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Monday
December 3, 1979

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69721 **Continuing Applicability of Panama Canal Regulations** Executive order

69723 **International Trade** Reorganization Plan

69602 **Gasoline** DOE/ERA gives notice of proposed rulemaking and public hearings on resellers' and reseller-retailers' price rules; comments by 12–31–79 and 2–1–80; hearings December 1979 and January 1980 (Part VIII of this issue)

69380 **Law Enforcement Education Program** Justice/LEAA applications for academic year 1980–81 will be mailed to current institutional participants in mid-December; apply by 3–15–80

69367, 69368 **Postsecondary Education Comprehensive Program** HEW invites applications for noncompeting continuation and new awards for fiscal year 1980 (2 documents)

69286 **Iranian Assets Control** Treasury/Foreign Control Assets Office clarifies effect of regulations on various types of letters of credit in which Iran or Iranian entity has interest; effective 11–28–79

69594 **Unleaded Gasoline Production** DOE/ERA amends refiners price rules; effective 12–1–79, comments by 12–31–79 (Part VII of this issue)

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69286 **Savings Bonds and Notes** Treasury/FS announces increase in investment yield of series E and H and freedom shares; effective 6–1–79

69417 **Motor Vehicle Exhaust Emission Standards** EPA issues notice of applications for waiver for 1981 model year light-duty motor vehicles (Part II of this issue)

69416 **Motor Vehicle Exhaust Emission Standards** EPA revises rule regarding carbon monoxide for 1981 and 1982 model year light-duty vehicles; effective 12–10–79 (Part II of this issue)

69299 **Maritime Safety: Hazardous Materials** DOT/CG amends regulations protecting maritime personnel from hazardous exposure to benzene vapor; effective 1–3–80

69305 **Maritime Safety** DOT/CG proposes to amend accident report regulations for deepwater ports; comments by 1–17–80

69311 **Lifeboats and Liferafts** DOT/CG proposes to amend stowage regulations; comments by 1–18–80

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69316 **I/O Channel Level Interface Standards** Commerce/NBS announces revision of Federal Information Processing Standards; effective 6–23–80

69586 **Interstate Highways System** DOT/FHWA proposes increase in maximum weight of trucks; comments by 3–3–80

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Presidential Documents

Title 3—

The President

Executive Order 12173 of November 29, 1979

Continuing Applicability of Panama Canal Regulations

By the authority vested in me as President of the United States of America by Section 301 of Title 3 of the United States Code, by the Panama Canal Code (76A Stat. 1), as amended, and by Public Law 96–70 (93 Stat. 452), and in accordance with the rights granted to the United States of America by the Panama Canal Treaty of 1977 "to manage, operate, and maintain the Panama Canal, its complementary works, installations and equipment and to provide for the orderly transit of vessels through the Panama Canal," it is hereby ordered as follows:

1–101. All regulations that were adopted by the President or his delegates pursuant to former Title 2 of the Canal Zone Code (76A Stat. 6–50), repealed by Section 303(a)(1)[1] of Public Law 96–70, or actions taken pursuant thereto, that were in effect on September 30, 1979, and that address matters which the President is authorized to regulate pursuant to Public Law 96–70, shall remain in effect unless or until amended, superseded, or otherwise terminated by the President or the Panama Canal Commission. This extension shall not apply to the extent that any such regulation or action is inconsistent with the provisions of the Panama Canal Treaty of 1977, its implementing agreements, or Public Law 96–70.

1–102. The Secretary of Defense shall exercise the powers and carry out the responsibilities vested in the President of the United States by the Panama Canal Code (76A Stat. 1), as amended, and Public Law 96–70 (93 Stat. 452), except for those powers and responsibilities vested in the President by Sections 1102(b), 1103, 1104, 1105(a), 1106(b), 1108, 1109(a), 1112(d), 1243(a)(1), 1321(c), 1344(b), 1504(b), 1601(a), 2206(b) and 3301 of Public Law 96–70. This delegation shall be effective for 120 days after the date of this Order.

Jimmy Carter

THE WHITE HOUSE,
November 29, 1979.

[FR Doc. 79–37192
Filed 11–29–79; 2:23 pm]
Billing code 3195–01–M

[1] EDITORIAL NOTE: The correct citation is Section 3303(a)(1).

Presidential Documents

REORGANIZATION PLAN NO. 3 OF 1979

Prepared by the President and transmitted to the Senate and the House of Representatives in Congress assembled, September 25, 1979, pursuant to the provisions of chapter 9 of title 5 of the United States Code.

Reorganization of Functions Relating to International Trade

Section 1. *Office of the United States Trade Representative*

(a) The Office of the Special Representative for Trade Negotiations is redesignated the Office of the United States Trade Representative.

(b)(1) The Special Representative for Trade Negotiations is redesignated the United States Trade Representative (hereinafter referred to as the "Trade Representative"). The Trade Representative shall have primary responsibility, with the advice of the interagency organization established under section 242 of the Trade Expansion Act of 1962 (19 U.S.C. 1872) (hereinafter referred to as the "Committee"), for developing, and for coordinating the implementation of, United States international trade policy, including commodity matters and, to the extent they are related to international trade policy, direct investment matters. The Trade Representative shall serve as the principal advisor to the President on international trade policy and shall advise the President on the impact of other policies of the United States Government on international trade.

(2) The Trade Representative shall have lead responsibility for the conduct of international trade negotiations, including commodity and direct investment negotiations in which the United States participates.

(3) To the extent necessary to assure the coordination of international trade policy, and consistent with any other law, the Trade Representative, with the advice of the Committee, shall issue policy guidance to departments and agencies on basic issues of policy and interpretation arising in the exercise of the following international trade functions. Such guidance shall determine the policy of the United States with respect to international trade issues arising in the exercise of such functions:

(A) matters concerning the General Agreement on Tariffs and Trade, including implementation of the trade agreements set forth in section 2(c) of the Trade Agreements Act of 1979; United States Government positions on trade and commodity matters dealt with by the Organization for Economic Cooperation and Development, the United Nations Conference on Trade and Development, and other multilateral organizations; and the assertion and protection of the rights of the United States under bilateral and multilateral international trade and commodity agreements;

(B) expansion of exports from the United States;

(C) policy research on international trade, commodity, and direct investment matters;

(D) to the extent permitted by law, overall United States policy with regard to unfair trade practices, including enforcement of countervailing duties and antidumping functions under section 303 and title VII of the Tariff Act of 1930;

(E) bilateral trade and commodity issues, including East-West trade matters; and

(F) international trade issues involving energy.

(4) All functions of the Trade Representative shall be conducted under the direction of the President.

(c) The Deputy Special Representatives for Trade Negotiations are redesignated Deputy United States Trade Representatives.

Section 2. *Department of Commerce*

(a) The Secretary of Commerce (hereinafter referred to as the "Secretary") shall have, in addition to any other functions assigned by law, general operational responsibility for major nonagricultural international trade functions of the United States Government, including export development, commercial representation abroad, the administration of the antidumping and countervailing duty laws, export controls, trade adjustment assistance to firms and communities, research and analysis, and monitoring compliance with international trade agreements to which the United States is a party.

(b)(1) There shall be in the Department of Commerce (hereinafter referred to as the "Department") a Deputy Secretary appointed by the President, by and with the advice and consent of the Senate. The Deputy Secretary shall receive compensation at the rate payable for Level II of the Executive Schedule, and shall perform such duties and exercise such powers as the Secretary may from time to time prescribe.

(2) The position of Under Secretary of Commerce established under section 1 of the Act of June 5, 1939 (ch. 180, 53 Stat. 808; 15 U.S.C. 1502) is abolished.

(c) There shall be in the Department an Under Secretary for International Trade appointed by the President, by and with the advice and consent of the Senate. The Under Secretary for International Trade shall receive compensation at the rate payable for Level III of the Executive Schedule, and shall perform such duties and exercise such powers as the Secretary may from time to time prescribe.

(d) There shall be in the Department two additional Assistant Secretaries appointed by the President, by and with the advice and consent of the Senate. Each such Assistant Secretary shall receive compensation at the rate payable for Level IV of the Executive Schedule, and shall perform such duties and exercise such powers as the Secretary may from time to time prescribe.

Section 3. *Export-Import Bank of the United States*

The Trade Representative and the Secretary shall serve, ex officio and without vote, as additional members of the Board of Directors of the Export-Import Bank of the United States.

Section 4. *Overseas Private Investment Corporation*

(a) The Trade Representative shall serve, ex officio, as an additional voting member of the Board of Directors of the Overseas Private Investment Corporation. The Trade Representative shall be the Vice Chair of such Board.

(b) There shall be an additional member of the Board of Directors of the Overseas Private Investment Corporation who shall be appointed by the President of the United States, by and with the advice and consent of the Senate, and who shall not be an official or employee of the Government of the United States. Such Director shall be appointed for a term of no more than three years.

Section 5. *Transfer of Functions*

(a)(1) There are transferred to the Secretary all functions of the Secretary of the Treasury, the General Counsel of the Department of the Treasury, or the Department of the Treasury pursuant to the following:

(A) section 305(b) of the Trade Agreements Act of 1979 (19 U.S.C. 2515(b)), to be exercised in consultation with the Secretary of the Treasury;

(B) section 232 of the Trade Expansion Act of 1962 (19 U.S.C. 1862);

(C) section 303 and title VII (including section 771(1)) of the Tariff Act of 1930 (19 U.S.C. 1303, 1671 *et seq.*), except that the Customs Service of the Department of the Treasury shall accept such deposits, bonds, or other security as deemed appropriate by the Secretary, shall assess and collect such duties as may be directed by the Secretary, and shall furnish such of its important records or copies thereof as may be requested by the Secretary incident to the functions transferred by this subparagraph;

(D) sections 514, 515, and 516 of the Tariff Act of 1930 (19 U.S.C. 1514, 1515, and 1516) insofar as they relate to any protest, petition, or notice of desire to contest described in section 1002(b)(1) of the Trade Agreements Act of 1979;

(E) with respect to the functions transferred by subparagraph (C) of this paragraph, section 318 of the Tariff Act of 1930 (19 U.S.C. 1318), to be exercised in consultation with the Secretary of the Treasury;

(F) with respect to the functions transferred by subparagraph (C) of this paragraph, section 502(b) of the Tariff Act of 1930 (19 U.S.C. 1502(b)), and, insofar as it provides authority to issue regulations and disseminate information, to be exercised in consultation with the Secretary of the Treasury to the extent that the Secretary of the Treasury has responsibility under subparagraph (C), section 502(a) of such Act (19 U.S.C. 1502(a));

(G) with respect to the functions transferred by subparagraph (C) of this paragraph, section 617 of the Tariff Act of 1930 (19 U.S.C. 1617); and

(H) section 2632(e) of title 28 of the United States Code, insofar as it relates to actions taken by the Secretary reviewable under section 516A of the Tariff Act of 1930 (19 U.S.C. 1516(a)).

(2) The Secretary shall consult with the Trade Representative regularly in exercising the functions transferred by subparagraph (C) of paragraph (1) of this subsection, and shall consult with the Trade Representative regarding any substantive regulation proposed to be issued to enforce such functions.

(b) (1) There are transferred to the Secretary all trade promotion and commercial functions of the Secretary of State or the Department of State that are—

(A) performed in full-time overseas trade promotion and commercial positions; or

(B) performed in such countries as the President may from time to time prescribe.

(2) To carry out the functions transferred by paragraph (1) of this subsection, the President, to the extent he deems it necessary, may authorize the Secretary to utilize Foreign Service personnel authorities and to exercise the functions vested in the Secretary of State by the Foreign Service Act of 1946 (22 U.S.C. 801 *et seq.*) and by any other laws with respect to personnel performing such functions.

(c) There are transferred to the President all functions of the East-West Foreign Trade Board under section 411(c) of the Trade Act of 1974 (19 U.S.C. 2441 (c)).

(d) Appropriations available to the Department of State for Fiscal Year 1980 for representation of the United States concerning matters arising under the General Agreement on Tariffs and Trade and trade and commodity matters dealt with under the auspices of the United Nations Conference on Trade and Development are transferred to the Trade Representative.

(e) There are transferred to the interagency organization established under section 242 of the Trade Expansion Act of 1962 (19 U.S.C. 1872) all functions of the East-West Foreign Trade Board under section 411 (a) and (b) of the Trade Act of 1974 (19 U.S.C. 2441 (a) and (b)).

Section 6. *Abolition*

The East-West Foreign Trade Board established under section 411 of the Trade Act of 1974 (19 U.S.C. 2441) is abolished.

Section 7. *Responsibility of the Secretary of State*

Nothing in this reorganization plan is intended to derogate from the responsibility of the Secretary of State for advising the President on foreign policy matters, including the foreign policy aspects of international trade and trade-related matters.

Section 8. *Incidental transfers; interim officers*

(a) So much of the personnel, property, records, and unexpended balances of appropriations, allocations, and other funds employed, used, held, available, or to be made available in connection with the functions transferred under this reorganization plan as the Director of the Office of Management and Budget shall determine shall be transferred to the appropriate agency, organization, or component at such time or times as such Director shall provide, except that no such unexpended balances transferred shall be used for purposes other than those for which the appropriation originally was made. The Director of the Office of Management and Budget shall provide for terminating the affairs of any agency abolished herein and for such further measures and dispositions as such Director deems necessary to effectuate the purposes of the reorganization plan.

(b) Pending the assumption of office by the initial officers provided for in section 2 of this reorganization plan, the functions of each such office may be performed, for up to a total of 60 days, by such individuals as the President may designate. Any individual so designated shall be compensated at the rate provided herein for such position.

Section 9. *Effective date*

The provisions of this reorganization plan shall take effect October 1, 1980, or at such earlier time or times as the President shall specify, but not sooner than the earliest time allowable under section 906 of title 5 of the United States Code.

[FR Doc 79-37308
Filed 11-30-79; 9:31 am]
Billing code 3195-01-M

LEGISLATIVE HISTORY:

WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS:

Vol. 15, No. 39: Sept. 25, Presidential message transmitting Reorganization Plan No. 3 of 1979 to Congress.

HOUSE REPORT No. 96-585 accompanying H. Res. 428 (Comm. on Government Operations).
SENATE REPORT No. 96-402 accompanying S. Res. 245 (Comm. on Governmental Affairs).
CONGRESSIONAL RECORD, Vol. 125 (1979):

Sept. 26, S. Res. 245, resolution of disapproval introduced in Senate and referred to Committee on Governmental Affairs.

Sept. 26, H. Res. 428, resolution of disapproval introduced in House and referred to Committee on Government Operations.

Nov. 8, H. Res. 428 rejected by House.

Rules and Regulations

Federal Register
Vol. 44, No. 233
Monday, December 3, 1979

This section of the FEDERAL REGISTER contains regulatory documents having general applicability and legal effect, most of which are keyed to and codified in the Code of Federal Regulations, which is published under 50 titles pursuant to 44 U.S.C. 1510.
The Code of Federal Regulations is sold by the Superintendent of Documents. Prices of new books are listed in the first FEDERAL REGISTER issue of each month.

DEPARTMENT OF AGRICULTURE

Commodity Credit Corporation

7 CFR Part 1464

Tobacco Loan Program; 1979 Crop Grade Loan Rates—Fire-Cured (Type 22 and 23) Tobacco

AGENCY: Commodity Credit Corporation.

ACTION: Final rule.

SUMMARY: This rule establishes the loan rates to be applied to the various grades of 1979-crop fire-cured (types 22 and 23) tobacco so as to provide the level of price support required by the Agricultural Act of 1949, as amended. Eligible fire-cured (types 22 and 23) tobacco can be delivered for price support at the specified rates.

EFFECTIVE DATE: December 3, 1979.

ADDRESS: U.S. Department of Agriculture, Price Support and Loan Division, ASCS, P.O. Box 2415, Washington, D.C. 20013.

FOR FURTHER INFORMATION CONTACT: Dalton J. Ustynik, ASCS, (202) 447–6733.

SUPPLEMENTARY INFORMATION: In accordance with the provisions of Section 106 of the Agricultural Act of 1949, as amended ("the Act"), the 1979 crop of fire-cured (types 22 and 23) tobacco is required to be supported at the level of 90.4 cents per pound. It is expected that price support will be provided through loans to a producer cooperative marketing association which will receive eligible tobacco from producers and make price support advances to the producers through auction warehouses. The tobacco received will serve as collateral for the loan. Price support advances will be based on the loan rates for each grade. These loan rates average the required level of support when weighted by the anticipated grade percentages as authorized by Section 403 of the Act. Price support advances to producers will be the amounts determined by multiplying the pounds of each grade received by the applicable loan rate for that grade less one cent per pound which the producers' association is authorized to deduct and to apply against overhead costs.

Final Rule

Accordingly, 7 CFR Part 1464 is amended by revising § 1464.18 to read as follows effective for the 1979 crop of fire-cured (types 22 and 23) tobacco. The material previously appearing under § 1464.18 remains applicable to the crop to which it refers.

§ 1464.18 1979 Crop Fire-Cured Tobacco, Types 22 and 23, Grade Loan Schedule [1]

[Dollars per hundred pounds, farm sales weight]

Grade	Loan Rate				
	Length				
	47	46	45	44	43
A1F	139	139	139		
A2F	134	134	134		
A3F	126	126	126		
A1D	139	139	139		
A2D	134	134	134		
A3D	126	126	126		
B1F	120	120	120	115	
B2F	115	115	115	111	
B3F	111	111	111	108	102
B4F	101	101	101	98	91
B5F	97	97	97	94	88
B1D	119	119	119	114	
B2D	114	114	114	110	
B3D	111	111	111	107	103
B4D	103	103	103	100	93
B5D	93	93	93	89	83
B3M	97	97	97	93	88
B4M	89	89	89	85	78
B5M	84	84	84	79	74
B3VF	94	94	94	90	83
B4VF	92	92	92	89	82
B5VF	88	88	88	85	78
B3G	94	94	94	90	82
B4G	89	89	89	85	77
B5G	81	81	81	76	71
C1L	121	121	121	117	
C2L	117	117	117	114	
C3L	110	110	110	106	100
C4L	106	106	106	103	97
C5L	103	103	103	101	94
C1F	115	115	115	111	
C2F	112	112	112	109	
C3F	109	109	109	106	99
C4F	101	101	101	98	91
C5F	99	99	99	95	88
C1D	118	118	118	113	
C2D	107	107	107	104	
C3D	101	101	101	98	92
C4D	92	92	92	90	84
C5D	87	87	87	85	78
C3M	97	97	97	94	88
C4M	90	90	90	89	83
C5M	88	88	88	86	77
C3VF	98	98	98	95	89
C4VF	95	95	95	93	87
C5VF	93	93	93	91	82
C3G	92	92	92	89	84
C4G	84	84	84	80	75
C5G	79	79	79	76	73

Grade	Loan Rate
	Length
	47
X1L	101
X2L	98
X3L	94
X4L	89
X5L	87
X1F	105
X2F	102
X3F	94
X4F	90
X5F	88
X1D	97
X2D	93
X3D	88
X4D	81
X5D	78
X3M	84
X4M	78
X5M	75
X3VF	84
X4VF	80
X5VF	76
X3G	82
X4G	72
X5G	67
N1L	70
N1D	62
N1G	58
N2	45

[1] Only the original producer is eligible to receive advances. Tobacco graded "No-G" (no grade), "U" (unsound), or scrap will not be accepted. Tobacco graded "W" (Doubtful keeping order) will be accepted at advance rates 20 percent below the advance rates otherwise applicable. Tobacco is eligible for loan only if consigned by the original producer.

(Sec 4, 5, 62 Stat. 1070, as amended (15 U.S.C. 714b, 714c), sec. 101, 106, 401, 403, 63 Stat. 1051, as amended (7 U.S.C. 1441, 1445, 1421, 1423))

Note.—This final rule has been reviewed under the USDA criteria established to implement Executive Order 12044, "Improving Government Regulations". A determination has been made that this action not be classified as "significant" under those criteria. This regulation contains necessary operating provisions and loan rates needed to implement the 1979 Tobacco Loan Program for fire-cured (types 22 & 23) tobacco, which was approved by the Secretary on September 13, 1979, and publicly announced the following day. A Final Impact Statement was prepared and is available from Robert L. Tarczy, Price Support and Loan Division, Room 3741-South Building, P.O. Box 2415, Washington, D.C. 20013.

Signed at Washington, D.C. on November 16, 1979.

John W. Goodwin,

Acting Executive Vice President, Commodity Credit Corporation.

[FR Doc. 79-36976 Filed 11-30-79; 8:45 am]

BILLING CODE 3410-05-M

7 CFR Part 1464

Tobacco Loan Program; 1979 Crop Grade Loan Rates—Ohio Filler Tobacco, Types 42–44; Connecticut Valley Broadleaf Tobacco, Type 51; Connecticut Valley Havana Seed Tobacco, Type 52; New York and Pennsylvania Havana Seed Tobacco, Type 53, Southern Wisconsin Tobacco, Type 54, Northern Wisconsin Tobacco, Type 55, and Puerto Rican Tobacco, Type 46

AGENCY: Commodity Credit Corporation.

ACTION: Final rule.

SUMMARY: This rule establishes the loan rates to be applied to the various grades of 1979-crop Ohio Filler tobacco, types 42–44; Connecticut Valley broadleaf tobacco, type 51; Connecticut Valley Havana seed tobacco, type 52; New York and Pennsylvania Havana seed tobacco, type 53; Southern Wisconsin tobacco, type 54, Northern Wisconsin, type 55, and Puerto Rican tobacco, type 46 so as to provide the level of price support required by the Agricultural Act of 1949, as amended. Eligible tobacco can be delivered for price support at the specified rates.

EFFECTIVE DATE: December 3, 1979.

ADDRESS: U.S. Department of Agriculture, Price Support and Loan Division, ASCS, P.O. Box 2415, Washington, D.C. 20013.

FOR FURTHER INFORMATION CONTACT: Robert L. Tarczy, ASCS, (202) 447–6733.

SUPPLEMENTARY INFORMATION: In accordance with the provisions of Section 106 of the Agricultural Act of 1949, as amended ("the Act"), the 1979 crops of Ohio filler, types 42–44, New York and Pennsylvania Havana seed, type 53 Southern Wisconsin, type 54, and Northern Wisconsin, type 55 tobaccos are required to be supported at 66.6 cents per pound, and Puerto Rican tobacco, type 46 required to be is supported at 69.2 cents per pound, and Connecticut Valley broadleaf, type 51, and Connecticut Valley Havana seed tobacco, type 52, tobaccos are required to be supported at 92.3 cents per pound. It is expected that price support will be provided through loans to a producer cooperative marketing association which will receive eligible tobacco from producers and make price support advances to the producers through auction warehouses. The tobacco received will serve as collateral for the loan. Price support advances will be based on the loan rates for each grade. These loan rates average the required level of support when weighted by the anticipated grade percentages as authorized by Section 403 of the Act. Price support advances to producers will be the amounts determined by multiplying the pounds of each grade received by the applicable loan rate for that grade less one cent per pound which the producers' associations are authorized to deduct and to apply against overhead costs.

This regulation contains loan rates for individual grades of cigar-binder, type 51 and 53 and cigar-filler and binder, types 42-44, 53-55, Puerto Rican, type 46 tobacco, needed to implement the national average loan rates for such tobaccos which were announced on September 14, 1979.

Final Rule

Accordingly, 7 CFR Part 1464 is amended by revising § 1464.22, through 1464.27 to read as follows effective for the 1979 crops.

§ 1464.22 1979 Crop—Ohio Filler Tobacco, Types 42–44, Loan Schedule.[1]

[Dollars per hundred pounds, farm sales weight]

Grade	Loan rate
Crop run (stripped together):	
X1	72
X2	66
X3	60
X4	54
Nondescript: N	45
Nonbinder X1	61

§ 1464.23 1979 Crop—Connecticut Valley Broadleaf Tobacco, Type 51, Loan Schedule.[2]

[Dollars per hundred pounds, farm sales weight]

Grade	Loan rate
Binders:	
B1	118
B2	108
B3	96
B4	86
B5	75
Nonbinders: X1	61

§ 1464.24 1979 Crop—Connecticut Valley Havana Seed Tobacco, Type 52—Loan Schedule.[2]

[Dollars per hundred pounds, farm sales weight]

Grade	Loan rate
Binders:	
B1	114
B2	106
B3	94
B4	85
B5	75
Nonbinder: X1	61

§ 1464.25 1979 Crop—New York and Pennsylvania Havana Seed Tobacco, Type 53, and Southern Wisconsin Tobacco, Type 54—Loan Schedule.[1]

[Dollars per hundred pounds, farm sales weight]

Grade	Loan rate
Crop Run:	
X1	73
X2	67
X3	60
Farm Fillers:	
Y1	52
Y2	50
Y3	47
Nondescript:	
N1	46
N2	40

§ 1464.26 1978 Crop—Northern Wisconsin Tobacco, Type 55, Loan Schedule.[1]

[Dollars per hundred pounds, farm sales weight]

Grade	Loan rate
Binders:	
B1	91.0
B2	84.0
B3	77.5
Strippers:	
C1	74.0
C2	68.0
C3	63.5
Crop Run:	
X1	73.5
X2	67.5
X3	62.0
Farm fillers:	
Y1	51.0
Y2	49.0
Y3	45.0
Nondescript:	
N1	44.0
N2	38.5

§ 1464.27 1979 Crop—Puerto Rican Tobacco, Type 46, Loan Schedule.[1]

[Dollars per hundred pounds, farm sales weight]

Grade	Loan rate
Price Block I (C1F and C1P)	75.50
Price Block II (X1F, X1P, and X1S)	69.00
Price Block III (X2T, X2F, X2P, and X2S)	59.00
Price Block IV (N)	27.00

[1] Tobacco is eligible for loan only if consigned by the original producer. No loan is authorized for tobacco graded "N1" or "N2" (nondescript) or "S" (scrap) or designated "No-G" (no grade). The cooperative association through which price support is made available is authorized to deduct from the amount paid the grower $1 per hundred pounds to apply against overhead and receiving costs.

[2] Tobacco is eligible for loan only if consigned by the original producer. No loan is authorized for tobacco graded "S" (scrap) or designated "No-G" (no grade). The cooperative association through which price support is made available is authorized to deduct from the amount paid the growers $1 per hundred pounds to apply against overhead and receiving costs.

(Secs. 4 and 5, 62 Stat. 1070, as amended (15 U.S.C. 714(b), 714(c)); secs. 101, 106, 401, 403, 63 Stat. 1051, as amended, 1054, 74 Stat. 6 (7 U.S.C. 1441, 1445, 1421, 1423).)

Note.—This final rule has been reviewed under the USDA criteria established to implement Executive Order 12044 "Improving Government Regulations". A determination has been made that this action should not be classified as "significant" under those criteria. This regulation contains necessary operation provisions and loan rates for cigar-

binder, types 51 and 52, and cigar filler and binder, types 42–44, 53–55, Puerto Rico, type 46 tobacco, needed to implement the 1979 Tobacco Loan Program which was approved by the Secretary on September 13, 1979 and publicly announced the following day. A Final Impact Statement has been prepared and is available from Robert L. Tarczy, Price Support and Loan Division, Room 3741-South Building, P.O. Box 2415, Washington, D.C. 20013.

Signed at Washington, D.C. on November 28, 1979.

John E. Gibbs,

Acting Executive Vice President, Commodity Credit Corporation.

[FR Doc. 79-37104 Filed 11-30-79; 8:45 am]

BILLING CODE 3410-05-M

Agricultural Marketing Service

9 CFR Part 201

Schedule of Rates and Charges; Filing Specific Data, Elimination

AGENCY: Packers and Stockyards, Agricultural Marketing Service, U.S. Department of Agriculture.

ACTION: Final rule: Correction.

SUMMARY: This document corrects a previous **Federal Register** document (FR Doc. 79–32741) beginning at page 61169, of the issue for Wednesday, October 24, 1979.

DATE: Effective October 24, 1979.

FOR FURTHER INFORMATION CONTACT: Jack W. Brinckmeyer, Livestock Marketing Division, P&S, Agricultural Marketing Service, U.S. Department of Agriculture, Washington, D.C. 20250, 202–447–4366.

SUPPLEMENTARY INFORMATION: In a notice published at 44 FR 61169, October 24, 1979, section 201.25 of the regulations was amended. However, the authority for such action was omitted. The notice is corrected to read as set forth below.

§ 201.25 Information required with proposed increases in existing charges.

Each stockyard owner and market agency proposing an increase in existing charges shall file with the Administrator not less than ten (10) days before the effective date thereof the supplement, amendment, or tariff containing the proposed increase. No supporting data need accompany such supplement, amendment, or tariff upon the filing thereof. However, if a valid complaint is filed or for other compelling reasons, the Administrator may require the furnishing of specific and detailed data on which the proposed increase is based.

(Section 407(a), 42 Stat. 169, 7 U.S.C. 228)

Done at Washington, D.C., November 23, 1979.

Paschal O. Drake,

Acting Deputy Administrator.

[FR Doc. 79-37137 Filed 11-30-79; 8:45 am]

BILLING CODE 3410-02-M

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 79-EA-47; Amdt. 39-3628]

Airworthiness Directives; AVCO Lycoming

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This amendment amends AD 79–10–03, applicable to AVCO Lycoming type aircraft engines, which requires an inspection of the engine mount bracket attach bolts for correct torque. This amendment revises the applicability paragraph to specify engines by serial number and also include the 0–320–H2AD series engines installed in the Cessna Model 172N airplanes. These latter engines have also developed the same loose, broken, and missing engine mount bolts.

EFFECTIVE DATE: December 7, 1979. Compliance is required as set forth in the AD.

ADDRESSES: AVCO Lycoming Service Bulletins may be acquired from the manufacturer at Williamsport, Pennsylvania 17701.

FOR FURTHER INFORMATION CONTACT: I. Mankuta, Propulsion Section, AEA–214, Engineering and Manufacturing Branch, Federal Building, J. F. K. International Airport, Jamaica, New York 11430; Tel. 212–995–2894.

SUPPLEMENTARY INFORMATION: In view of the continuing air safety problem, notice and public procedure hereon are impractical, and the amendment may be made effective in less than 30 days.

Adoption of the Amendment

Accordingly, and pursuant to the authority delegated to me by the Administrator, § 39.13 of the Federal Aviation Regulations (14 CFR 39.13) is amended by amending AD 79–10–3, as follows:

1. Amend the applicability paragraph to read as follows:

AVCO LYCOMING: Applies to 0–360–E1A6D Series engines, Serial Number L–101–77 thru L–347–77, L–352–77 and L0–360–E1A6D Series engines, Serial Number L–101–72 thru L–319–72, L–321–72 thru L–324–72, L–326–72 thru L–339–72, L–341–72 thru L–348–72, L–350–72 installed in the Piper Model PA–44 aircraft, and 0–320–H2AD Series engines, Serial Number L–101–76 thru L–5708–76 or any engine remanufactured on or after January 4, 1979, installed in the Cessna Model 172N.

2. Insert after the last paragraph: "Lycoming Service Instruction No. 1380, dated 6–22–79, applies to this subject."

Effective date: This amendment is effective December 7, 1979.

(Secs. 313(a), 601, 603, Federal Aviation Act of 1958, as amended, (49 U.S.C. 1354(a), 1421, 1423); sec. 6(c), Department of Transportation Act, (49 U.S.C. 1655(c)); 14 CFR 11.89)

Issued in Jamaica, New York, on November 21, 1979.

Murray E. Smith,

Director, Eastern Region.

[FR Doc. 79-37033 Filed 11-30-79; 8:45 am]

BILLING CODE 4910-13-M

14 CFR Part 39

[Docket No. 79-WE-36-AD; Amdt. 39-3629]

Lockheed-California Co. Model L- 1011-385 Series Airplanes; Airworthiness Directives

AGENCY: Federal Aviation Administration (FAA) DOT.

ACTION: Final rule.

SUMMARY: This amendment adopts a new airworthiness directive (AD) which requires visual inspection of the main landing gear piston clevis lugs including the web area directly above the lugs and replacement of pistons, if necessary, on the main landing gear assemblies of the Lockheed-California Company L–1011–385 series aircraft. The AD is required to preclude possible failures of the main landing gear pistons which could result in hazardous operational environment to the airplane during taxiing, takeoff or landing.

DATES: Effective date December 11, 1979. Initial compliance required in the next 48 hours from the effective date of this AD.

FOR FURTHER INFORMATION CONTACT: Jerry J. Presba, Executive Secretary, Airworthiness Directive Review Board, Federal Aviation Administration, Western Region, P.O. Box 92007, World Way Postal Center, Los Angeles, California 90009. Telephone: (213) 536–6351.

SUPPLEMENTARY INFORMATION: There has been a report of a crack in a main landing gear piston clevis lug area. This crack was discovered by an operators' personnel while the aircraft was nonoperational.

The crack was found to be initiated on the inside surface of the piston lug

underneath the bushing flange. The crack emanated from this location to the outside surface of the lug and continued upward and forward along the forward flange of the piston. Indications are that reformed martensite existed underneath the bushing indicating that heat had generated through the bushing flange into the piston base material. The reformed martensite was approximately 0.002 inches deep, centered approximately 0.165 inches above the pivot pin bore. Inspection of the bushing flange indicated that galling had taken place between the flanges of the bogie bushing and the adjacent bushing on the inside of the piston bore. The tentative conclusion is that the initial crack was caused by an over-tempered condition and that the crack progressed by stress corrosion.

Cracks in the main landing gear truck pivot pins initiated from the same phenomenon discussed above, and predictions of safe operational life of the cracked pivot pins proved to be unreliable, and in one instance potentially hazardous (see Airworthiness Directive Amendment 39-3448). Since at this time a reliable NDT method is not available, the visual inspections required by this AD are intended to provide an assurance of minimizing any possible crack propagation from attaining a hazardous rate of growth.

The FAA is currently evaluating the manufacturer's proposed redesign of the piston/truck beam joint which is intended to eliminate the crack phenomenon. The initial and repeat visual inspections of this AD are considered to constitute an adequate interim safety action.

Since a condition exists that requires immediate adoption of this regulation, it is found that notice and public procedure hereon are impracticable, and good cause exists for making the amendment effective in less than thirty (30) days.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, § 39.13 of Part 39 of the Federal Aviation Regulations (14 CFR 39.13) is amended, by adding the following new airworthiness directive:

Lockheed-California Company. Applies to Lockheed-California Company L-1011-385 series airplanes certificated in all categories.

To preclude possible failure of the main landing gear pistons P/N 1523009 (-109, -113, -117, -121), perform the following:

Compliance required as indicated.

(a) Within the next 48 hours after the effective date of the AD, unless already accomplished, conduct a visual inspection of the main landing gear piston clevis lugs including the web area directly above the lugs. If a crack is found, the piston must be replaced prior to further revenue flight.

(b) Repeat the visual inspection of paragraph (a), above, once per each day in which the aircraft is operated.

Note.—The visual inspection of paragraphs (a) and (b), above, should be conducted with the piston clevis lugs and the web area directly above the lugs thoroughly cleaned of all accumulated dirt and grease. The conduct of this visual inspection is considered to constitute an interim safety action.

(c) Special flight permits may be issued in accordance with FAR 21.197 and 21.199 to operate airplanes to a base for the accomplishment of replacements required by this AD.

(d) Alternative inspections or other actions which provide an equivalent level of safety may be used when approved by the Chief, Aircraft Engineering Division, FAA Western Region.

This amendment becomes effective December 11, 1979.

(Secs. 313(a), 601, and 603, Federal Aviation Act of 1958, as amended (49 U.S.C. 1354(a), 1421, and 1423); sec. 6(c) Department of Transportation Act (49 U.S.C. 1655(c)); and 14 CFR 11.89)

Issued in Los Angeles, Calif. on November 23, 1979.

William R. Krieger,

Acting Director, FAA Western Region.

[FR Doc. 79-37034 Filed 11-30-79; 8:45 am]

BILLING CODE 4910-13-M

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14 CFR Part 39

[Docket No. 79-SO-72, Amdt. No. 39-3623]

Airworthiness Directives; Embraer Models EMB-110P1 and EMB-110P2

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This amendment amends an existing Airworthiness Directive (AD) applicable to Embraer Model EMB-110P1 airplanes by making the AD applicable to the Model EMB-110P2 and extending the inspection and replacement intervals. This amendment is needed to make the AD applicable to the Model EMB-110P2 and decrease the frequency of inspection for airplanes with shot-peened struts.

DATES: Effective November 28, 1979.

Compliance as prescribed in body of AD.

ADDRESSES: The applicable service bulletin may be obtained from Empresa Brasileira de Aeronautica S/A (EMBRAER), P.O. Box 343-CEP, 12.200, San Jose dos Campos-SP, Brazil.

A copy of the service bulletin is contained in Room 275, FAA, Southern Region, 3400 Whipple Street, East Point, Georgia.

FOR FURTHER INFORMATION CONTACT: R. B. Davis, Chief, Airframe Section, Engineering and Manufacturing Branch, FAA, Southern Region, P.O. Box 20636, Atlanta, Georgia 30320, telephone (404) 763-7407.

SUPPLEMENTARY INFORMATION: This amendment amends Amendment 39-3411, 44 FR 9740, AD 79-04-03, which currently requires inspection and replacement of landing gear components. After issuing amendment 39-3411, the FAA has determined that the inspection frequencies may be decreased on airplanes with shot-peened struts and that the AD is also applicable to the Model EMB-110P2. Therefore, the FAA is amending Amendment 39-3411 by extending the inspection and replacement intervals and making the AD applicable to the Model EMB-110P2 airplanes.

Since a situation exists that requires the immediate adoption of this regulation, it is found that notice and public procedure hereon are impracticable and good cause exists for making this amendment effective in less than 30 days.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, § 39.13 of Part 39 of the Federal Aviation Regulations (14 CFR 39.13) is amended by amending Amendment 39-3411, 44 FR 9740, AD 79-04-03, as follows:

A. Revise applicability statement to read:

Applies to all Model EMB-110P1 and EMB-110P2 airplanes, certificated in all categories.

B. Revise the remainder of AD 79-04-03 to read:

1. Applicable to oleo strut assemblies, P/N 15164A, B, or C, and 15165A, B, or C, on shock struts, P/N 14570 and 14575, which have 2000 landings or more.

a. Prior to the first flight of each day, using a 10-power magnifying glass, conduct a visual inspection of the shock struts of the main landing gear at the weld that joins the torque link-to-shock strut attachment. If cracks are found, replace the failed component prior to further flight.

b. Within the next 200 landings and each 200 landings thereafter, using a dye-penetrant method, inspect the area outlined in 1.a. If cracks are found, replace the failed component prior to further flight.

c. Replace shock struts P/N 14570 and 14575 which have 3000 landings or more.

2. Applicable to oleo strut assemblies P/N 15164D, 001, 002, or 110P2-421-01 and P/N 15165D, 001, 002, or 110P2-422-01 on shock struts P/N 14570A, B, or C and 14575A, B, or C, which have 12,500 landings or more.

a. Prior to the first flight of each day, using a 10-power magnifying glass, conduct a visual

inspection on the shock struts of the main landing gear at the weld that joins the torque link-to-shock strut attachment. If cracks are found, replace the failed component prior to further flight.

b. Within the next 200 landings and each 200 landings thereafter, using a dye-penetrant method, inspect the areas outlined in 2.a. If cracks are found, replace the failed component prior to further flight.

3. Applicable to upper half-drag strut P/N 14284 and 14334 without shot-peening treatment.

a. Prior to the first flight of each day, using a 10-power magnifying glass, conduct a visual inspection of the external side of the upper region of the half-drag strut, near the hydraulic actuator joint. If cracks are found, replace the failed component prior to further flight.

b. Within the next 200 landings and each 200 landings thereafter, using a dye-penetrant method, inspect the area outlined in 3.a. If cracks are found, replace the failed component prior to further flight.

4. Applicable to upper half-drag strut P/N 14284A and 14334A which have shot-peening treatment and which have 8300 landings or more.

a. Prior to the first flight of each day, using a 10-power magnifying glass, conduct a visual inspection of the external side of the upper region of the half-drag strut, near the hydraulic actuator joint. If cracks are found, replace the failed component prior to further flight.

b. Within the next 200 landings and each 200 landings thereafter, using a dye-penetrant method, inspect the external and internal side of the half-drag strut. If cracks are found, replace the failed component prior to further flight.

Compliance with the provisions of this AD may be accomplished in an equivalent manner approved by the Chief, Engineering and Manufacturing Branch, Southern Region.

Upon request of the operator, an FAA maintenance inspector, subject to prior approval of the Chief, E&M Branch, Southern Region, may adjust the inspection compliance times specified in this airworthiness directive to permit compliance at an established inspection period of the operator if the request contains substantiating data to justify the increase for that operator.

Note.—Embraer Service Bulletin No. 110–32–018 pertains to this same subject. Airplanes on which cracks are found may be flown to a base for replacement of the failed components in accordance with FAR 21.197 and 21.199. On airplanes on which landings are not recorded, one landing per flying hour may be used to determine number of landings.

This amendment becomes effective November 28, 1979.

(Secs. 313(a), 601, and 603, Federal Aviation Act of 1958, as amended, (49 U.S.C. 1354(a), 1421, and 1423); sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)); 14 CFR 11.89).

—**Note.**The FAA has determined that this document involves a regulation which is not significant under Executive Order 12044, as implemented by Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979).

Issued in East Point, Ga., on November 21, 1979.

Louis J. Cardinali,

Director, Southern Region.

[FR Doc. 79–37108 Filed 11–30–79; 8:45 am]

BILLING CODE 4910–13–M

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14 CFR Part 39

[Docket No. 79–WE–35–AD, Amdt. 39–3627]

Airworthiness Directives; McDonnell Douglas DC–10 Series Airplanes

AGENCY: Federal Aviation Administration (FAA) DOT.

ACTION: Final rule.

SUMMARY: This amendment adopts a new Airworthiness Directive (AD) that requires cleaning, replacement, or modification of the AiResearch P/N 103506 Cabin Positive Pressure Relief Valve installed on DC–10 airplanes. The proposed AD is necessary to ensure that the valves will perform their intended function at altitude should a cabin pressure system failure occur, resulting in an undetected cabin over-pressurization.

DATES: Effective January 7, 1980.

Compliance schedule—As prescribed in the body of the AD.

ADDRESSES: The applicable service information may be obtained from: McDonnell Douglas Corporation, 3855 Lakewood Boulevard, Long Beach, California 90846, Attention: Director, Publications and Training C1–750 (54–60).

Also, a copy of the service information may be reviewed at, or a copy obtained from: Rules Docket in Room 916, FAA, 800 Independence Avenue, SW., Washington, D.C. 20591, or Rules Docket in Room 6W14, FAA Western Region, 15000 Aviation Boulevard, Hawthorne, California 90261.

FOR FURTHER INFORMATION CONTACT: Jerry Presba, Executive Secretary, Airworthiness Directive Review Board, Federal Aviation Administration, Western Region, P.O. Box 92007, World Way Postal Center, Los Angeles, California 90009. Telephone: (213) 536–6351.

SUPPLEMENTARY INFORMATION: The DC–10 cabin pressurization control system contains three positive pressure relief valves. These valves are independent pneumatically actuated poppet valves. Each one of these valves is capable of limiting the individually sensed cabin pressure differential to 9.1 p.s.i.g., (cabin pressure relief valve upper limit), at the maximum flow rate from the air conditioning system. In the case of certain pressurization system duct failures in the pressurized portion of the fuselage, two positive pressure relief valves are necessary to assure the cabin pressure differential does not exceed 9.1 p.s.i.g. in the event the cabin outflow valve is not positioned automatically.

As of approximately June 21, 1978 four operators of DC–10's had reported seven instances of cabin positive pressure relief valves not opening at design limits on DC–10 airplanes. In one instance, all three valves failed to open. This problem was noticed on airplanes having logged more than 3,000 flight-hours with the AiResearch P/N 103506–2 valve installed.

Investigation revealed that failure of the valve to open can be attributed to tobacco tar accumulating at the valve metering system. It has been demonstrated that the existing maintenance checks, or functional bench check, may indicate operation within prescribed limits while in fact the valve will not function properly at altitude. This is due to the effects of the air density on valve operation at sea level versus operation at altitude. A modification, (Douglas Service Bulletin SB21–87), to the relief valve which involves installation of a filter at the valve inbleed orifice, has been shown through actual in-service evaluation to prevent contamination of the metering system for up to 8,000 flight-hours.

On June 22, 1978, McDonnell Douglas Corporation issued Alert Service Bulletin A21–103 which addressed the need for cleaning of the DC–10 positive pressure relief valve metering system in assuring proper operation of the relief valves. In response to the bulletin, the Chairman, DC–10 Maintenance Review Board, (MRB), sent a letter on June 27, 1978 to the FAA Principal Maintenance Inspectors (PMI) for all U.S. DC–10 operators, pointing out the need for proper maintenance of the DC–10 positive pressure relief valves. Further, the DC–10 MRB Document was revised as of February, 1979, to reflect, (in Item 213401, page 149), the maintenance necessary to provide proper operation of the positive pressure relief valves, in accordance with the intervals recommended in the referenced Service Bulletin.

Further, on August 30, 1979 the FAA sent a request to all DC–10 FAA Principal Maintenance Inspectors asking for information on the inspection/maintenance procedures performed by the DC–10 operators as a result of the Maintenance Review Board Document revision mentioned above. The results of this survey of eight operators showed that some operators have incorporated

Douglas Service Bulletin SB21–87, installing the new filter, with periodic maintenance equal to or better than that presently referenced in the DC–10 MRB Document. Other operators, however, have not modified the valve through installation of the new filter and do not perform the maintenance presently recommended in the DC–10 MRB Document. Maintenance by these operators can vary to an extreme of performing a functional check of the relief valve and valve open light every 3 "c" checks or approximately every 10,000 flight-hours. Consequently the FAA has determined that the positive pressure relief valves on DC–10 airplanes are not being maintained in all cases in the manner which has been shown necessary to assure that they will perform their intended function as required by the Federal Aviation Regulations.

In the absence of proper maintenance, the contamination of the metering system of the positive pressure relief valves with tobacco tar accumulation, combined with an undetected cabin pressure system failure resulting in cabin over-pressurization, could cause permanent deformation and severe damage to structure.

Since this condition is likely to exist or develop on other airplanes of the same type design, and in the absence of other avenues appropriate to require proper maintenance, this Airworthiness Directive is being issued to require cleaning, replacement, or modification of the positive pressure relief valves on the DC–10 airplanes to minimize the possibility of structural damage occurring due to inoperative, (passively failed), positive pressure relief valves during cabin pressure system failure.

Since a situation exists that requires immediate adoption of this regulation, it is found that notice of public procedure are impracticable and good cause exists for making this amendment effective in less than thirty days.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, § 39.13 of Part 39 of the Federal Aviation Regulations (14 CFR 39.13) is amended, by adding the following new airworthiness directive.

McDonnell Douglas

Applies to McDonnell Douglas Model DC–10–10, –10F, –30, –30F, and –40 series airplanes certificated in all categories.

Compliance required as indicated, unless already accomplished.

To preclude contamination from preventing proper operation of the AiResearch Positive Pressure Relief Valves, accomplish the following:

(1) Within the next 300 hours time in service after the effective date of this AD,

(a) Modify and reidentify the AiResearch P/N 103506–2 cabin pressure relief valves by the addition of an improved filter in accordance with Douglas Service Bulletin 21–87 dated December 3, 1975 (AiResearch Service Bulletin 103506–21–2271, Revision #1, dated May 15, 1979) or AiResearch Service Bulletin 103506–21–2307, dated June 15, 1978 immediately following cleaning of the valve metering system in accordance with Douglas Service Bulletin A21–103, Revision 1, dated August 7, 1978; or,

(b) Unless already accomplished within the preceding 3,000 flight-hours prior to the effective date of this AD,

(i) Disassemble, clean and reassemble the AiResearch P/N 103506–2 cabin pressure relief valves metering systems and adjust/test valves in accordance with Douglas Service Bulletin A21–103, Revision 1, dated August 7, 1978; or,

(ii) Replace the AiResearch P/N 103506–2 cabin positive pressure relief valves with P/N 103506–2 valves having clean metering systems and test valves in accordance with Douglas Service Bulletin A21–103, Revision 1, dated August 7, 1978.

(2) If paragraph (1)(a) above is accomplished, at 8,000 hour intervals time in service thereafter, change the relief valve filter elements and functionally check valve per the Maintenance Manual.

(3) Unless paragraph (1)(a) is accomplished, paragraph (1)(b)(i) or (1)(b)(ii) must be accomplished within 3,000 hour intervals since previous accomplishment, and the original delivery design positive pressure relief valve filter elements must be changed per the Maintenance Manual within 1,500 hour intervals since previous accomplishment.

Special flight permits may be issued in accordance with FAR 21.197 and 21.199 to operate airplanes to a base for the accomplishment of inspections required by this AD.

Alternative inspections, modifications or other actions which provide an equivalent level of safety may be used when approved by the Chief, Aircraft Engineering Division, FAA Western Region.

This amendment becomes effective January 7, 1980.

(Secs. 313(a), 601, and 603, Federal Aviation Act of 1958, as amended (49 U.S.C. 1354(a), 1421, and 1423); sec 6(c) Department of Transportation Act (49 U.S.C. 1655(c)); and 14 CFR 11.89)

Issued in Los Angeles, Calif., on November 21, 1979.

William R. Krieger,

Acting Director, FAA Western Region.

[FR Doc. 79–37107 Filed 11–30–79; 8:45 am]

BILLING CODE 4910–13–M

14 CFR Part 71

[Airspace Docket No. 79–SO–77]

Redesignation of Control Zones in Mississippi

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: Republic Airlines provides weather reporting service at several airports in the State of Mississippi. A change in airlines hours of operation necessitates changes in control zone hours of operation.

EFFECTIVE DATE: January 24, 1980.

ADDRESS: Federal Aviation Administration Chief, Air Traffic Division, P.O. Box 20636, Atlanta, Georgia 30320

FOR FURTHER INFORMATION CONTACT: Donald Ross, Airspace and Procedures Branch, Federal Aviation Administration, P.O. Box 20636, Atlanta, Georgia 30320; telephone: 404–763–7646.

SUPPLEMENTARY INFORMATION: In Subpart F, § 71.171 (44 FR 353) of Part 71, Federal Aviation Regulations, the Artesia, Greenville, Pine Belt and Tupelo, Mississippi, control zones are designated as part-time control zones by listing of specific hours of operation. One of the requirements for establishment of control zones is weather observation/reporting service. Republic Airlines, which provides the weather service at the aforementioned locations, has made minor changes to its hours of operations and redesignation of the control zones is required for compatibility with the availability of weather reporting service.

As aeronautical activity changes occur at the airport, future minor adjustments to the effective hours of the control zones may be required. Since this and any future adjustments to operating hours will be minor in nature, the use of the FAA's Notice to Airmen system can be utilized to advertise and establish new hours. Therefore, this provision is to be included in the description of the control zones.

Since this redesignation is minor in nature, notice and public procedure thereon are necessary.

Adoption of the Amendment

Accordingly, Subpart F, § 71.171 (44 FR 353) of Part 71 of the Federal Aviation Regulations (14 CFR Part 71) is amended, effective 0901 G.m.t., January 24, 1980, as follows:

The Artesia, Mississippi, control zone is amended by deleting the following:

"* * * This control zone is effective from 0530 to 2330 hours, local time, daily."

The Greenville, Mississippi, control zone is amended by deleting the following:

"* * * N of the VOR, effective from 0600 to 2200 hours, local time, daily."

The Pine Belt, Mississippi, control zone is amended by deleting the following:

"* * * This control zone is effective from 0530 to 1430 hours and from 1600 to 0100 hours, local time, daily."

The Tupelo, Mississippi, control zone is amended by deleting the following:

"* * * This control zone is effective from 0700 to 2130 hours, local time, Monday through Friday; 0700 to 2000 hours, local time, Saturday, and 1100 to 2130 hours, local time, Sunday."

The Artesia, Pine Belt and Tupelo control zones are further amended by adding the following to each description:

"* * * This control zone is effective during the specific dates and times established in advance by a Notice to Airmen. The effective date and time will thereafter be continuously published in the Airport/Facility Directory."

The Greenville control zone is further amended by adding the following:

"* * * N of the VOR. This control zone is effective during the specific dates and times established in advance by a Notice to Airmen. The effective date and time will thereafter be continuously published in the Airport/Facility Directory."

(Sec. 307(a) of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1348(a)) and sec. 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c)))

Note.—The Federal Aviation Administration has determined that this document involves a regulation which is not significant under Executive Order 12044, as implemented by DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979). Since this regulatory action involves an established body of technical requirements for which frequent and routine amendments are necessary to keep them operationally current and promote safe flight operations, the anticipated impact is so minimal that this action does not warrant preparation of a regulatory evaluation.

Issued in East Point, Ga., on November 19, 1979.

Louis J. Cardinali,

Director, Southern Region.

[FR Doc. 79-37105 Filed 11-30-79; 8:45 am]

BILLING CODE 4910-13-M

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14 CFR Part 71

[Docket No. 79-ASW-48]

Alteration of Transition Area: Dallas-Fort Worth, Texas

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The nature of the action being taken is to alter the transition area at Dallas-Fort Worth, Tex. The intended effect of the action is to provide additional controlled airspace for aircraft executing a new instrument approach procedure to the McKinney Municipal Airport. The circumstance which created the need for the action is the establishment of a nondirectional radio beacon (NDB) on the McKinney Municipal Airport. Coincident with this action, the airport is changed from Visual Flight Rules (VFR) to Instrument Flight Rules (IFR). This is a new airport located at latitude 33°10'43"N., longitude 96°35'25.5"W.

EFFECTIVE DATE: January 24, 1980.

FOR FURTHER INFORMATION CONTACT: Kenneth L. Stephenson, Airspace and Procedures Branch (ASW-535), Air Traffic Division, Southwest Region, Federal Aviation Administration, P.O. Box 1689, Fort Worth, Texas 76101; telephone 817-624-4911, extension 302.

SUPPLEMENTARY INFORMATION:

History

On October 9, 1979, a notice of proposed rule making was published in the **Federal Register** (44 FR 57936) stating that the Federal Aviation Administration proposed to alter Dallas-Fort Worth, Tex., transition area. Interested persons were invited to participate in this rule making proceeding by submitting written comments on the proposal to the Federal Aviation Administration. Comments were received and one commentor did not support the proposal.

Discussion of Comments

The Deputy Director of the Air Transport Association of America, Southwest Regional Office, commented that the proposal would not affect airspace use; however, it would create an added demand for air traffic control services on the east satellite airports and place additional workload on the Dallas/Fort Worth Regional Approach Control. The McKinney Municipal Airport has been identified by the Federal Aviation Administration as a reliever airport on the northeast side of the metropolitan area. This airport will support the users in this area and provide services and relieve some of the congestion at the Addison and Love Field Airports. The entire instrument approach procedure for the McKinney Municipal Airport is well within radio and radar coverage of the Dallas/Fort Worth Regional Approach Control. Therefore, the Federal Aviation Administration has determined that the McKinney Municipal Airport will not have any detrimental effects on the control of IFR traffic in the metropolitan area. Except for editorial changes, this amendment is that proposed in the notice.

The Rule

This amendment to Subpart G of Part 71 of the Federal Aviation Regulations (14 CFR 71) alters the Dallas-Fort Worth, Tex., transition area. This action provides controlled airspace from 700 feet above the ground for the protection of aircraft executing instrument approach procedures to the McKinney Municipal Airport.

Adoption of the Amendment

Accordingly, pursunat to the authority delegated to me by the Administrator, Subpart G of Part 71 of the Federal Aviation Regulations (14 CFR Part 71) as republished (44 FR 442) is amended, effective 0901 GMT, January 24, 1980, as follows:

In Subpart G, 71.181 (44 FR 442), the following transition area is altered by adding the following:

Dallas-Fort Worth, Tex.

. . . and within a 6.5-mile radius of the McKinney Muncipal Airport (latitude 33°10'43"N., longitude 96°35'25.5"W.) and within 3 miles either side of the 010° bearing from the NDB (latitude 33°10'43"N., longitude 96°35'34.5"W.) extending from the 6.5-mile radius area to 8.5 miles north of the NDB.

(Sec. 307(a), Federal Aviation Act of 1958 (49 U.S.C. 1348(a); and Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)))

The FAA has determined that this document involves a regulation which is not significant under Executive Order 12044, as implemented by DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). Since this regulatory action involves an established body of technical requirements for which frequent and routine amendments are necessary to keep them operationally current and promote safe flight operations, the anticipated impact is so minimal that this action does not warrant preparation of a regulatory evaluation.

Issued in Fort Worth, Tex., on November 21, 1979.

C. R. Melugin, Jr.,

Director, Southwest Region.

[FR Doc. 79-37106 Filed 11-30-79; 8:45 am]

BILLING CODE 4910-13-M

14 CFR Part 71

[Airspace Docket No. 79-ASW-49]

Alteration of Transition Area: Giddings, Tex.

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final Rule.

SUMMARY: The nature of the action being taken is to alter the transition area at Giddings, Tex. The intended effect of the action is to provide additional controlled airspace for aircraft executing a new instrument approach procedure to the Giddings-Lee County Airport. The circumstance which created the need for the action is the establishment of a nondirectional radio beacon (NDB) located on the airport.

EFFECTIVE DATE: January 24, 1980.

FOR FURTHER INFORMATION CONTACT: Kenneth L. Stephenson, Airspace and Procedures Branch (ASW-535), Air Traffic Division, Southwest Region, Federal Aviation Administration, P.O. Box 1689, Fort Worth, Texas 76101; telephone 817-624-4911, extension 302.

SUPPLEMENTARY INFORMATION:

History

On October 9, 1979, a notice of proposed rule making was published in the **Federal Register** (44 FR 57937) stating that the Federal Aviation Administration proposed to alter the Giddings, Tex., transition area. Interested persons were invited to participate in this rulemaking proceeding by submitting written comments on the proposal to the Federal Aviation Administration. Comments were received without objections. Except for editorial changes this amendment is that proposed in the notice.

The Rule

This amendment to Subpart G of Part 71 of the Federal Aviation Regulations (14 CFR 71) alters the Giddings, Tex., transition area. This action provides controlled airspace from 700 feet above the ground for the protection of aircraft executing established and proposed instrument approach procedures to the Giddings-Lee County Airport.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, Subpart G of Part 71 of the Federal Aviation Regulations (14 CFR Part 71) as republished (44 FR 442) is amended, effective 0901 GMT, January 24, 1980, as follows.

In Subpart G, 71.181 (44 FR 442), the following transition area is altered by adding the following:

Giddings, Tex.

* * * and 3 miles each side of the 351° bearing from the NDB (latitude 30°10'07.3" N., longitude 96°58'46.6" W.) extending from the 5-mile radius area to 8.5 miles northwest of the NDB.

(Sec. 307(a), Federal Aviation Act of 1958 (49 U.S.C. 1348(a)) and sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)]).

Note.—The FAA has determined that this document involves a regulation which is not significant under Executive Order 12044, as implemented by DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). Since this regulatory action involves an established body of technical requirements for which frequent and routine amendments are necessary to keep them operationally current and promote safe flight operations, the anticipated impact is so minimal that this action does not warrant preparation of a regulatory evaluation.

Issued in Fort Worth, Tex., on November 20, 1979.

C. R. Melugin, Jr.,

Director, Southwest Region.

[FR Doc. 79-37099 Filed 11-30-79; 8:45 am]

BILLING CODE 4910-13-M

FEDERAL TRADE COMMISSION

16 CFR Part 5

Standards of Conduct

AGENCY: Federal Trade Commission.

ACTION: Final rule.

SUMMARY: The Federal Trade Commission is amending its standards of conduct regulations for employees to exempt, from 18 U.S.C. 208 and the Commission's rules, *de minimis* conflicts of interest resulting from very small (less than one percent) holdings in diversified mutual funds or investment companies.

EFFECTIVE DATE: December 3, 1979.

FOR FURTHER INFORMATION CONTACT: Sophie A. Krasik, Attorney, Office of General Counsel (GC-H-576), Federal Trade Commission, 6th Street and Pennsylvania Ave., N.W., Washington, D.C. 20580, 202-523-3866.

SUPPLEMENTARY INFORMATION: The Federal Trade Commission is amending its standards of conduct regulations, 16 CFR 5.1 *et seq.* (1979), to add a rule exempting from 18 U.S.C. 208(a) and Commission Rule § 5.7 (16 CFR 5.7) certain *de minimis* conflicts of interest. Such rules are permitted by 18 U.S.C. 208(b) for interests "too remote or too inconsequential to affect the integrity of Government officers' or employees' services." The interests being exempted are those in stocks or bonds of a diversified mutual fund or investment company provided that the fair market value of the employee's holding in the fund or company does not exceed one percent of the value of its reported assets.

Accordingly, the Commission's rules are amended by adding a new § 5.8(d), 16 CFR 5.8(d), as follows:

§ 5.8 [Amended]

* * * * *

(d). The financial interests described below are exempted from the provisions of § 5.7 and 18 U.S.C. 208(a) as being too remote or too inconsequential to affect the integrity of an employee's services: Stocks and bonds of a diversified mutual fund or investment company provided that the fair market value of the employee's holdings in the fund or company does not exceed one percent of the value of its reported assets.

(15 U.S.C. 46(g); 18 U.S.C. 208(b).)

By direction of the Chairman and the Commission, dated November 21, 1979.

Carol M. Thomas,

Secretary.

[FR Doc. 79-37158 Filed 11-30-79; 8:45 am]

BILLING CODE 6750-01-M

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

18 CFR Part 1

[Docket No. RM79-32; Order No. 24-A]

Procedures for Adjustments of Rules and Orders Issued by the Federal Energy Regulatory Commission Under the NGPA

AGENCY: Federal Energy Regulatory Commision, DOE.

ACTION: Amending interim rule.

SUMMARY: The purpose of the amendment is to clarify interim rules issued on March 22, 1979, under Docket No. RM79-32, 44 FR 18961. The clarification, and amendment to § 1.41(a) of the Commission's regulations, provides that procedures for requests for adjustments under section 502(c) of the NGPA will not apply when waived by the Commission or when adjustments are granted under the Commission's own motion.

DATES: Amendments effective November 27, 1979; Notice of intent to participate in oral presentations and written comments by December 14, 1979; oral presentations on December 19, 1979.

ADDRESS: Notice of intent to participate in oral presentations and written comments should reference Docket No. RM79–32 and should be addressed to: Office of the Secretary, Federal Energy Regulatory Commission, 825 North Capitol Street, NE., Washington, D.C. 20426.

Oral presentations to be held at the Offices of the Federal Energy Regulatory Commission, 825 North Capitol Street, NE., Washington, D.C. 20426

FOR FURTHER INFORMATION CONTACT: MaryJane Reynolds, Office of General Counsel, Federal Energy Regulatory Commission, 825 North Capitol Street, N.E., Room 8000, Washington, D.C. 20425 (202) 357–8455

November 27, 1979.

A. Background

On March 22, 1979, the Federal Energy Regulatory Commission (Commission) issued interim regulations implementing procedures whereby any person may seek an adjustment from Commission rules and orders issued under the Natural Gas Policy Act of 1978 (NGPA) (15 U.S.C. 3301 to 3432). Order No. 24, Docket No. RM79–32 (44 FR 18961, March 30, 1979). These interim procedural regulations implement provisions of section 502(c) of the NGPA. [1] However, these interim procedural regulations did not specifically address the issue of waiver.

Section 1.41 was created to provide a mechanism by which those affected by Commission rules or orders issued under the NGPA could apply for, and be granted (if appropriate), an adjustment of those rules or orders. When issued, the interim regulations of § 1.41 did not specifically include provisions for submissions which did not comply with the provisions of § 1.41 or adjustments considered on the Commission's own motion. Instead, such situations have been handled on a case-by-case basis.

B. Discussion

The Commission reviews and acts upon a large number of diverse filings under the regulations implementing the NGPA. This review function provides a useful method whereby the Commission becomes aware of circumstances which require remedial or other corrective action. The Commission must also deal with petitions received under § 1.41 which, for one reason or another, do not comport with the filing requirements of that section or are not amenable to the procedures of that section.

The changes made today explicitly provide for a waiver of the procedures of § 1.41 for those cases which, while not filed under or in accordance with the provisions of that section, should nonetheless be considered for adjustments because of the issues they raise. We believe that this amendment effects the flexible approach inherent in section 502(c) of the NGPA and permits the Commission to proceed expeditiously to the substance of filings and the question of adjustment.

C. Effective Date and Public Procedures

These revisions to the interim regulations of § 1.41 are being issued as interim rules effective immediately. The regulations of § 1.41 and these amendments are procedural and relate to practice before the Commission. In addition, there is an immediate need to have regulations which aid in the Commission's full and effective implementation of section 502(c) of the NGPA. For these reasons, the Commission finds that good cause exists to adopt the revisions of this order effective immediately.

Although effective immediately, the amendments of this order are interim regulations. In order to consider appropriate comments prior to issuing a final rule, the Commission is affording an opportunity for interested persons to submit written comments, data, views or arguments regarding this Order. An original and 14 conformed copies of the comment should be filed by December 14, 1979 with the Secretary, Federal Energy Regulatory Commission, 825 North Capitol Street, N.E., Washington, D.C. 20426. Each comment should include the name and address of the person submitting the comment, should reference Docket No. RM79–32, and should include reasons for any recommendations. Comments should indicate the name, title, mailing address and telephone number of one person to whom communications concerning the amendment may be addressed. Written comments will be placed in the Commission's public file and will be available for public inspection during regular business hours at the Commission's Office of Public Information, Room 1000, 825 North Capitol Street N.E., Washington, D.C. 20426.

Because this order amends a regulation issued under the NGPA, the Commission will provide an opportunity for the oral presentation of data, views and arguments on the Order as required by section 502(b) of the NGPA. A public hearing on this order will be held in Washington, D.C. on Wednesday, December 19, 1979. The hearing will be held at the Offices of the Federal Energy Regulatory Commission, 825 North Capitol Street, N.E., Washington, D.C., and will begin at 10:00 a.m., local time.

Requests to participate in the hearing should be directed to the Secretary, Federal Energy Regulatory Commission, 825 North Capitol Street, N.E., Washington, D.C. and should be made no later than December 14, 1979. Requests should reference Docket No. RM79–32 and should indicate the name of the person who will be making the presentation, a phone number at which that person may be contacted, and the amount of time requested for the presentation.

Persons participating in the public hearing should, if possible, bring 25 copies of their testimony to the hearing. A list of the participants in the hearing will be available in the Commission's Office of Public Information prior to the hearing and will be available at the Commission on the morning of the hearing.

The hearing will not be a judicial or evidentiary-type hearing, and there will be no cross examination of persons presenting statements. The presentations will be made before a panel whose members will be designated by the Chairman. Members participating on the panel before whom the presentations are made may ask questions. If time permits, they may also ask such relevant questions as are submitted to them by participants. Other procedural rules relating to the hearing will be announced at the time the proceedings commence. A transcript of the hearing will be made and a copy of that transcript will be placed in the public file for this docket and be made available at the Commission's Office of Public Information.

(Natural Gas Policy Act of 1978, Pub. L. No. 95–621, 92 Stat. 3350; Department of Energy, Organization Act, Pub. L. No. 95–91, 91 Stat. 565, et seq., E.O. 12009, 42 FR 46267; Natural Gas Act, as amended, 15 U.S.C. 717 et seq.)

[1] Section 502(c) of the NGPA provides that: [t]he Commission or any other Federal officer or agency authorized to issue rules or orders described in subsection (a) (other than an order under section 301, 302, or 303) shall, by rule, provide for the making of such adjustments, consistent with the other purposes of this Act, as may be necessary to prevent special hardship, inequity, or an unfair distribution of burdens. Such rule shall establish procedures which are available to any person for the purpose of seeking an interpretation, modification, or rescission of, exception to, or exemption from, such applicable rules or orders. If any person is aggrieved or adversely affected by the denial of a request for adjustment under the preceding sentence, such person may request a review of such denial by the officer or agency and may obtain judicial review in accordance with section 506 when such denial becomes final. The officer or agency shall, by rule, establish procedures, including an opportunity for oral presentation of data, views, and arguments, for considering requests for adjustment under this subsection.

Inconsideration of the foregoing, Part 1, Subchapter A, Chapter I of Title 18 of the Code of Federal Regulations is amended as set forth below, as an interim regulation, effective immediately.

By the Commission.

Kenneth F. Plumb,

Secretary.

1. Section 1.41 is amended in paragraph (a) by deleting the reference "paragraph (a)(2)(i)" in paragraph (a)(2)(ii)(A) and inserting in lieu thereof the words "paragraph (a)(3)(i)"; and by redesignating subparagraph (2) as subparagraph (3).

2. Section 1.41 is further amended in paragraph (a) by revising subparagraph (1) and adding a new subparagraph (2) to read as follows:

§ 1.41 Requests for adjustments under the NGPA.

(a) *Applicability.* (1) Except as provided in subparagraph (2) of this paragraph, this section applies to proceedings of the Commission held in accordance with section 502(c) of the NGPA to provide for ajdustments of

(i) Commission rules; and

(ii) Commission orders having the applicability and effect of a rule as defined in 5 U.S.C. 551(4) and issued under the NGPA, except orders issued under Sections 301, 302, and 303 of the NGPA.

(2) This section does not apply to

(i) proceedings wherein the Commission by order grants an adjustment on its own motion; or

(ii) proceedings for which the Commission by order waives the provisions of this section.

* * * * *

[FR Doc. 79-37113 Filed 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

DEPARTMENT OF THE TREASURY

Fiscal Service

31 CFR Parts 316, 332 and 342

Notice of Savings Bond Interest Rate Increase

AGENCY: Department of the Treasury.

ACTION: Notice of savings bond interest rate increase.

SUMMARY: This notice is being published to announce the increase in investment yield for United States Savings Bonds of Series E and H and for United States Savings Notes (Freedom Shares).

EFFECTIVE DATE: June 1, 1979.

FOR FURTHER INFORMATION CONTACT: A. E. Martin, Office of the Chief Counsel, Bureau of the Public Debt (202) 376-0636.

SUPPLEMENTAL INFORMATION: On May 10, 1979, the Secretary of the Treasury announced that the interest rate paid on Series E and H savings bonds and on savings notes would be increased, effective June 1, 1979, to 6.5 percent per annum, compounded semiannually. Pending publication of revised offering circulars for these securities, notice is hereby given that the increase will be applied as follows:

1. All Series E or H savings bonds bearing issue dates of June 1, 1979 or thereafter, will have an investment yield of 6.5 percent per annum, compounded semiannually, if held to original maturity. Series E bonds mature five (5) years after their respective issue dates; Series H bonds mature in ten (10) years.

2. Outstanding Series E bonds reaching original maturity on or after December 1, 1979, will have their yield improved by approximately ½ of 1 percent per annum, compounded semiannually, for the period from their first interest accrual period starting on or after June 1, 1979, to original maturity, but only if the bonds are held to their respective maturity dates.

3. Outstanding Series E bonds which entered an extended maturity period prior to December 1, 1979, all outstanding Series H bonds issued prior to June 1, 1979, and all outstanding savings notes will have their yield improved by approximately ½ of 1 percent per annum, compounded semiannually, for each semiannual interest period starting on or after June 1, 1979.

Effective December 1, 1979, interest payments on Series H bonds and the redemption values on Series E bonds and savings notes will reflect the rate increase in the manner described above. Publication of the revised offering circulars showing the rate increase and containing new tables of redemption values or interest payments and investment yields will be made shortly.

Dated: November 29, 1979.

Paul H. Taylor,

Fiscal Assistant Secretary.

[FR Doc. 79-37195 Filed 11-30-79; 8:45 am]

BILLING CODE 4810-25-M

31 CFR Part 321

Treasury Tax and Loan Accounts; Announcement of Effective Date of Final Rules and Amendments to Certain Provisions Concerning Collateral Pledged; Correction

AGENCY: Fiscal Service, Department of the Treasury.

ACTION: Correction to final rules.

SUMMARY: This document corrects final rules and amendments to certain provisions concerning collateral pledged, published October 16, 1978. (*See* 43 FR 47505.)

EFFECTIVE DATE: The provisions of the rules which were published in the **Federal Register** of May 2 (43 FR 18960) and as amended by this notice are effective November 2, 1978.

FOR FURTHER INFORMATION CONTACT: Mr. John Kilcoyne, Assistant Fiscal Assistant Secretary (Banking), Office of the Secretary, Department of the Treasury, Washington, D.C. 20220, 202-566-2849.

SUPPLEMENTARY INFORMATION: In FR Doc. 78-29199 appearing at page 47505 in the issue of Monday, October 16, 1978, on page 47507, first column, second line of the amendatory language numbered 9. "(e)" should read "(c)"; and the paragraph lettered "(e)" of § 321.5 should read "(c)".

Dated: November 20, 1979.

Paul H. Taylor,

Fiscal Assistant Secretary.

[FR Doc. 79-37929 Filed 11-30-79; 8:45 am]

BILLING CODE 4810-35-M

Office of Foreign Assets Control

31 CFR Part 535

Iranian Assets Control Regulations; Amendments

AGENCY: Office of Foreign Assets Control, Treasury.

ACTION: Final rule.

SUMMARY: The Office of Foreign Assets Control is amending the Iranian Assets Control Regulations. The purpose of the amendments is to clarify the effect of the Regulations on various types of letters of credit in which Iran or an Iranian entity has an interest. The need for the amendments is to set forth interpretations and licensing policies with respect to letter of credit problems. The effect of the amendment will be that

there will be available to interested parties an explanation of the effect of the Regulations on letters of credit in which Iran or an Iranian entity has an interest and the licensing policies of the Office with respect to various letter of credit problems.

EFFECTIVE DATE: November 28, 1979.

FOR FURTHER INFORMATION CONTACT: Dennis M. O'Connell, Chief Counsel, Office of Foreign Assets Control, Department of the Treasury, Washington, D.C. 20220 (202) 376–0236.

SUPPLEMENTARY INFORMATION: Since the regulations involve a foreign affairs function, the provisions of the Administrative Procedure Act, 5 U.S.C. 553, requiring notice of proposed rule making, opportunity for public participation and delay in effective date are inapplicable.

PART 535—IRANIAN ASSETS CONTROL REGULATIONS

31 CFR Part 535 is amended as follows:

1. Subpart D is amended by adding §§ 535.416 and 535.417 to read as follows:

Subpart D—Interpretations

§ 535.416 Letters of credit.

(a) *Q* Prior to the effective date, a bank subject to the jurisdiction of the United States has issued or confirmed a documentary letter of credit for a non-Iranian account party in favor of an Iranian entity. Can payment be made upon presentation of documentary drafts?

A Yes, provided payment is made into a blocked account in a domestic bank.

(b) *Q* Prior to the effective date, a domestic branch of a bank organized or incorporated under the laws of the United States has issued or confirmed a documentary letter of credit for a non-Iranian account party in favor of an Iranian entity. Payment is to be made through a foreign branch of the bank. Can payment be made upon presentation of documentary drafts?

A Yes, provided payment is made into a blocked account in a domestic bank.

(c) *Q* Prior to the effective date, a foreign bank confirms a documentary letter of credit issued by its U.S. agency or branch for a non-Iranian account party in favor of an Iranian entity. Can the U.S. agency or branch of the foreign bank transfer funds to the foreign bank in connection with that foreign bank's payment under the letter of credit?

A No, the U.S. agency's payment is blocked, unless the foreign bank made payment to the Iranian entity prior to the effective date.

(d) *Q.* Prior to the effective date, a bank subject to the jurisdiction of the United States has issued or confirmed a documentary letter of credit for a non-Iranian account party in favor of an Iranian entity. The Iranian entity presents documentary drafts which are deficient in some detail. May the non-Iranian account party waive the documentary deficiency and make payment?

A. Yes, provided payment is made into a blocked account in a domestic bank. However, the non-Iranian account party is not obligated by these Regulations to exercise a waiver of documentary deficiencies. In cases where such a waiver is not exercised, the amount of the payment held by the account party is blocked.

(e) *Q.* If the facts are the same as in the preceding question except that the Iranian entity permits the letter of credit to expire, does the bank hold a blocked asset?

A. No, but depending on the facts, the account party may hold a blocked obligation to the Iranian entity.

(f) *Q.* A bank subject to the jurisdiction of the United States has issued a letter of credit for a U.S. account party in favor of an Iranian entity. The letter of credit is confirmed by a foreign bank. Prior to or after the effective date, the Iranian entity presents documents to the U.S. issuing bank. Payment is deferred. After the effective date, the Iranian entity requests that the issuing bank either return the documents to the Iranian entity or transfer them to the confirming bank. Can the issuing bank do so?

A. No. The U.S. issuing bank can neither return nor transfer the documents without a license. The documents constitute blocked property under the Regulations.

(g) *Q.* Prior to the effective date, a bank subject to the jurisdiction of the United States has issued or confirmed a documentary letter of credit for a non-Iranian account party in favor of an Iranian entity. The Iranian entity presents documentary drafts which are deficient in some detail. May the non-Iranian account party waive the documentary deficiency and make payment?

A. Yes, provided payment is made into a blocked account in a domestic bank. However, the non-Iranian account party is not obligated by these Regulations to exercise a waiver of documentary deficiencies. In cases where such a waiver is not exercised, the amount of the payment held by the account party is blocked.

§ 535.417 Payment of Accepted Drafts and Other Obligations.

(a) A banking institution as its own obligation may make payment to the beneficiary of a letter of credit issued by it or on a draft accepted by it, which letter of credit or draft is in favor of a non-Iranian person subject to the jurisdiction of the United States and which was issued on behalf of Iran or an Iranian entity or was accepted prior to the effective date provided that notwithstanding the provisions of § 535.902, no blocked account may at any time be debited in connection with such a payment.

(b) A payment under paragraph (a) of this section shall give the banking institution making payment no special priority or other right to blocked accounts it holds in the event that such blocked accounts are vested or otherwise lawfully used in connection with a settlement of claims.

(c) Nothing in this section prevents payment being made to the beneficiary of any draft or letter of credit or to any banking institution pursuant to § 535.904.

2. Subpart E is amended by adding §§ 535.567 and 535.568 to read as follows:

Subpart E—Licenses, Authorizations and Statements of Licensing Policy

§ 535.567 Payments Under Advised Letters of Credit.

Specific licenses may be issued for presentation, acceptance, or payment of documentary drafts under a letter of credit opened by an Iranian entity and advised by a domestic bank, *Provided*, That:

(a) The letter of credit was advised prior to the effective date;

(b) The property which is the subject of the payment under the letter of credit was not in the possession or control of the exporter on or after the effective date;

(c) The beneficiary is a person subject to the jurisdiction of the United States.

As a general matter, licenses will not be issued if the amount to be paid to a single payee exceeds $500,000.

§ 535.568 Certain Standby Letters of Credit and Performance Bonds.

(a) Notwithstanding the provisions of § 535.508, an issuing or confirming bank may not make payment into a blocked account in a domestic bank under a standby letter of credit in favor of an Iranian entity if a specific license has

been issued pursuant to the provisions of paragraph (b) of this section.

(b) Whenever an issuing or confirming bank shall receive such demand for payment under a standby letter of credit, it shall promptly notify the person for whose account the credit was opened. Such person may then apply within 5 days for a specific license authorizing the account party to establish a blocked account on its books in the name of the Iranian entity in the amount payable under the credit, in lieu of payment by the issuing or confirming bank into a blocked account and reimbursement therefor by the account party.

(c) If necessary to assure the availability of the funds blocked, the Secretary may at any time require the payment of the amounts due under any letter of credit described in paragraph (a) of this section into a blocked account in a domestic bank or the supplying of any form of security deemed necessary.

(d) Nothing in this section precludes any person for whose account a standby letter of credit was opened or any other person from at any time contesting the legality of the demand from the Iranian entity or from raising any other legal defense to payment under the standby letter of credit.

(e) This section does not affect the obligations of the various parties to the instruments covered by this section if the instruments and payments thereunder are subsequently unblocked.

(f) For the purposes of this section, the term "standby letter of credit" shall mean a letter of credit securing performance of, or repayment of, any advance payments or deposits, under a contract with Iran or an Iranian entity, or any similar obligation in the nature of a performance bond.

(g) The regulations do not authorize any person subject to the jurisdiction of the United States to reimburse a non-U.S. bank for payment to Iran or an Iranian entity under a standby letter of credit, except by payment into a blocked account in accordance with § 535.508 or paragraph (b) of this section.

(Secs. 201–207, 91 Stat. 1626; 50 U.S.C. 1701–1706; E.O. No. 12170, 44 FR 65729)

Dated: November 28, 1979.

Stanley L. Sommerfield,

Director, Foreign Assets Control.

Approved:

Richard J. Davis,

Assistant Secretary.

[FR Doc. 79-37103 Filed 11-29-79; 9:40 am]

BILLING CODE 4810-25-M

DEPARTMENT OF DEFENSE

Department of the Air Force

32 CFR Part 860

Aircraft; Contractor's Flight Operations

AGENCY: Department of the Air Force, Department of Defense.

ACTION: Final rule.

SUMMARY: The Department of the Air Force is revising Part 860 of Chapter VII, Title 32, of the Code of Federal Regulations. This revision sets up procedures to obtain the required approval from the Army, Navy, Air Force, or Defense Logistics Agency of contractor's Flight Operations Procedures and contractor's personnel who operate aircraft for the Government, and provides for the delegation of authority for such approvals. It applies to all Army, Navy, Air Force and Defense Logistics Agency (DLA) Government Flight representatives who approve contractor's Flight Operations Procedures, and to contractor personnel who operate any aircraft for which the Government is assuming some of the risks of loss or damage.

EFFECTIVE DATE: April 3, 1979.

FOR FURTHER INFORMATION CONTACT: Lt. Col. Richard Burton, telephone: (202) 697–8850.

SUPPLEMENTARY INFORMATION: Part 860 of Subchapter F, Chapter VII, Title 32, of the Code of Federal Regulations has been revised. Terms and definitions have been revised, deleted from and added to.

The responsibilities of the Government Flight Representative (GFR) have been redefined. Flight operations procedures have been altered. Qualification requirements have been revised, including equivalency provision to the Military Test Pilot School. Flight crewmember proficiency requirements have been rewritten and the tables have been expanded and revised. There is a new section on Ground Personnel Requirements. In addition to other administrative changes, this part is now subject to the Privacy Act of 1974.

Title 32 of the Code of Federal Regulations is amended by revising Part 860 to read as follows:

PART 860—CONTRACTOR'S FLIGHT OPERATIONS

Sec.

860.1 Purpose.
860.2 Terms explained.
860.3 Responsibilities and authority of the GFR.
860.4 Contractor's flight operations procedures.
860.5 Forms and records.
860.6 Qualification requirements.
860.7 Flight crewmember and other flight personnel approval.
860.8 Flight crewmembers proficiency requirements.
860.9 Pilot, copilot proficiency requirements for rotary wing aircraft.
860.10 Pilot/copilot proficiency requirements for all tactical fighters, fighter bombers, attack surveillance, trainers, and light aircraft that have a gross weight of less than 12,500 pounds.
860.11 Pilot/copilot proficiency requirements for large cargo, bomber, patrol, and utility aircraft that have a gross weight greater than 12,500 pounds.
860.12 Navigator proficiency requirements for cargo/bomber/patrol unless specifically identified in 860.13.
860.13 Navigator proficiency requirements for tactical jet fighter, fighter bomber/trainer, such as F–4, F–111, FB–111, F–14, etc.
860.14 Flight crewmembers other than identified in tables 860.9, 860.10, 860.11, and 860.12 as defined in 860.2(b)(2).
860.15 Ground personnel.
860.16 Additional administrative matters.
860.17 Sample format for request for approval for qualification training.
860.18 Sample format for request for approval of contractor flight crewmember.
860.19 Sample format for designating government flight representatives.
860.20 Minimum requirements.

Authority: 10 U.S.C. 8012.

Note.—This part is derived from Air Force Regulation 55–22, April 3, 1979.

Part 806 of this Chapter states the basic policies and instructions governing the disclosure of records and tells members of the public what they must do to inspect or obtain copies of the material referenced herein.

§ 860.1 Purpose.

This part sets up procedures to obtain the required approval from the Army, Navy, Air Force, or Defense Logistics Agency of contractor's Flight Operations Procedures (hereafter identified as Procedures) and contractor's personnel who operate aircraft for the Government. Also, it provides for the delegation of authority for such approvals, regardless of service affiliation. This part applies to all Army, Navy, Air Force, and Defense Logistics Agency (DLA) Government Flight Representatives who approve contractor's Procedures, and to contractor personnel who operate any aircraft for which the Government is assuming some of the risks of loss or damage. This part does not apply to undergraduate contract flight training,

operation of leased Government aircraft in accordance with 10 U.S.C. 2667, or Corps of Engineers, Civil Works owned and operated aircraft.

§ 860.2 Terms explained.

(a) *Terms relating to Government.*—(1) *Approving authority.* The commander or comparable individual of one of the following organizations having the administrative responsibility for a particular contractor facility in accordance with DODM 4105.59H:

(i) Army Heads of Contracting Activities (HCA) or their designee.

(ii) Naval Plant Representative (NAVPLANT–REP).

(iii) Air Force Heads of Contracting Activities (HCA) or their designee.

(iv) Commander, Defense Contract Administration Services Region (DCASR).

(2) Government Flight Representative (GFR). That officer on current flight status (including non-operational flying status) to whom the approving authority has delegated responsibility for approval of contractor flights, Procedures, and flight crewmembers.

(3) Procuring Contracting Officer (PCO) and Administrative Contracting Officer (ACO). Individuals designated in accordance with the Defense Acquisition Regulation (DAR/ASPR) and defined in DAR 1–201.3.

(b) *Terms relating to contractor.*—(1) *Contractor.* Any individual, corporation, or other entity whose personnel may operate aircraft for which the Government assumes contractual liability for loss or damage to the aircraft.

(2) *Flight Crewmembers.* Any instructor/flight examiner, pilot, copilot, flight engineer/mechanic, navigator, weapons system operator, bombardier-navigator, sensory systems operator, boom operator, loadmaster, remote piloted vehicle operator, and defensive systems operator when assigned to their respective crew positions to conduct any flight under the contract.

(3) *Flight Personnel (Noncrewmember).* Personnel designated by the contractor to perform a function while the aircraft is in flight; for example, technicians, observers, inspectors, systems engineers, and photographers.

(4) *Ground Personnel.* Personnel designated by the contractor to perform preflight/postflight inspections, aircraft towing and taxiing, engine run-up functions, and to operate associated aerospace ground support equipment.

(5) *Requesting Official.* The member of the contractor's first level of management (president, vice president) or appointed designee authorized to sign a request for GFR approval for qualification training of contractor personnel or for a flight crewmember. (See § 860.17 and § 860.18.)

(6) *Aviation Safety Official.* The individual assigned primary responsibility for developing and administering the contractor's aviation safety program. Normally this individual should be a qualified pilot who has related aviation safety administration experience.

(7) *Flight Operations.* Those operations conducted by the contractor's management, flight crewmembers, flight personnel (noncrewmembers), ground personnel, and crash/rescue personnel in support of aircraft flight or ground operation related to contractual requirements. For the purpose of this document, operation of installed engines, towing, taxiing, and high speed taxi tests are also considered "flight operations."

(c) *Terms Relating to Aircraft.*—(1) *Test Aircraft.* Any aircraft used for research, development, test and evaluation purposes.

(2) *Production Aircraft.* Any aircraft being manufactured for use in the operational inventory or undergoing contractor maintenance or modification, including aircraft produced for a Defense Security Assistance Program, when applicable:

(i) *Preaccepted Aircraft.* Any aircraft which has not been accepted (that is, DD Form 250, Material Inspection and Receiving Report, has not been executed) by the Government, but for which the Government has assumed the risk of loss, destruction, or damage.

(ii) *Accepted Aircraft.* Any aircraft for which the DD Form 250 has been executed by the Government.

(3) *Government-Furnished/Bailed Aircraft.* Any Government-owned aircraft provided to a contractor for use in conjunction with a specific contractual requirement.

(d) *Terms Relating To Flights.*—(1) *Experimental Test Flights.* Flights which are hazardous in nature and involve greater than normal risk. These include but are not limited to:

(i) Initial flight of a new type or model aircraft, high angle of attack tests, flutter and loads tests, and critical stores separation tests.

(ii) Flights to determine or expand flight or propulsion system envelope.

(iii) Flights to initially determine the performance, flight characteristics, and handling qualities.

(iv) Flights of experimental and research aircraft.

(v) Flights of an aircraft whose flight characteristics may have been altered by configuration changes.

(vi) Initial flights of the first production aircraft of a new type, model, or series.

(vii) Initial flights of the first of those aircraft which have undergone "major alteration" as defined in Federal Aviation Regulations.

(2) Engineering Flights:

(i) Subsystem development flights (for example, autopilot, fire control, bombardier/navigator systems).

(ii) Component development and reliability flights (for example, engine propeller, rotor and transmission systems).

(iii) Flights where the aircraft serves as the vehicle carrying the item to be checked (for example, electronic countermeasure stores, checking a radar or firing of a missile).

(3) Acceptance, Functional, or Production Check Flights. For the purpose of this part:

(i) Flights to determine compliance with contractual requirements.

(ii) Flights to ensure that installed systems are operating correctly.

(iii) Flights following programmed maintenance.

(4) Support Flights:

(i) Photographic.

(ii) Chase/pace.

(iii) Crash/rescue.

(iv) Target or target towing.

(v) Aircraft delivery.

(vi) Demonstration flights conducted accoring to AR 95–1, Navy OPNAVINST 3710.7H, AFR 60–18, and contractor demonstration flights.

(vii) Severe weather evacuation flights conducted according to AR 95–87, OPNAVINST 3730.3D, AFR 55–4, or appropriate oversea command directives.

(viii) Administrative flights, such as cargo flights, personnel carrier, etc. This includes flights of an emergency nature.

(ix) Aircrew evaluation, training, and proficiency.

(5) Associated Experimental Ground Operation. Ground operations which are hazardous in nature and involve greater than normal risk:

(i) Ground run up, subsystem warm up/check out, and taxi/hover of aircraft.

(ii) Operation of any Ground Test Vehicle (GTV).

§ 860.3 Responsibilities and authority of the GFR.

(a) *Approving Authority.* The approving authority designates the GFR for the contractor's facility. The approving authority also may designate an alternate GFR to act in the absence of the primary GFR. This delegation must be in writing, and may not be redelegated. GFRs, when practical and possible, will be qualified in the type,

model, and series aircraft operated at the contractor's facility. The contractor should be notified in the same way as other Government contract administrative personnel when the GFR is appointed or changed (See § 860.19).

(b) *GFR Responsibilities.* The GFR is responsible for surveillance of all contractor flight operations involving Government aircraft and other aircraft for which the Government is assuming some of the risk of loss or damage. All flights and procedures for ground operations of installed engines, engaging of rotors, and towing of Government air craft conducted by the contractor are subject to final administrative approval by the GFR. When the contractor is not acting in accordance with safety release procedures prescribed in the contract, test plans, or other applicable directives, or if safety of flight is involved, the GFR may withdraw approval for the flights and Procedures.

(c) *GFR Approvals.* The GFR having cognizance of the contractor facility, approves flight crewmembers, qualifications training, and the contractor's Procedures. Subsequent to approval, the GFR will notify the contractor in writing, with a copy to the ACO, of the conditions found unreasonable and therefore unacceptable which the contractor must correct within a reasonable time. If the contractor fails to act promptly to correct the unreasonable conditions, the GFR refers the matter to the ACO for a decision as to the termination of the Government's assumption of risk for loss, damage, or destruction of Government aircraft.

(d) *Review Requirements.* Conduct a review of the contractor's Procedures in accordance with this part at least every 12 months and whenever the primary GFR is changed to ensure currency and compliance. The contractor keeps the record of the review dates and action taken.

(e) *Remote Locations.* At remote or geographically separated operating locations where support administration is being accomplished, the responsible GFR will, as much as possible, rely on the approval granted at the home facility.

§ 860.4 Contractor's flight operations procedures.

(a) *Preparation.* The contractor prepares and maintains current, specific, written Procedures, separate and distinct from industrial procedures, to cover flight operations at all operating facilities, These Procedures must describe how the contractor controls these activities so that individuals do not perform duties that they are not qualified or authorized to perform. The GFR for each facility or another qualified staff member, may assist but should not actually prepare these Procedures. Approved contractor Procedures for operating facilities must cover the areas listed in § 860.4(b) through § 860.4(h) unless the GFR determines that they do not apply.

(b) *Flight Management:*

(1) Flight scheduling and planning includes:

(i) Flight planning facilities, including FLIP or other appropriate planning charts.

(ii) Procedures for obtaining GFR approval for all flights, including advanced planning to avoid situations where personnel designated to approve flights are not available. Prepare flight schedules sufficiently in advance to preclude interruption to either Government or contractor operations. When a type of flight is conducted repeatedly for the same purpose, the approval may be for each or any number of flights at the discretion of the approving authority. Flights approved singly or as groups, must be:

(*a*) Conducted by contractor's approved pilots.

(*b*) Performed in a specified flight area, route or course.

(*c*) Performed according to a Government approved flight test plan, if applicable.

(*d*) Within the applicable safety/engineering limitations.

(*e*) In accordance with approved Procedures.

Note.—The GFR refers technical concerns to the appropriate engineering authority.

(iii) Identification of the contract individual, by position or title, responsible for giving written flight authorization.

(iv) Procedures governing the use of mixed aircrew (contractor and Government crewmembers) in multiplace aircraft or formation flights.

(v) Procedures for designating pilot in command for aircraft with more than one pilot and for formation flights.

(vi) Minimum crew requirements for the various types of flight activities.

(vii) The following crew duty period for crewmembers or flight personnel (See § 860.2(b) (2) and (3)).

(*a*) The maximum crew duty is 10 consecutive hours for single piloted aircraft; 12 consecutive hours for dual piloted aircraft without an operative autopilot installed; and 16 consecutive hours for dual piloted aircraft with an operative autopilot installed and used.

(*b*) The crew duty time for all acceptance/functional check flights is limited to 12 consecutive hours for dual piloted aircraft.

(*c*) Except for support flights, the crew duty time for single piloted rotary wing aircraft is limited to a maximum of 6 flying hours in a 10-hour duty period.

(*d*) The crew duty period begins when the crewmember or flight personnel reports for work, and includes all time spent in flight planning and preflight.

(*e*) A downtime of 12 hours with a minimum of 8 hours allowed for sleep, is required before beginning a new crew duty period. When justified, the GFR may grant extension to the crew duty period of not more than 2 hours, on a case-by-case basis.

(viii) Procedures to make sure that flight crewmembers who will be exposed to night or instrument meteorological conditions are currently qualified for these flight conditions.

(ix) Pilot/flightcrew information file and procedures to review the information file prior to flight. Include interim changes or revisions to the approved procedures in this file.

(2) Contractor personnel use Government technical manuals and checklists in all flight operations where applicable technical data has been published. The contractor obtains Government publications through normal distribution for all military technical manuals, changes, and supplements. Where only commercial manuals are available, the contractor is responsible for obtaining them and making sure that changes and supplements are promptly posted in the basic technical publications so that personnel use the most current technical data available. Locally devised checklists may be used only when such deviation is authorized by the appropriate approving authority. Mixed crews (Government and contractor personnel) performing aircrew or maintenance tasks must use identical checklists.

(3) See § 860.6(c) for aircraft currency requirements.

(4) It is recognized that circumstances dictate that some contractor flight crewmembers be current in more than one type of aircraft. This is generally due to a number of unlike aircraft in the contractor's custody. Prior to approving contractor pilots for multiple currency in Government aircraft, the GFR reviews the individual's qualifications as they relate to the various aircraft to be operated. Contractor's flight personnel who are current in other than military aircraft will have their records so noted, but certification of approval for such additional currency will not be the responsibility of the GFR. However, the appropriate approving authority may

limit multiple aircraft currency on the basis of total civilian Government aircraft and their complexity. Generally, the operation of civilian Government aircraft will not contribute to currency and proficiency requirements in the operation of military aircraft unless the civil and military aircraft are similar in type and model, and have basically the same engineering systems (fuel, electrical, hydraulic, etc.) as determined by the approving authority.

(5) Procedures for maintaining qualifications and training folders for flight crewmembers, flight personnel (noncrewmembers) and ground personnel.

(6) Procedures for inspecting aircrew training folder and aircrew records folder.

(7) Procedures to ensure flight crewmember qualification for varying flight conditions and flight activities.

(8) Criteria for standardization or evaluation of flight crewmembers.

(9) Procedure for requesting Government approval of qualification training (See § 860.17).

(10) Procedure for requesting approval of contractor flight crewmember (See § 860.18).

(11) Documentation of qualification and experience (that is, certificates, licenses, logbooks, permits, instrument ratings, etc.).

(12) Procedure and criteria for selecting and designating contractor aircrew instructors, flight examiners, etc.

(13) Procedure for termination of approval.

(14) Provisions for determining weight and balance for each aircraft and flight.

(15) Procedures for and use of personal and life support equipment. Flight equipment that at least meets military requirement will be made available for aircrew use.

(16) Flight safety:

(i) The accident prevention program will include:

(*a*) Contractor's consolidated safety council to promote a program of accident prevention in flight, ground, industrial, and explosive activities.

(*b*) Regular flight safety surveys (at least semiannually) using the following references as guidelines: (1) Army—the USAAAVS Guide to Aircraft Aviation Resource Management for Aircraft Mishap Prevention. (2) Navy—the NAVSAFECEN 3750 P1 Safety Review Checklist. (3) Air Force—AFM 127–1. (4) Defense Logistics Agency DLAM 8220.3.

(*c*) Safety publications.

(*d*) Published safety responsibilities.

(*e*) Hazard, mishap, reporting, and correction procedures.

(*f*) Regularly scheduled monthly flying safety meeting.

(*g*) Designation of aviation safety official with specific duties and responsibilities.

(*h*) Fire protection and prevention program.

(*i*) Crash and rescue procedures.

(*j*) Aircraft ground handling and services procedures and practices.

(*k*) Foreign object damage control procedures.

(ii) Preaccident and crash alarm systems procedures include a current roster of Government personnel (home and office phone) to be notified of damage or destroyed aircraft. This is in accordance with the DAR clause titled, "Aircraft, Missile and Space Vehicle Accident Reporting and Investigation." This plan includes the procedure for contractor and subcontractor cooperation and participation in accident investigation conducted by the Government.

(iii) Provisions for search and rescue procedures.

(iv) Procedures for medical examination of flight crewmembers, flight personnel (noncrewmember), passengers, and official observers involved in an aircraft mishap. Military and contractor supervisory personnel will use discretion in determining when contractor personnel are to be examined by competent medical personnel following certain aircraft mishaps. In the event of a physiological incident, or when the nature of the mishap causes injury to the flight crewmembers/personnel or causes substantial damage to the aircraft, an FAA approved medical examination is required. However, aircraft system failures that do not prevent safe recovery and landing, and that have not inflicted injury, are not the type of mishaps that would normally require medical examination prior to subsequent flights.

(c) Flight Crewmember Requirements:

(1) Detailed qualification, requalification, upgrading, and instructor qualification programs must be outlined in the contractor's Procedures. These include the expiration dates for recurring training requirements, as well as the procedure used to assure that flight crews do not fly if training requirements have not been met.

(2) Training Requirements:

(i) Survival training requirements, if applicable.

(ii) Personal and life support equipment training.

(iii) Egress training.

(iv) Physiological training, if required (See § 860.6(d)).

(v) Ground school requirements.

(vi) Emergency procedures training, including simulator, if available.

(3) Flying Requirements:

(i) Annual flying time/sorties examinations (See § 860.8).

(ii) Annual proficiency flight checks.

(iii) Annual instrument flight checks, if required.

(iv) Who may administer flight checks.

(v) Current FAA flight physical.

(vi) Contractor physical requirements, when FAA physical not required.

(d) Flight Personnel (noncrewmembers) Requirements:

(1) Qualification procedures, including emergency procedures as applicable.

(2) Determination of contents and maintenance of records folder.

(3) Flying Requirements:

(i) Physiological training, if required (See §860.6(d)).

(ii) Qualification procedures.

(iii) Egress training.

(iv) Contractor physical requirements.

(e) Ground Personnel Requirements:

(1) Qualification procedures, including emergency procedures as applicable.

(2) Ground egress training.

(3) Contractor physical requirements.

(f) Passenger Transporation Procedures. Include procedures for submitting contractor personnel or other passenger transportation requests, including orientation flights, on Government aircraft through the GFR to the appropriate military command for approval.

(g) Planning and Flight Mission Procedures:

(1) Prepare mission profiles for each type of flight regulatory conducted by the contractor's flight crewmembers and covered in the Procedures. Prescribe specific geographical areas or point-to-point routes and flight-following procedures for conduct of flights.

(2) Mission profiles and specified geographical areas must make maximum use of ground radar, ground radio, and chase/pace aircraft to monitor position and status of aircraft.

(3) Crew briefings should include, but will not be limited to:

(i) Station and takeoff times.

(ii) Primary mission, including mission aircraft, support aircraft, weather, crewmember duties, routes and ranges, communications, specific mission procedures, and recovery and landing.

(iii) Alternate mission.

(iv) Life support systems and equipments.

(v) Emergency procedures (including hand signals in tandem seat aircraft in the event normal communications become inoperative).

(vi) Security assigned to the mission.

(vii) Ground coordination procedures.

(viii) Passenger briefing.

(ix) Mission debriefing after each flight.

(4) The contractor's Procedures should, as a minimum, cover items (i) through (v) below. If the contractor flight activity is physically located at a fully operational civil or military airfield that has these Procedures in operation, the contractor will comply with local directives and execute an agreement with the airfield authority. All procedures must meet FAA requirement and include:

(i) Basic regulations, to include flight areas.

(ii) Weather minimums.

(iii) Traffic control tower requirements.

(iv) Filing of flight plans.

(v) Standard operating procedures, to include:

(*a*) Radio failure.

(*b*) Landing gear malfunction.

(*c*) Crosswind landing criteria.

(*d*) Airdrome traffic procedures.

(*e*) Emergency procedures for takeoff and landing, to include procedures for use of fire equipment, barriers and arresting gear, if applicable.

(*f*) Controlled bailout/ejection and jettisoning areas, if applicable.

(*g*) Arming and dearming, if applicable.

(*h*) Minimum fuel procedures.

(*i*) Severe weather plans.

(h) Unlawful Seizure Procedures. Procedures to prevent unlawful seizure of aircraft.

(i) Experimental and Engineering Operations. Address contractor flight operations of experimental tests, engineering tests, and associated experimental ground operations of government aircraft as separate sections within the Procedures.

(j) *Approval of Procedures.* The contractor forwards the completed Procedures to the GFR for approval. The Procedures for each operating location must be approved by the cognizant GFR assigned. Current copies of these Procedures are to be maintained by the GFR and the contractor at each such facility. Furnish a list of the approved crews at the principal facility to all remote or geographically separated operating locations. The contractor will not begin flight operations until Procedures have been approved in writing by the GFR.

(k) *Procedure Deficiencies.* If the GFR determines the Procedures are deficient, inadequate, or outdated, notify the contractor and the ACO. Failure of the contractor to correct the Procedures in a reasonable time are grounds for withdrawal of the GFR's approval of the flight crewmembers and contractor's Procedures. Flight operations conducted after such withdrawal are deemed operations without the approvals required by applicable clauses of the contract.

(l) Noncompliance With Approved Procedures. Noncompliance with approved Procedures or development of dangerous practice must be brought to the immediate attention of the contractor and the ACO by the GFR. When the initial notification is oral, the GFR immediately prepares a formal written statement fully outlining the deficiencies as a matter of contract record. Failure to comply with approved Procedures or development of a dangerous practice is unacceptable and therefore an unreasonable condition within the meaning of the clause of the contract. This is grounds for termination of the Government's assumption of risk for loss or damage to Government aircraft. The Government reserves the right to take such other action as may be necessary for preserving the aircraft.

(m) Review System. The contractor establishes a Procedures review system. Whenever the Procedures need revising, the contractor submits revisions with supporting documents to the GFR for approval.

§ 860.5 Forms and records.

(a) DD Form 1821, Contractor—Crewmember Record. Use DD Form 1821, OMB Approval No. 22–R0197, to record individual flightcrew personnel records and approval to operate Government aircraft.

(b) Training Folder. Maintain a training folder on each flight crewmember while in training status. This folder serves as a management tool to record training progress and assists in the orderly progression of training. The folder contains:

(1) A record of qualification training.

(2) A record of the grade and date of the current aircraft and aircrew examinations.

(3) Hour, type, and dates of ground school completed.

(4) Each training and checkout flight numbered with a resume as to the areas covered including how the trainee performed during that training period.

(5) Record of training prerequisites (See § 860.4(d)(2).

(c) Records (Crewmember). Maintain a record folder for each flight crewmember after the completion of training and qualification. Include in the record folder:

(1) A complete training folder as required in § 860.5(b).

(2) Copies of GFR flight crewmember approvals. Include documented records of completed special training which is needed to perform all maneuvers required to conduct the test, functional/acceptance check flights and mission profile; for example: formation, refueling, instrument, night, low level, etc.

(3) Certification of current FAA flight physical.

(4) Completed copies of aircrew proficiency during the last 2 years.

(5) Certification of physiological training, when required.

(6) Certification of applicable egress and survival training required by the contractor's Procedures.

(7) A copy of all applicable FAA certificates.

(d) Records (Noncrewmember). Maintain a records folder for flight personnel (noncrewmembers). Include in this folder:

(1) A completed copy of contractor's noncrewmembers' authorization to fly.

(2) Certification of current medical examination.

(3) Certification of training and qualifications as required by the contractor's Procedures.

(4) Certification of physiological training, when required.

(5) Certification of applicable egress and survival training required by the contractor's Procedures.

(e) Records (Ground Personnel). Maintain a records folder for ground personnel, including fire-fighting, crash/rescue. Include in this folder:

(1) Certification of qualification training.

(2) Certification of continuation training (ground egress, engine runup, towing, crash/rescue, etc.).

(3) Certification of current medical examination, when required.

(f) *Flight Time Records.* Maintain a record of flight time by type, model, and series of aircraft depicting date and condition of flight for each flight crewmember.

(g) *Access to Records.* Make the forms and records above available to the GFR and other appropriate Government personnel at the request of the GFR.

§ 860.6 Qualification requirements.

(a) General Qualifications. Minimum qualifications for approval of contract of flight crewmember, for test and flight categories, are listed below. However, they are only minimums and such factors as total experience, currency of experience, experience in similar aircraft, type of flying experience, and other related factors are evaluated by the GFR before approving a contractor flight crewmember. In all cases, current FAA commercial rating, instrument rating, and class II physical qualification

in accordance with Federal Aviation Regulations (FARs) are required.

Note: For contractors located in foreign countries, the appropriate civil aviation authority or foreign military department ratings may be substituted for FAA in the following paragraphs; for example, Department of Transport (Canada), Royal Air Force (Great Britain).

(1) Experimental Test Flights and Associated Experimental Ground Operations:

(i) *Pilot.* Not less than 1500 hours first pilot time, to include 100 hours of pilot time during engineering and/or acceptance flights listed under the functional flight category. Graduation from a military TPS is required.

(ii) *Copilot.* Not less than 1000 hours first pilot time, to include 100 hours of pilot time during engineering and/or acceptance flights listed under the functional flight category. Graduation from a military TPS is required.

(iii) *TPS Waiver.* When the contractor pilot or copilot is not a graduate of a military TPS, the following education and longevity requirements must be met as a basis of consideration for TPS waiver. The contractor submits a request for waiver to the GFR. The GFR forwards the request with recommendation, through channels as appropriate, to: Headquarters, U.S. Army Materiel Development and Readiness Command; Headquarters, Air Force Systems Command; Headquarters, Air Force Logistics Command; or Headquarters, Naval Air Systems Command:

(a) Pilot. Not less than 2000 hours first pilot time (in comparable type aircraft; that is, helicopter, tactical jet, transport/patrol), plus 200 hours of first pilot time during engineering flight tests (plus 10 hours of experimental copilot time when applicable). Education and longevity requirements are as follows:

(*1*) An undergraduate or higher degree in an aerospace engineering science plus 1 year engineering test experience with the contractor; or

(*2*) An undergraduate or higher degree in any other engineering science plus 2 years engineering test experience, one of which must be with the contractor; or

(*3*) Any nonengineering undergraduate or higher degree plus 3 years engineering test experience, one of which must be with the contractor; or

(*4*) No degree, 4 years engineering test experience, one of which must be with the contractor.

(*b*) *Copilot.* Not less than 1000 hours first pilot time (in comparable type aircraft; that is, helicopter, tactical jet, transport/patrol), plus 100 hours/flights first pilot or copilot during engineering test flights. One year of engineering test experience with the contractor.

(2) Other Flights (Engineering, acceptance, support, etc.):

(i) *Pilot.* The pilot must have not less than 1000 hours first pilot time and be qualified in type, model, and, if appropriate, series of aircraft.

(ii) *Copilot.* The copilot must have not less than 500 hours first pilot time and be qualified in type, model, and, if appropriate, series aircraft.

(b) *Qualification in Specific Aircraft.* The following are minimum prerequisites to qualify in any specific type aircraft:

(1) *Pilots* (See § 860.20). These minimums have been established after considering that some contracts require that pilots operate Government aircraft only during VFR and daylight and within a few miles of the home station. If a contract requires flying under more adverse conditions, then the GFR requires more experience than listed in § 860.20. In all cases, however, Government approval depends on experience and proficiency equal to the type of flying contemplated or conducted. A comprehensive written examination on the applicable type, model, and if appropriate, series of aircraft must be completed. Knowledge of all the aircraft systems, including normal and emergency procedures, must be demonstrated to a qualified instructor pilot approved by the GFR. This demonstration may be made while the aircraft is on the ground or in the air. Initial training will be in a specific model and series aircraft. Emphasize differences in series aircraft and special equipment and systems during training.

(2) *Copilots.* A minimum of 5 hours or three sorties and five dual or supervised landings are required in the type, model, and, if necessary, series aircraft for which approval is requested. The GFR may require more training based upon the type of flying contemplated or conducted. Completion of ground school course is required for type, model, and if necessary, series of aircraft. Reference appropriate Army aircrew training manual, NATOPS for the Navy, and AFM 50–5 and the 51 series manuals for the Air Force. Complete a comprehensive written examination on the applicable type, model and, if appropriate, series of aircraft. Demonstrate a knowledge of all the aircraft systems, including normal and emergency procedures, to a qualified instructor pilot approved by the GFR. This demonstration may be made while the aircraft is on the ground or in the air.

(3) *Other Flight Crewmembers.* These personnel will receive ground and flight training necessary to qualify the individual for the crew position. A comprehensive written examination must be completed. Demonstrate a knowledge of applicable aircraft systems, including normal and emergency procedures, to an instructor qualified in the crew position.

(4) *Flight Personnel (Noncrewmember) and Ground Personnel.* Complete a written examination (to include emergency procedures) applicable to the particular function the individual is to perform, before performing flight operations.

(c) *Currency Requirements.* A minimum of one flight and one landing every 45 days in each type, model, and series aircraft of significant difference in which qualified, is required to ensure currency as either pilot or copilot. To regain currency a takeoff landing must be accomplished under supervision of flight examiner (FE) or instructor pilot (IP). A pilot or copilot who exceeds 90 days without a takeoff and landing requires a flight evaluation as outlined in § 860.7(j). The approving authority determines the grouping of aircraft for currency requirements.

(d) *Physiological Training.* All flight crewmembers/noncrewmembers receive physiological training prior to flight above 12,000 feet, and altitude chamber training for flight above 18,000 feet.

(e) *Egress Training.* The contractor makes sure that all personnel involved in flight operations (as defined in § 860.2(b)(7)) receive egress training annually.

§ 860.7 Flight crewmember and other flight personnel approval.

(a) *Requesting Officials.* Only contractor-designated requesting officials may submit requests for crewmember approval and for qualification training. Send a list of these officials to the GFR. The contractor or subcontractor revises the list as necessary to ensure currency.

(b) *Government Approval.* The contractor official requesting approval for qualification training forwards two copies of the justification to the GFR for approval. The GFR indicates approval by signing both copies, or provides complete rationale if the request is rejected. The original is kept by the GFR and the duplicate returned to the contractor. The contractor makes sure that flight crewmembers do not fly or initiate qualification training before receipt of Government approval:

(1) The GFR is allowed a minimum of 10 work-days for processing, analyzing, and approving or rejecting contractor requests for qualification training.

(2) Following approval, training must be initiated within 90 days and

completed without interruption. If interrupted for any reason, coordinate the resumption of training between the GFR and the contractor.

(3) Formal training offered by military agencies may be requested by the contractor on a space available basis. Unless otherwise provided in the contract, the contractor must reimburse the military agencies for such training.

(c) Request for Approval of Contractor Flight Crewmember (§ 860.18).

(1) On completion of training, the contractor forwards GFR two completed copies of any Request For Approval of Contract of Flight Crewmember to the GFR. The GFR indicated action taken and signs both copies. The GFR keeps the original in their files and returns the duplicate copy to the contractor within 10 workdays.

(2) The contractor will not use the flight crewmembers in their aircrew specialties until receipt of Government approval.

(d) Requests for Aircraft Initial Flights:

(1) The contractor submits a written request (§ 860.18), including the names of the flight crew with current Qualification Training records, the GFR approval for each flight crewmember, and the date of anticipated flight, to the GFR, not less than 90 days before the scheduled initial flight date. The GFR forwards all requests to the appropriate project manager (PM).

(2) The GFR returns the request to the contractor at least 30 days before initial flight date. If disapproved, notify the contractor immediately.

(e) *Contractor Approval.* The contractor's requesting official grants written approval for each contractor and subcontractor noncrewmember required to fly in Government aircraft, before the individual's first flight, with a copy to the GFR. The contractor's requesting official makes sure that each person is needed, and is qualified to serve in a specific capacity while aboard military aircraft. The contractor keeps the written approval on file until the individual is no longer authorized to fly:

(1) The contractor limits approved personnel to those needed to perform on the contract.

(2) If the GFR determines that the written approval has been signed without adequate justification, the contractor is asked to remove the affected individual from flight status. If the contractor still believes that the individual should be allowed to fly, the GFR refers the matter to the ACO. The contractor then makes sure that the above mentioned individuals are not allowed to fly pending the result of any appeal.

(3) The GFR reviews flight personnel assignments each 6 months to ensure that only those needed for the mission have current written approval.

(f) Contractor Instructor Flight Crewmember:

(1) Only the most highly qualified, proficient, and experienced personnel are designated as instructor flight crewmembers. The GFR approves the IP and documents the certification of instructor pilot status on DD Form 1821.

(2) Contractor instructor flight crewmembers administer flight evaluations to other flight crewmembers employed by the contractor. Military personnel may receive qualification and recurrency evaluation from the contractor instructor flight crewmembers when deemed appropriate by the approval authority.

(3) Contractor personnel administering these evaluations must be qualified as instructors in accordance with the instructor's criteria as outlined in the contractor's operations procedures. Instructor pilots must have at least 1500 hours first pilot time and be well qualified in the type, model, and series aircraft.

(g) Termination of Approvals:

(1) Approvals of flight crewmembers are automatically cancelled on termination of employment, physical disqualification, or revocation of FAA rating. The contractor notifies the GFR of such action by the most expeditious means, and confirms in writing within 10 calendar days.

(2) The contractor may request the GFR to terminate any approval. The contractor's requesting official makes this request in writing.

(3) The GFR will withdraw the approvals of flight crewmembers and flight personnel who:

(i) Have failed to meet the general requirements of normal flight techniques and to exercise sound judgment in the conduct of test or other flights;

(ii) Have exhibited evidence of personal instability or similar undesirable tendencies, or have conducted themselves contrary to the Government's interests in promoting safety; or

(iii) Have failed to accomplish semiannual proficiency requirements.

(4) The GFR promptly notifies the contractor and ACO when an approval is withdrawn. A written statement by the GFR to the contractor must set forth in detail the reasons for the action. If the contractor believes that the approval should not have been withdrawn, he or she may request a review of the matter by the ACO.

(h) *Verification.* Verification by the GFR as to the qualifications of contractor personnel flying military aircraft at locations other than the principal location is furnished by letter or message to the GFR at the other location. The contents of the transmittal include the level of the pilot's qualification (for example, experimental test, acceptance/functional flight, etc), date of last flight, time in the model being flown, time in the last 90 days, and any other specific information pertinent to the maneuver or mission to be flown at that location.

(i) *GFR Approval.* The GFR will not approve any flight crewmember until the contractor's operations procedures have been approved.

(j) *Requalification.* Failure to maintain proficiency in appropriate aircraft necessitates a flight evaluation by either a contractor, a Government instructor pilot, or a flight examiner. The IP or FE, with GFR approval, determines the extent of the evaluation. Additional flying time is not furnished at Government expense, if a training period is required.

§860.8 Flight crewmembers proficiency requirements.

(a) *General Requirements.* Contractor flight crewmembers maintain the proficiency requirements of this section in the designated Government aircraft and crew position. Proficiency generally applies to flights in the same type and series as the Government aircraft. An exception would be similar (airframe, power plant, and flight characteristic) civil aircraft. Small, single and twin engine, propeller driven aircraft are not acceptable unless the contract is for production or maintenance/modification of similar Government aircraft. Where a civilian aircraft equivalent exists, substitution of requirements will be determined by the approving authority. For Government aircraft, where no approved civilian equivalent is available, a minimum of 50 percent of these requirements will be accomplished in that aircraft. The remaining requirements may be accomplished in like category and type aircraft in accordance with § 860.4(b)(4) and/or simulators as addressed below. The requirements of this section are in no way a substitute for any currency or proficiency requirements as specified in applicable FARs as they apply to contractor flight crewmember FAA ratings. When a pilot fails to maintain currency and proficiency, he or she is not permitted to fly as a crewmember of aircraft covered by the Government flight risk clause until appropriate training as approved by the GFR, is accomplished and a satisfactory flight evaluation is completed.

(b) *Minimum Requirements.* As outlined below and in § 860.9 through § 860.14, minimum requirements apply to the period covered by the flight operation phase of the Government contract. Each flight crewmember performs a prorated share for contracts of less than 6 months duration. Semiannual minimums apply from January through June and from July through December.

(1) Pilots and copilots must perform 80 hours flying time annually. A minimum of 35 hours must be flown to meet one semiannual requirement. The balance of 45 hours would then be required for the other semiannual period to accomplish the annual 80-hour requirement. In lieu of the annual 80-hour requirement and with the approval of the GFR, the contractor may substitute sorties as shown in the applicable tables to this section. A sortie is a flight of 30 minutes or more and includes the performance of a takeoff and landing after which the engine is stopped, the aircraft is on the surface for 5 minutes, or a pilot/copilot crew change is made. No combination of the sortie minimum and the hourly minimum may be used to satisfy proficiency requirements for a period of 6 months or less. However a semiannual period using the sortie minimum may be combined with a semiannual period using the hourly minimum to determine annual minimums. Within the flight time available, distribute the accomplishment of these proficiency requirements evenly throughout the calendar period.

(2) Up to 50 percent of the semiannual pilot and copilot requirements (hours/sorties, precision approach, nonprecision approach, missed approach, and instrument hours) as listed in the above referenced tables may be substituted through the use of modern flight simulators authorized by the approving authority. The GFR makes sure that the simulator operation and cockpit configuration are similar to the applicable Government aircraft.

(3) There is no requirement for contractor pilots and copilots to fulfill the night, instrument, or approach requirements, except in those cases where night or instrument flying by contractor personnel will be required. Those pilots maintaining night flying proficiency also must maintain instrument proficiency. Pilots and copilots logging night instrument time in the aircraft may simultaneously apply this event to both night time and instrument time requirements. This does not mean that the Government will furnish additional flying time for contractor flight crewmembers; these events will be accomplished in the contractor's flying program under the provisions of the contract. Pilots and copilots who do not maintain night proficiency are prohibited from operating Government aircraft between the hours of official sunset and official sunrise.

(c) *Proficiency evaluation.* Approved contractor flight crewmembers must demonstrate their ability to perform assigned duties. They operate aircraft, aircraft systems (to include egress systems), or perform other assigned aircrew functions safely and effectively. This is accomplished in accordance with the criteria for standardization/evaluation of flight crewmembers in the approved contractor's Procedures. Performs these evaluations in each aircraft in which proficiency is maintained at intervals not to exceed 12 months. They may be conducted as an integral part of the regularly scheduled flights with the evaluation pilot in the same aircraft or chase aircraft when a two-seat aircraft is not available. Document all phases of the flight evaluation on the DD Form 1821. For those aircraft of similar type and model, but dissimilar series designations, the approving authority determines which are considered like aircraft for purposes of performing annual proficiency evaluation.

(d) *Proficiency Evaluator.* These proficiency flight evaluations or instrument flight evaluations (if applicable) are administered to the contractor flight crewmember either by the approved IP/FE's designated by the contractor or by a qualified Government IP/FE at the direction of the cognizant GFR. Contractor pilots are subject to no-notice flight evaluations. When the evaluation is administered by the Government IP or FE, the Government may furnish the flying time necessary to support this requirement.

(e) *Additional Checks.* In conjunction with the flight evaluation, the flight crewmember also demonstrates orally to the IP or FE his or her knowledge of the contractor's Procedures that apply to his or her crew position. In addition, the GFR approved contractor open-book proficiency and closed-book emergency procedure examinations for the aircraft and its associated systems are administered prior to the proficiency flight evaluation. GFR approved Government representatives may periodically administer written examinations to evaluate crewmember's knowledge of the aircraft procedures and systems.

(f) *Multiple Currency.* When the contractor crewmembers are approved for multiple currency, a minimum of 50 percent of the basic table requirements must be accomplished in each aircraft; for example, an individual qualified in three fighter/trainer aircraft requires 15 sorties or 20 hours in each aircraft twice a year.

§ 860.9 Pilot, copilot proficiency requirements for rotary wing aircraft.

Event	Semiannual minimum	Annual minimum
Sorties or hours	35*	80
Landings—day	12	24
Instrument sorties or hours	10/6	20/12
Precision approaches	6 (1 night)	12 (2 night)
Nonprecision approaches	6 (1 night)	12 (2 night)
Missed approaches	2	4 (1 night)
Night sorties or hours	6/4	12/8
Landing—night	6	12
Autorotations—day**	.....	3
Autorotations—night**	.....	1

*Minimum Annual proficiency requirements are 80 hours when not computing on the sortie basis. One semiannual period may be as low as 35 hours providing the other semiannual period makes up the balance of 80 hours annually.

**Conduct emergency procedures only with a military IP or contractor CFI during flight evaluation, and night autorotations only when required by contract.

Note: Instrument requirements do not apply to aircraft that are not certified for instrument flight.

§ 860.10 Pilot, copilot proficiency requirements for all tactical fighters, fighter bombers, attack surveillance, trainers, and light aircraft that have a gross weight of less than 12,500 pounds.

Event	Semiannual minimum
Sortie or hours	30 or 35*
Landing—day	15
Landing—night	2
Precision approach	5
Nonprecision approach	5
Missed approach	2
Night hours	5
Instrument hours	8

*Minimum annual proficiency requirements are 80 hours when not computing on the sortie basis, and one semiannual period may be as low as 35 hours providing the other semiannual period made up the balance of 80 hours annually.

§ 860.11 Pilot/copilot proficiency requirements for large cargo, bomber, patrol, and utility aircraft that have a gross weight greater than 12,500 pounds.

Event	Semiannual minimum
Sortie or hours	12 or 35*
Landing—day	6
Landing—night	2
Precision approach	5
Nonprecision approach	5
Missed approach	2
Night hours	5
Instrument hours	8

*Minimum annual proficiency requirements are 80 hours when not computing on the sortie basis, and one semiannual period may be as low as 35 hours providing the other semiannual period made up the balance of 80 hours annually.

§ 860.12 Navigator proficiency requirements for cargo/bomber/patrol unless specifically identified in 860.13.

Event	Semiannual minimum
Sorties or hours	6 or 30
XC/Nav Leg*	2

*Applicable when required by contract.

§ 860.13 Navigator proficiency requirements for tactical jet fighter, fighter bomber/trainer, such as F–4, F–111, FB–111, F–14, etc.

Event	Semiannual minimum
Sorties or hours	20 or 30
XC/Nav Leg*	3
Instrument interpretation	2

*Applicable when required by contract.

§ 860.14 Flight crewmembers other than identified in 860.9, 860.10, 860.11, and 860.12 as defined in 860.2(b)(2).

Event	Semiannual minimum
Sorties or hours	6 or 30

§ 860.15 Ground personnel.

(a) *Proficiency Requirements.* Ground personnel performing preflight and postflight inspections, ground movement and engine run ups, as well as fire, crash, and rescue personnel, must be qualified as outlined in the contractor's approved procedures.

(b) *Criteria.* Unless specified in other contractual provisions, people approved to run up or taxi Government aircraft must meet the following:

(1) Demonstrate, at least semiannually, to an authorized instructor the ability to do those operations needed and authorized.

(2) Have operated the type, model, and series (if appropriate) aircraft at least once during the last 45 days.

§ 860.16 Additional administrative matters.

(a) *Requests for Waivers.* Waivers regarding application of this part to the contractor's performance of a contract or contracts, are forwarded to the ACO, and will include the recommendations of the GFR. The ACO will then send the waiver through channels to the contracting activity, or the requiring activity in those cases where the requiring activity is not the contracting activity (for example, military interdepartmental purchase requests (MIPR)). The contracting activity may require that monetary or other consideration be obtained when contract requirements are waived. Waivers to this part require approval of the HCA or a designee, or the HCA for the requiring activity where the contract is awarded as a result of MIPR.

(b) *Disposition of GFR Records.* Records accumulated by the GFRs are disposed of according to disposition standards published by the military services (AFM 12–50, AR 340–18–11, SECNAVINST 5212.5B, DLAM 5015.1).

(c) Reports:

(1) OMB approval 22–R0195 applies to the format for Request for Approval of Qualification Training (§ 860.17).

(2) OMB approval 22–R0196 applies to the format for Request for Approval of Contractor Flight Crewmember (§ 860.18).

(3) OMB approval 22–R0197 applies to DD Form 1821, contractor—Crewmember Record.

(d) Supply of DD Form 1821:

(1) *Army.* Obtain from Letterkenny Army Depot, ATTN: SDSLE–AGD, Chambersburg, PA 17201.

(2) *Navy.* Local reproduction is authorized.

(3) *Air Force.* Available through PDO system.

(4) *DLA.* Order according to existing agency procedures.

§ 860.17 Sample format, request for approval for qualification training.

Subject: Request for Government Approval for Aircrew Qualification and Training

To: Government Flight Representative

I. Name _____

Crew Position _____

Aircraft _____

Date of Birth _____

Security Clearance _____

FAA Rating _____

II. Provide a résumé of education background. (High school, name and location; college or university name, location and degree obtained; flight school and date completed; test pilot school and date completed; and special professional schools.)

III. Have you ever served in any branch of the US Military Service? _____

If so, state: Branch _____

Service Dates: From _____ To _____

Last Location _____

Highest Rank _____

SSAN _____

Aero Rating _____

Are you now a member of the Reserves or National Guard? _____

If yes, state: Branch _____

Present Rank _____

IV. Provide a resume of experience in the flight test field. Include both engineering and aircrew experience by project, type of aircraft, and hours flown.

Flight Phase

V. I certify that I have read and understand all of the contractor's procedures and directives pertinent to the accomplishment of my assigned duty.

_____

(Flight Crew Member's Signature)

VI. I have verified the records of _____

_____

and it is requested that he be approved for qualification training as a

_____

(Crew Position)

for experimental/functional flights (delete one not applicable) in

_____

type aircraft.

_____

(Type Name of Contractor's Requesting Official)

_____

(Signature of Contractor's Requesting Official)

1 Atch: DD Form 1821

VII. ——Approved ——Disapproved

_____

(Date of Approval or Disapproval)

_____

(Type Name of Govt Flt Rep)

_____

(Sig of Govt Flt Rep)

§ 860.18 Sample format, request for approval of contractor flight crewmember.

Subject: Request for Approval of Contractor Flight Crewmember

To: Government Flight Representative

I. I have verified the records of

_____

(Crewmember's name)

and it is requested that he/she be approved as a

_____

(Crew position)

for experimental/functional (as appropriate) flights in _____ type aircraft.

_____

(Signature of Contractor's Requesting Official and Date)

_____

(Typed Name of Contractor's Requesting Official)

1 Attachment: DD Form 1821

II. I certify that

_____

has satisfactorily flown a proficiency flight check on ———— (Date).

_____

(Signature of Instr Pilot/Flt Examiner)

III. —— Approved —— Disapproved

_____

(Signature of Government Flight Representative)

_____

(Type Name of Government Flight Representative)

_____

(Date).

§ 860.19 Sample format, designating government flight representatives.

(Service Letterhead)

Reply to Attn of:
Subject: Delegation of Authority
To:

1. Pursuant to AR 95–20, NAVAIRINST 3710.1 series, AFR 55–22, and DSAR 8210.1, you are hereby designated primary/alternate Government Flight Representative (as appropriate) and delegated authority to approve contractor personnel and procedures for operating aircraft under your jurisdiction for which the Government, by contract, assumes the risk for loss, damage, or destruction.

2. This authority is granted to you as an individual, and is not to be redelegated. It is effective only so long as you remain physically qualified for flying status and in your present assignment, unless sooner terminated.

3. As the Government flight representative, you shall assure that the procedures contained in AR 95–20, NAVAIRINST 3710.1 series, AFR 55–22, or DSAR 8210.1 and appropriate ASPR provisions including Departmental implementing instructions, are followed in the approval of contractor aircrew personnel and flight operations procedures.

_____

(Signature of Approving Authority)

§ 860.20 Minimum requirements.

Minimum requirements for initial qualification of contractor pilots are the satisfactory completion of written questionnaire and demonstration of knowledge of system, including normal and emergency systems pertaining to the specific mission, design, and series of aircraft to be flown. In addition, the Government flight representative may require night flying (up to 5 hours) and instrument practice (up to 5 hours) or until a satisfactory degree of proficiency is demonstrated, if contractor pilots are to fly under these conditions.

Aircraft by group	First pilot time for this group (hours) (note 1)	Dual or supervised time before checkout (hours)	Dual or supervised sorties, each including at least one landing (note 2)	Other requirements	Instructor pilot
Reciprocating aircraft					
Single Engine up to 5,000 lbs gross weight.	.....	5	5	Note 3	At the discretion of the Government flight representative.
I Single Engine 5,000 to 20,000 lbs gross weight.	.....	5	5	Note 3	Do.
II Twin Engine up to 12,000 lbs gross weight.	.....	5	5	Note 3	Do.
Four or More Engines	75	15	10	Note 3	Do.
Jets and Turbo Prop					
Single	50	5	5	Note 3	At the discretion of the Government flight representative.
I Twin Engine	100	5	5	Note 3	Do.
II Three or Four Engines	100	15	10	Note 3	Do.
V Multiengine (more than four)	200	20	10	Note 3	Do.

Rotary Wing Aircraft

Type of aircraft for group and similar aircraft weight and engine horsepower	Total first pilot time (hours)	Dual time before checkout (hours)	Dual autorotations either full touchdown or power recovers as applicable	Other requirements	Instructor pilot
I. 0 to 500 lbs; 10 sorties	100	10	10	Completion of formal ground school course required.	At the discretion of the Government flight representative.
II. 5,000 to 16,000 lbs; 10 sorties...	250	10	10	Previous completion of a formal ground school course. Completion of specialized or formal ground school course for helicopter concerned. (Note 1).	Do.
III. 16,000 to 40,000 lbs; 10 sorties.	500	10	10	Previous completion of a formal ground school course. Completion of specialized or formal ground school course for helicopter concerned. (Note 2).	Do.
IV. 40,000 lbs; and over 10 sorties	500	10	10	Previous completion of a formal ground school course. Completion of specialized or formal ground school course for helicopter concerned. (Note 2).	Do.

NOTES: 1. To include checkout time. 2. For qualification in amphibious aircraft, 10 water landings also are required. 3. Completion of ground school course required for mission, design, and, if necessary, series of aircraft. Reference Army Training Circular 1–34, NATOPS for the Navy, and AFM 50-5 and the 51 series manual for the Air Force.

Carol M. Rose,

Air Force Federal Register Liaison Officer.

[FR Doc. 79–36874 Filed 11–30–79; 8:45 am]

BILLING CODE 3910–01–M

DEPARTMENT OF TRANSPORTATION

Coast Guard

33 CFR Part 82

[CGD 78–052]

COLREGS Demarcation Line, Capri Pass, Florida; Editorial Amendment

AGENCY: Coast Guard, DOT.

ACTION: Final rule.

SUMMARY: This rule revises the description of the COLREGS Demarcation Line at Capri Pass, Florida. The line is presently described as being drawn across Capri Pass through daybeacons "2A" and "3". However, daybeacon "2A" has been moved seaward and daybeacon "3" has been moved seaward and replaced by a buoy. Due to the relocation of the daybeacons, the described line does not cross nor fully enclose Capri Pass. This rule

eliminates the inconsistencies in the description of the line by redescribing it using a bearing from a fixed point.

EFFECTIVE DATE: January 3, 1980.

FOR FURTHER INFORMATION CONTACT: Lieutenant (jg) George W. Molessa, Jr., Office of Marine Environment and Systems (G–WLE–4/TP11), Room 1608, U.S. Coast Guard Headquarters, 2100 Second Street SW., Washington, DC 20593, (202) 426–4958.

SUPPLEMENTARY INFORMATION: Since this amendment is purely editorial, notice and public procedure are unnecessary under 5 U.S.C. 553, and the amendment may be made effective in less than 30 days after publication in the **Federal Register**.

Drafting Information

The principal persons involved in the drafting of this document are: Lieutenant (jg) George W. Molessa, Jr., Project Manager, Office of Marine Environment and Systems, and Lieutenant John W. Salter, Project Counsel, Office of the Chief Counsel.

Evaluation

The Coast Guard has determined, in accordance with the Department of Transportation's "Regulatory Policies and Procedures" (44 FR 11034), that this amendment is not significant. Additionally, since this amendment merely redescribes, without relocating, an existing line, there will be no economic impact and a full evaluation is not necessary.

Accordingly, Part 82 of Title 33 of the Code of Federal Regulations is amended as follows:

By revising paragraph (b) of § 82.748 to read as follows:

§ 82.748 Cape Romano, FL to Sanibel Island, FL.

(a) * * *.

(b) A line drawn from the northwesternmost extremity of Coconut Island 000°T across Capri Pass.

* * * * *

(Rule 1, International Regulations for Preventing Collisions at Sea, 1972, TIAS 8587; E.O. 11964; (14 U.S.C. 2); Pub. L. 95–75, 91 Stat. 310 (33 U.S.C. 1607); 49 CFR 1.46(b))

Dated: November 27, 1979.

J. B. Hayes,

Admiral, U.S. Coast Guard, Commandant.

[FR Doc. 79–37109 Filed 11–30–79; 8:45 am]

BILLING CODE 4910–14–M

DEPARTMENT OF DEFENSE

Corps of Engineers, Department of the Army

33 CFR Part 204

Danger Zone Regulations; Atlantic Ocean and Vieques Sound in Vicinity of Culebra Island

AGENCY: U.S. Army Corps of Engineers, DoD

ACTION: Final rule.

SUMMARY: The Department of the Army is amending the regulations which establish a danger zone in the Atlantic Ocean and Vieques Sound to delete references to three buoys which have been removed. The buoys were placed in the water to mark the boundaries of the danger zone.

DATE: Effective on November 30, 1979.

ADDRESS: HQDA, DAEN–CWO–N, Washington, D.C. 20314.

FOR FURTHER INFORMATION CONTACT: Mr. Ralph T. Eppard, Telephone No. (202) 272–0200.

SUPPLEMENTARY INFORMATION: Regulations have been promulgated by the Department of the Army in 33 CFR 204.230 to establish a bombing and gunnery target practice area in the Atlantic Ocean and Vieques Sound in the vicinity of Culebra Island. The Commander, U.S. Naval Forces, Caribbean has reported that buoys identified as "4RA", "2RA", and "24" have been removed and accordingly, the regulation is amended to reflect this change.

The Department of the Army has determined that notice of proposed rulemaking is unnecessary and impractical since this amendment reflects only minor changes within the danger zone. 33 CFR 204.230 (a) is amended by deleting buoys 4RA, 2RA, and 24. As amended paragraph (a) reads as set forth below:

§ 204.230 Atlantic Ocean and Vieques Sound, in vicinity of Culebra Island, bombing and gunnery target area.

(a) The danger zone. From Punta Resaca on the north coast of Culebra at latitude 18°20'12", longitude 65°17'29" to latitude 18°25'07", longitude 65°12'07"; thence to latitude 18°26'31", longitude 65°16'45"; thence to latitude 18°23'00", longitude 65°24'30"; thence to the charted position of nun buoy "2" at latitude 18°20'19", longitude 65°24'51"; thence to latitude 18°18'47", longitude 65°24'35"; thence to latitude 18°15'30", longitude 65°21'30"; thence to a point on the southeast coast of Cayo de Luis Pena at latitude 18°17'51", longitude 65°19'41"; and thence to Punta Tamarindo on the west coast of Culebra at latitude 18°19'12" longitude 65°19'22".

* * * * * *

(40 Stat 266; 33 U.S.C. 1) and (40 Stat. 892; 33 U.S.C. 3)

Note: The Department of the Army has determined that this document does not contain a major proposal requiring the preparation of a regulatory analysis under EO 12044, Improving Government Regulations.

Dated: November 5, 1979.

Edward Lee Rogers,

Deputy Assistant Secretary of the Army (Civil Works).

[FR Doc. 79–36820 Filed 11–30–79; 8:45 am]

BILLING CODE 3710–92–M

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 60

[FRL 1369–3]

New Source Performance Standards; Delegation of Authority to the State of Maryland

AGENCY: Environmental Protection Agency.

ACTION: Final rulemaking.

SUMMARY: Pursuant to the delegation of authority for New Source Performance Standards (NSPS) to the State of Maryland on September 15, 1978, EPA is today amending 40 CFR 60.4, *Address*, to reflect this delegation.

EFFECTIVE DATE: December 3, 1979.

FOR FURTHER INFORMATION CONTACT: Tom Shiland, 215 597–7915.

SUPPLEMENTARY INFORMATION: A Notice announcing this delegation is published today elsewhere in this **Federal Register**. The amended 60.4 which adds the address of the Maryland Bureau of Air Quality to which all reports, requests, applications, submittals, and communications to the Administrator pursuant to this part must also be addressed, is set forth below.

The Administrator finds good cause for foregoing prior public notice and for making this rulemaking effective immediately in that it is an administrative change and not one of substantive content. No additional substantive burdens are imposed on the parties affected. The delegation which is reflected by this administrative

amendment was effective on September 15, 1978, and it serves no purpose to delay the technical change of this address to the Code of Federal Regulations.

This rulemaking is effective immediately, and is issued under the authority of Section 111 of the Clean Air Act, as amended, 42 U.S.C. 7411.

Dated: November 14, 1979.

Douglas M. Costle,

Administrator.

Part 60 of Chapter I, Title 40 of the Code of Federal Regulations is amended as follows:

1. In § 60.4 paragraph (b) is amended by revising Subparagraph (V) to read as follows:

§ 60.4 Address.

* * * * *

(b) * * *

(A)–(U) * * *

(V) State of Maryland: Bureau of Air Quality and Noise Control, Maryland State Department of Health and Mental Hygiene, 201 West Preston Street, Baltimore, Maryland 21201.

[FR Doc. 79-37032 Filed 11-30-79; 8:45 am]

BILLING CODE 6560-01-M

COMMUNITY SERVICES ADMINISTRATION

45 CFR Part 1060

[CSA Instruction 6004-1L]

CSA Income Poverty Guidelines

AGENCY: Community Services Administration.

ACTION: Clarification of existing policy.

SUMMARY: The Community Services Administration (CSA) is issuing a Clarification of Existing Policy concerning the application of its Income Poverty Guidelines, "farm family" thresholds of poverty, to persons deriving their wages or income from employment by persons owning or having a proprietary interest in a farm. The term "farm family" as found in CSA's Income Poverty Guidelines shall include only those families who own or otherwise have some proprietary interest in a "farm residence" as defined in 45 CFR 1060.2-2(c)(2). This Clarification of Existing Policy is necessary because of information and inquiries received by CSA's Office of General Counsel indicating that some hospitals assisted by Titles VI and XVI of the Public Health Services Act are misapplying CSA's Income Poverty Guidelines when determining financial eligibility for persons unable to pay for health services. Specifically, persons employed as farmworkers are being denied medical care in some instances because their income is above the poverty threshold as measured by the "farm family" guideline. This Clarification of Existing Policy is intended to clarify CSA's policy in this instance as well as in any other instance wherein the application of CSA's "farm family" Income Poverty Guidelines may be at issue.

FURTHER INFORMATION CONTACT: Mr. Roger Schwartz, Office of Legal Affairs and General Counsel, Community Services Administration, 1200 19th Street, N.W., Washington, D.C. 20506, Telephone: (202) 653-7520, Teletypewriter (202) 254-6218.

SUPPLEMENTARY INFORMATION: On May 18, 1979, the Secretary of Health, Education, and Welfare issued new rules "establishing requirements for health care facilities assisted by the Department under Titles VI and XVI of the Public Health Services Act to fulfill assurances required to be given in their applications for assistance that they would make their services available to all persons in the community and that they would make available a reasonable volume of services to persons unable to pay". (44 FR 29372, May 18, 1979).

Subpart 124.506 of this regulation provides that uncompensated services shall be provided to persons whose income is not more than the current poverty income guidelines of the Community Services Administration. 42 CFR 124.506; 44 FR 29377, May 18, 1979. Since the adoption of this rule by HEW, some individuals employed as farmworkers have been denied uncompensated care by hospitals assisted by Titles VI and XVI on the basis that they are considered "farm families", and as such their incomes must not be more than the current poverty income guidelines for "farm families". The statutory basis for CSA's Income Poverty Guidelines is found at 42 U.S.C. 2971d, and also at section 624 of the Economic Opportunity Act of 1964, as amended. Section 624 states that the official poverty line is determined by the Office of Management and Budget. OMB adopted as the official poverty line, the "Orshansky poverty threshold pattern" which was originally developed in 1963 for the Social Security Administration. The category of "farm family" poverty thresholds was created by Ms. Orshansky as a result of studies published by the Department of Agriculture which indicated that farm families raise a significant proportion of their own food, permitting them to maintain the same diet while requiring less money income than non-farm families. Further, in making their home on the farm they operate, farm families are relieved of some direct outlays for items other than food.

Therefore, to categorize persons employed as farmworkers as "farm families" in determining financial eligibility under CSA's Income Poverty Guidelines is contrary to the intent behind the justification for developing the "farm family" thresholds of poverty, and is a misapplication of such guidelines. CSA clarifies the existing policy that the term "farm families" as found in CSA's Income Poverty Guidelines shall include only those families who own or otherwise have some proprietary interest in a "farm residence" as defined in CSA Instruction section 6004-1L also found at 45 CFR 1060.2-2(c)(2).

This Clarification of Existing Policy is issued under the authority of Sec. 602, 78 Stat. 530; 42 U.S.C. 2942.

Graciela (Grace) Olivarez,

Director.

[FR Doc. 79-36800 Filed 11-29-79; 8:45 am]

BILLING CODE 6315-01-M

DEPARTMENT OF TRANSPORTATION

Coast Guard

46 CFR Parts 151 and 153

[CGD 75-075]

Benzene Carriage Requirements

AGENCY: Coast Guard, DOT.

ACTION: Final rule.

SUMMARY: The Coast Guard is amending its regulations to provide protection to maritime personnel from hazardous exposure to benzene vapor. The probable danger to tankermen, ship's personnel, and towboat personnel necessitates adoption of benzene exposure limits.

EFFECTIVE DATE: This amendment is effective on January 3, 1980.

FOR FURTHER INFORMATION CONTACT: LTJG R. F. MURRAY, (G-MVI-2/TP24), U.S. Coast Guard, Trans Point Bldg., 2100 2nd St. SW., Washington, D.C. 20593 (202) 426-2190.

SUPPLEMENTARY INFORMATION: On August 21, 1978, a NPRM was published in the **Federal Register** (41 FR 37149) stating that the Coast Guard was planning to amend its regulations to provide protection to maritime personnel from hazardous exposure to benzene vapors. Interested persons were invited to participate in the rulemaking proceedings through

submission of written comments on the proposal to the Coast Guard. All submissions, including late submissions that were received on the proposal were fully considered by the Coast Guard in the development of this final rule.

Drafting Information

The principal persons involved in drafting this rule are: LTJG Robert F. Murray and LT Thomas J. Haas, Office of Merchant Marine Safety, and Michael N. Mervin, Project Attorney, Office of the Chief Counsel.

Discussion

This final rule has been evaluated in accordance with DOT "Regulatory Policies and Procedures," 44 FR 11033 (February 26, 1979). A copy of the final evaluation may be obtained from the Commandant (G-CMC/TP24), U.S. Coast Guard, Washington, D.C. 20593 (202) 426-1477.

The Coast Guard has assessed the environmental effects of these amendments and found that these amendments will have no significant adverse impact on the human environment. This assessment is available for review.

The majority of comments received requested that the Coast Guard defer any final rulemaking until the Fifth Circuit Court of Appeals made its final decision concerning the challenge to the Occupational Safety and Health Administration's (OSHA) permanent standard on benzene. On October 5, 1978, subsequent to the receipt of comments, the Court of Appeals set aside the OSHA provision requiring that no employee may be exposed to airborne concentration of benzene in excess of 1 ppm averaged over an 8-hour day. The Court held that the record did not show that the benefits resulting from reducing the airborne permissible exposures limit from 10 ppm to 1 ppm bore a reasonable relationship to the costs of the regulation. The provision on warning signs was also vacated by the Court as being ancillary to the permissible exposure limit reduction. The case has been appealed and accepted for review by the Supreme Court and oral argument has been scheduled for the October 1979 term. Because of the time lag before the Supreme Court could decide the matter, the Coast Guard has decided to amend, at this time, its standards to include a provision limiting exposures to benzene. This action is necessary in light of numerous scientific studies linking exposure to benzene with the risk of developing cancer—specifically, leukemia, as well as other blood disorders.

Until the Supreme Court rules on the appropriateness of the 1 ppm exposure limit, the Coast Guard is limiting the exposure of tankermen, ship's personnel and towing personnel to toxic benzene vapors to an 8-hour time-weighted average of 10 ppm, with a ceiling concentration of 25 ppm as a time-weighted average over any 10-minute period. The specific levels included in this rule are identical to the exposure limits found in 29 CFR § 1910.1000, Table Z-2, and currently being enforced by OSHA during the pendency of its litigation. These exposure limits were adopted by OSHA in 1971 from the Z 37.4-1969 consensus standard of the American National Standards Institute (ANSI). Neither the ANSI standard nor the resultant OSHA standard adopted under Section 6(a) of the Occupational Safety and Health Act of 1970 (84 Stat. 1956, 1959, 29 USC 655, 657) was based on the possible leukemogenic effects of exposure to benzene. In 1974, the American Conference of Governmental Industrial Hygienists adopted the 10 ppm as recommended by ANSI. Based on these recommendations and in light of the posture of the OSHA benzene standard, the Coast Guard believes that it would be appropriate to provide these levels as an interim measure of protection. This standard shall be subject to review following the final decision by the Supreme Court.

Many commentators were concerned with the proposed wording on the required signs. The proposed sign, which paralleled OSHA's benzene sign, read "Cancer Hazard". As stated, the OSHA sign provision has also been vacated subject to the review of the Supreme Court. However, the vacating of the OSHA sign provision was merely incidental to the vacating of exposure limit. Future amendment of the Coast Guard's interim 10 ppm requirement would not affect the Coast Guard sign requirement. Therefore, the Coast Guard makes no change in its proposed sign reading "Cancer Hazard". The conclusion that benzene causes cancer is well founded and has been upheld in the U.S. Court of Appeals. Thus, the Coast Guard sign, reading "Cancer Hazard", is proper. Workers will be immediately apprised of the hazards to which they are exposed. Additionally, other incidental workers or visitors to the area will be warned of the potential hazard, and reminded to use respiratory protection when necessary.

Accordingly, Title 46 of the Code of Federal Regulations is amended as follows:

Subchapter O—Certain Bulk Dangerous Cargoes

PART 151—UNMANNED BARGES CARRYING CERTAIN BULK DANGEROUS CARGOES

1. By amending the table in Subpart 151.05—*Summary of Minimum Requirements* as follows: In column 14, change the entry for the cargo benzene from "NO" to "151.50-60"

2. By adding a section to Subpart 151.50 consisting of § 151.50-60 as follows:

§ 151.50-60 Benzene

The licensed officer, certificated tankerman or person in charge of a barge shall ensure that:

(a) No person on the barge is exposed to an airborne concentration of benzene in excess of—

(1) 10 parts per million (10 ppm) as an eight-hour time weighted average,

(2) Twenty-five parts per million (25 ppm) as a time-weighted average over any ten minute period;

(b) Personnel engaged in duties listed in 46 CFR 153.932(a)(1) through (5) don and use respirators meeting 29 CFR 1910.134 if the benzene exposure limits under paragraph (a) of this section are likely to be exceeded;

(c) The words: BENZENE. CANCER HAZARD IN THIS AREA. PROTECTIVE EQUIPMENT MAY BE REQUIRED. AUTHORIZED PERSONNEL ONLY.

are on the warning signs required by § 151.45-2(e)(1).

PART 153—SAFETY RULES FOR SELF-PROPELLED VESSELS CARRYING HAZARDOUS LIQUIDS

§ 153.12 [Amended].

3. By amending § 153.12, *Table 1—Table of Minimum Requirements* as follows: in column 7, for the cargo benzene, after the entry ".526" add the entry ".1060".

4. By adding § 153.1060 to read:

§ 153.1060 Benzene

The Master shall ensure that:

(a) No person on the vessel is exposed to an airborne concentration of benzene in excess of—

(1) 10 parts per million (10 ppm) as an eight-hour time weighted average,

(2) Twenty-five parts per million (25 ppm) as a time weighted average over any ten minute period;

(b) Personnel engaged in duties listed in 46 CFR 153.932(a)(1) through (5) don and use respirators meeting 29 CFR 1910.134, if benzene exposure limits under paragraph (a) of this section are likely to be exceeded;

(c) The words: BENZENE. CANCER HAZARD IN THIS AREA. PROTECTIVE EQUIPMENT MAY BE REQUIRED. AUTHORIZED PERSONNEL ONLY.

are on the warning sign under § 153.955.

(49 U.S.C. 1804(a); 49 CFR 1.46(t))

Dated: November 27, 1979.

J. B. Hayes,

Admiral, U.S. Coast Guard Commandant.

[FR Doc. 79-37094 Filed 11-30-79; 8:45 am]

BILLING CODE 4910-14-M

DEPARTMENT OF COMMERCE

Maritime Administration

46 CFR Part 310

Admission and Training of Midshipmen at the United States Merchant Marine Academy; Pay Increase

AGENCY: Maritime Administration, Commerce.

ACTION: Final rule.

SUMMARY: The Maritime Administration amends its regulations relating to merchant marine training to increase the pay that midshipmen of the United States Merchant Marine Academy receive while assigned to merchant vessels for sea year training. The purpose of this amendment is to implement the Maritime Administration policy that midshipmen shall receive the same rate of pay from their steamship company employers for the sea year training as cadets receive at the Federal academies.

EFFECTIVE DATE: January 18, 1980.

FOR FURTHER INFORMATION CONTACT: Mr. Erich J. Bernhardt, Academies Program Officer, Maritime Administration, Office of Maritime Labor and Training, Main Commerce Building, Washington, D.C. 20230, (202) 377-2095.

SUPPLEMENTARY INFORMATION: Part 310 of Title 46 of the Code of Federal Regulations is hereby amended. This amendment increases the pay that midshipmen of the United States Merchant Marine Academy receive while assigned to merchant vessels for sea year training.

The rate of pay received by midshipmen while assigned to subsidized merchant vessels is a matter of public contract with the owners of such vessels. This amendment has been determined not to be a significant regulation within the scope of E.O. 12044, "Improving Government Regulations" (43 FR 12661), and implementing procedures of the Department of Commerce and the Maritime Administration (44 FR 2082), as amended. Therefore, this amendment to the Merchant Marine Training regulations is adopted without notice of proposed rulemaking. The text following the amended first sentence of § 310.58(c) is not an additional amendment to this paragraph, but is a restatement of provisions in the regulations under Subpart C that were inadvertently omitted in the publication of the editions of Title 46, Code of Federal Regulations published after the 1975 edition.

Part 310 of Title 46 of the Code of Federal Regulations is amended by revising paragraph (c) of § 310.58 to read as follows:

§ 310.58 Training on subsidized vessels.

* * * * *

(c) *Pay*—Midshipmen shall receive pay, while attached to merchant vessels, at the rate of $375.60 per month from their steamship company employers. Midshipmen, while assigned to ships, will be furnished quarters and subsistence by the steamship company employer. While aboard ship, they shall be berthed in rooms with other midshipmen in that part of the vessel designated for licensed officers or first-class passenger quarters and shall mess with the licensed officers. In addition, the steamship company employers shall pay the midshipmen such subsistence and room allowance in port, transportation allowances, and other bonuses or allowances as are paid to the licensed officers of the vessel to which midshipmen are attached.

* * * * *

(Sec. 204(b), Merchant Marine Act, 1936, as amended (49 Stat. 1987, 46 U.S.C. 1114); Reorganization Plans No. 21 of 1950 (64 Stat. 1273) and No. 7 of 1961 (75 Stat. 840), as amended by Public Law 91-469 (84 Stat. 1036); Department of Commerce, Organization Order 10-8 (38 FR 19707, July 23, 1973))

Catalog of Federal Domestic Assistance Program No. 11-507 U.S. Merchant Marine Academy (Kings Point).

Dated: November 26, 1979.

By Order of the Assistant Secretary of Commerce for Maritime Affairs.

Robert J. Patton, Jr.,

Secretary.

[FR Doc. 79-36977 Filed 11-30-79; 8:45 am]

BILLING CODE 3510-15-M

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 1 and 94

Editorial Amendments Reflecting the Deletion of Parts 89, 91, and 93 and the Adoption of Part 90

AGENCY: Federal Communications Commission.

ACTION: Order.

SUMMARY: The adoption of Part 90, Private Land Mobile Radio Service, in Docket 21348 resulted in inaccurate references in Parts 1 and 94. This Order makes editorial amendments to reflect the deletion of Parts 89, 91, and 93 and the adoption of Part 90.

EFFECTIVE DATE: December 3, 1979.

ADDRESSES: Federal Communications Commission, Washington, D.C. 20554.

FOR FURTHER INFORMATION CONTACT: Arthur C. King, Rules Division, Private Radio Bureau, (202) 632-6497.

In the matter of editorial amendment of Parts 1 and 94 to reflect the deletion of Parts 89, 91, and 93 and the adoption of Part 90.

Adopted: November 16, 1979.
Released: November 19, 1979.

By the Executive Director:

1. Part 90 of the Commission's Rules was adopted and Parts 89, 91, and 93 were deleted at the time of the adoption of the Report and Order in Docket 21348, published at 43 FR 54788, November 22, 1978 (FCC 78-799). The new Part 90 became effective January 2, 1979, obsoleting references in Parts 1 and 94 to the old Parts 89, 91, and 93. The purpose of this order is to delete such references and add in their place references to Part 90.

2. Adoption of the attached amendments to Part 1 and Part 94 will serve the public interest. Inasmuch as these amendments only reflect existing rules and raise no issues upon which comments would serve any useful purpose, prior notice of rule making, effective date provisions, and public procedure thereon are unnecessary, pursuant to the requirements of 5 U.S.C. 553.

3. In view of the foregoing, and pursuant to authority contained in sections 4 and 303 of the Communications Act of 1934, as amended, it is ordered, that Parts 1 and 94, are amended as set forth in the

attached Appendix, effective December 3, 1979.

(Secs. 4, 303, 48 stat., as amended 1066, 1082; 47 U.S.C. 154, 303.)

Federal Communications Commission.

Richard D. Lichtwardt,
Executive Director.

Appendix

Parts 1 and 94 of Chapter 1 of Title 47 of the Code of Federal Regulations is amended as follows:

PART 1—PRACTICE AND PROCEDURE

1. In § 1.924 paragraph (b)(2)(iv) is revised as follows:

§ 1.924 Assignment or transfer of control, voluntary or involuntary.

* * * * *

(b) * * *

(2) * * *

(iv) FCC Form 425: for assignment of station authorizations for base, mobile, and fixed stations authorized to operate on frequencies below 950 MHz in services under Part 90 of this chapter in the Chicago, Ill., Regional Area, and for assignment of authorization for all stations operating in the band 470–512 MHz. The Chicago Regional Area is defined in Parts 90 and 95 of this chapter.

* * * * *

2. In § 1.926 paragraph (b)(5) is revised as follows:

§ 1.926 Application for renewal of license.

* * * * *

(b) * * *

(5) Beginning April 1, 1972, applications for renewal of licenses for base, mobile, and fixed stations operating on frequencies below 950 MHz in the Public Safety, Industrial, and Land Transportation Radio Services, and for General Mobile Radio Service stations in the Personal Radio Services which are located in the Chicago, Ill. Regional Area (Defined in Parts 90 and 95 of this chapter) shall be filed on FCC Form 425. Such applications shall be filed at the Commission's Washington, D.C. office.

§ 1.951 [Amended]

3. Section 1.951(d) is deleted in its entirety.

PART 94—PRIVATE OPERATIONAL-FIXED MICROWAVE SERVICE

1. Section 94.5 is revised as follows:

§ 94.5 Eligibility.

Any person, or any governmental entity or agency, eligible for licensing in a radio service under Parts 81, 87, or 90 for private operational-fixed communications related to activities for which licensing is available in such service, is eligible to hold an authorization under this part.

2. In § 94.61 footnote 15 following the table in paragraph (b) is revised as follows:

§ 94.61 Applicability.

* * * * *

(b) * * *

[15] This band is not available for operation by persons whose sole basis for eligibility in this service is established under § 90.75(a)(1) for licensing in the Business Radio Service (Part 90).

[FR Doc. 79-37165 Filed 11-30-79; 8:45 am]

BILLING CODE 6712-01-M

INTERSTATE COMMERCE COMMISSION

49 CFR Part 1033

[Service Order No. 1294-A]

Indiana Interstate Railway Co., Inc., Authorized to Operate Over Tracks Owned by the City of Bicknell, Ind.

Decided: November 20, 1979.

AGENCY: Interstate Commerce Commission.

ACTION: Service Order No. 1294–A.

SUMMARY: Authorizes the Indiana Interstate Railway Company, Inc. (IIRC), to operate over tracks owned by the City of Bicknell, Indiana, and within the corporate limits of that city.

DATES: Since an emergency no longer exists, Service Order No. 1294 is vacated effective 11:59 p.m., November 21, 1979.

FOR FURTHER INFORMATION CONTACT:

J. Kenneth Carter (202) 275–7840.

Upon further consideration of Service Order No. 1294 (43 FR 1092, 29007, and 44 FR 3713 and 42698), and good cause appearing therefor:

It is ordered, § 1033.1294 *Indiana Interstate Railway Company, Inc., Authorized to Operate over Tracks Owned by the City of Bicknell, Indiana* Service Order No. 1294 is vacated effective 11:59 p.m., November 21, 1979.

(49 U.S.C. (10304–10305 and 11121–11126))

This order shall be served upon the Association of American Railroads, Car Service Division, as agent of the railroads subscribing to the car service and car hire agreement under the terms of that agreement, and upon the American Short Line Railroad Association. Notice of this order shall be given to the general public by depositing a copy in the Office of the Secretary of the Commission at Washington, D.C., and by filing a copy with the Director, Office of the Federal Register.

By the Commission, Railroad Service Board, members Joel E. Burns, Robert S. Turkington, and John R. Michael. John R. Michael not participating.

Agatha L. Mergenovich,
Secretary.

[FR Doc. 79-37081 Filed 11-30-79; 8:45 am]

BILLING CODE 7035-01-M

Proposed Rules

Federal Register
Vol. 44, No. 233
Monday, December 3, 1979

This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

DEPARTMENT OF AGRICULTURE

Agricultural Marketing Service

7 CFR Parts 906 and 944

Oranges and Grapefruit Grown in Texas; Imported Oranges; Proposed Grade and Size Requirements

AGENCY: Agricultural Marketing Service, USDA.

ACTION: Proposed rule.

SUMMARY: This notice invites written comments on a proposal which would extend current grade and size requirements for Texas oranges and grapefruit, and imported oranges through November 9, 1980. Under the current regulations, these requirements would expire December 31, 1979. The proposed extension of these requirements is designed to assure the continued shipment of ample supplies of oranges and grapefruit (and importation of oranges) of acceptable grades and sizes for the remainder of the 1979–80 season.

DATES: Comments must be received on or before December 18, 1979.

ADDRESS: Send two copies of comments to the Hearing Clerk, U.S. Department of Agriculture, Room 1077, South Building, Washington, D.C. 20250, where they will be available for public inspection during business hours (7 CFR 1.27(b)).

FOR FURTHER INFORMATION CONTACT: Malvin E. McGaha, 202–447–5975.

SUPPLEMENTARY INFORMATION: Section 906.362 Texas Orange and Grapefruit Regulation 31, and § 944.309 Orange Import Regulation 10 published in the October 31, 1979, issue of the **Federal Register** (44 FR 62475), set forth grade and size requirements for Texas oranges and grapefruit, and oranges imported into the United States for the period November 5 through December 31, 1979. The Texas orange and grapefruit regulation was issued under the marketing agreement, as amended, and Order No. 906, as amended (7 CFR Part 906), regulating the handling of oranges and grapefruit grown in Texas, effective under the Agricultural Marketing Agreement Act of 1937, as amended (7 U.S.C. 601–674). The orange import regulation was issued under Section 8e (7 U.S.C. 608e–1) of this act, which requires that when specified commodities, including oranges, are regulated by a federal marketing order, imports must meet the same or comparable grade, size, quality, or maturity requirements as those for the domestically produced commodities.

The proposed rule would amend both Texas Orange and Grapefruit Regulation 31 and Orange Import Regulation 10, to extend current grade and size requirements through November 9, 1980.

Under the proposed amendments, Texas oranges and imported oranges would be required to grade U.S. Fancy, U.S. No. 1, U.S. No. 1 Bright, U.S. No. 1 Bronze, U.S. Combination (with not less than 60 percent, by count, of the oranges in any lot thereof grading at least U.S. No. 1), or U.S. No. 2; and be at least 2$^{5}/_{16}$ inches in diameter (size 288's). Texas grapefruit would be required to grade U.S. Fancy, U.S. No. 1, U.S. No. 1 Bright, U.S. No. 1 Bronze, or U.S. No. 2, and be at least 3$^{5}/_{16}$ inches in diameter (size 96's), except that grapefruit which are at least 3$^{5}/_{16}$ inches in diameter (size 112's) could be shipped if they were at least U.S. No. 1.

The proposed action was recommended by the Texas Valley Citrus Committee, the agency established under the order. The Texas orange crop for the 1979–80 season is estimated at 4,000,000 boxes (85 pounds net weight), compared with 6,400,000 boxes produced in 1978–79. The Texas grapefruit crop for the 1979–80 season is estimated at 6,500,000 boxes (80 pounds net weight), compared with 9,600,000 boxes produced in 1978–79.

The committee estimates that about 55 percent of the Texas orange crop, and 60 percent of the Texas grapefruit crop will be needed to fill the demand in the regulated domestic market, Canada and Mexico. The balance will be available for other markets such as the fresh export market, the processed products market, and the local unregulated market within the production area. Fresh shipments of Texas oranges and grapefruit meet considerable competition in major markets from citrus produced in other areas of the country. This season, 1.6 percent of the nation's orange supply and 8.7 percent of the nation's grapefruit supply is expected to be produced in Texas. More than adequate supplies of fresh oranges and grapefruit should be available to fill domestic market demands.

This proposal has been reviewed under USDA criteria for implementing Executive Order 12044. It is being published with less than a 60-day comment period because of insufficient time between the date when information became available upon which these proposals are based and the effective date necessary to effectuate the declared policy of the act. A determination has been made that these actions should not be classified "significant." A Draft Impact Analysis is available from Malvin E. McGaha, Fruit Branch, Fruit and Vegetable Division, AMS, USDA, Washington, D.C. 20250, (202) 447–5975.

The proposal is that § 906.362 Texas Orange and Grapefruit Regulation 31, and § 944.309 Orange Import Regulation 10 be amended to read as follows:

PART 906—ORANGES AND GRAPEFRUIT GROWN IN LOWER RIO GRANDE VALLEY IN TEXAS

§ 906.362 Texas Orange and Grapefruit Regulation 31.

(a) During the period January 1, 1980, through November 9, 1980, no handler shall handle any variety of oranges or grapefruit grown in the production area unless:

(1) Such oranges grade U.S. Fancy, U.S. No. 1, U.S. No. 1 Bright, U.S. No. 1 Bronze, U.S. Combination (with not less than 60 percent, by count, of the oranges in any lot thereof grading at least U.S. No. 1), or U.S. No. 2;

(2) Such oranges are at least pack size 288, as such size is specified in § 2851.691(c) of the U.S. Standards for Oranges (Texas and States other than Florida, California, and Arizona), except that the minimum diameter limit for pack size 288 oranges in any lot shall be 2$^{5}/_{16}$ inches;

(3) Such grapefruit grade U.S. Fancy, U.S. No. 1, U.S. No. 1 Bright, U.S. No. 1 Bronze, or U.S. No. 2;

(4) Such grapefruit are at least pack size 96, as such size is specified in § 2851.630(c) of the U.S. Standards for Grapefruit (Texas and States other than Florida, California, and Arizona), except that the minimum diameter limit for pack size 96 grapefruit in any lot shall

be 3$^{9}/_{16}$ inches: *Provided,* That any handler may handle grapefruit smaller than pack 96, provided such grapefruit grade at least U.S. No. 1 and they are at least pack size 112, as such size is specified in the aforesaid U.S. Standards for Grapefruit, except that the minimum diameter limit for pack size 112 grapefruit in any lot shall be 3$^{5}/_{16}$ inches;

(5) An appropriate inspection certificate has been issued for such fruit within 48 hours prior to the time of shipment; and

(6) The fruit meets all the applicable container and pack requirements effective under this marketing agreement and order.

(b) Terms used in this section shall mean the same as in the marketing order, and terms relating to grade and diameter shall mean the same as in the U.S. Standards for Oranges (Texas and States other than Florida, California, and Arizona), (7 CFR 2851.680–2851.714) or in the U.S. Standards for Grapefruit (Texas and States other than Florida, California, and Arizona), (7 CFR 2851.620–2851.653).

PART 944—FRUITS; IMPORT REGULATIONS

§ 944.309 Orange Import Regulation 10.

(a) *Applicability to Imports.* Pursuant to section 8e of the act and Part 944—Fruits; Import Regulations, the importation into the United States of any oranges is prohibited during the period January 1, 1980, through November 9, 1980, unless such oranges meet the minimum grade and size requirements specified in § 906.362 Texas Orange and Grapefruit Regulation 31.

(b) It is hereby determined that imported oranges are in most direct competition with oranges grown in the Lower Rio Grande Valley in Texas, and that the requirements specified in this section for imported oranges are the same as those for Texas oranges in § 906.362 Texas Orange and Grapefruit Regulation 31.

(c) The Federal or Federal-State Inspection Service, Fruit and Vegetable Quality Division, Food Safety and Quality Service, United States Department of Agriculture is designated as the governmental inspection service for certifying the grade, size, quality, and maturity of oranges that are imported into the United States. Inspection by the Federal-State Inspection Service with evidence thereof in the form of an official inspection certificate, issued by the respective Service, applicable to the particular shipment of oranges, is required on all imports. The inspection and certification services will be available upon application in accordance with the rules and regulations governing inspection and certification of fresh fruits, vegetables, and other products (7 CFR Part 2851) and in accordance with the Procedure for Requesting Inspection and Certification (7 CFR Part 944.400).

(d) The term "importation" means release from custody of the United States Customs Service.

(e) Any person may recondition any shipment of oranges prior to importation, to make it eligible for importation.

(f) *Minimum quantity exemption:* Any person may import up to ten $^{7}/_{10}$ bushel cartons, or equivalent quantity, of oranges exempt from the requirements specified in this section.

Dated: November 28, 1979.

D. S. Kuryloski,

Deputy Director, Fruit and Vegetable Division, Agricultural Marketing Service.

[FR Doc. 79-37114 Filed 11-30-79; 8:45 am]

BILLING CODE 3410-02-M

COMMODITY FUTURES TRADING COMMISSION

17 CFR Chapter I

Regulation of Leverage Transactions as Contracts for Future Deivery; Postponement of Effective Date

AGENCY: Commodity Futures Trading Commission.

ACTION: Postponement of proposed effective date.

SUMMARY: The Commission has postponed until June 30, 1980, the date upon which it intends to make effective its determination to regulate leverage transactions for the delivery coins as contracts for future delivery.

FOR FURTHER INFORMATION CONTACT: David R. Merrill, Office of the General Counsel, Commodity Futures Trading Commission, 2033 K Street, N.W., Washington, D.C. 20581; telephone (202) 254–9880.

SUPPLEMENTARY INFORMATION: On July 10, 1979, the Commission announced its intention to determine, effective January 1, 1980, that leverage transactions for the delivery of silver bullion, gold bullion, bulk silver coins or bulk gold coins of the type presently being offered to the public are contracts for future delivery within the meaning of the Commodity Exchange Act, as amended, and, therefore, are required to be regulated as such. Notification of the Commission's July 10 determination was published on July 27, 1979 (44 FR 44177).

On November 20, 1979, the Commission determined to postpone the effective date of this determination until June 30, 1980.

The Commission wishes to make clear that Commission Rule 31.1, 17 CFR 31.1 (1979), which imposes a moratorium on the entry into the gold and silver leverage transaction business, continues in effect. The moratorium does not apply to persons engaged in such a business on June 1, 1978.

Issued in Washington, D.C., on November 27, 1979.

Jane K. Stuckey,

Secretary of the Commission.

[FR Doc. 79-37092 Filed 11-30-79; 8:45 am]

BILLING CODE 6351-01-M

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Office of the Secretary

24 CFR Part 571

[Docket No. R-79-745]

Community Development Block Grants for Indian Tribes and Alaskan Natives, Housing Assistance Plan; Transmittal of Proposed Rule to Congress

AGENCY: Department of Housing and Urban Development.

ACTION: Notice of transmittal of proposed rule to Congress under Section 7(o) of the Department of HUD Act.

SUMMARY: Recently enacted legislation authorizes Congress to review certain HUD rules for fifteen (15) calendar days of continuous session of Congress prior to each such rule's publication in the **Federal Register.** This Notice lists and summarizes for public information a proposed rule which the Secretary is submitting to Congress for such review.

FOR FURTHER INFORMATION CONTACT: Burton Bloomberg, Director, Office of Regulations, Office of General Counsel, 451 7th Street, SW., Washington, D.C. 20410, (202) 755–6207.

SUPPLEMENTARY INFORMATION: Concurrently with issuance of this Notice, the Secretary is forwarding to the Chairmen and Ranking Minority Members of both the Senate Banking, Housing and Urban Affairs Committee and the House Banking, Finance and Urban Affairs Committee the following rulemaking document:

PART 571—COMMUNITY DEVELOPMENT BLOCK GRANTS FOR INDIAN TRIBES AND ALASKAN NATIVES, HOUSING ASSISTANCE PLAN

This proposed rule would apply the Housing Assistance Plan of the Community Development Block Grant Program to eligible Indian Tribes and Alaskan Natives pursuant to Section 107(a)(7) of the Housing and Community Development Act of 1977. Instructions and forms for applying are attached to the proposed rule to permit public comment on the entire Housing Assistance Plan process as it would apply to eligible Indian Tribes and Alaskan Natives.

(Sec. 7(o), Department of HUD Act, 42 U.S.C. 3535(o), sec. 324, Housing and Community Development Amendments of 1978)

Issued at Washington, D.C., November 27, 1979.

Moon Landrieu,

Secretary, Department of Housing and Urban Development.

[FR Doc. 79-37037 Filed 11-30-79; 8:45 am]

BILLING CODE 4210-01-M

DEPARTMENT OF TRANSPORTATION

Coast Guard

33 CFR Part 150

[CGD 76-170A]

Marine Casualties

AGENCY: Coast Guard, DOT.

ACTION: Supplemental Notice of Proposed Rulemaking.

SUMMARY: The Coast Guard is proposing to amend the casualty or accident report regulations for deepwater ports to include reports concerning diving casualties and to change the monetary damage criterion for incidents involving vessels.

In this issue of the **Federal Register** the Coast Guard published a proposal to amend the definition of marine casualty to include diving casualties. That proposal would also amend the reporting criteria to include a change increasing the monetary damage criterion. The proposals in this document are necessary in order to make a diving casualty reportable under all Coast Guard casualty regulations and also to provide consistency concerning the monetary damage criterion for incidents involving vessels.

DATE: Comments must be received on or before January 17, 1980.

ADDRESSES: Comments should be submitted to Commandant (G-CMC/TP24) (CGD 76-170A), U.S. Coast Guard, Washington, D.C. 20590. Comments will be available for examination at the Marine Safety Council (G-CMC/TP24), Room 2418, Department of Transportation, Coast Guard Headquarters, 2100 Second Street, S.W., Washington, D.C. 20590.

FOR FURTHER INFORMATION CONTACT: CDR H. T. Blomquist, Office of Merchant Marine Safety (G-MMI/TP24), Room 2407, Department of Transportation, Coast Guard Headquarters, 2100 Second Street, S.W., Washington, D.C. 20593 (202) 426-1455.

SUPPLEMENTARY INFORMATION: Interested persons are invited to participate in this proposed rulemaking by submitting written views, data, or arguments. Each comment should include the name and address of the person submitting the comment, reference the docket number (CGD 76-170A), identify the specific section of the proposal to which each comment applies, and include sufficient detail to indicate the basis on which each comment is made. Persons desiring acknowledgment that their comment has been received should enclose a stamped self-addressed postcard or envelope.

The proposal may be changed in view of the comments received. All comments received before the expiration of the comment period will be considered before final action is taken on this proposal. No public hearing is planned but one may be held at a time and place to be set in a later notice in the **Federal Register** if requested in writing by an interested person raising a genuine issue and desiring to comment orally at a public hearing.

Drafting Information

The principal persons involved in drafting this proposal are CDR H. T. Blomquist, Project Manager, Office of Merchant Marine Safety, and LT Jack Orchard, Project Attorney, Office of the Chief Counsel.

Discussion of the Proposal

The initial proposal published under this docket number on October 19, 1978 would have required a report in the case of injury causing any person to require hospitalization for more than 24 hours or to be incapacitated for a period in excess of 72 hours, as a result of diving using underwater breathing apparatus. The 24 hour hospitalization element of the proposal has been deleted due to the many comments expressing the opinion that the increasing trend in law suits for medical malpractice has resulted in the almost routine hospitalization of injury cases for at least 24 hours for observation.

Also, to implement Pub. L. 95-372 of September 18, 1978, the Outer Continental Lands Act as amended, 43 U.S.C. 1331, it has been found necessary to undertake a general revision of subchapter N, Artificial Islands and Fixed Structures on the Outer Continental Shelf. As this will include changes to the casualty reporting regulations at 33 CFR 146.01-20 and will be the subject of a separate regulatory project, the proposal to add a new § 146.01-20(a)(6) or the reporting of diving casualties involving artificial islands and fixed structures on the Outer Continental Shelf has been deleted from this docket. This proposal only addresses diving casualties involving deepwater ports.

Although the original NPRM was silent concerning the monetary damage criterion for incidents involving deepwater ports which are struck by vessels, the Coast Guard proposes to increase the reportable amount of damage from $1,500.00 to $10,000.00. With the rising cost of ship repairs, this amendment will eliminate the reporting of insignificant incidents and will provide consistency concerning the monetary damage criterion for all incidents involving vessels.

This proposal has been reviewed under the Department of Transportation's "Regulatory Policies and Procedures" (44 FR 11034, February 26, 1979). A draft evaluation of the proposal has been prepared and has been included in the public docket.

In consideration of the foregoing, it is proposed that Chapter I of Title 33 of the Code of Federal Regulations be amended as follows:

PART 150—OPERATIONS

By changing § 150.711(a) by revising subparagraph (1) and by adding a new subparagraph (6) to read as follows:

§ 150.711 Casualty or accident.

(a) * * *

(1) Any component of the deepwater port is hit by a vessel and damage to property is in excess of $10,000.00. This amount is to reflect the cost necessary to restore the property to the service condition which existed prior to the casualty, including the cost of salvage, gas freeing, and dry dock. It does not include such items as demurrage.

* * * * *

(6) Loss of life or injury causing any person to be incapacitated for a period in excess of 72 hours as a result of

diving using underwater breathing apparatus.

* * * * *

(Pub. L. 93-627, sec. 10, 88 Stat. 2137 (33 U.S.C. 1509); sec. 4(e)(1), 67 Stat. 462 (43 U.S.C. 1333(e)(1)); sec. 6(b)(1), 80 Stat. 937 (49 U.S.C. 1655(b)(1)); 49 CFR 1.46(b) and (s).)

Dated: November 21, 1979.

J. B. Hayes,

Admiral, U.S. Coast Guard Commandant.

[FR Doc. 79-37131 Filed 11-30-79; 8:45 am]

BILLING CODE 4910-14-M

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33 CFR Part 160

[CGD 79-026]

Conditions for Vessel Operation and Cargo Transfers

AGENCY: Coast Guard, DOT.

ACTION: Proposed rule.

SUMMARY: The Commandant U.S. Coast Guard proposes to delegate to the District Commander, Captain of the Port, or the Captain of the Port's designated alternate, authority contained within the Ports and Waterways Safety Act to make a determination that certain listed statutory conditions exist. A determination of this nature will have the effect of prohibiting vessels subject to the Tank Vessel Act from operating in the navigable waters of the United States or transferring cargo in a port or place subject to the jurisdiction of the United States. Authority to permit provisional entry under certain other listed conditions would also be delegated. This action would give the authority to implement these provisions of the recently enacted Port and Tanker Safety Act of 1978 to the on-scene Coast Guard officials.

DATES: Comments must be received on or before: January 18 1980.

ADDRESSES: Comments should be submitted to Commandant (G-CMC/TP24), (CGD 79-026), U.S. Coast Guard, Washington, D.C. 20590. Comments will be available for examination at the Marine Safety Council (G-CMC/TP24), Room 2418, U.S. Coast Guard Headquarters, Trans Point Building, 2100 Second St. SW., Washington, D.C. 20590.

FOR FURTHER INFORMATION CONTACT: Lieutenant Virgil R. Allen, Port Safety Branch, Port Safety and Law Enforcement Division, Office of Marine Environment and Systems, U.S. Coast Guard, Washington, D.C. 20590 (202-426-1927).

SUPPLEMENTARY INFORMATION: Interested persons are invited to participate in this proposed rulemaking by submitting written views, data, or arguments. Each comment should include the name and address of the person submitting the comment, reference the docket number (CGD 79-026), identify the specific section of the proposal to which each comment applies, and include sufficient detail to indicate the basis on which each comment is made. All comments received before the expiration of the comment period will be considered before final action is taken on this proposal. No public hearing is planned, but one may be held at a time and place to be set in a later notice in the **Federal Register** if requested in writing by an interested person raising a genuine issue and desiring to comment orally at a public hearing.

Drafting Information

The principal persons involved in drafting this proposal are: Lieutenant David G. Dickman, Project Manager, Office of Marine Environment and Systems, and Lieutenant Jack Orchard, Project Attorney, Office of the Chief Counsel.

Discussion of Proposed Rule

The Port and Tanker Safety Act of 1978 (Pub. L. 95-474, 92 Stat. 1471) reenacted, with some changes, the Ports and Waterways Safety Act of 1972 (33 U.S.C. 1221, et seq.) and added new provisions. Section nine of the Ports and Waterways Safety Act (33 U.S.C. 1228), is a new section entitled "Conditions for Entry to Ports of the United States". The statute provides that no vessel subject to the Tank Vessel Act (46 U.S.C. 391a) may operate in the navigable waters of the United States or transfer cargo or residue in any port or place under the jurisdiction of the United States, if any of seven specific conditions exist. There is also authority to allow provisional entry of vessels despite the existence of one or more of the conditions if certain other conditions are proven to exist. The entire text of the section is reproduced below, in order that the reader may more easily follow the ensuing discussion.

(a) *In General.*—No vessel, subject to the provisions of section 4417a of the Revised Statutes, as amended, shall operate in the navigable waters of the United States or transfer cargo or residue in any port or place under the jurisdiction of the United States, if such vessel—

(1) has a history of accidents, pollution incidents, or serious repair problems which, as determined by the Secretary, creates reason to believe that such vessel may be unsafe or may create a threat to the marine environment; or

(2) fails to comply with any applicable regulation issued under this Act, under section 4417a of the Revised Statutes, as amended, or under any other applicable law or treaty; or

(3) discharges oil or hazardous material in violation of any law of the United States or in a manner or quantities inconsistent with the provisions of any treaty to which the United States is a party; or

(4) does not comply with any applicable vessel traffic service requirements; or

(5) is manned by one or more officers who are licensed by a certificating state which the secretary has determined, pursuant to section 4417a(11) of the Revised Statutes, as amended, does not have standards for licensing and certification of seafarers which are comparable to or more stringent than United States standards or international standards which are accepted by the United States; or

(6) is not manned in compliance with manning levels as determined by the secretary to be necessary to insure the safe navigation of the vessel; or

(7) while underway, does not have at least one licensed deck officer on the navigation bridge who is capable of clearly understanding English.

(b) *Exceptions.*—The Secretary may allow provisional entry of a vessel not in compliance with subsection (a), if the owner or operator of such vessel proves, to the satisfaction of the Secretary, that such vessel is not unsafe or a threat to the marine environment, and if such entry is necessary for the safety of the vessel or persons aboard. In addition, paragraphs (1), (2), (3), and (4) of subsection (a) shall not apply if the owner or operator of such vessel proves, to the satisfaction of the Secretary, that such vessel is no longer unsafe or a threat to the marine environment, and is no longer in violation of any applicable law, treaty, regulation or condition, as appropriate. Clauses (5) and (6) of subsection (a) shall become applicable eighteen months after the effective date of this section.

Under paragraphs (a)(1), (5) and (6) the Secretary is authorized to make determinations which may result in the prohibitions of the section being applied to the vessel. In paragraph (b) the Secretary may allow provisional entry on a showing that the vessel is not unsafe or a threat to the marine environment where entry is necessary for safety of the vessel or persons on board. This paragraph also provides that the provisions of paragraph (a)(1), (2), (3), and (4) do not apply to a vessel if the owner or operator can prove, to the Secretary's satisfaction, that the conditions in those paragraphs no longer exist. The Secretary's authority was delegated to the Commandant, United States Coast Guard on February 16, 1979 (44 FR 10063).

This document proposes to delegate the authority to make the determination, under paragraph (a)(1), that a vessel's history of accidents, pollution incidents or serious repair problems warrants the belief that it may be unsafe or a threat to the marine environment. The

authority would be delegated to the District Commander, the Captain of the Port or the Captain of the Port's designated alternate. These are the on-scene officials most likely to have the facts and data upon which the determination for a particular vessel must be based. Under paragraphs (a)(2), (3) and (4) no delegation is required since a failure to comply gives rise to the statutory prohibition. If the COTP or District Commander has reason to believe that a violation exists, the law enforcement function will be carried out by the COTP order system in 33 CFR Part 160.

Paragraphs (a)(5) and (6) are based on the mandate to the Secretary in Section 5(11) of the Port and Tanker Safety Act (PTSA). Paragraph (b) states that "* * * Clauses (5) and (6) of subsection (a) shall become applicable eighteen months after the effective date of this section." This does not necessarily mean that the provisions of clauses (5) and (6) will be operative 18 months after the enactment of PTSA (i.e. by April 17, 1980).

Paragraph (a)(5) is operative only after the Coast Guard has made a determination that a particular nation's standards for licensing and certification of its seafarers are not comparable to or more stringent than United States standards or international standards which are accepted by the United States. This determination cannot be made until the standards of other nation's have been evaluated as mandated by Section 5(11)(D) of the PTSA, which may be prior to or after April 17, 1980. It is expected that these determinations will be completed as soon as possible, particularly for certificating states of the seafarers most likely to be on vessels calling at U.S. ports. As a result, foreign tank vessels may continue to operate in U.S. waters after April 17, 1980 with seafarers licensed and certified by any certifying state until the Coast Guard has evaluated a certifying state's standards and determined that they are inadequate.

Similarly, the provisions of subsection (a)(6) are operative only after determination by the Coast Guard of minimum adequate manning levels for foreign vessels. This will be the subject of another Coast Guard regulatory project (CGD 79–081). Until such time as these regulations are published as a final rule, foreign vessels may continue to operate in U.S. waters, subject to existing international provisions for adequate manning. Again, publication of final regulations, necessary to render operative the provisions of paragraphs (a)(6), may occur before or after April 17, 1980.

The determinations under paragraphs (a)(5) and (6) would be retained by the Commandant because they are not based on a particular vessel but on a general standard. Under paragraphs (a)(5) and (6) enforcement is a two step process. The Commandant determines the standard for license equivalents or manning as discussed above. Once these standards are set, law enforcement would be achieved through the COTP order system, if the COTP or District Commander had reason to believe a vessel was in violation of these standards.

The authority to permit provisional entry and to determine that sufficient evidence had been presented to decide that paragraphs (a)(1), (2), (3) and (4) do not apply to a vessel would also be delegated to the District Commander, the COTP, or the COTP's designated alternate, for the same reasons mentioned above.

The provisions of this section would be enforced by Captain of the Port orders issued under 33 CFR Part 160. The appeals procedures in Part 160 would thus apply. So that users of the Code would have knowledge of the conditions which could give rise to the issuance of a COTP order under this section of the statute, a brief summary of the section would be placed in the regulations, as well. The Coast Guard is specifically requesting comment as to whether the regulation as proposed provides the user with sufficient information to understand the conditions giving rise to the prohibitions, the conditions for provisional entry, the conditions for a determination of non-applicability and the procedures for enforcement.

The Coast Guard has reviewed this proposal under the Department of Transportation Regulatory Policies and Procedures, published February 26, 1979 (44 FR 11034). Since this rule merely redelegates powers and functions already vested in the Coast Guard the expected impacts on the public are so minimal that no regulatory evaluation is considered necessary.

In consideration of the foregoing, it is proposed to amend Chapter I of Title 33, Code of Federal Regulations as follows:

1. By amending § 160.11 by adding a new subsection (g) to read as follows:

§ 160.11 Definitions.

For the purpose of this subchapter:

* * * * *

(g) "Captain of the Port's designated alternate" means that Coast Guard officer designated by the Commandant as "Alternate Captain of the Port."

2. By adding a new § 160.118 to read as follows:

§ 160.118 Conditions for vessel operation and cargo transfers.

(a) Each District Commander, Captain of the Port, or the COTP's designated alternate may prohibit any vessel subject to the provisions of section 4417a of the Revised Statutes (46 U.S.C. 391a) from operating in the navigable waters of the United States or from transferring cargo or residue in any port or place under the jurisdiction of the United States, by issuing orders concerning the operation or anchoring of the vessel, if the District Commander, the COTP, or the COTP's designated alternate determines that a vessel's history of accidents, pollution incidents, or serious repair problems creates reason to believe that the vessel may be unsafe or a threat to the marine environment.

(b) The authority to issue orders concerning operation of the vessel or transfer of cargo or residue under paragraph (a) of this section also applies if the vessel:

(1) Fails to comply with any applicable regulation;

(2) Discharges oil or hazardous material in violation of United States law or Treaty;

(3) Does not comply with applicable vessel traffic service requirements;

(4) Is manned by one or more officers who are licensed by a certificating State which the Commandant has determined, pursuant to 46 U.S.C. 391a(11), does not have standards for licensing and certification of seafarers which are comparable to or more stringent than United States standards or international standards which are accepted by the United States;

(5) Is not manned in compliance with manning levels as determined by the Commandant to be necessary to insure the safe navigation of the vessel; or

(6) While underway, does not have at least one licensed deck officer on the navigation bridge who is capable of clearly understanding English.

Note.—Paragraphs (4) and (5) are effective April 18, 1980.

(c) When a vessel has been prohibited from operation in the navigable waters of the United States under paragraph (a) or (b) of this section, the District Commander, Captain of the Port, or the COTP's designated alternate, may allow provisional entry of a vessel into the navigable waters of the United States or into any port or place under the jurisdiction of the United States if the owner or operator of such vessel proves, to the satisfaction of the District

Commander, Captain of the Port, or the COTP's designated alternate, that the vessel is not unsafe or a threat to the marine environment, and if such entry is necessary for the safety of the vessel or the persons on board.

(d) A vessel which has been prohibited from operation in the navigable waters of the United States or transferring cargo in a port or place under the jurisdiction of the United States under the provisions of paragraph (a) or (b) (1), (2), or (3) shall not be subject to the provisions of this section if the owner or operator proves, to the satisfaction of the District Commander, Captain of the Port, or the COTP's designated alternate that the vessel is no longer unsafe or a threat to the environment and that the condition which gave rise to the prohibition no longer exists.

(33 U.S.C. 1231; 49 CFR 1.46(n)(4))

Dated: November 27, 1979.

J. B. Hayes,

Admiral, U.S. Coast Guard Commandant.

[FR Doc. 79-37084 Filed 11-30-79; 8:45 am]

BILLING CODE 4910-14-M

COMMITTEE FOR PURCHASE FROM THE BLIND AND OTHER SEVERELY HANDICAPPED

41 CFR Ch. 51

Improving Government Regulations; Semiannual Agenda of Regulations

AGENCY: Committee for Purchase from the Blind and Other Severely Handicapped.

ACTION: Semiannual agenda of significant regulations under development or review.

SAUMMARY: Pursuant to Section 2 of Executive Order 12044, the Committee, during the period December 3, 1979 through June 1, 1980, is not planning to issue or review any significant regulations or any regulations affecting small businesses and organizations.

FOR FURTHER INFORMATION CONTACT: Mr. C. W. Fletcher, Executive Director, Committee for Purchase from the Blind and Other Severely Handicapped, 2009 14th Street North, Suite 610, Arlington, Virginia 22201, telephone: 703/557-1145

C. W. Fletcher,

Executive Director.

[FR Doc. 79-36898 Filed 11-30-79; 8:45 am]

BILLING CODE 6820-33-M

46 CFR Part 4, 26, 35, 78, 97, 109, 167, 185, and 196

[CGD 76-170]

Casualty Reporting Requirements

AGENCY: Coast Guard, DOT.

ACTION: Supplemental Notice of Proposed Rulemaking.

SUMMARY: The Coast Guard is proposing to amend certain criteria in the casualty reporting regulations. Some of the present criteria have become unrealistic and inadequate from a monetary viewpoint and others are apparently unclear as to the types of incidents that need to be reported. The initial proposal published under this docket on October 19, 1978, received considerable constructive comment. The proposal has therefore been rewritten and is published for further comment. The proposed regulations should make the criteria more realistic relative to today's economics and marine operations and should increase the value of the reports as a basic tool in the marine safety program.

DATE: Comments must be received on or before March 3, 1980.

ADDRESSES: Comments should be submitted to Commandant (G-CMC/TP24) (CGD 76-170), U.S. Coast Guard, Washington, D.C. 20593. Comments will be available for examination at the Marine Safety Council (G-CMC/TP24), Room 2418, Department of Transportation, Coast Guard Headquarters, 2100 Second Street, S.W., Washington, D.C. 20593.

FOR FURTHER INFORMATION: CDR. H. T. BLOMQUIST, Office of Merchant Marine Safety (G-MMI/TP24) Room 2407, Department of Transportation, Coast Guard Headquarters, 2100 Second Street, S.W., Washington, D.C. 20593, (202) 426-1455.

SUPPLEMENTARY INFORMATION: Thirty-five comments have been received concerning the Notice of Proposed Rulemaking published on October 19, 1978, at (43 FR 48982). These comments are available for examination at the Coast Guard Marine Safety Council. Two comments requested that a public hearing be held. However, since the proposal has been substantially revised in response to the majority of the comments, no public hearing was held.

Interested parties are invited to participate in this proposed rulemaking by submitting written views, data, or arguments. Each comment should include the name and address of the person submitting the comment, reference the docket number (CGD 76-170), identify the specific section of the proposal to which each comment applies, and include sufficient detail to indicate the basis on which each comment is made. Persons desiring acknowledgement that their comment has been received should enclose a stamped self-addressed postcard or envelope.

The proposal may be changed in view of the comments received. All comments received before the expiration of the comment period will be considered before final action is taken on this proposal. No public hearing is planned but one may be held at a time and place to be set in a later notice in the **Federal Register** if requested in writing by an interested person raising a genuine issue and desiring to comment orally at a public hearing.

Drafting Information

The principal persons involved in drafting this proposal are CDR H. T. BLOMQUIST, Project Manager, Office of Merchant Marine Safety, and LT JACK ORCHARD, Project Attorney, Office of the Chief Counsel.

Discussion of the Proposal

The monetary damage criterion in the casualty reporting regulations has become unrealistic for reporting/investigation purposes due to the increase, through the years, in the cost of ship repair. Also, because of inflation, many insignificant incidents are now reportable. A number of commenters suggested that the original proposal to raise the monetary criterion from $1,500.00 to $5,000.00 was inadequate. Most recommendded a figure of $10,000.00 as being more realistic. A monetary criterion of $10,000.00 is therefore proposed. That criterion has also been relocated to the last element in the reporting criteria in order to emphasize that it is applicable only in the case of an occurrence that does not meet any of the other elements. Apparently, some commenters were under the mistaken impression that casualties such as grounding, fire, mechanical failure, etc. were only reportable if the resulting damage also met the monetary figure. The criterion has also been expanded to indicate the types of costs to be included.

The criterion that generated the most comment was that requiring the reporting of "an intentional grounding that results in damage to the vessel and all accidental groundings." This wording is a change from the existing regulation which simply requires the reporting of

all stranding or groundings. The proposed change was made to eliminate the reporting of groundings that were done intentionally while making up tows or otherwise dealing with tows provided damage meeting the other criteria does not occur. The Coast Guard considered that it was reasonable to expect that those operations would be done with reasonable care and safety.

All of the comments were from the towing industry, the central theme being that many grounding incidents were normal occurrences, characteristic of inland towing operations and should not be reportable even if considered accidental unless damage meeting other criteria results.

The requirement for the reporting of marine casualties had its origin in the need for information for the purpose of ascertaining the presence of hazards to navigation. The need for casualty notification and reports continues today, of course, and in fact because of the continually increasing public concern about the degradation of the environment, the grounding of vessels is assuming much more importance.

The main reason for the reporting of accidental groundings continues to be, as mentioned above, a need for marine safety information. Reports of these incidents occurring in inland waters can provide the information and justification for channel maintenance and/or improvement including the removal of obstructions, the regulation of water flow and pool depth as well as matters relating to Coast Guard aids to navigation and in some cases the exercising of Coast Guard traffic management authority. These incidents may also indicate evidence of safety hazards from operating personnel negligence, incompetence, misconduct or violation of law. The grounding criteria has therefore been changed to more clearly indicate the purpose and the types of incidents included.

One commenter expressed a concern that the definition of a marine casualty or accident contained in § 4.03–1(b), described "an occurrence involving a vessel which results in damage . . . or injury or loss of life." The commenter therefore concluded that if an accidential grounding occurred and resulted in no damage, no injury, and no loss of life, this would not amount to a casualty requiring notice to the Coast Guard. While it is recognized that intentional groundings constitute an established method of operating in the inland barge trade, for the reasons stated previously, the Coast Guard feels that there is a need to investigate accidental groundings. Therefore, it is proposed that § 4.03–1(b) be amended to include "all accidental groundings" and that such groundings remain as a reportable criterion under § 4.05–1.

The criterion concerning equipment failures drew comment from ocean as well as inland operators which indicated a need for further explanation as well as a rewording to clearly indicate the types of incidents included. The increasing dependence on components in automation of equipment and systems is a matter of concern to the Coast Guard. Many casualty investigations reveal that the cause of contributing factor was the failure or improper functioning of a component mechanical or electrical part. In many cases the problem had appeared previously, but had not been reported since the current regulations do not specifically address this type of incident. The reliability of equipment and systems vital to vessel maneuverability is of extreme importance and therefore malfunctions that affect vessel control should be brought to the attention of the Coast Guard so that corrective action may be taken. The "equipment failure" criterion has therefore been changed to more clearly indicate the type of incidents that should be reported.

The existing casualty reporting regulations at 46 CFR 4.05–1 require a notice when the casualty results in: "(b) Material damage affecting the seaworthiness or efficiency of a vessel."

Although this requirement has been in effect for more than 30 years, the comments received indicate that there is some misunderstanding as to its applicability relative to the terms "seaworthiness or efficiency" and that in order to be effective, it must be more definitive. The criterion has therefore been reworded and expanded.

The proposed criterion concerning hazardous materials has been deleted as it has been determined that information concerning hazardous materials incidents reported under other regulations can be utilized through internal procedures to fulfill the purpose of the casualty reporting regulations. The addition of a new § 4.05–30 referencing the appropriate notification/reporting regulations is proposed.

The change proposal which would have required a report in the case of injury causing any person to require hospitalization for more than 24 hours has been deleted due to the many comments expressing the opinion that the increasing trend in law suits for medical malpractice has resulted in the almost routine hospitalization of injury cases for at least 24 hours for observation. The remaining criterion for reportable injuries, regarding incapacitation in excess of 72 hours, should provide adequate information.

The lead paragraph of 46 CFR 4.05–1 containing the casualty notice requirement has been further revised to emphasize the importance of immediate notification. Utilizing the most rapid means, i.e., radio or telephone, can provide Coast Guard SAR units and pollution strike forces with a very valuable time edge in the protection of life, property and the environment.

As indicated in the initial proposed rulemaking, reporting criteria in the various regulations for different types of vessels will also be amended. The affected sections are set out below.

It is proposed that the grounding criterion be included as a reportable casualty for small passenger vessels under 100 gross tons. The existing grounding criterion is not presently included for those vessels. All vessels, regardless of inspection status or size, should have the same casualty reporting criteria.

In addition to changes to the reporting requirements, it is proposed that the definition of a marine casualty be changed to include diving casualties. These would be reported under the loss of life/injury criteria. The previous proposal has been changed to substitute a single inclusive term of the various categories of personnel that may be aboard a vessel.

Concerning a related matter, several commenters suggested changes to the casualty reporting forms. The Coast Guard has an ongoing project to combine and simplify the public reporting forms for personal accidents and vessel casualties.

Finally, in order to avoid confusion and to make it perfectly clear that the marine casualty notice and report requirements contained in Subpart 4.05 apply to all vessels, these requirements have been added to subchapter C, "Uninspected Vessels", and subchapter S, "Small Passenger Vessels". No changes to existing requirements will result from this action. The reproduction is being accomplished only to provide uniformity among the subchapters regarding a provision of general applicability.

This proposal has been reviewed under the Department of Transportation's "Regulatory Policies and Procedures" (44 FR 11034, February 26, 1979). A draft evaluation of the proposal has been prepared, and has been included in the public docket.

In consideration of the foregoing, it is proposed that Chapter I of Title 46 of the Code of Federal Regulations be amended as follows:

1. By amending § 4.03–1(b) and adding a new § 4.03–1(c) to read as follows:

§ 4.03–1 Marine casualty or accident.

* * * * *

(b) A marine casualty or accident includes any accidental grounding, or any occurrence involving a vessel which results in damage by or to the vessel, its apparel and gear, and/or cargo, or injury or loss of life of any of its crew or passengers; and includes, among other things, collisions, strandings, groundings, founderings, heavy weather damage, fires, explosions, failure of gear and equipment, and any other damage which might affect and/or impair the seaworthiness of the vessel.

(c) A marine casualty or accident also includes occurrences of loss of life or injury to any person while diving from a vessel and using underwater breathing apparatus.

2. By revising § 4.05–1 to read as follows:

§ 4.05–1 Notice of marine casualty.

The owner, agent, master or person in charge of a vessel involved in a marine casualty shall give notice by the most rapid means, e.g., radio or telephone, to the nearest Coast Guard Marine Safety or Marine Inspection Office whenever the casualty involves any of the following:

(a) All accidental groundings and any intentional grounding which also meets any of the other reporting criteria or creates a hazard to navigation, the environment, or the safety of the vessel;

(b) Loss of main propulsion or primary steering, or an associated component or control system, the loss of which causes a reduction of the maneuvering capabilities of the vessel. Loss means that systems, component parts, subsystem or control systems do not perform the specified or required function;

(c) An occurrence materially adversely affecting the vessel's seaworthiness or fitness for service or route including but not limited to fire, flooding, failure or damage to fixed fire extinguishing systems, lifesaving equipment, auxiliary power generating equipment or bilge pumping systems;

(d) Loss of life;

(e) Injury causing any persons to remain incapacitated for a period in excess of 72 hours; except injury to harbor workers not resulting in death and not resulting from vessel casualty or vessel equipment casualty.

(f) An occurrence not meeting any of the above criteria but resulting in damage to property in excess of $10,000.00. This amount is to reflect the cost necessary to restore the property to the service condition which existed prior to the casualty, including the cost of salvage, gas freeing and dry dock. It does not include such items as demurrage.

3. By adding a new § 4.05–30 to read as follows:

§ 4.05–30 Incidents involving hazardous materials.

When a casualty occurs involving hazardous materials, notification and a written report to the Department of Transportation may be required. See 49 CFR 171.15 and 171.16.

4. By revising the following sections in Title 46 to read exactly the same as the proposed revision to § 4.05–1:

§ 35.15–1 Notice of casualty and voyage records—TB/ALL.

§ 78.07–1 Notice of casualty.

§ 97.07–1 Notice of casualty.

§ 109.411 Notice of casualty.

§ 167.65–65 Notice of casualty and voyage records.

§ 185.15–1 When required.

§ 196.07–1 Notice of casualty.

5. By amending Part 24 by adding a new Subpart 26.08 to read as follows:

Subpart 26.08—Notice of Marine Casualty and Voyage Records

Sec.

26.08–1 Notice of marine casualty.
26.08–5 Substance of marine casualty notice.
26.08–10 Report by officer in charge of vessel in person.
26.08–15 Voyage records, retention of.
26.08–20 Report of accident to aid to navigation.
26.08–25 Report when state of war exists.

Subpart 26.08—Notice of Marine Casualty and Voyage Records

§ 26.08–1 Notice of marine casualty.

The owner, agent, master or person in charge of a vessel involved in a marine casualty shall give notice by the most rapid means, e.g., radio or telephone, to the nearest Coast Guard Marine Safety or Marine Inspection Office whenever the casualty involves any of the following:

(a) All accidental groundings and any intentional grounding which also meets any of the other reporting criteria or creates a hazard to navigation, the environment, or the safety of the vessel;

(b) Loss of main propulsion or primary steering, or an associated component or control system, the loss of which causes a reduction of the maneuvering capabilities of the vessel. Loss means that systems, component parts, subsystem or control systems do not perform the specified or required function;

(c) An occurrence materially adversely affecting the vessel's seaworthiness or fitness for service or route including but not limited to fire, flooding, failure or damage to fixed fire extinguishing systems, lifesaving equipment, auxiliary power generating equipment or bilge pumping systems;

(d) Loss of life;

(e) Injury causing any persons to remain incapacitated for a period in excess of 72 hours; except injury to harbor workers not resulting in death and not resulting from vessel casualty or vessel equipment casualty.

(f) An occurrence not meeting any of the above criteria but resulting in damage to property in excess of $10,000.00. This amount is to reflect the cost necessary to restore the property to the service condition which existed prior to the casualty, including the cost of salvage, gas freeing and dry dock. It does not include such items as demurrage.

§ 26.08–5 Substance of marine casualty notice.

The notice required in § 26.08–1 shall show the name and official number of the vessel involved, the owner or agent thereof, and insofar as is practicable, the nature and probable occasion of the casualty, the locality in which it occurred, the nature and extent of injury to personnel and the damage to property.

§ 26.08–10 Report by officer in charge of vessel in person.

(a) In addition to the notice required by § 26.08–1, the person in charge of the vessel shall, as soon as possible report in writing and in person to the Officer in Charge, Marine Inspection, at the port in which the casualty occurred or nearest the port of first arrival: *Provided,* That when from distance it may be inconvenient to report in person it may be done in writing only.

The written report required for personal accident shall be made on Form CG 924E and submitted for each individual injured and each loss of life. For all other vessel casualties the written report shall be made on Form CG 2692.

(b) If filed without delay, the Form CG 924E or CG 2692 may also provide the notice required by § 26.08–1.

(Secs. 13, 17, 54 Stat. 166, as amended, 46 U.S.C. 526(c))

§ 26.08–15 Voyage records, retention of.

(a) The owner, agent, master, or person in charge of any vessel involved in a marine casualty shall retain such voyage records as are maintained by the vessel, such as both rough and smooth deck and engine room logs, bell books, navigation charts, navigation work books, compass deviation cards, gyro records, stowage plans, records of draft, aids to mariners, night order books, radiograms sent and received, radio

logs, crew and passenger lists, articles of shipment, official logs and other material which might be of assistance in investigating and determining the cause of the casualty. The owner, agent, master, other officer or person responsible for the custody thereof, shall make these records available upon request, to a duly authorized investigating officer, administrative law judge, officer or employee of the Coast Guard.

(b) The investigating officer may substitute photostatic copies of the voyage records referred to in paragraph (a) of this section when they have served their purpose and return the original records to the owner or owners thereof.

§ 26.08-20 Report of accident to aid to navigation.

Whenever a vessel collides with a lightship buoy or other aid to navigation under the jurisdiction of the Coast Guard, or is connected with any such collision, it shall be the duty of the person in charge of such vessel to report the accident to the nearest Officer in Charge, Marine inspection. No report on Form CG–2692 is required unless one or more of the results listed in 26.08–1 occur.

§ 26.08-25 Reports when state of war exists.

During the period when a state of war exists between the United States and any foreign nation, communications in regard to casualties or accidents shall be handled with caution and the reports shall not be made by radio or by telegram.

6. By amending Subpart 185.15 by adding new sections to read as follows:

§ 185.15-5 Substance of marine casualty notice.

The notice required in § 185.15–1 shall show the name and official number of the vessel involved, the owner or agent thereof, and insofar as is practicable, the nature and probable occasion of the casualty, the locality in which it occurred, the nature and extent of injury to personnel and the damage to property.

§ 185.15-10 Report by officer in charge of vessel in person.

(a) In addition to the notice required by § 185.15–1, the person in charge of the vessel shall, as soon as possible, report in writing and in person to the Officer in Charge, Marine Inspection, at the port in which the casualty occurred or nearest the port of first arrival: *Provided*, That when from distance it may be inconvenient to report in person it may be done in writing only. The written report required for personal accident shall be made on Form CG 924E and submitted for each individual injured and each loss of life. For all other vessel casualties the written report shall be made on Form CG–2692.

(b) If filed without delay, the Form CG 924E or CG 2692 may also provide the notice required by § 185.15–1.

(Secs. 13, 17, 54 Stat. 166, as amended, 46 U.S.C. 526(c))

§ 185.15-15 Voyage records, retention of.

(a) The owner, agent, master, or person in charge of any vessel involved in a marine casualty shall retain such voyage records as are maintained by the vessel, such as both rough and smooth deck and engine room logs, bell books, navigation charts, navigation work books, compass deviation cards, gyro records, stowage plans, records of draft, aids to mariners, night order books, radiograms sent and received, radio logs, crew and passenger lists, articles of shipment, official logs and other material which might be of assistance in investigating and determining the cause of the casualty. The owner, agent, master, other officer or person responsible for the custody thereof, shall make these records available upon request, to a duly authorized investigating officer, administrative law judge, officer or employee of the Coast Guard.

(b) The investigating officer may substitute photostatic copies of the voyage records referred to in paragraph (a) of this section when they have served their purpose and return the original records to the owner or owners thereof.

§ 185.15-20 Report of accident to aid to navigation.

Whenever a vessel collides with a lightship, buoy, or other aid to navigation under the jurisdiction of the Coast Guard, or is connected with any such collision, it shall be the duty of the person in charge of such vessel to report the accident to the nearest Officer in Charge, Marine Inspection. No report on Form CG–2692 is required unless one or more of the results listed in 185.15–1 occur.

§ 185.15-25 Reports when state of war exists.

During the period when a state of war exists between the United States and any foreign nation, communications in regard to casualties or accidents shall be handled with caution and the reports shall not be made by radio or by telegram.

(Sec. 10, 18 Stat. 128 (33 U.S.C. 361); R.S. 4450, as amended (46 U.S.C. 239); R.S. 462, as amended (46 U.S.C. 416); Sec. 17, 54 Stat. 16 (46 U.S.C. 526p); Sec. 6(b)(1) 80 Stat. 938 (46 U.S.C. 1655(b)(1); 49 CFR 1.46(b)).)

Dated: November 21, 1979.

J. B. Hayes,

Admiral, U.S. Coast Guard, Commandant.

[FR Doc. 79-37085 Filed 11-30-79; 8:45 am]

BILLING CODE 4910-14-M

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46 CFR Parts 33, 94, and 192

[CGD 79-072]

Stowage of Lifeboats and Liferafts

AGENCY: Coast Guard, DOT.

ACTION: Proposed rule.

SUMMARY: The Coast Guard is proposing to amend its regulations pertaining to stowage of lifeboats and liferafts for all inspected vessels. Adoption of this proposal would improve the probability of survival for crew members in cases where a ship has to be abandoned.

DATES: Comments must be received on or before January 18, 1980.

ADDRESSES: Comments should be submitted to Commandant (G–CMC/TP24), U.S. Coast Guard Headquarters, Washington, D.C. 20593. Comments will be available for inspection or copying from 7:30 a.m. to 4:00 p.m. on working days at the Marine Safety Council (G–CMC/TP24), Room 2418, 2100 2nd St., S.W., Washington, D.C., 202–426–1477.

A draft regulation evaluation and the environmental impact assessment will be available for examination at the Marine Safety Council (G–CMC/TP24), Room 2418, U.S. Coast Guard Headquarters, 2100 2nd St., S.W., Washington, D.C. 20593, 202–426–1477.

FOR FURTHER INFORMATION CONTACT: Lieutenant Daniel J. Zedan (G–MVI–2/TP24), Room 2612, U.S. Coast Guard Headquarters, Washington, D.C., 202–426–2190.

SUPPLEMENTARY INFORMATION: The public is invited to participate in this proposed rulemaking by submitting written views, data or arguments. Comments should include the name and address, identify the Notice (CGD 79–072) and the specific section of the proposal to which the comment applies, and give the reasons for the comments.

All comments received before the expiration of the comment period will be considered before the final action is taken on this proposal. No public hearing is planned but one may be held at a time and a place to be set in a later notice in the **Federal Register** if enough interest is generated and if requested in writing by all interested persons having a genuine issue to raise and desiring to comment orally at a public hearing.

If an acknowledgment is desired, a stamped, addressed postcard should be enclosed.

DRAFTING INFORMATION: The principal persons involved in drafting this proposal are:

Lt. Daniel J. Zedan, Project Manager, Office of Merchant Marine Safety and Michael Mervin, Project Attorney, Office of Chief Counsel.

DISCUSSION OF THE PROPOSED REGULATIONS: The Proposal has been reviewed under the DOT's regulatory "Policies and Procedures" (44 FR 11033, February 26, 1979). A copy of the draft evaluation may be obtained from the Commandant (G-CMC/TP24), U.S. Coast Guard Headquarters, Washington, D.C. 20593, 202-426-1477.

The Coast Guard has assessed the environmental effects of this proposal and have found no foreseeable significant adverse impact on the human environment. This assessment is available for review.

As a result of the National Transportation Safety Board's investigation into the sinking of the M/V *Chester A. Poling,* it was recommended that the Coast Guard promulgate regulations that would require that at least one inflatable liferaft be stowed near each accommodation and working space on coastal tankships. During this casualty the vessel broke in half and sank. The crewmembers that were on the bridge of the vessel were stranded without any lifesaving equipment other than lifejackets. The lifeboat and liferaft were carried on the stern. Had it not been for the timely response of the United States Coast Guard, it is unlikely that the master and seamen who were in the wheelhouse would have been rescued. Because no exposure suits were available, and considering the rough seas and poor visibility, they probably would not have been located in time.

In consideration of the foregoing, it is proposed that Chapter I of Title 46 of the Code of Federal Regualtions be amended as follows:

PART 33—LIFESAVING EQUIPMENT

1. By amending § 33.05-1(f) to read as follows:

§ 33.05-1 Lifeboats and liferafts for tankships; ocean and coastwise; construction or conversion of which was started prior to November 19, 1952-T/OC.

* * * * *

(f) Each tankship in ocean or coastwise service, and each tankship of less than 1,600 gross tons on an international voyage must carry inflatable liferafts of sufficient aggregate capacity to accommodate at least 50 percent of the persons on board. Those tankships that have widely separated accommodation or working spaces must have at least one liferaft in each such location.

2. By amending § 33.05-2(f) to read as follows:

§ 33.05-2 Lifeboats and liferafts for tankships; ocean and coastwise; construction or conversion of which was started on or after November 19, 1952, and prior to May 26, 1965-T/OC.

* * * * *

(f) Each tankship certificated for ocean or coastwise service, and each tankship of less than 1,600 gross tons on an international voyage must carry inflatable liferafts of sufficient aggregate capacity to accommodate at least 50 percent of the persons on board. Those tankships that have widely separated accommodation or working spaces must have at least one liferaft in each such location.

3. By amending § 33.05-3(f) to read as follows:

§ 33.05-3 Lifeboats and liferafts for tankships; ocean and coastwise; construction or conversion of which started on or after May 26, 1965-T/OC.

* * * * *

(f) Each tankship certificated for ocean or coastwise service, and each tankship of less than 1,600 gross tons on an international voyage must carry inflatable liferafts of sufficient aggregate capacity to accommodate at least 50 percent of the persons on board. Those tankships that have widely separated accommodation or working spaces must have at least one liferaft in each such location.

PART 94—LIFESAVING EQUIPMENT

4. By amending § 94.10-10(e) to read as follows:

§ 94.10-10 Requirements for vessels in ocean or coastwise service other than barges, towing, fishing, and wrecking vessels, pilot boats, and yachts.

* * * * *

(e) In addition to the lifeboats required by paragraph (a) of this section, each vessel on an international voyage and each vessel in ocean or coastwise service must carry liferafts of sufficient aggregate capacity to accommodate at least one-half the total number of persons on board. Those vessels that have widely spaced accommodations or working spaces must have at least one liferaft in each such location.

PART 192—LIFESAVING EQUIPMENT

5. By amending § 192.10-10(d) to read as follows:

§ 192.10-10 Requirements for vessels in ocean or coastwise service.

* * * * *

(d) In addition to the lifeboats required by paragraph (a) of this section, each vessel on an international voyage and each vessel in ocean or coastwise service must carry liferafts of sufficient aggregate capacity to accommodate at least one-half of the total number of persons on board. Those vessels that have widely spaced accommodations or working spaces must have at least one liferaft in each such location.

(46 U.S.C. 391a, 481; 49 U.S.C. 1655(b); 49 CFR 1.46(b) and (n)(4))

Dated: November 26, 1979.

J. B. Hayes,

Admiral, U.S. Coast Guard Commandant.

[FR Doc. 79-37083 Filed 11-30-79; 8:45 am]

BILLING CODE 4910-14-M

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 651

Atlantic Groundfish; Permit Sanctions

AGENCY: National Oceanic and Atmospheric Administration/ Department of Commerce.

ACTION: Proposed rulemaking.

SUMMARY: The National Oceanic and Atmospheric Administration (NOAA) proposes to establish a system, to implement further the provisions of the Fishery Management Plan for Atlantic Groundfish, under which violations of the regulations contained in 50 CFR Part 651 would be assigned points according to a prescribed schedule. Accumulation of sufficient points would result in the automatic suspension of a vessel's permit.

DATES: Comments on this proposal must be received on or before January 2, 1980.

ADDRESS: Send comments to: NOAA Office of General Counsel (GCEL), Room 280-L, Page 1 Building, 2001 Wisconsin Avenue, NW, Washington, D.C. 20235. Telephone: (202) 254-8350.

FOR FURTHER INFORMATION CONTACT: Stephen J. Powell, address and telephone as above.

SUPPLEMENTARY INFORMATION: Section 303(b) of the Fishery Conservation and Management Act of 1976 (the Act) authorizes Regional Fishery Management Councils to require that a permit be obtained from the Secretary of Commerce (the Secretary) for each domestic vessel wishing to fish within the Fishery Conservation Zone for species regulated under a particular fishery management plan. The fishery management plan for Atlantic Groundfish provides that no vessel may fish without such a permit.

Section 305(c) of the Act requires the Secretary to promulgate regulations to implement any fishery management plan formulated under the Act. Section 305(g) of the Act further charges the Secretary with general responsibility to carry out any fishery management plan, and empowers the Secretary to promulgate such regulations as may be necessary to do so. Pursuant to this charge, the

Secretary has, at 50 CFR 621.52, provided for the suspension, revocation, or modification of permits issued under the Act, when any regulation has been violated. However, experience has demonstrated that in most instances, these permit sanctions (suspension, revocation, and modification) were considered too severe a remedy for the violations discovered on any single occasion. On the other hand, repeated violations have a cumulative harmful effect on the fishery resources, and seriously jeopardize fair and effective implementation of the Atlantic Groundfish Fishery Management Plan. The proposed point system is designed to give fishermen advance notice of the specific intentions of the Agency with respect to permit sanctions for violations of these regulations. Administration of permit sanctions should become more predictable and "automatic" under the point system, making the enforcement process more efficient, and more effective in encouraging compliance with the fishery management plan.

Therefore, pursuant to sections 303(b), 305(c), and 305(g), NOAA proposes a point system under which federal permits issued in connection with the fishery management plan for Atlantic Groundfish may be suspended or revoked as a result of violations of this Part 651.

The point system would operate as follows:

1. Violations of Part 651 will be assigned point values, from 1 to 3, according to the nature of the offense, as set out in Appendix C to Part 651, proposed below.

2. When, in connection with any offense listed in Appendix C, a civil penalty is paid, or an assessment of civil penalty by the Agency becomes final, or a civil forfeiture is ordered by a court of competent jurisdiction, the number of points associated with that offense in Appendix C will be "assigned" to the permit of the vessel used in connection with the offense, effective as of the date of the offense.

3. When the number of points assigned to any permit reaches or exceeds 8, that permit will automatically be suspended for 30 days. The vessel owner will be notified and the suspension will become effective upon the permit's physical transfer to the appropriate Agency official, or upon the passage of ten days from the receipt of such notice (whichever occurs first).

4. If violations resulting in the accumulation of 8 or more points occur within nine months of the date of the assignment of the points which resulted in a previous suspension, then the permit will be suspended for 60 days.

5. For each one-year period for which no violations are charged, 2 points will be subtracted from the total then assigned to the vessel's permit.

6. All points upon which a suspension of a permit was based will be expunged from its record when the suspension terminates.

7. If a vesel is sold, subsequent federal goundfish permits will be issued subject to any suspension or points in effect at the time of sale.

8. Permit sanction procedures presently available under 50 CFR 621.52 will not be eliminated or otherwise affected by the proposed point system. Violations of Part 651 for which points are not assigned by Appendix C include enforcement-related offenses such as refusal to permit an authorized officer to board, assault on an officer, and otherwise resisting or interfering with arrest and inspection, and employment of a fishing vessel in the Atlantic Groundfish fishery during a period of permit suspension. The Agency intends to use the § 621.52 permit sanction procedures for these violations, since a single offense in these categories would be serious enough to warrant permit action.

9. Points will be assigned only for violations occurring after the date of implementation of this proposed Part 651 point system. All violations occurring prior to that effective-date will be processed under 50 CFR 621.52.

The following examples indicate how the proposed system would operate.

Example 1: On January 1, a vessel is observed offloading an excess catch of haddock, in apparent violation of § 651.7(d), and the master is issued a Report of Violation. Civil penalty proceedings are initiated, and a civil penalty assessed by the Agency becomes final on April 15. Excess catch is a 3-point violation (see proposed Appendix C to Part 651); therefore, upon the assessment of a civil penalty, the agency will assign 3 points to the vessel's permit *as of January 1.* Attention is invited to 50 CFR Part 621 for details on how a civil penalty assessment becomes final.

Example 2: On January 15, the same vessel is boarded by a Coast Guard boarding party, which determines that the vessel has discarded groundfish, in apparent violation of § 651.7(f), and that the boarding ladder requires repair, in apparent violation of § 651.7(s). The master is issued a Report of Violation for discarding groundfish, and a warning citation for carrying an inadequate boarding ladder. The discarding groundfish violation is settled on April 1 and an agreed penalty is paid. Since discarding groundfish is an offense for which 2 points are assigned, those points will be assigned *effective January 15.* No points are assigned for the citation. Thus, as of January 15, the vessel will have 5 points.

Example 3: The same vessel fishes from January 16 to January 16 of the following year (one year) with no violation being charged. Two points are automatically subtracted from its total, leaving 3. If the vessel fishes another two years with no violations having been charged, its point total will be further reduced, this time to zero, since the point total cannot be reduced below zero.

Example 4: If the vessel in example 3 is charged with a violation on April 1 (75 days after the most recent charge), it must start a new one-year period on that date. However, if that charge is later dropped, or not proven, two points will be subtracted from the vessel's total as of January 16 of the following year, the date on which they would have been subtracted had the violation not been charged.

Three aspects of the proposed point system bear special note.

First, the Agency recognizes that if the master of a vessel and its owner are different individuals, their interests may not always be identical. Therefore, by amendment to NOAA's civil procedure regulations (50 CFR Part 621), the Agency will more explicitly provide for participation as a party by the owner of a vessel whose permit may be assigned points as a result of a civil penalty proceeding. In such cases, the owner of the vessel involved in a violation has the right to a full evidentiary hearing, even if the owner is not himself a civil penalty respondent charged with the violation. This right is not taken away by the payment of a civil penalty prior to such a hearing by a respondent who is not the vessel's owner.

Second, the Agency recognizes that, particularly where an alleged violation subjects a vessel to the imminent likelihood of a permit suspension, the parties may wish to negotiate a settlement with respect to the number of points to be awarded for that violation, in that context of a civil penalty proceeding. The proposed regulations do not provide for such a settlement option and NOAA employees are not authorized to make, consider, or accept offers in this regard. Assignment of points under the proposed system is based solely on a determination (or stipulation) that the facts complained of occurred, not on the consideration of other factors which may be relevant in informal discussions regarding civil penalties.

Third, the proposed lengths of the periods for suspension (§ 651.4(*l*)(6)) and for "good behavior" (§ 651.4(*l*)(5)) were

arrived at through internal Agency evaluation of what periods would be effective to protect the resource, discourage further violations, and encourage continued observance of the regulations. Comments as to whether these periods are sufficient for those purposes will be particularly welcome.

The Assistant Administrator for Fisheries, under a delegation of authority from the Secretary, has determined that these proposed amendments to Part 651: (1) Do not necessitate the preparation of an Environmental Impact Statement, and (2) do not constitute a significant action requiring the preparation of a regulatory analysis under Executive Order 12044.

Signed at Washington, D.C., this 23rd day of November, 1979.

Winfred H. Meibohm,

Executive Director, National Marine Fisheries Service.

(16 U.S.C. 1801, *et seq.*)

It is therefore proposed to amend 50 CFR Part 651 as follows:

§ 651.4 [Amended]

1. Amend § 651.4 by adding (c)(1) (i) and (ii) as follows:

* * * * *

(c) * * *

(1) * * *

(i) Permits issued for vessels under this section shall be issued subject to any outstanding points assigned to or suspension of a permit previously issued for the same vessel.

(ii) A permit may not be issued for a vessel whose owner owns or has owned, during the preceding year, a vessel whose permit has been revoked within that year. The Regional Director may refuse to issue a permit under authority of this paragraph if the Regional Director determines that a vessel transfer has not changed the true owner of the vessel.

* * * * *

2. Delete § 651.4(j).

3. Section 651.4(k) becomes § 651.4(j).

4. Section 651.4(*l*) becomes § 651.4(k).

5. Add a new § 561.4(*l*) as follows:

* * * * *

(*l*) *Permit Suspensions.* (1) Subpart D of 50 CFR Part 621 shall govern the imposition of permit suspensions under this part, except as further provided in this paragraph.

(2) Vessels shall be assigned points for certain violations of this Part, according to the schedule set forth in Appendix C. For the purpose of this paragraph, "violation" means a violation with respect to which:

(i) An agreed civil penalty has been paid;

(ii) A civil penalty assessment has become final under 50 CFR 621.26; or

(iii) Any forfeiture has been ordered by a United States district court under section 310 of the Act, or a dollar amount is paid in settlement of a complaint for forfeiture.

(3) Points shall be assigned as of the date of the offense.

(4) When as assessment, penalty, or order serving as the basis for assignment of points under this section is reversed on appeal, the points assigned shall be subtracted from the vessel's total.

(5) Points accumulated under paragraph (*l*)(2) of this section will be reduced by 2 points for each one-year period during which no violations are charged: *Provided,* That no point total shall be less than zero. For purposes of this paragraph, a violation is "charged" when it serves as a basis for a civil penalty notice of violation or a complaint for forfeiture. Charges shall be assigned as of the date of the offense, except that if such violation is later dismissed, the charge will be expunged from the record.

(6) The Regional Director shall suspend for 30 days a permit issued for a vessel under this section whenever the vessel accumulates 8 or more points under the point system set forth in paragraphs (*l*)(2), and (3) and (4) of this section. The Regional Director shall suspend the permit for 60 days if a vessel accumulates an additional 8 or more points within 9 months of the date of the assignment of the points which resulted in a previous suspension.

(7) The owner of the permitted vessel shall be notified personally or by registered or certified mail, return receipt requested, of any permit suspension. The suspension will become effective 10 days after the owner's receipt of such notice, or upon the permit's being physically transferred to any NMFS agent or employee, whichever occurs first.

(8) The points on which the suspension is based will be expunged from the permit's record at the end of the suspension period.

(9) 50 CFR 621.55 (permit sanction hearings) shall not apply to any suspension under this paragraph. Instead of the sanction authorized by this paragraph, the Assistant Administrator may revoke, suspend, or modify a permit under 50 CFR 621.52.

* * * * *

6. Add a new § 651.4(m) as follows:

* * * * *

(m) *Permit Revocation.* (1) The Assistant Administrator may extend the period of suspension or revoke the permit of a vessel used in violation of § 651.7(g) (taking groundfish during a period of permit suspension), as well as other offenses not addressed by Appendix C, according to the provisions of Subpart D of 50 CFR Part 621.

(2) When a permit is revoked under this paragraph, the owner of the affected vessel may apply to the Regional Director for reinstatement of the permit not earlier than one year after the effective date of the revocation. Upon such application, the permit shall be reinstated if, during the year immediately preceding the application, the vessel has not been charged with being used in connection with any violation of the Act or this part, and if the other requirements of this section are met.

(3) In addition to the action authorized by this section, the Assistant Administrator may revoke a permit for the reasons stated in 50 CFR 621.52.

7. Revise § 651.9 to read as follows:

§ 651.9 Penalties.

Any person or fishing vessel found to be in violation of this part will be subject to the civil and criminal penalty provisions of the Act (Sections 308 and 309), and to 50 CFR Parts 620 (Citations) and 621 (Civil Procedures), and other applicable Federal law, as well as to the assignment of points under this Part. Subparts B and C of Part 621 shall apply to vessel owners.

8. Add Appendix C to read as follows:

Note.—This appendix will appear in the CFR.

Appendix C to Atlantic Groundfish Regulations

3 Point Violations

§ 651.7(a)—Fishing in closed area.
§ 651.7(b)—Fishing in closed area with modified midwater gear.
§ 651.7(c)—Excess incidental catch.
§ 651.7(d)—Excess catch.
§ 651.7(e)—Non-compliance with minimum mesh size.
§ 651.7(g)—Fishing without a valid permit.
§ 651.7(i)—Falsification of logbook or reports.
§ 651.7(i)—Failure to keep logbook.
§ 651.7(i)—Failure to submit logbook reports.

2 Point Violations

§ 651.7(f)—Discarding groundfish.
§ 651.7(j)—Refusal of logbook inspection.
§ 651.7(k)—False statement to authorized officer.
§ 651.7(*l*)—Possession, shipment, sale, etc., of illegally taken groundfish.
§ 651.7(s)—Impeding enforcement and boarding procedures.
§ 651.7(t)—Transfer of fish to foreign processing vessel without permit.

1 Point Violations

§ 651.7(g)—Fishing without a permit on board.
§ 651.7(h)—Failure to report permit information.
§ 651.7(m)—Improper vessel markings.
§ 651.7(u)—Violation of other provisions.

[FR Doc. 79-36999 Filed 11-30-79; 8:45 am]

BILLING CODE 3510-22-M

Notices

Federal Register
Vol. 44, No. 233
Monday, December 3, 1979

This section of the FEDERAL REGISTER contains documents other than rules or proposed rules that are applicable to the public. Notices of hearings and investigations, committee meetings, agency decisions and rulings, delegations of authority, filing of petitions and applications and agency statements of organization and functions are examples of documents appearing in this section.

DEPARTMENT OF AGRICULTURE

Federal Grain Inspection Service

State of Florida; Termination of Official Services

AGENCY: Federal Grain Inspection Service.

ACTION: Notice.

SUMMARY: This notice announces that at this time a replacement agency will not be designated to provide official services in the State of Florida. The Florida Department of Agriculture and Consumer Resources, the agency formerly designated to provide official inspection services in Florida, elected to voluntarily cancel its designation under the United States Grain Standards Act, as amended, effective midnight, June 30, 1979.

EFFECTIVE DATE: December 3, 1979.

FOR ADDITIONAL INFORMATION CONTACT: J. T. Abshier, Director, Compliance Division, Federal Grain Inspection Service, United States Department of Agriculture, Washington, D.C. 20250, (202) 447–8262.

SUPPLEMENTARY INFORMATION: In accordance with the provisions of the United States Grain Standards Act, as amended (7 U.S.C. 71 *et seq.*) (the "Act"), and pursuant to the request by the State of Florida Department of Agriculture and Consumer Resources (State of Florida), as announced in the June 26, 1979, issue of the **Federal Register** (44 FR 37322), the State of Florida's delegation and designation of authority to provide official services in Florida was cancelled, effective midnight, June 30, 1979.

Interested persons were given until August 27, 1979, to comment with respect to the need for designation of a replacement agency to provide official services in all or any part of Florida at other than export port locations after June 30, 1979. Subject to a final determination by the Administrator of the Federal Grain Inspection Service (FGIS) as to the need for official services at other than export port locations, interested persons were also given opportunity to make application for designation to operate as an official agency at other than export port locations in Florida.

No comments or applications were received regarding this matter.

After due consideration of all relevant matters and information available to the U.S. Department of Agriculture, the Administrator, FGIS, has determined that there is insufficient interest concerning designation of a replacement agency and subsequently at this time, no agency will be designated to provide official services at other than export port locations in Florida.

This action does not preclude any interested party from making future application for designation as an official agency at other than export port locations, should interest for such action be demonstrated.

In accordance with Sections 7(e)(1) and 7A(c)(1) of the Act, the FGIS has been and will be providing official inspection and weighing services at export port locations and where requested, on an interim basis, at other than export port locations in Florida (7 U.S.C. 79(e)(2), 79a(c)(1) and 79(h)). Persons desiring official inspection services should contact Mr. Wayne R. Schonemann, Field Office Supervisor, United States Department of Agriculture, Federal Grain Inspection Service, P.O. Box 2708, Pier D. South, Alabama State Docks, Mobile, Alabama 36601, (205) 690–2115.

(Sec. 8, 9, Pub. L. 94–582, 90 Stat. 2870, 2875 (7 U.S.C. 79, and 79a))

Done in Washington, D.C., November 28, 1979.

David R. Galliart,
Acting Administrator.

[FR Doc. 79-37091 Filed 11-30-79; 8:45 am]

BILLING CODE 3410-02-M

Privacy Act of 1974; Adoption of System of Records

AGENCY: Federal Grain Inspection Service, USDA.

ACTION: Notice; Adoption of System of Records.

SUMMARY: Notice and summary of a proposed new system of records subject to the Privacy Act of 1974 was published in the **Federal Register** on October 15, 1979 (44 FR 59304). This Nonviolation Case File System will provide compliance officers of the Federal Grain Inspection Service with ready access to relevant data and will aid in the investigative process of future violations involving individuals who are subject to the U.S. Grain Standards Act or the Agricultural Marketing Act of 1946. The required 60-day comment period ended on November 27, 1979. No comments were received.

EFFECTIVE DATE: January 2, 1980.

FOR FURTHER INFORMATION CONTACT: Burt C. Hawkins, Privacy Act Officer, Agricultural Marketing Service, 14th and Independence Ave., SW, Room 1090–S, Washington, D.C. 20250, Phone Number: (202) 447–3955.

D. R. Galliart,
Acting Administrator, Federal Grain Inspection Service.

The new System is as follows:

SYSTEM NAME:

Nonviolation Case File System on individuals subject to the U.S. Grain Standards Act or Agricultural Marketing Act of 1946, USDA/FGIS.

SYSTEM LOCATION:

Federal Grain Inspection Service, U.S. Department of Agriculture, Washington, D.C. 20250.

CATEGORIES OF INDIVIDUALS COVERED BY THE SYSTEM:

Individuals who are regulated by the subject Acts and who have been referenced in an investigation or other information for possible violations of the Acts or other Federal law with respect to the handling, weighing, or official inspection of grain.

CATEGORIES OF RECORDS IN THE SYSTEM:

Information on individuals who are subject to the rules of the U.S. Grain Standards Act or the Agricultural Marketing Act of 1946, and activities which might lead to possible violations of these Acts or violations of other Federal law with respect to the handling, weighing, or official inspection of grain.

AUTHORITY FOR MAINTENANCE OF THE SYSTEM:

7 U.S.C. 71 *et. seq.*, 1621 *et. seq.*

ROUTINE USES OF RECORDS MAINTAINED IN THE SYSTEM, INCLUDING CATEGORIES OF USERS AND THE PURPOSES OF SUCH USES:

Use of such records will be limited to authorized personnel of the Federal Grain Inspection Service.

POLICIES AND PRACTICES FOR STORING, RETRIEVING, ACCESSING, RETAINING, AND DISPOSING OF RECORDS IN THE SYSTEM:

STORAGE:

Records are maintained in the file folders at the applicable address listed above.

RETRIEVABILITY:

Records are indexed by name of the individual in chronological sequence, by fiscal year.

SAFEGUARDS:

Government office buildings, locked office or locked file cabinets.

RETENTION AND DISPOSAL:

Records are maintained in conformance with appropriate General Services Administration disposal schedules as implemented by AMS Instruction 270–1, Records Management Program.

SYSTEMS MANAGER(S) AND ADDRESS:

Director, Compliance Division, Federal Grain Inspection Service, U.S. Department of Agriculture, Washington, D.C. 20250.

NOTIFICATION PROCEDURE:

Any individual may request information concerning himself from this system from the System Manager.

RECORD ACCESS PROCEDURES:

Any individual may obtain information as to the procedure for gaining access to a record in the system that pertains to him by submitting a request to the System Manager.

CONTESTING RECORD PROCEDURES:

Any individual may obtain information as to the procedure for contesting a record in the system that pertains to him by submitting a request to the System Manager.

RECORD SOURCE CATEGORIES:

Information in this system comes primarily from complaints, case file review, investigative reports, Agency employees, and the news media.

[FR Doc. 79-37090 Filed 11-30-79; 8:45 am]

BILLING CODE 3410-02-M

CIVIL RIGHTS COMMISSION

Massachusetts Advisory Committee; Agenda and Notice of Open Meeting

Notice is hereby given, pursuant to the provisions of the rules and regulations of the U.S. Commission on Civil Rights, that a planning meeting of the Massachusetts Advisory Committee (SAC) of the Commission will convene at 4:00 p.m. and will end at 6:00 p.m., on January 7, 1980, at the New England Regional Office of the Commission, 55 Summer Street, 8th Floor, Boston, Massachusetts 02110.

Persons wishing to attend this open meeting should contact the Committee Chairperson, or the New England Regional Office of the Commission, 55 Summer Street, 8th Floor, Boston, Massachusetts 02110.

The purpose of this meeting is the Affirmative Action Project; racial violence in Boston—monitoring; and census monitoring.

This meeting will be conducted pursuant to the provisions of the Rules and Regulations of the Commission.

Dated at Washington, D.C., November 28, 1979.

John I. Binkley,

Advisory Committee Management Officer.

[FR Doc. 79-37016 Filed 11-30-79; 8:45 am]

BILLING CODE 6335-01-M

New Hampshire Advisory Committee; Agenda and Notice of Open Meeting

Notice is hereby given, pursuant to the provisions of the rules and regulations of the U.S. Commission on Civil Rights, that a planning meeting of the New Hampshire Advisory Committee (SAC) of the Commission will convene at 7:00 p.m. and will end at 9:00 p.m., on December 18, 1979, at the Federal Building, 275 Chesnut Street, Room 313, Manchester, New Hampshire.

Persons wishing to attend this open meeting should contact the Committee Chairperson, or the New England Regional Office of the Commission, 55 Summer Street, 8th Floor, Boston, Massachusetts 02110.

The purpose of this meeting is to discuss program planning for Hispanic Project of Manchester.

This meeting will be conducted pursuant to the provisions of the rules and regulations of the Commission.

Dated at Washington, D.C., November 28, 1979.

John I. Binkley,

Advisory Committee Management Officer.

[FR Doc. 79-37017 Filed 11-30-79; 8:45 am]

BILLING CODE 6335-01-M

New York Advisory Committee; Agenda and Notice of Open Meeting

Notice is hereby given, pursuant to the provisions of the rules and regulations of the U.S. Commission on Civil Rights, that a factfinding meeting of the New York Advisory Committee (SAC) of the Commission will convene at 10:00 a.m. and will end at 1:00 p.m., on January 10–11, 1980, at the Civic Center, 201 Palisades Avenue and Holiday Inn, Yonkers, New York.

Persons wishing to attend this meeting should contact the Committee Chairperson, or the Eastern Regional Office of the Commission, 26 Federal Plaza, Room 1639, New York, New York 10007.

The purpose of this meeting is to gather information from community groups on civil rights and racial isolation in the city of Yonkers.

This meeting will be conducted pursuant to the provisions of the rules and regulations of the Commission.

Dated at Washington, D.C., November 16, 1979.

John I. Binkley,

Advisory Committee Management Officer.

[FR Doc. 79-37018 Filed 11-30-79; 8:45 am]

BILLING CODE 6335-01-M

DEPARTMENT OF COMMERCE

National Bureau of Standards

I/O Channel Level Interface Standards; Revision of Federal Information Processing Standards

On February 16, 1979, notice was given in the **Federal Register** (44 FR 10098–10101) announcing that the Secretary of Commerce (Secretary) had approved three Federal Information Processing Standards (FIPS): (1) I/O Channel Interface, (2) Channel Level Power Control Interface, and (3) Operational Specifications for Magnetic Tape Subsystems, designated FIPS Publication (PUB) 60, FIPS PUB 61, and FIPS PUB 62, respectively. The provisions of these FIPS were to take effect December 13, 1979.

On August 27, 1979, notice was given in the **Federal Register** (44 FR 50078–50079) announcing that the Secretary had approved a fourth I/O channel level interface standard, Operational Specifications for Rotating Mass Storage Subsystems, designated FIPS PUB 63. The August 27 announcement was the subject of a correction notice in the **Federal Register** on August 31, 1979 (44 FR 51294). The provisions of this latter FIPS were to take effect June 23, 1980.

Also on August 27, 1979, notice was given in the **Federal Register** (44 FR

50079–50080) that the Secretary had approved a revision of FIPS PUB 60, I/O Channel Interface, that replaced the first sentence of the "Implementation" section of that FIPS so that it read "The provisions of this standard are effective December 13, 1979, except for the provisions of the third paragraph of the section labeled "Applicability" as they apply to rotating mass storage subsystems, including magnetic disk storage equipment, such provisions being effective on June 23, 1979." A subsequent **Federal Register** notice on August 31, 1979, (44 FR 52194) corrected that announcement, so that the above referenced sentence of that FIPS read "* * * such provisions being effective on June 23, 1980."

These four I/O channel level interface standards each provide for the issuance of regulations concerning the specific use of these FIPS in Federal procurement. In order to assure ample time for issuance of the required procurement regulations, revision of FIPS PUB 60, FIPS PUB 61, and FIPS PUB 62 should be made so as to make their provisions effective on June 23, 1980.

Accordingly, and pursuant to the authority vested in the Secretary under Pub. L. 89–306 (79 Stat. 1127; 40 U.S.C. 759(f)) and Executive Order 11717 (38 FR 12315, dated May 11, 1973), the Secretary has approved a further revision of FIPS PUB 60, I/O Channel Interface, that deletes the first sentence of the "Implementation" section of that FIPS and substitutes therefore the following:

"The provisions of this standard are effective June 23, 1980."

Also pursuant to the above cited authority, the Secretary has approved revisions of FIPS PUB 61 and FIPS PUB 62, Channel Level Power Control Interface and Operational Specifications for Magnetic Tape Subsystems, respectively, that deletes the first sentence of the "Implementation" section of each FIPS and substitutes therefore the following:

"The provisions of this standard are effective June 23, 1980."

It should be noted that the results of these revisions will be to make the provisions of FIPS PUB 60, FIPS PUB 61, FIPS PUB 62, and FIPS PUB 63 all effective on June 23, 1980.

Persons desiring any further information about these revisions may contact Mr. Thomas N. Pyke, Jr., Director, Center for Computer Systems Engineering, Institute for Computer Sciences and Technology, National Bureau of Standards, Washington, D.C. 20234, (301) 921–3436.

Dated: November 28, 1979.

Ernest Ambler,

Director.

[FR Doc. 79-37015 Filed 11-30-79; 8:45 am]

BILLING CODE 3510-13-M

Office of the Secretary

National Laboratory Accreditation Criteria Committees for Thermal Insulation Materials and Freshly Mixed Field Concrete; Open Meetings

Proposed criteria for accrediting laboratories that test thermal insulation materials, freshly mixed field concrete, or carpet were published in the **Federal Register** on September 28, 1979 (44 FR 56230–56263). Requests for informal public hearings to present views on the proposed criteria were due by October 15, 1979. One request was received and, accordingly, an informal public hearing was held on November 28, 1979. Written comments were due by November 26, 1979 and those that were received are filled in the Department's Central Reference and Records Inspection Facility (CRRIF), Room 5317, Main Commerce Building, 14th Street between Pennsylvania and Constitution Avenues, N.W., Washington, D.C. 20230, where they are available for public inspection.

Under the procedures for the National Voluntary Laboratory Accreditation Program (NVLAP) (15 CFR Part 7a), the Assistant Secretary for Science and Technology has requested the National Laboratory Accreditation Criteria Committee for Thermal Insulation Materials (NLACC–1) and the National Laboratory Accreditation Criteria Committee for Freshly Mixed Field Concrete (NLACC–2) to prepare and return to him in writing its respective evaluations of those public comments and to include any recommendations for appropriate action. In responding to this request, the chairman of NLACC–1 and NLACC–2 has distributed copies of these comments to each NLACC–1 and NLACC–2 member with a request that each member evaluate and submit recommendations on the comments by December 17, 1979.

NLACC–1 and NLACC–2 will meet on December 18, 1979, in the Main Commerce Building, 14th Street and Constitution Avenues, N.W., Washington, D.C. (public entrance to the building on 14th Street between Constitution Avenue and E Street, N.W.). NLACC–1 will meet from 9:00 a.m. to 5:00 p.m. on December 18 in Conference Room D. NLACC–2 will meet from 9:00 a.m. to 5:00 p.m. on December 18 in Conference Room A.

Tentative Agenda Items Include

1. Review of the public comments on proposed criteria.
2. Recommendations to the Assistant Secretary for Science and Technology.

The meetings will be open to public observation. The public may submit written statements or inquiries to the Chairman before or after the meetings. A limited number of seats will be available to the public and press on a first come, first-served basis.

Copies of the minutes and materials distributed will be made available for reproduction following certification by the Chairman, in accordance with the Federal Advisory Committee Act, at Room 3876, U.S. Department of Commerce, 14th Street and Constitution Avenue, N.W., Washington, D.C. 20230.

Additional information may be obtained from Mr. Peter Unger, Assistant Coordinator, National Voluntary Laboratory Accreditation Program, Room 3876, U.S. Department of Commerce, Washington, D.C. 20230, telephone 202/377–5872.

Dated: November 28, 1979.

Howard I. Forman,

Acting Assistant Secretary for Science and Technology.

[FR Doc. 79-37087 Filed 11-30-79; 8:45 am]

BILLING CODE 3510-13-M

COMMITTEE FOR THE IMPLEMENTATION OF TEXTILE AGREEMENTS

Announcing Import Restraint Levels Under a New Multifiber Agreement With the Dominican Republic

November 28, 1979.

AGENCY: Committee for the Implementation of Textile Agreements

ACTION: Establishing import restraint levels for certain cotton and man-made fiber textile products produced or manufactured in the Dominican Republic and exported to the United States during the twelve-month period which began on June 1, 1979, pursuant to the terms of a new multifiber agreement.

SUMMARY: On August 7 and 8, 1979, the Governments of the United States and the Dominican Republic exchanged notes establishing a new Bilateral Cotton, Wool and Man-Made Fiber Textile Agreement for the four-year period beginning on June 1, 1979 and extending through May 31, 1983. Among the provisions of the agreement are those establishing specific levels of restraint for Categories 340 (men's and boys' woven cotton shirts), 351 (cotton nightwear), 639 (women's, girls' and infants' man-made fiber knit shirts and

blouses) and 649 (man-made fiber brassieres), produced or manufactured in the Dominican Republic and exported to the United States during the twelve-month period which began on June 1, 1979. Accordingly, in the letter published below the Chairman of the Committee for the Implementation of Textile Agreements directs the Commissioner of Customs to prohibit entry for consumption, or withdrawal from warehouse for consumption, of cotton and man-made fiber textile products in Categories 340, 351, 639 and 649 in excess of the designated twelve-month levels of restraint.

(A detailed description of the textile categories in terms of T.S.U.S.A. numbers was published in the **Federal Register** on January 4, 1978 (43 FR 884), as amended on January 25, 1978 (43 FR 3421), March 3, 1978 (43 FR 8828), June 22, 1978 (43 FR 26773), September 5, 1978 (43 FR 39408), January 2, 1979 (44 FR 94), March 22, 1979 (44 FR 17545), and April 12, 1979 (44 FR 21843).)

This letter and the actions taken pursuant to it are not designed to implement all of the provisions of the bilateral agreement, but are designed to assist only in the implementation of certain of its provisions.

EFFECTIVE DATE: December 4, 1979.

FOR FURTHER INFORMATION CONTACT: Ross Arnold, International Trade Specialist, Office of Textiles, U.S. Department of Commerce, Washington, D.C. 20230 (202/377–5423).

Sincerely,

Paul T. O'Day,

Acting Chairman, Committee for the Implementation of Textile Agreement.

November 28, 1979.

Committee for the Implementation of Textile Agreements

Commissioner of Customs,
Department of the Treasury, Washington, D.C. 20229.

Dear Mr. Commissioner: Under the terms of the Arrangement Regarding International Trade in Textiles done at Geneva on December 20, 1973, as extended on December 15, 1977; pursuant to the Bilateral Cotton, Wool and Man-Made Fiber Textile Agreement of August 7 and 8, 1979, between the Governments of the United States and the Dominican Republic, and in accordance with the provisions of Executive Order 11651 of March 3, 1972, as amended by Executive Order 11951 of January 6, 1977, you are directed to prohibit, effective on December 4, 1979, and for the twelve-month period beginning on June 1, 1979 and extending through May 31, 1980, entry into the United States for consumption and withdrawal from warehouse for consumption, of cotton and man-made fiber textile products in Categories 340, 351, 639 and 649 in excess of the following levels of restraint:

12-Month Level of Restraint [1]

Category:
340—122,000 dozen.
351—163,462 dozen.
639—275,000 dozen.
649—1,500,000 dozen.

Cotton and man-made fiber textile products in the foregoing categories produced or manufactured in the Dominican Republic, which have been exported to the United States prior to June 1, 1979, shall not be subject to this directive.

Cotton and man-made fiber textile products in the foregoing categories which have been released from the custody of the U.S. Customs Service under the provisions of 19 U.S.C. 1448(b) or 1484(a)(1)(A) prior to the effective date of this directive shall not be denied entry under this directive.

The levels of restraint set forth above are subject to adjustment pursuant to the provisions of the bilateral agreement of August 7 and 8, 1979, between the Governments of the United States and the Dominican Republic which provide, in part, that: (1) specific limits may be exceeded by designated percentages to account for swing; (2) specific limits may also be increased for carryover and carryforward up to 11 percent of the applicable category limit; (3) administrative arrangements or adjustments may be made to resolve minor problems arising in the implementation of the agreement. Any appropriate future adjustments under the foregoing provisions of the bilateral agreement will be made to you by letter.

A detailed description of the textile categories in terms of T.S.U.S.A. numbers was published in the **Federal Register** on January 4, 1978 (43 FR 884), as amended on January 25, 1978 (43 FR 3421), March 3, 1978 (43 FR 8828), June 22, 1978 (43 FR 26773), September 5, 1978 (43 FR 39408), January 2, 1979 (44 FR 94), March 22, 1979 (44 FR 17545), and April 12, 1979 (44 FR 21843).

In carrying out the above directions, entry into the United States for consumption shall be construed to include entry for consumption into the Commonwealth of Puerto Rico.

The actions taken with respect to the Government of the Dominican Republic and with respect to imports of cotton and man-made fiber textile products from the Dominican Republic have been determined by the Committee for the Implementation of Textile Agreements to involve foreign affairs functions of the United States. Therefore, the directions to the Commissioner of Customs, which are necessary to the implementation of such actions, fall within the foreign affairs exception to the rule-making provisions of 5 U.S.C. 553. This letter will be published in the **Federal Register.**

Sincerely,

Paul T. O'Day,

Acting Chairman, Committee for the Implementation of Textile Agreements.

[FR Doc. 79-37095 Filed 11-30-79; 8:45 am]

BILLING CODE 3510-25-M

[1] The levels of restraint have not been adjusted to reflect any imports after December 31, 1978.

DEPARTMENT OF DEFENSE

Corps of Engineers, Department of the Army

Intent To Prepare a Draft Environmental Impact Statement for Cape Girardeau-Jackson, Mo.

AGENCY: St. Louis District, U.S. Army Corps of Engineers.

ACTION: Notice of Intent To Prepare a Draft Environmental Impact Statement for Cape Girardeau-Jackson, Missouri.

SUMMARY: 1. *Proposed Action:* The proposed action is to prepare a Draft Environmental Impact statement for the Cape Girardeau-Jackson, Missouri, General Investigation Study concerning flooding and related land resource problems. Structural measures will provide a means for preventing or reducing flood damage to existing developments. Nonstructural measures will address controlling the future land use and future development that may be located in the floodplain.

2. *Alternatives:* Alternatives will include applicable structural and nonstructural measures such as: Channelization on Cape La Croix Creek; upstream dry detention areas; linear parks; floodproofing; flood warning systems; floodplain zoning; flood evacuation; and no action (including damages not alleviated).

3. *Scoping Process:*

a. *Public Involvement Program:* The scoping process, as outlined by the Council of Environmental Quality (November 29, 1978), was initiated in April 1972 with the first of three Congressional Resolutions concerning the study area. In 1972, correspondence was initiated with local governments, and inter-agency field trips were made with the Heritage Conservation and Recreation Service and the U.S. Fish and Wildlife Service to determine the area's problems and needs. The public involvement program began with a public meeting held on April 3, 1975, to obtain information concerning problems and needs. Public meetings were also held on March 27, 1979 and November 8, 1979, to present proposals that had been developed during the study process. A meeting will be held with elected officials of Cape Girardeau and Jackson, and Cape La Croix Creek Levee and Drainage District to provide input to address the problems. Additional input to identify the problems will be received via numerous telephone and letter contacts to insure an opportunity for as many as possible to express an opinion. Public meetings will be scheduled throughout the remainder of the study as plans become better defined.

b. *Significant Issues:* Significant issues addressed in the Draft Environmental Impact Statement will include: Channelization; dry detention areas; fish and wildlife enhancement; and increased commercialization which contributes to run-off problems in the floodplain area.

c. *Lead Agency and Cooperating Agency Responsibilities:* The St. Louis District, Army Corps of Engineers, is the lead agency responsible to prepare a Draft Environmental Impact Statement. The Cape La Croix-Walker Creek Levee and Drainage District and the city of Cape Girardeau will be asked to participate as cooperating agencies.

d. *Environmental Review and Consultation Requirements:* The completed Draft Environmental Impact Statement will be made available to appropriate Federal, state, and local agencies, representatives of environmental groups, and other interested individuals. The Draft Environmental Impact Statement will contain records of compliance with designated consultation requirements found applicable during the course of this study.

4. *Scoping Meeting:* The scoping process was initiated in April 1972, and, throughout the duration of the study, will continue in meetings with Federal, state, and local agencies as well as with environmental groups.

5. *Draft Environmental Impact Statement Preparation:* The Draft Environmental Impact Statement is tentatively scheduled to be completed in the second quarter of FY 80 (January 1980).

ADDRESS: Questions concerning the proposed action and the Draft Environmental Impact Statement can be answered by: Mr. Jack F. Rasmussen, Chief, Planning Branch, U.S. Army Engineer District, St. Louis, 210 North 12th Street, St. Louis, Missouri 63101.

Dated: November 26, 1979.

Robert J. Dacey,

Colonel, CE District Engineer.

[FR Doc. 79-37009 Filed 11-30-79; 8:45 am]

BILLING CODE 3710-GS-M

Intent To Prepare a Draft Environmental Impact Statement (DEIS) for Conesus Lake Flood Control Project, Livingston County, N.Y.

AGENCY: U.S. Army Engineer District, Buffalo, DOD.

ACTION: Notice of Intent To Prepare a Draft Environmental Impact Statement (DEIS).

PROPOSED ACTION: The proposed action is the development of a flood control project to alleviate flood damages to residences bordering Conesus Lake under the continuing authority of Section 205 of the Flood Control Act of 1948. The improvements will consist of widening and/or deepening the Conesus Lake outlet (Conesus Creek) and installing flood control gates at the outlet to regulate lake levels. Following the design of these improvements, a lake management study will be performed to establish regulatory guidelines and measures to manage lake levels for fish spawning in the spring, recreational activities in the summer, and consideration of riparian owners downstream of the project.

ALTERNATIVES CONSIDERED: Six alternative schemes have been developed which consist of channel improvements of the Conesus Lake outlet and provision of a lake level control structure. The channel improvements will vary from 60–110 feet in width depending on the scheme. The length of channel improvement for all alternatives is approximately 5,050 feet. The level of protection varies from 30-year flood protection to 170-year flood protection. A lake level regulation plan will be developed after the best channel improvement plan is selected. This plan will take into account both flood damage reduction within the flood plain of Conesus Lake, the interests of downstream riparian owners, and required lake levels for fish spawning and recreational activities.

PUBLIC INVOLVEMENT: Considerable public involvement has been conducted on the Conesus Lake Study, to date, through the efforts of the Buffalo District, the Conesus Lake Association, the Conesus Compact, the NYSDEC, and local contributors. A late-stage public meeting will be held when the DEIS is released for public review.

ISSUES: Significant issues to be analyzed in the DEIS will include a determination of the extent, in degree and kind, to which the Selected Plan and any reasonable alternatives might positively or negatively impact upon the human and natural environments, to include fish and wildlife habitat areas, plants, water quality, aesthetic quality of the area, cultural resources, and the equitable distribution and stability of income.

SCOPING MEETING: Since all interested local, State, and Federal agencies have been involved for the past several years in the study, no scoping meeting will be held.

AVAILABILITY: This Draft Environmental Impact Statement will be made available to the public on or about September 31, 1980.

ADDRESS: Questions about the proposed action and DEIS can be answered by Richard H. Lewis, U.S. Army Engineer District, Buffalo, 1776 Niagara Street, Buffalo, NY 14207, Area Code 716–876–5454.

Dated: November 26, 1979.

Thomas R. Braun,

LTC, Corps of Engineers, Deputy District Engineer.

[FR Doc. 79-37010 Filed 11-30-79; 8:45 am]

BILLING CODE 3710-GP-M

Department of the Navy

Chief of Naval Operations Executive Panel Advisory Committee; Closed Meeting

Pursuant to the provisions of the Federal Advisory Committee Act (5 U.S.C. App. I), notice is hereby given that a subgroup of the Command, Control, and Communications Sub-Panel of the Chief of Naval Operations (CNO) Executive Panel Advisory Committee will meet December 18–20, 1979. Sessions each day will be held from 8:00 a.m. to 5:00 p.m. The meetings on December 18 and 19 will be held in Room 318, Crystal Plaza #5, Washington, D.C. The meeting on December 20 will be held in the Mark Center, 2000 N. Beauregard Street, Room 350, Alexandria, Virginia. All sessions will be closed to the public.

The entire agenda for the meeting will consist of discussions of the Naval Tactical Data System (NTDS) and related intelligence. These matters constitute classified information that is specifically authorized by Executive order to be kept secret in the interest of national defense and is, in fact, properly classified pursuant to such Executive order. Accordingly, the Secretary of the Navy has determined in writing that the public interest requires that all sessions of the meeting be closed to the public because they will be concerned with matters listed in section 552b(c)(1) of title 5, United States Code.

For further information concerning this meeting, contact: Commander Robert B. Vosilus, U.S. Navy, Executive Secretary of the CNO, Executive Panel Advisory Committee, 2000 N. Beauregard Street, Room 392, Alexandria, VA 22311. Telephone No. (703) 756–1205.

Dated: November 29, 1979.

P. B. Walker,

Captain, JAGC, U.S. Navy, Deputy Assistant Judge Advocate General (Administrative Law).

[FR Doc. 79-37123 Filed 11-30-79; 8:45 am]

BILLING CODE 3810-71-M

DEPARTMENT OF ENERGY

[DOE/EIS-0023]

Long-Term Management of Defense High-Level Radioactive Wastes (Research and Development Program for Immobilization), Savannah River Plant; Final Environmental Impact Statement

AGENCY: Department of Energy.

ACTION: Notice of availability of final environmental impact statement (EIS).

SUMMARY: The Department of Energy (DOE) announces the availability of the final environmental impact statement, DOE/EIS-0023, "Long-term Management of Defense High-Level Radioactive Wastes (Research and Development Program for Immobilization), Savannah River Plant, Aiken, South Carolina" (November 1979). The EIS was prepared in compliance with the National Environmental Policy Act of 1969 to analyze the environmental implications of the proposed continuation of a large Federal research and development (R&D) program directed toward the immobilization of the high-level radioactive wastes generated as part of the national defense effort at DOE's Savannah River Plant (SRP). The statement analyzes, in general, the environmental impacts which would result from subsequent implementation on the SRP high-level wastes of the technology developed during the R&D phase.

The R&D program proposed for continuation is aimed at developing the technology for removing the wastes from interim storage tanks, concentrating them into a high activity fraction, and immobilizing the radioactive nuclides in a high integrity form for subsequent disposal. The immobilized wastes could be disposed of by a variety of techniques, such as in a mined repository or surface engineered storage. Analyses of the impacts of geologic disposal and engineered storage subsequent to immobilization are included in this statement.

The alternatives to carrying out the proposed immobilization R&D program are to decide to (1) continue tank storage of the wastes, or (2) fund an R&D program for direct disposal of the wastes in the bedrock under the Savannah River Plant. The consequences of these alternatives have been analyzed for comparison to the consequences of conducting and implementing the proposed immobilization R&D program. Any later proposals to take action of potentially significant impact, such as the construction of a major waste treatment facility or the construction of a permanent waste repository, will be covered in subsequent project-specific environmental reviews.

FOR FURTHER INFORMATION CONTACT:

(1) Dr. Goetz K. Oertel, Director, Division of Waste Products, U.S. Department of Energy, MS B-107, Washington, D.C. 20545, 301-353-3641.

(2) Dr. Robert J. Stern, Director, NEPA Affairs Division, U.S. Department of Energy, MS 4G-064, Washington, D.C. 20585, 202-252-4600.

(3) Mr. Stephen Greenleigh, Assistant General Counsel for Environment, U.S. Department of Energy, MS 6A-152, Washington, D.C. 20585, 202-252-6947.

(4) Mr. Ben E. McCarty, Public Affairs Officer, U.S. Department of Energy, MS 8G-031, Washington, D.C. 20585, 202-252-4296.

SUPPLEMENTARY INFORMATION:

I. Previous Notices

The Department of Energy published a notice of intent (42 FR 27281) on May 27, 1977, regarding the preparation of the draft EIS and soliciting comments for use in the preparation of the document. The notice of intent also announced the availability of a reference report, "Alternatives for Long-term Management of Defense High-Level Radioactive Waste at the Savannah River Plant," (ERDA 77-42). The Environmental Protection Agency published a notice of availability of the draft EIS (43 FR 35997) on August 14, 1978. Comments and suggestions received regarding the draft EIS were considered in preparing this document.

II. Background of Proposed Project

A reference report, "Alternatives for the Long-Term Management of Defense High-Level Radioactive Waste at the Savannah River Plant," (ERDA 77-42) was issued in May 1977. It serves as the technical basis and major reference for the EIS.

The environmental impacts of current waste management operations of SRP were addressed in ERDA-1537, "Final Environmental Statement, Waste Management Operations, Savannah River Plant," which was issued in September 1977.

III. Purpose of the EIS

The EIS explores the environmental impacts associated with implementation of the technology resulting from the proposed continuation of a large research and development program aimed at providing the information required to decide to replace tank storage of the high-level wastes at the Savannah River Plant with a method requiring less management control and surveillance. The particular R&D program proposed is aimed at developing technology for removing the wastes from the tanks and immobilizing the radionuclides in solid forms for subsequent disposal. Any later proposals to take action of potentially significant impact, such as the construction of a major waste treatment facility or the construction of a permanent waste repository, will be covered in subsequent project-specific environmental reviews.

The statement, in general, analyzes the environmental impacts which could result from subsequent implementation on the SRP high-level wastes of the technology developed during the R&D phase. The following alternatives are analyzed in this EIS:

- Continue storing high-level waste in subsurface storage tanks, which is a continuation of the present management practice.
- Convert the waste into two fractions: A durable waste form containing over 99 percent of the radioactivity, and decontaminated salt.

—Store or dispose of the waste form in one of the following Federal repositories: an offsite geological repository, and onsite surface storage vault, or an onsite geological repository (bedrock cavern).*

—Store the salt in: decontaminated waste tanks at SRP, an onsite surface vault, or an offsite geological repository.

- Slurry the high-level waste into bedrock caverns, an onsite geological repository.*

The preferred alternative is to continue an R&D program aimed at developing the technology for removing the wastes from interim storage tanks and converting it to a durable waste form and decontaminated salt for subsequent disposal.

IV. Availability of the Final Environmental Impact Statement

Copies of the final EIS have been distributed to Federal, state and local agencies, organizations, and individuals known to be interested in the long-term waste management program at SRP. Additional copies may be obtained by writing to: Dr. Goetz K. Oertel, Division of Waste Products, MS B-107 (GTN), U.S. Department of Energy, Washington, D.C. 20545.

Copies of the final EIS are also available for public inspection at:

Public Reading Room, FOI, Room 6A-152, Forrestal Building, 100 Independence Avenue, SW, Washington, D.C. 20585.
Albuquerque Operations Office, National Atomic Museum, Kirtland Air Force Base East, Albuquerque, New Mexico.
Chicago Operations Office, 175 West Jackson Boulevard, Chicago, Illinois.
Chicago Operations Office, 9800 South Cass Avenue, Argonne, Illinois.
Idaho Operations Office, 550 Second Street, Idaho Falls, Idaho.

*Storage or disposal of the high-level wastes under the Savannah River Plant site (in bedrock) is judged environmentally unacceptable by the EPA.

Nevada Operations Office, 2753 South Highland Drive, Las Vegas, Nevada.
Oak Ridge Operations Office, Federal Building, Oak Ridge, Tennessee.
Richland Operations Office, Federal Building, Richland, Washington.
Energy Information Center, 215 Fremont Street, Fremont, California.
Savannah River Operations Office, Savannah River Plant, Aiken, South Carolina.

Dated at Washington, D.C. this 9th day of November 1979 for the United States Department of Energy.

Ruth C. Clusen,

Assistant Secretary for Environment.

[FR Doc. 79-36996 Filed 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

Economic Regulatory Administration

William Gruenerwald & Associates, Inc.; Action Taken on Consent Order

AGENCY: Economic Regulatory Administration, Department of Energy.

ACTION: Notice of action taken and opportunity for comment on the Consent Order.

SUMMARY: The Economic Regulatory Administration (ERA) of the Department of Energy (DOE) announces action taken to execute a Consent Order and provides an opportunity for public comment on the Consent Order and on potential claims against the refunds deposited in an escrow account established pursuant to the Consent Order.

EFFECTIVE DATE: July 30, 1979.

COMMENTS BY: January 2, 1979.

ADDRESS: Send comments to: Kenneth E. Merica, District Manager of Enforcement, Rocky Mountain District, Department of Energy, 1075 South Yukon Street, Lakewood, Colorado 80226.

FOR FURTHER INFORMATION CONTACT: Kenneth E. Merica, District Manager of Enforcement, Rocky Mountain District, Department of Energy, 1075 South Yukon Street, Lakewood, Colorado 80226, telephone 303/234-3195.

SUPPLEMENTARY INFORMATION: On July 30, 1979, the Office of Enforcement of the ERA executed a Consent Order with William Gruenerwald and Associates, Inc. (Gruenerwald) of Colorado Springs, Colorado. Under 10 CFR 205.199J(b), a Consent Order which involves a sum of less than $500,000 in the aggregate, excluding penalties and interest, becomes effective upon its execution.

Because of the complex settlement negotiations in this case and the necessity to conclude this matter simultaneously with other proceedings associated with this Consent Order, as well as the concern to avoid delay in the payment of refunds, the DOE has determined that it is in the public interest to make the Consent Order with Gruenerwald effective as of the date of its execution by the DOE and Gruenerwald.

I. The Consent Order

Gruenerwald, with its home office located in Colorado Springs, Colorado is a firm engaged in the production of crude oil, and is subject to the Mandatory Petroleum Price and Allocation Regulations at 10 CFR, Parts 210, 211, 212. To resolve certain civil actions which could be brought by the Office of Enforcement of the Economic Regulatory Administration as a result of its audit of crude oil sales, the Office of Enforcement, ERA, and Gruenerwald entered into a Consent Order, the significant terms of which are as follows:

1. Gruenerwald is a "producer" as defined by 6 CFR 150.342 and 10 CFR 212.31 and is an operator and working interest owner in crude oil producing properties located in Kansas, Oklahoma and Texas.

2. The period covered by the Audit was September 1, 1973 through December 31, 1976, and included all sales of crude oil which were made during that period.

3. Gruenerwald's pricing of crude oil sales were continuously controlled under CLC regulations (6 CFR, 150.1 *et seq.*) and successor regulations (10 CFR 212.1 *et seq.*) during the period of audit.

4. In order to expedite resolution of the disputes involved, the DOE and Gruenerwald have agreed to a settlement in the amount of $46,906.55. The negotiated settlement was determined to be in the public interest as well as the best interests of the DOE and Gruenerwald.

5. Refund of the agreed settlement amount will be made in accordance with 10 CFR, Part 205, Subpart V as provided below.

6. The provisions of 10 CFR, 205.199J, including publication of this Notice, are applicable to the Consent Order.

II. Disposition of Refunded Overcharges

In this Consent Order, Gruenerwald agrees to refund, in full settlement of any civil liability with respect to actions which might be brought by the Office of Enforcement, ERA, arising out of the transactions specified in I.2. above, the sum of $46,906.55, twenty-four (24) months from the date of the execution of the Consent Order. Refunded overcharges will be in the form of a certified check made payable to the United States Department of Energy and will be delivered to the Assistant Administrator for Enforcement, ERA. These funds will remain in a suitable account pending the determination of their proper disposition.

The DOE intends to distribute the refund amounts in a just and equitable manner in accordance with applicable laws and regulations. Accordingly, distribution of such refunded overcharges requires that only those "persons" (as defined at 10 CFR 205.2) who actually suffered a loss as a result of the transactions described in the Consent Order receive appropriate refunds. Because of the petroleum industry's complex marketing system, it is likely that overcharges have either been passed through as higher prices to subsequent purchasers or offset through devices such as the Old Oil Allocation (Entitlement) Program, 10 CFR 211.67. In fact, the adverse effects of the overcharges may have become so diffused that it is a practical impossibility to identify specific, adversely affected persons, in which case disposition of the refunds will be made in the general public interest by an appropriate means such as payment to the Treasury of the United States pursuant to 10 CFR 205.199I(a).

III. Submission of Written Comments

A. *Potential Claimants:* Interested persons who believe that they have a claim to all or a portion of the refund amount should provide written notification of the claim to the ERA at this time. Proof of claims is not now being required. Written notification to the ERA at this time is requested primarily for the purpose of identifying valid potential claims to the refund amount. After potential claims are identified, procedures for the making of proof of claims may be established.

Failure by a person to provide written notificaton of a potential claim within the comment period for this Notice may result in the DOE irrevocably disbursing the funds to other claimants or to the general public interest.

B. *Other Comments:* The ERA invites interested persons to comment on the terms, conditions, or procedural aspects of this Consent Order.

You should send your comments or written notification of a claim to Kenneth E. Merica, District Manager of Enforcement, Rocky Mountain District, Department of Energy, 1075 South Yukon Street, Lakewood, Colorado 80226. You may obtain a free copy of this Consent Order by writing to the same address or by calling 303/234-3195.

You should identify your comments or written notification of a claim on the outside of your envelope and on the

documents you submit with the designation, "Comments on Gruenerwald Consent Order." We will consider all comments we receive by 4:30 p.m., local time, on December 17, 1979. You should identify any information or data which, in your opinion, is confidential and submit it in accordance with the procedures in 10 CFR 205.9(f).

Issued in Lakewood, Colorado on the 13th day of November, 1979.

Kenneth E. Merica,

District Manager of Enforcement.

[FR Doc. 79-37082 Filed 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

Federal Energy Regulatory Commission

Determinations by Jurisdictional Agencies Under the Natural Gas Policy Act of 1978

November 23, 1979.

The Federal Energy Regulatory Commission Received Notices from the jurisdictional agencies listed below of determinations pursuant to 18 CFR 274.104 and applicable to the indicated wells pursuant to the Natural Gas Policy Act of 1978.

Colorado Oil and Gas Conservation Commission

1. Control Number (F.E.R.C./State)
2. API well number
3. Section of NGPA
4. Operator
5. Well name
6. Field or OCS area name
7. County, State or Block No.
8. Estimated annual volume
9. Date received at FERC
10. Purchaser(s)

1. 80-04799/79-345
2. 05-123-08337-0000
3. 108 000 000
4. Amoco Production Company
5. Heinz Ernest P Gas Unit #1
6. Wattenberg
7. Weld CO
8. 5.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04800/79-361
2. 05-123-08272-0000
3. 108 000 000
4. Amoco Production Company
5. Frazier Jon Gas Unit #1
6. Wattenberg
7. Weld CO
8. 7.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04801/79-334
2. 05-001-06313-0000
3. 108 000 000
4. Amoco Production Company
5. Uprr 48 Pan American C #1
6. Totem
7. Adams CO
8. 7.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04802/79-172
2. 05-123-09192-0000
3. 103 000 000
4. Macey & Mershon Oil Inc
5. Jillson #5
6. Spindle
7. Weld CO
8. 21.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04803/79-177
2. 05-123-09358-0000
3. 103 000 000
4. Macey & Mershon Oil Inc
5. Miller #1
6. Wattenberg
7. Weld CO
8. 143.2 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Co

1. 80-04804/79-170
2. 05-123-09303-0000
3. 103 000 000
4. Macey & Mershon Oil Inc
5. Cosslett #2
6. Spindle
7. Weld CO
8. 67.8 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Co

1. 80-04805/79-182
2. 05-123-09208-0000
3. 103 000 000
4. Macey & Mershon Oil Inc
5. Woolley #2
6. Spindle
7. Weld CO
8. 43.6 million cubic feet
9. November 1, 1979
10. Vessels Gas Processing Co

1. 80-04806/79-216
2. 05-081-06345-0000
3. 102 000 000
4. Northwest Exploration Company
5. Bruder #1
6. Great Divide
7. Moffat County CO
8. 42.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corporation

1. 80-04807/79-217
2. 05-081-06322-0000
3. 102 000 000
4. Northwest Exploration Company
5. Alice Weaver #1
6. Wildcat-Great Divide
7. Moffat County CO
8. 124.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corporation

1. 80-04808/79-178
2. 05-123-09555-0000
3. 103 000 000
4. Macey & Mershon Oil Inc
5. Musick-McClintock #2
6. Unnamed
7. Weld CO
8. 144.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Co

1. 80-04809/79-179
2. 05-123-09418-0000
3. 103 000 000
4. Macey & Mershon Oil Inc
5. Olin #1
6. Wattenberg
7. Weld CO
8. 105.3 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Co

1. 80-04810/79-180
2. 05-123-09469-0000
3. 103 000 000
4. Macey & Mershon Oil Inc
5. Powers #1
6. Wattenberg
7. Weld CO
8. 149.6 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Co

1. 80-04811/79-185
2. 05-123-07332-0000
3. 108 000 000
4. Panhandle Western Gas Co
5. Wardell #1
6. Wattenberg
7. Weld CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Co

1. 80-04812/79-184
2. 05-001-07362-0000
3. 103 000 000
4. Panhandle Western Gas Co
5. Prairie-Vetter No 1
6. Chieftain
7. Adams CO
8. 110.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Co

1. 80-04813/79-224
2. 05-005-06345-0000
3. 103 000 000
4. Brownlie Wallace Armstrong & Bander
5. Reeves #28-31
6. Dragoon
7. Arapahoe CO
8. 80.0 million cubic feet
9. November 1, 1979
10. Sun Co

1. 80-04814/79-222
2. 05-005-06792-0000
3. 103 000 000
4. Brownlie Wallace Armstrong & Bander
5. Reeves #28-22
6. Dragoon
7. Arapahoe CO
8. 35.0 million cubic feet
9. November 1, 1979
10. Sun Co

1. 80-04815/79-187
2. 05-001-06503-0000
3. 103 000 000
4. Sandlin Oil Corp
5. Davis No 1
6. Chieftain
7. Adams CO
8. 30.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04816/79-221
2. 05-123-09267-0000
3. 103 000 000
4. Brownlie Wallace Armstrong & Bander
5. Kiyota #1
6. Spindle

7. Weld CO
8. 7.3 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04817/79-223
2. 05-123-09388-0000
3. 103 000 000
4. Brownlie Wallace Armstrong & Bander
5. Kiyota #2
6. Spindle
7. Weld CO
8. 7.3 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04818/79-183
2. 05-067-06210-0000
3. 103 000 000
4. Mesa Petroleum Co
5. Ute Indian 5A
6. Blanco Mesaverde
7. LaPlata CO
8. 51.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company, Northwest Pipeline Corp

1. 80-04819/79-188
2. 05-103-08094-0000
3. 108 000 000
4. Twin Arrow Inc
5. C & K 2-7
6. Cathedral
7. Rio Blanco CO
8. 10.1 million cubic feet
9. November 1, 1979
10. IGC Production Company

1. 80-04820/79-189
2. 05-103-08093-0000
3. 108 000 000
4. Twin Arrow Inc
5. Continental 4-17
6. Cathedral
7. Rio Blanco CO
8. 5.9 million cubic feet
9. November 1, 1979
10. IGC Production

1. 80-04821/79-190
2. 05-125-08125-0000
3. 102 000 000
4. Kansas Nebraska Natural Gas Co Inc
5. K & L Enterprises #1-9
6. Armel
7. Yuma CO
8. 4.0 million cubic feet
9. November 1, 1979
10.

1. 80-04822/79-186
2. 05-001-07260-0000
3. 103 000 000
4. Sandlin Oil Corporation
5. Bullard No 1
6. Chieftain
7. Adams CO
8. 50.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04823/79-92
2. 05-009-00000-0000
3. 108 000 000
4. Kaiser Francis Oil Company
5. Shanline-Henderson-Treon #1
6. Greenwood
7. Baca CO
8. 4.0 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04824/79-91
2. 05-009-00000-0000
3. 108 000 000
4. Kaiser-Francis Oil Co
5. R H Pride #1
6. Greenwood
7. Baca Co
8. 11.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04825/79-199
2. 05-001-06735-0000
3. 108 000 000
4. Koch Industries Inc
5. Rosenbrock No 1
6. Wattenberg
7. Adams Co
8. .0 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04826/79-123
2. 05-103-08022-0000
3. 103 000 000
4. Husky Oil Company
5. Hill 10-31
6. Rangely
7. Rio Blanco Co
8. 4.8 million cubic feet
9. November 1, 1979
10. IGC Production Co

1. 80-04827/79-198
2. 05-001-06849-0000
3. 108 000 000
4. Koch Industries Inc
5. Merkowitz No 1
6. Wattenberg
7. Adams Co
8. 16.2 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04828/79-127
2. 05-001-06477-0000
3. 108 000 000
4. Koch Industries Inc
5. Monoghan No 2
6. Wattenberg
7. Adams Co
8. .6 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04829/79-193
2. 05-001-06075-0000
3. 108 000 000
4. Koch Industries Inc
5. Egan State No 1
6. Wattenberg
7. Adams Co
8. 14.4 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04830/79-195
2. 05-001-06863-0000
3. 108 000 000
4. Koch Industries Inc
5. Maul No 1
6. Wattenberg
7. Adams Co
8. 15.6 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04831/79-192
2. 05-001-06695-0000
3. 108 000 000
4. Koch Industries Inc
5. Jeffery No 1
6. Wattenberg
7. Adams Co
8. 4.2 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04832/79-194
2. 05-001-06994-0000
3. 108 000 000
4. Koch Industries Inc
5. Green No 1
6. Wattenberg
7. Adams Co
8. 9.0 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04833/79-201
2. 05-001-06653-0000
3. 108 000 000
4. Koch Industries Inc
5. Box Elder E No 2
6. Third Creek
7. Adams Co
8. 4.5 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04834/79-213
2. 05-001-06425-0000
3. 108 000 000
4. Koch Industries Inc
5. Box Elder B No 1
6. Third Creek
7. Adams Co
8. 1.0 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04835/79-212
2. 05-001-06463-0000
3. 108 000 000
4. Koch Industries Inc
5. Box Elder A No 1
6. Third Creek
7. Adams Co
8. 1.5 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04836/79-205
2. 05-001-06669-0000
3. 108 000 000
4. Koch Industries Inc
5. Box Elder G No 4
6. Ambush
7. Adams Co
8. 9.1 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04837/79-196
2. 05-001-06656-0000
3. 108 000 000
4. Koch Industries Inc
5. Sam Koch No 1
6. Ambush
7. Adams Co
8. 3.0 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04838/79-118
2. 05-067-06179-0000
3. 103 000 000
4. Arco Oil and Gas Company
5. Southern Ute 23-1 33N-10W
6. Ignacio Blanco-Mesaverde
7. La Plata Co
8. 91.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corp

1. 80-04839/79-191
2. 05-009-00000-0000
3. 108 000 000
4. Kaiser Francis Oil Company
5. Watkins-Frink-Homsher #1
6. Greenwood
7. Baca Co
8. 4.0 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04840/79-119
2. 05-067-06208-0000
3. 103 000 000
4. Arco Oil and Gas Company
5. Southern Ute 18-4 32-7
6. Ignacio Blanco
7. La Plata Co
8. 110.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corp

1. 80-04841/79-215
2. 05-081-06348-0000
3. 102 000 000
4. Northwest Exploration Company
5. Sterret #1
6. Great Divide
7. Moffat County Co
8. 232.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corp

1. 80-04842/79-218
2. 05-081-06343-0000
3. 102 000 000
4. Northwest Exploration Company
5. Randolph #1
6. Great Divide
7. Moffat County Co
8. 38.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corp

1. 80-04843/79-211
2. 05-001-06075-0000
3. 108 000 000
4. Koch Industries Inc
5. Box Elder No 1
6. Wattenberg
7. Adams Co
8. 13.7 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04844/79-214
2. 05-001-06637-0000
3. 108 000 000
4. Koch Industries Inc
5. Box Elder D No 2
6. Wattenberg
7. Adams Co
8. 15.0 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04845/79-210
2. 05-001-06818-0000
3. 108 000 000
4. Koch Industries Inc
5. Bergman No 1
6. Wattenberg
7. Adams Co
8. 8.4 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04846/79-204
2. 05-001-06662-0000
3. 108 000 000
4. Koch Industries Inc
5. Box Elder G No 3
6. Ambush
7. Adams Co
8. 9.1 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04847/79-202
2. 05-001-07623-0000
3. 108 000 000
4. Koch Industries Inc
5. Box Elder G No 1
6. Ambush
7. Adams Co
8. 9.1 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04848/79-203
2. 05-001-06652-0000
3. 108 000 000
4. Koch Industries Inc
5. Box Elder G No 2
6. Ambush
7. Adams Co
8. 9.1 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04849/79-209
2. 05-001-06857-0000
3. 108 000 000
4. Koch Industries Inc
5. Barr No 1
6. Wattenberg
7. Adams Co
8. 5.4 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04850/79-208
2. 05-001-06904-0000
3. 108 000 000
4. Koch Industries Inc
5. Farmer No 1
6. Wattenberg
7. Adams Co
8. 4.8 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04851/79-207
2. 05-001-06773-0000
3. 108 000 000
4. Koch Industries Inc
5. Champlin-Danford No 1
6. Wattenberg
7. Adams Co
8. 5.0 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04852/79-206
2. 05-001-07125-0000
3. 108 000 000
4. Koch Industries Inc
5. Box Elder M No 1
6. Wattenberg
7. Adams Co
8. 9.8 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04853/79-301
2. 05-123-08335-0000
3. 108 000 000
4. Amoco Production Company
5. Pettinger Len D Gas Unit #1
6. Wattenberg
7. Weld Co
8. 13.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04584/79-281
2. 05-005-06774-0000
3. 103 000 000
4. Amoco Production Company
5. Champlin 126 F #3
6. Dragoon
7. Arapahoe CO
8. 17.0 million cubic feet
9. November 1, 1979
10. Peoria Gas Plant (Operator-Amoco)

1. 80-04855/79-259
2. 05-001-07272-0000
3. 103 000 000
4. Amoco Production Company
5. Champlin 248 Amoco A #2
6. Radar
7. Adams CO
8. 49.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04856/79-240
2. 05-067-06181-0000
3. 103 000 000
4. Amoco Production Company
5. Ford Gas Unit D #1
6. Ignacio-Blanco
7. La Plata CO
8. 183.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80-04857/79-286
2. 05-001-07237-0000
3. 103 000 000
4. Amoco Production Company
5. J C Blauw #1
6. Strasburg
7. Adams CO
8. 46.0 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04858/79-229
2. 05-039-06250-0000
3. 103 000 000
4. Amoco Production Company
5. Champlin 416 Amoco A #1
6. Double Tree
7. Elbert CO
8. 389.0 million cubic feet
9. November 1, 1979
10. Peoria Gas Plant (Operator-Amoco)

1. 80-04859/79-227
2. 05-001-07300-0000
3. 103 000 000
4. Amoco Production Company
5. UPRR #4 Pan Am C #1
6. Jamboree
7. Adams CO
8. 144.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04860/79-269
2. 05-001-07304-0000
3. 103 000 000
4. Amoco Production Company
5. Champlin 75 Amoco D #3
6. Ambush
7. Adams County CO
8. 88.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04861/79-226
2. 05-123-09302-0000
3. 103 000 000
4. Amoco Production Company
5. UPRR #21 Pan Am G #1

6. Hambert
7. Weld CO
8. 438.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04862/79-279
2. 05-001-07305-0000
3. 103 000 000
4. Amoco Production Company
5. Habel #7 (Habel-Fee C #1)
6. Longbranch
7. Adams CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Vessels Gas Processing Company

1. 80-04863/79-280
2. 05-001-07235-0000
3. 103 000 000
4. Amoco Production Company
5. Champlin 459 Amoco #1
6. Wildcat
7. Adams CO
8. 24.0 million cubic feet
9. November 1, 1979
10. Koch Oil Company

1. 80-04864/79-243
2. 05-001-07251-0000
3. 103 000 000
4. Amoco Production Company
5. Champlin 75 Amoco I Unit #1
6. Maria
7. Adams CO
8. 138.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04865/79-274
2. 05-001-07272-0000
3. 103 000 000
4. Amoco Production Company
5. Champlin 248 Amoco A #2
6. Radar
7. Adams CO
8. 49.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04866/79-311
2. 05-001-06251-0000
3. 108 000 000
4. Amoco Production Company
5. Guthrie Abner #1
6. Wattenberg
7. Adams CO
8. 14.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04867/79-236
2. 05-123-09424-0000
3. 103 000 000
4. Amoco Production Company
5. Oster-Molander Unit A #1
6. Hambert
7. Weld CO
8. 269.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04868/79-376
2. 05-123-07267-0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #61 Pan American B #1
6. Wattenberg
7. Weld CO
8. 8.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04869/79-284
2. 05-123-09153-0000
3. 103 000 000
4. Amoco Production Company
5. Jack Hein Unit #1
6. Spindle
7. Weld CO
8. 35.0 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Company

1. 80-04870/79-276
2. 05-123-09204-0000
3. 103 000 000
4. Amoco Production Company
5. Kenneth E Koch #1
6. Unnamed
7. Weld CO
8. 31.0 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Company

1. 80-04871/79-273
2. 05-123-09295-0000
3. 103 000 000
4. Amoco Production Company
5. Elton Miller E #1
6. Unnamed
7. Weld CO
8. 263.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04872/79-268
2. 05-123-09205-0000
3. 103 000 000
4. Amoco Production Company
5. Carl A Peterson #1
6. Wildcat
7. Weld CO
8. 20.0 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Company

1. 80-04873/79-244
2. 05-123-09387-0000
3. 103 000 000
4. Amoco Production Company
5. UPRR 21 Pan American F #1
6. Hambert
7. Weld CO
8. 57.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04874/79-233
2. 05-123-09453-0000
3. 103 000 000
4. Amoco Production Company
5. Warren McMillian Unit #2
6. Hambert
7. Weld CO
8. 274.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04875/79-282
2. 05-123-09296-0000
3. 103 000 000
4. Amoco Production Company
5. John A Kunzman #2
6. Spindle
7. Weld CO
8. 103.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04876/79-326
2. 05-123-08423-0000
3. 108 000 000
4. Amoco Production Company
5. Callow James E Gas Unit #1
6. Wattenberg
7. Weld CO
8. 21.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04877/79-327
2. 05-123-07847-0000
3. 108 000 000
4. Amoco Production Company
5. Oster Dan J Jr Unit #1
6. Wattenberg
7. Weld CO
8. 12.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04878/79-324
2. 05-123-08183-0000
3. 108 000 000
4. Amoco Production Company
5. Gabel Adam Gas Unit #1
6. Wattenberg
7. Weld CO
8. 19.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04879/79-247
2. 05-123-09451-0000
3. 103 000 000
4. Amoco Production Company
5. Roy A Schmidt Unit #2
6. Hambert
7. Weld CO
8. 356.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04880/79-270
2. 05-123-09452-0000
3. 103 000 000
4. Amoco Production Company
5. C. J. Schmidt Unit #2
6. Hambert
7. Weld CO
8. 253.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04881/79-256
2. 05-123-09445-0000
3. 103 000 000
4. Amoco Production Company
5. Edward Hemple Unit #2
6. Hambert
7. Weld CO
8. 249.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04882/79-235
2. 05-123-09107-0000
3. 103 000 000
4. Amoco Production Company
5. Harold Craven #1
6. Hambert
7. Weld CO
8. 50.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04883/79-250
2. 05-123-09424-0000
3. 103 000 000
4. Amoco Production Company
5. Schmidt B #1
6. Hambert
7. Weld CO
8. 250.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04884/79–356
2. 05–123–07250–0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #53 Pan American #1
6. Wattenberg
7. Weld CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04885/79–357
2. 05–123–07265–0000
3. 108 000 000
4. Amoco Production Company
5. Wardell JJ #1
6. Wattenberg
7. Weld CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04886/79–304
2. 05–123–08249–0000
3. 108 000 000
4. Amoco Production Company
5. Miller Jimmie E #1
6. Wattenberg
7. Weld CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04887/79–385
2. 05–123–08116–0000
3. 108 000 000
4. Amoco Production Company
5. Moser Wesley E Gas Unit B#1
6. Wattenberg
7. Weld CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04888/79–383
2. 05–123–08365–0000
3. 108 000 000
4. Amoco Production Company
5. Brown Charles M Gas Unit #1
6. Wattenberg
7. Weld CO
8. 8.8 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04889/79–349
2. 05–001–06990–0000
3. 108 000 000
4. Amoco Production Company
5. Diedrichs Gilbert A Gas Unit #1
6. Wattenberg
7. Adams CO
8. 21.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04890/79–390
2. 05–123–08345–0000
3. 108 000 000
4. Amoco Production Company
5. Burch Robert M Gas Unit #1
6. Wattenberg
7. Weld CO
8. 13.1 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04891/79–391
2. 05–001–06963–0000
3. 108 000 000
4. Amoco Production Company
5. Boxelder F #1
6. Wattenberg
7. Adams CO
8. 4.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04892/79–392
2. 05–123–07995–0000
3. 108 000 000
4. Amoco Production Company
5. Brown Gordon D Unit #1
6. Wattenberg
7. Weld CO
8. 17.5 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04893/79–394
2. 05–123–08289–0000
3. 108 000 000
4. Amoco Production Company
5. Moser Norman Gas Unit #1
6. Wattenberg
7. Weld CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04894/79–395
2. 05–123–07800–0000
3. 108 000 000
4. Amoco Production Company
5. McHale Merle L Gas Unit #1
6. Wattenberg
7. Weld CO
8. 13.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04895/79–338
2. 05–123–08117–0000
3. 108 000 000
4. Amoco Production Company
5. Hicks Ruth Elizabeth #2
6. Wattenberg
7. Weld CO
8. 7.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04896/79–330
2. 05–001–06234–0000
3. 108 000 000
4. Amoco Production Company
5. State of Colorado Y #1
6. Wattenberg
7. Adams CO
8. 12.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04897/79–329
2. 05–123–07291–0000
3. 108 000 000
4. Amoco Production Company
5. Purse Helen Marie #1
6. Wattenberg
7. Weld CO
8. 13.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04893/79–347
2. 05–123–07911–0000
3. 108 000 000
4. Amoco Production Company
5. Lorenz Chris Unit B#1
6. Wattenberg
7. Weld CO
8. 2.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04899/79–380
2. 05–123–07283–0000
3. 108 000 000
4. Amoco Production Company
5. Cushman Pooling Unit #1
6. Wattenberg
7. Weld CO
8. 4.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04900/79–382
2. 05–123–07203–0000
3. 108 000 000
4. Amoco Production Company
5. Boulter Frank #1
6. Wattenberg
7. Weld CO
8. 17.3 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04901/79–275
2. 05–001–07295–0000
3. 103 000 000
4. Amoco Production Company
5. UPRR #23 Pan American K #2
6. Wattenberg
7. Adams CO
8. 27.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04902/79–255
2. 05–123–09524–0000
3. 103 000 000
4. Amoco Production Company
5. UPRR 42 Pn American Gas Unit AR #1
6. Wattenberg
7. Weld CO
8. 124.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04903/79–267
2. 05–123–09449–0000
3. 103 000 000
4. Amoco Production Company
5. UPRR 38 Pan American H Gas Unit #1
6. Wattenberg
7. Weld CO
8. 246.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04904/79–225
2. 05–123–09159–0000
3. 103 000 000
4. Amoco Production Company
5. UPRR 38 Pan American F Gas Unit #1
6. Wattenberg
7. Weld CO
8. 197.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04905/79–363
2. 05–123–07869–0000
3. 108 000 000
4. Amoco Production Company
5. Greeley National Bank B #2
6. Spindle
7. Weld CO
8. 2.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04906/79–364
2. 05–123–07309–0000
3. 108 000 000
4. Amoco Production Company
5. Greeley National Bank the #1

6. Wattenberg
7. Weld CO
8. .0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04907/79-365
2. 05-123-07285-0000
3. 108 000 000
4. Amoco Production Company
5. Ehrlich Feedlot Inc Pool Unit #1
6. Wattenberg
7. Weld CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04908/79-367
2. 05-123-07755-0000
3. 108 000 000
4. Amoco Production Company
5. Schlegel Jacob #1
6. Wattenberg
7. Weld CO
8. 15.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04909/79-368
2. 05-123-07304-0000
3. 108 000 000
4. Amoco Production Company
5. Selby Pooling Unit #1
6. Wattenberg
7. Weld CO
8. 12.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04910/79-369
2. 05-123-07274-0000
3. 108 000 000
4. Amoco Production Company
5. Shable Pooling Unit #1
6. Wattenberg
7. Weld CO
8. 7.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04911/79-370
2. 05-123-07948-0000
3. 108 000 000
4. Amoco Production Company
5. State of Colorado AC #1
6. Wattenberg
7. Weld CO
8. 13.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04912/79-371
2. 05-123-07836-0000
3. 108 000 000
4. Amoco Production Company
5. State of Colorado AD #1
6. Wattenberg
7. Weld CO
8. 12.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04913/79-372
2. 05-123-07244-0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #39 Pan American B #1
6. Wattenberg
7. Weld CO
8. 21.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04914/79-378
2. 05-123-07233-0000
3. 108 000 000
4. Amoco Production Company
5. Lorenz Chris #1
6. Wattenberg
7. Weld CO
8. 4.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line

1. 80-04915/79-379
2. 05-123-08268-0000
3. 108 000 000
4. Amoco Production Company
5. Johnson John L Unit #1
6. Wattenberg
7. Weld CO
8. 14.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line

1. 80-04916/79-298
2. 05-123-07289-0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #21 Pan American C #1
6. Wattenberg
7. Weld CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line

1. 80-04917/79-121
2. 05-103-07998-0000
3. 103 000 000
4. Husky Oil Company
5. Hill 7-31
6. Rangley
7. Rio Blanco CO
8. 4.8 million cubic feet
9. November 1, 1979
10. IGC Production Co

1. 80-04918/79-122
2. 05-103-08021-0000
3. 103 000 000
4. Husky Oil Company
5. Hill 9-31
6. Rangely
7. Rio Blanco CO
8. 4.8 million cubic feet
9. November 1, 1979
10. IGC Production Co

1. 80-04919/79-80
2. 05-103-07981-0000
3. 108 000 000
4. Lawrence Barker Jr
5. South Douglas Creek Fee #14
6. South Douglas Creek
7. Rio Blanco CO
8. 15.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corp

1. 80-04920/79-81
2. 05-103-07979-0000
3. 108 000 000
4. Lawrence Barker Jr
5. Barker Fee #15
6. South Douglas Creek
7. Rio Blanco CO
8. 6.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corp

1. 80-04921/79-174
2. 05-123-09551-0000
3. 103 000 000
4. Macey & Mershon Oil Inc
5. Jillson A #3
6. Spindle
7. Weld CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Co

1. 80-04922/79-173
2. 05-123-09550-0000
3. 103 000 000
4. Macey & Mershon Oil Inc
5. Jillson #5
6. Spindle
7. Weld CO
8. 24.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Co

1. 80-04923/79-175
2. 05-123-99366-0000
3. 103 000 000
4. Macey & Mershon Oil Inc
5. Kennedy Gas Unit #1
6. Wattenberg
7. Weld CO
8. 146.1 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Co

1. 80-04924/79-181
2. 05-123-09359-0000
3. 103 000 000
4. Macey & Mershon Oil Inc
5. Sprague #1
6. Wattenberg
7. Weld CO
8. 199.6 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Co

1. 80-04925/79-171
2. 05-123-09191-0000
3. 103 000 000
4. Macey & Mershon Oil Inc
5. Jillson #4
6. Spindle
7. Weld CO
8. 17.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Co

1. 80-04926/79-176
2. 05-123-09189-0000
3. 103 000 000
4. Macey & Mershon Oil Inc
5. Maier #1
6. Wattenberg
7. Weld CO
8. 190.5 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Co

1. 80-04927/79-302
2. 05-123-08402-0000
3. 108 000 000
4. Amoco Production Company
5. Pickering G Gas Unit #1
6. Wattenberg
7. Weld CO
8. 10.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line

1. 80-04928/79-303
2. 05-123-07252-0000
3. 108 000 000
4. Amoco Production Company
5. Pulliam Pooling Unit #1
6. Wattenberg
7. Weld CO
8. 13.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line

1. 80-04929/79-289
2. 05-123-08353-0000
3. 108 000 000
4. Amoco Production Company
5. Rademacher Albert Gas Unit #1
6. Wattenberg
7. Weld CO
8. 12.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line

1. 80-04930/79-339
2. 05-123-08370-0000
3. 108 000 000
4. Amoco Production Company
5. Delventhal Emma Gas Unit #1
6. Wattenberg
7. Weld CO
8. 10.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line

1. 80-04931/79-340
2. 05-123-09107-0000
3. 108 000 000
4. Amoco Production Company
5. Craven Harold Unit #1
6. Hambert
7. Weld CO
8. 6.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line

1. 80-04932/79-300
2. 05-123-06176-0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #53 Pan American B #1
6. Wattenberg
7. Weld CO
8. 9.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line

1. 80-04933/79-359
2. 05-001-07140-0000
3. 108 000 000
4. Amoco Production Company
5. Samford Norbert Gas Unit #1
6. Wattenberg
7. Weld CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line

1. 80-04934/79-305
2. 05-001-06619-0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #10 Pan American D #1
6. Hombre
7. Adams CO
8. .7 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Company

1. 80-04935/79-306
2. 05-067-05796-0000
3. 108 000 000
4. Amoco Production Company
5. Pan American Fee Gas Unit B #1
6. Ignacio Blanco-Mesaverde
7. La Plata CO
8. 19.0 million cubic feet
9. November 1, 1979
10. Western Slope Gas Company

1. 80-04936/79-307
2. 05-123-07411-0000
3. 108 000 000
4. Amoco Production Company
5. State #1
6. Wattenberg
7. Weld CO
8. 11.0 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Company

1. 80-04937/79-309
2. 05-123-07204-0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #21 Pan American A #1
6. Wattenberg
7. Weld CO
8. 12.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line

1. 80-04938/79-313
2. 05-123-08594-0000
3. 108 000 000
4. Amoco Production Company
5. Hanson Leslie E Gas Unit #1
6. Wattenberg
7. Weld CO
8. 7.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line

1. 80-04939/79-314
2. 05-001-07074-0000
3. 108 000 000
4. Amoco Production Company
5. Moore L W Gas Unit #1
6. Wattenberg
7. Adams CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line

1. 80-04940/79-295
2. 05-123-07305-0000
3. 108 000 000
4. Amoco Production Company
5. Camp Lewis C #1
6. Wattenberg
7. Weld CO
8. 20.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line

1. 80-04941/79-287
2. 05-123-08317-0000
3. 108 000 000
4. Amoco Production Company
5. Zadel Franklin C Gas Unit #1
6. Wattenberg
7. Weld CO
8. .0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line

1. 80-04942/79-316
2. 05-123-08504-0000
3. 108 000 000
4. Amoco Production Company
5. Kochler Maude Gas Unit #1
6. Wattenberg
7. Weld CO
8. 17.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line

1. 80-04943/79-342
2. 05-001-07218-0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #23 Pan American J #1
6. Wattenberg
7. Adams CO
8. 9.8 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line

1. 80-04944/79-341
2. 05-123-06393-0000
3. 108 000 000
4. Amoco Production Company
5. Martin Raymond D Gas Unit #1
6. Wattenberg
7. Weld CO
8. 9.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04945/79-343
2. 05-123-08286-0000
3. 108 000 000
4. Amoco Production Company
5. Ehrlich Feedlot Unit B #1
6. Wattenberg
7. Weld CO
8. .0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04946/79-344
2. 05-123-08034-0000
3. 108 000 000
4. Amoco Production Company
5. Eaton Cattle Co Unit B #1
6. Wattenberg
7. Weld CO
8. 6.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04947/79-315
2. 05-123-08392-0000
3. 108 000 000
4. Amoco Production Company
5. Leclerg V C Gas Unit #1
6. Wattenberg
7. Weld CO
8. 15.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04948/79-318
2. 05-123-08503-0000
3. 108 000 000
4. Amoco Production Company
5. Adam George Gas Unit #1
6. Wattenberg
7. Weld CO
8. 12.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04949/79-321
2. 05-001-06973-0000
3. 108 000 000
4. Amoco Production Company
5. Stevensen Ben Gas Unit #1
6. Wattenberg
7. Adams CO
8. 2.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04950/79-320
2. 05-123-08925-0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #21 Pan Am Unit E #1
6. Hambert
7. Weld CO
8. 8.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04951/79-319
2. 05-123-07797-0000
3. 108 000 000
4. Amoco Production Company
5. Webster Land & Cattle Co Unit #1

6. Wattenberg
7. Weld CO
8. 10.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04952/79-288
2. 05-001-06403-0000
3. 108 000 000
4. Amoco Production Company
5. Champlin 125 Amoco A #1
6. Third Creek
7. Adams CO
8. 7.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04953/79-290
2. 05-123-08235-0000
3. 108 000 000
4. Amoco Production Company
5. Wardell Gerald J Gas Unit #1
6. Wattenberg
7. Weld CO
8. 10.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04954/79-293
2. 05-123-08066-0000
3. 108 000 000
4. Amoco Production Company
5. Elliot Karl Unit #1
6. Wattenberg
7. Weld CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04955/79-292
2. 05-123-07260-0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #38 Pan American A #1
6. Wattenberg
7. Weld CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04956/79-355
2. 05-123-07657-0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #50 Pan American B #1
6. Wattenberg
7. Weld CO
8. 9.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04957/79-352
2. 05-123-08126-0000
3. 108 000 000
4. Amoco Production Company
5. Okamoto Sam M #1
6. Wattenberg
7. Weld CO
8. 7.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04958/79-373
2. 05-123-07759-0000
3. 108 000 000
4. Amoco Production Company
5. Dodero Louis A Unit #1
6. Wattenberg
7. Weld CO
8. 14.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04959/79-328
2. 05-123-07907-0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #53 Pan American E #1
6. Wattenberg
7. Weld CO
8. 9.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04960/79-358
2. 05-123-07819-0000
3. 108 000 000
4. Amoco Production Company
5. Webber Edith #1
6. Wattenberg
7. Weld CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-0461/79-323
2. 05-123-07412-0000
3. 108 000 000
4. Amoco Production Company
5. State #2
6. Wattenberg
7. Weld CO
8. 7.0 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Company

1. 80-04962/79-230
2. 05-123-09221-0000
3. 103 000 000
4. Amoco Production Company
5. UPRR 42 Pan American Al Gas Unit #1
6. Wattenberg
7. Weld CO
8. 370.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04963/79-228
2. 05-123-09340-00000
3. 103 000 000
4. Amoco Production Company
5. UPRR #41 Pan American B #1
6. Wattenberg
7. Weld CO
8. 123.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04964/79-261
2. 05-123-09185-0000
3. 103 000 000
4. Amoco Production Company
5. UPRR 62 Pan American K Gas Unit #1
6. Wattenberg
7. Weld CO
8. 279.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04965/79-285
2. 05-123-09393-0000
3. 103 000 000
4. Amoco Production Company
5. UPRR #43 Pan American L #1
6. Wattenberg
7. Weld CO
8. 189.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04966/79-389
2. 05-123-08359-0000
3. 108 000 000
4. Amoco Production Company
5. Anderson Family Trust Gub #1
6. Wattenberg
7. Weld CO
8. 17.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04967/79-375
2. 05-001-06250-0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #60 Pan American #1
6. Wattenberg
7. Adams CO
8. 6.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04968/79-264
2. 05-001-07278-0000
3. 103 000 000
4. Amoco Production Company
5. UPRR 23 Amoco E Well #2
6. Trapper
7. Adams CO
8. 31.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04969/79-322
2. 05-005-06675-0000
3. 108 000 000
4. Amoco Production Company
5. Mitchell Harry #1
6. Bombing Range
7. Arapahoe CO
8. 6.0 million cubic feet
9. November 1, 1979
10. Sun Gas Company

1. 80-04970/79-336
2. 05-123-07825-0000
3. 108 000 000
4. Amoco Production Company
5. Odenbaugh Cullen C Unit #1
6. Wattenberg
7. Weld CO
8. 15.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04971/79-294
2. 05-123-08271-0000
3. 108 000 000
4. Amoco Production Company
5. Odenbaugh Paul Gas Unit #1
6. Wattenberg
7. Weld CO
8. 17.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04972/79-297
2. 05-123-07221-0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #21 Pan American B #1
6. Wattenberg
7. Weld CO
8. 14.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04973/79-335
2. 05-123-07242-0000
3. 108 000 000
4. Amoco Production Company
5. Norgren Donald K #1
6. Wattenberg
7. Weld CO
8. 11.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04974/79-241
2. 05-123-09405-0000
3. 103 000 000
4. Amoco Production Company
5. UPRR 38 Pan American I #1
6. Wattenberg
7. Weld CO
8. 246.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04975/79-242
2. 05-123-09345-0000
3. 103 000 000
4. Amoco Production Company
5. Elmer Webber A #1
6. Wattenberg
7. Weld CO
8. 146.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04976/79-249
2. 05-123-09184-0000
3. 103 000 000
4. Amoco Production Company
5. UPRR #43 Pan American K Gas Unit #1
6. Wattenberg
7. Weld CO
8. 221.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04977/79-248
2. 05-123-08727-0000
3. 103 000 000
4. Amoco Production Company
5. UPRR #42 Pan American S #1
6. Wattenberg
7. Weld CO
8. 271.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04978/79-260
2. 05-123-09343-0000
3. 103 000 000
4. Amoco Production Company
5. Nels Christiansen Gas Unit #1
6. Wattenberg
7. Weld CO
8. 128.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04979/79-245
2. 05-123-09401-0000
3. 103 000 000
4. Amoco Production Company
5. Earl Young Gas Unit #1
6. Wattenberg
7. Weld CO
8. 99.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04980/79-254
2. 05-123-09186-0000
3. 103 000 000
4. Amoco Production Company
5. Albert D Kurtz Gas Unit C #1
6. Wattenberg
7. Weld CO
8. 197.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Company

1. 80-04981/79-253
2. 05-123-09222-0000
3. 103 000 000
4. Amoco Production Company
5. UPRR #53 Pan American GU J #1
6. Wattenberg
7. Weld CO
8. 76.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04982/79-252
2. 05-123-09344-0000
3. 103 000 000
4. Amoco Production Company
5. UPRR #42 Pan American AO #1
6. Wattenberg
7. Weld CO
8. 230.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04983/79-251
2. 05-123-09486-0000
3. 103 000 000
4. Amoco Production Company
5. Margaret Eichthaler B #1
6. Wattenberg
7. Weld CO
8. 90.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04984/79-234
2. 05-123-09416-0000
3. 103-000-000
4. Amoco Production Company
5. Glen L Hansen Gas Unit B #1
6. Wattenberg
7. Weld CO
8. 160.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04985/79-232
2. 05-123-09419-0000
3. 103 000 000
4. Amoco Production Company
5. UPRR #43 Pan American M #1
6. Wattenberg
7. Weld CO
8. 230.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04986/79-350
2. 05-123-08060-0000
3. 108 000 000
4. Amoco Production Company
5. Damiana Frank Unit #1
6. Wattenberg
7. Weld CO
8. 13.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04987/79-310
2. 05-123-08162-0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #22 Pan American GU K #1
6. Wattenberg
7. Weld CO
8. 12.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04988/79-374
2. 05-123-08011-0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #53 Pan American I #1
6. Wattenberg
7. Weld CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04989/79-291
2. 05-123-08156-0000
3. 108 000 000
4. Amoco Production Company
5. Oster Dan Unit #1
6. Wattenberg
7. Weld CO
8. 4.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastaern Pipeline Co

1. 80-04990/79-337
2. 05-123-07241-0000
3. 108 000 000
4. Amoco Production Company
5. Oster Pooling Unit #1
6. Wattenberg
7. Weld CO
8. 12.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04991/79-332
2. 05-123-08515-0000
3. 108 000 000
4. Amoco Production Company
5. Dreiling Michael R Gas Unit #1
6. Wattenberg
7. Weld CO
8. 21.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04992/79-366
2. 05-123-07738-0000
3. 108 000 000
4. Amoco Production Company
5. Sarchet Raymond V Unit B #1
6. Wattenberg
7. Weld CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04993/79-360
2. 05-123-08590-0000
3. 108 000 000
4. Amoco Production Company
5. Gurtler Russell L #1
6. Wattenberg
7. Weld CO
8. 19.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04994/79-312
2. 05-123-08109-0000
3. 108 000 000
4. Amoco Production Company
5. Hempstead Jackie Gas Unit #1
6. Wattenberg
7. Weld CO
8. 12.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04995/79-386
2. 05-123-08678-0000
3. 108 000 000
4. Amoco Production Company
5. Adler Floyd Gas Unit C #1
6. Wattenberg
7. Weld CO
8. 10.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04996/79-351
2. 05-123-08105-0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #42 Pan American N #1

6. Wattenberg
7. Weld CO
8. 17.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04997/79–333
2. 05–001–06457–0000
3. 108 000 000
4. Amoco Production Company
5. D–G–H–L #1
6. Wattenberg
7. Adams CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04998/79–384
2. 05–001–07038–0000
3. 108 000 000
4. Amoco Production Company
5. Champlin #75 Amoco Unit F #1
6. Wattenberg
7. Adams CO
8. 16.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–04999/79–393
2. 05–123–08052–0000
3. 108 000 000
4. Amoco Production Company
5. Croissant John Unit #1
6. Wattenberg
7. Weld CO
8. 8.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–05000/79–348
2. 05–001–06197–0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #24 Pan American #1
6. Jamboree
7. Adams CO
8. 14.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–05001/79–258
2. 05–001–07234–0000
3. 103 000 000
4. Amoco Production Company
5. David Small #2
6. Chieftain
7. Adams CO
8. 37.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–05002/79–257
2. 05–001–07277–0000
3. 103 000 000
4. Amoco Production Company
5. Champlin #67 Amoco G #1
6. Chieftain
7. Adams CO
8. 64.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–05003/79–296
2. 05–123–08106–0000
3. 108 000 000
4. Amoco Production Company
5. Booker Harold E Unit #1
6. Wattenberg
7. Weld CO
8. 19.4 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–05004/79–200
2. 05–001–00000–0000
3. 108 000 000
4. Koch Industries Inc
5. Pollard No 1
6. Wattenberg
7. Adams CO
8. 5.4 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80–05005/79–331
2. 05–123–07290–0000
3. 108 000 000
4. Amoco Production Company
5. State Of Colorado Z #1
6. Wattenberg
7. Weld CO
8. 2.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80–05006/79–353
2. 05–123–07223–0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #41 Pan American A #1
6. Wattenberg
7. Weld CO
8. 12.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80–05007/79–354
2. 05–123–07236–0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #41 Pan American B #1
6. Wattenberg
7. Weld CO
8. 11.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80–05008/79–308
2. 05–123–07307–0000
3. 108 000 000
4. Amoco Production Company
5. Hildenbrandt Pooling Unit #1
6. Wattenberg
7. Weld CO
8. 12.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80–05009/79–325
2. 05–123–07623–0000
3. 108 000 000
4. Amoco Production Company
5. Deroo Wilfred Unit #1
6. Wattenberg
7. Weld CO
8. 4.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80–05010/79–362
2. 05–123–08168–0000
3. 108 000 000
4. Amoco Production Company
5. Willard John W Gas Unit #1
6. Wattenberg
7. Weld CO
8. 1.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80–05011/79–383
2. 05–123–08567–0000
3. 108 000 000
4. Amoco Production Company
5. Camenisch David E Gas Unit #1
6. Wattenberg
7. Weld CO
8. 21.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80–05012/79–231
2. 05–123–09187–0000
3. 103 000 000
4. Amoco Production Company
5. Tom Russell E #2
6. Spindle
7. Weld CO
8. 558.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–05013/79–299
2. 05–123–07220–0000
3. 108 000 000
4. Amoco Production Company
5. UPRR #39 Pan American A #1
6. Wattenberg
7. Weld CO
8. 6.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80–05014/79–266
2. 05–123–09458–0000
3. 103 000 000
4. Amoco Production Company
5. Paul Schmidt Gas Unit B #1
6. Wattenberg
7. Weld CO
8. 257.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–05015/79–265
2. 05–123–09283–0000
3. 103 000 000
4. Amoco Production Company
5. Champlin #525 Amoco A #1
6. Wattenberg
7. Weld CO
8. 27.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–05016/79–277
2. 05–123–09321–0000
3. 103 000 000
4. Amoco Production Company
5. Carl Miller Gas Unit F #1
6. Wattenberg
7. Weld CO
8. 205.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–05017/79–283
2. 05–123–09223–0000
3. 103 000 000
4. Amoco Production Company
5. UPRR #22 Pan American R Gas Unit #1
6. Wattenberg
7. Weld CO
8. 230.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80–05018/79–239
2. 05–123–09215–0000
3. 103 000 000
4. Amoco Production Company
5. UPRR #42 Pan American Am Gas Unit #1
6. Wattenberg
7. Weld CO
8. 279.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-05019/79-238
2. 05-123-09418-0000
3. 103 000 000
4. Amoco Production Company
5. UPRR #42 Pan American R Gas Unit #1
6. Wattenberg
7. Weld CO
8. 148.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-05020/79-237
2. 05-123-09158-0000
3. 103 000 000
4. Amoco Production Company
5. UPRR #43 Pan American J Gas Unit #1
6. Wattenberg
7. Weld CO
8. 173.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-05021/79-263
2. 05-123-09478-0000
3. 103 000 000
4. Amoco Production Company
5. Cosslett E Gas Unit #1
6. Wattenberg
7. Weld CO
8. 128.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-05022/79-262
2. 05-123-09505-0000
3. 103 000 000
4. Amoco Production Company
5. UPRR #53 Pan American Gas Unit M #1
6. Wattenberg
7. Weld CO
8. 100.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-05023/79-272
2. 05-123-09339-0000
3. 103 000 000
4. Amoco Production Company
5. UPRR #38 Pan American G #1
6. Wattenberg
7. Weld CO
8. 67.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-05024/79-271
2. 05-123-09146-0000
3. 103 000 000
4. Amoco Production Company
5. Champlin #366 Amoco #1
6. Wattenberg
7. Weld CO
8. 77.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

Kansas Corporation Commission

1. Control Number (FERC/State)
2. API well number
3. Section of NGPA
4. Operator
5. Well name
6. Field or OCS area name
7. County, State or Block No.
8. Estimated annual volume
9. Date received at FERC
10. Purchaser(s)

1. 80-04627/K-79-0423
2. 15-165-20624-0000
3. 108 000 000
4. George A Angle
5. #5 Lebsack
6. Reichel
7. Rush KS
8. 15.0 million cubic feet
9. October 31, 1979
10. Kansas-Nebraska Natural Gas Co Inc

1. 80-04628/K-79-0424
2. 15-165-20574-0000
3. 108 000 000
4. George A Angle
5. #5 Lippert A
6. Reichel
7. Rush KS
8. 1.0 million cubic feet
9. October 31, 1979
10. Kansas-Nebraska Natural Gas Co Inc

1. 80-04629/K-79-0322
2. 15-129-00000-0000
3. 108 000 000
4. Suerte Oil Company
5. A W Hines No 1
6. Greenwood
7. Morton KS
8. 5.0 million cubic feet
9. October 31, 1979
10. Colorado Interstate Gas Co

1. 80-04630/K-79-0410
2. 15-093-20431-0000
3. 103 000 000
4. Beymer & Beymer
5. Davis #1
6. Hugoton
7. Kearny KS
8. 40.0 million cubic feet
9. October 31, 1979
10. Colorado Interstate Gas Company

1. 80-04631/K-79-0422
2. 15-151-20527-0000
3. 103 000 000
4. Argonaut Energy Corporation
5. Hartsell #1
6. None-Wildcat
7. Pratt KS
8. 117.0 million cubic feet
9. October 31, 1979
10. Panhandle Eastern Pipeline Company

1. 80-04632/K-79-0425
2. 15-145-20537-0000
3. 103 000 000
4. Halliburton Oil Producing Co
5. Schartz No 2-B
6. Zook
7. Pawnee KS
8. 100.0 million cubic feet
9. October 31, 1979
10. Kansas-Nebraska Natural Gas Co Inc

1. 80-04633/K-79-0646
2. 15-129-10112-0000
3. 108 000 000
4. Amoco Production Company
5. Jensen Gas Unit #1
6. Bernyman Richfield-Morrison
7. Morton KS
8. 12.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Company

1. 80-04650/K-79-0582
2. 15-175-00033-0000
3. 108 000 000
4. Cabot Corporation
5. H F Massoni B #1
6. Arkalon
7. Seward KS
8. 4.6 million cubic feet
9. October 31, 1979
10. Panhandle Eastern Pipeline Company

1. 80-04651/K-79-0583
2. 15-175-00000-0000
3. 108 000 000
4. Cabot Corporation
5. Naden #1
6. Hugoton-Kansas
7. Seward KS
8. 9.0 million cubic feet
9. October 31, 1979
10. Cities Service Gas Co

1. 80-04652/K-79-0584
2. 15-175-00000-0000
3. 108 000 000
4. Cabot Corporation
5. Mercer #2
6. Kansas-Hugoton
7. Seward KS
8. 19.4 million cubic feet
9. October 31, 1979
10. Cities Service Gas Co

1. 80-04658/K-79-0679
2. 15-129-10123-0000
3. 108 000 000
4. Amoco Production Company
5. Myers Gas Unit B #1
6. Kinsler West Morrow
7. Morton KS
8. 7.0 million cubic feet
9. October 31, 1979
10. Kansas Power & Light Co

1. 80-04659/K-79-0680
2. 15-129-10099-0000
3. 108 000 000
4. Amoco Production Company
5. Atkinson Gas Unit B #1
6. Kansler East Morrow
7. Morton KS
8. 15.0 million cubic feet
9. October 31, 1979
10. Kansas Power and Light Co

1. 80-04660/K-79-0687
2. 15-129-00000-0000
3. 108 000 000
4. Amoco Production Company
5. Sweangen Gas Unit #1
6. Hugoton Chase
7. Morton KS
8. 16.0 million cubic feet
9. October 31, 1979
10. Cities Service Gas Co

1. 80-04661/K-79-0666
2. 15-093-00000-0000
3. 108 000 000
4. Amoco Production Company
5. Martin Gas Unit C #1
6. Hugoton Chase
7. Kearney KS
8. .0 million cubic feet
9. October 31, 1979
10. Cities Service Gas Co

1. 80-04662/K-79-0656
2. 15-187-20284-0000
3. 103 000 000
4. Amoco Production Company
5. Lindsley Gas Unit #2
6. Council Grove
7. Stanton KS
8. 73.0 million cubic feet
9. October 31, 1979
10. Cities Service Gas Company

1. 80-04663/K-79-0657
2. 15-187-00000-0000

3. 108 000 000
4. Amoco Production Company
5. Eyman Gas Unit B #1
6. Hugoton Chase
7. Stanton KS
8. .0 million cubic feet
9. October 31, 1979
10. Cities Service Gas Company

1. 80-04664/K-79-0664
2. 15-093-00000-0000
3. 108 000 000
4. Amoco Production Company
5. Bentley Gas Unit #2
6. Hugoton Chase
7. Kearny KS
8. 16.0 million cubic feet
9. October 31, 1979
10. Cities Service Gas Company

1. 80-04665/K-79-0662
2. 15-187-00000-0000
3. 108 000 000
4. Amoco Production Company
5. Dotter Gas Unit B #1
6. Hugoton Chase
7. Stanton KS
8. 19.0 million cubic feet
9. October 31, 1979
10. Cities Services Gas Company

1. 80-04666/K-79-0661
2. 15-093-20390-0000
3. 103 000 000
4. Amoco Production Company
5. Moser Gas Unit B #2
6. Panoma/Council Grove
7. Kearny KS
8. 167.0 million cubic feet
9. October 31, 1979
10. Cities Service Gas Company

1. 80-04667/K-79-0658
2. 15-093-20515-0000
3. 103 000 000
4. Amoco Production Company
5. Kleeman Gas Unit A #2
6. Panoma/Council Grove
7. Kearny KS
8. 160.0 million cubic feet
9. October 31, 1979
10. Cities Service Gas Company

1. 80-04668/K-79-0647
2. 15-129-10109-0000
3. 108 000 000
4. Amoco Production Company
5. Fidelity Savings Gas Unit B #1
6. Kinsler East Morrow
7. Morton KS
8. 14.0 million cubic feet
9. November 1, 1979
10. Kansas Power & Light Company

1. 80-04669/K-79-0645
2. 15-129-00000-0000
3. 108 000 000
4. Amoco Production Company
5. Cowan Gas Unit A #1
6. Hugoton-Chase
7. Morton KS
8. 15.0 million cubic feet
9. November 1, 1979
10. Cities Service Gas Company

1. 80-04670/K-79-0644
2. 15-093-00000-0000
3. 108 000 000
4. Amoco Production Company
5. Claypool Gas Unit #1
6. Hugoton-Chase
7. Kearny KS
8. 10.0 million cubic feet
9. November 1, 1979
10. Cities Service Gas Company

1. 80-04671/K-79-0643
2. 15-055-00000-0000
3. 108 000 000
4. Amoco Production Company
5. Smith Gas Unit D #1
6. Hugoton Chase
7. Finney KS
8. 9.0 million cubic feet
9. November 1, 1979
10. Cities Service Gas Company

1. 80-04672/K-79-0648
2. 15-187-00067-0000
3. 108 000 000
4. Amoco Production Company
5. Herrick Gas Unit #1
6. Shore Wabaunsee
7. Stanton KS
8. 10.0 million cubic feet
9. November 1, 1979
10. Cities Service Gas Co

1. 80-04673/K-79-0272
2. 15-071-20156-0000
3. 103 000 000
4. E L Smith III
5. Peachey #1
6. Byerly
7. Greeley KS
8. 108.0 million cubic feet
9. November 1, 1979
10. Kansas-Nebraska Natural Gas Co

1. 80-04674/K-79-0693
2. 15-187-00000-0000
3. 108 000 000
4. Amoco Production Company
5. Reece Gas Unit #1
6. Hugoton Chase
7. Stanton KS
8. 12.0 million cubic feet
9. November 1, 1979
10. Cities Service Gas Company

1. 80-04675/K-79-0444
2. 15-047-20378-0000
3. 102 000 000
4. F G Holl
5. Chalk No 1-13
6. WAC
7. Edwards KS
8. 200.0 million cubic feet
9. November 1, 1979
10. Kansas-Nebraska Natural Gas Co Inc

1. 80-04676/K-79-0660
2. 15-155-20506-0000
3. 102 000 000
4. F & M Oil Co Inc
5. #1 Elward NE SW NE 15-25S-6W
6. Elward
7. Reno KS
8. 60.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04677/K-79-0677
2. 15-129-00000-0000
3. 108 000 000
4. Amoco Production Company
5. Wratil Gas Unit A #1
6. Hugoton Chase
7. Morton KS
8. 20.0 million cubic feet
9. November 1, 1979
10. Cities Service Gas Co

1. 80-04678/K-79-0678
2. 15-093-20538-0000
3. 103 000 000
4. Amoco Production Company
5. Bergkamp #1
6. Panoma/Council Grove
7. Kearny KS
8. 160.0 million cubic feet
9. November 1, 1979
10. Cities Service Gas Company

1. 80-04679/K-79-0318
2. 15-055-20166-0000
3. 108 000 000
4. True Oil Company
5. Campbell #1-15
6. Hugoton
7. Finney KS
8. 1.3 million cubic feet
9. November 1, 1979
10. Northern Natural Gas Company

1. 80-04680/K-79-0480
2. 15-093-20486-0000
3. 102 000 000
4. W B Osborn Jr (Operator)
5. Zongker #1-A
6. Panoma
7. Kearny KS
8. 30.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline

1. 80-04681/K-79-0311
2. 15-189-20422-0000
3. 102 000 000
4. Anadarko Production Company
5. Guyer B-1 (Lower Morrow G)
6. Gentzler
7. Stevens KS
8. 140.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04682/K-79-0517
2. 15-081-00000-0000
3. 108 000 000
4. Northern Pump Company
5. Rooney #1 71066
6. Hugoton
7. Haskell KS
8. 15.0 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co

1. 80-04683/K-79-0516
2. 15-055-00000-0000
3. 108 000 000
4. Northern Pump Company
5. Neuman D1 63066
6. Hugoton
7. Finney KS
8. 18.0 million cubic feet
9. November 1, 1979
10. Northern Natural Gas Co

1. 80-04684/K-79-0515
2. 15-055-00000-0000
3. 108 000 000
4. Northern Pump Company
5. Danner #A1 23177
6. Hugoton
7. Finney KS
8. 20.0 million cubic feet
9. November 1, 1979
10. Cities Service Gas Co

1. 80-04685/K-79-0514
2. 15-055-00000-0000
3. 108 000 000
4. Northern Pump Company
5. Burgardt #1 08119
6. Hugoton

7. Finney KS
8. 18.0 million cubic feet
9. November 1, 1979
10. Cities Service Gas Co

1. 80-04686/K-79-0513
2. 15-055-00000-0000
3. 108 000 000
4. Northern Pump Company
5. Becker #1 08315
6. Hugoton
7. Finney KS
8. 18.0 million cubic feet
9. November 1, 1979
10. Northern Natural Gas Co

1. 80-04687/K-79-0512
2. 15-055-00000-0000
3. 108 000 000
4. Northern Pump Company
5. Keller #1 48053
6. Hugoton
7. Finney KS
8. 15.0 million cubic feet
9. November 1, 1979
10. Cities Service Gas Co

1. 80-04688/K-79-0511
2. 15-189-00000-0000
3. 103 000 000
4. Northern Pump Company
5. Carpenter #8
6. Panoma Council Grove Gas Pool
7. Stevens KS
8. 104.0 million cubic feet
9. November 1, 1979
10. Natural Natural Gas Co

1. 80-04689/K-79-0510
2. 15-189-00000-0000
3. 103 000 000
4. Northern Pump Company
5. Carpenter #9
6. Panoma Council Grove Gas Pool
7. Stevens KS
8. 67.0 million cubic feet
9. November 1, 1979
10. Northern Natural Gas Co

1. 80-04690/K-79-0508
2. 15-055-00000-0000
3. 103 000 000
4. Northern Pump Company
5. J J Meyer #2 55103
6. Hugoton
7. Finney KS
8. 53.0 million cubic feet
9. November 1, 1979
10. Cities Service Gas Co

1. 80-04691/K-79-0507
2. 15-189-00000-0000
3. 103 000 000
4. Northern Pump Company
5. Carpenter #7
6. Panoma Council Grove Gas Pool
7. Stevens KS
8. 150.0 million cubic feet
9. November 1, 1979
10. Northern Natural Gas Co

1. 80-04692/K-79-0506
2. 15-033-20262-0000
3. 103 000 000
4. Calvin Exploration Inc
5. #1-31 Coate
6. Overocker Extension
7. Comanche KS
8. 360.0 million cubic feet
9. November 1, 1979
10. Northern Natural Gas Co

1. 80-04693/K-79-0524
2. 15-059-20347-0000
3. 108 000 000
4. Glacier Petroleum Co Inc
5. Frieden (Flora) #1
6. Pomona
7. Franklin KS
8. 12.7 million cubic feet
9. November 1, 1979
10. Cities Service

1. 80-04694/K-79-0520
2. 15-047-20391-0000
3. 103 000 000
4. Pickrell Drilling Company
5. Fisher S #1
6. Mull
7. Edwards KS
8. 64.0 million cubic feet
9. November 1, 1979
10. Kansas-Nebraska Natural Gas Co Inc

1. 80-04695/K-79-0519
2. 15-047-20356-0000
3. 103 000 000
4. Pickrell Drilling Company
5. Voegeli A #1
6. Mull West
7. Edwards KS
8. 22.0 million cubic feet
9. November 1, 1979
10. Kansas-Nebraska Natural Gas Co Inc

1. 80-04696/K-79-0518
2. 15-047-20386-0000
3. 102 000 000
4. Pickrell Drilling Company
5. Neff A #1
6. CLW East
7. Edwards KS
8. 73.0 million cubic feet
9. November 1, 1979
10. Kansas-Nebraska Natural Gas Co Inc

1. 80-04697/K-79-0321
2. 15-075-00000-0000
3. 108 000 000
4. Suerte Oil Company
5. M R Bernstorf No 1
6. Bradshaw
7. Hamilton KS
8. 10.5 million cubic feet
9. November 1, 1979
10. Kansas-Nebraska Natural Gas Co Inc

1. 80-04698/K-79-0320
2. 15-081-20052-0000
3. 108 000 000
4. True Oil Company
5. Watson #1-11
6. Hugoton
7. Haskell KS
8. 16.0 million cubic feet
9. November 1, 1979
10. Northern Natural Gas Company

1. 80-04699/K-79-0503
2. 15-205-20375-0000
3. 108 000 000
4. Ox Bow Gas Co
5. Stryker #2
6. E ½ SE ¼ S36 T29 R14E
7. Wilson KS
8. 18.2 million cubic feet
9. November 1, 1979
10. Union Gas Co

1. 80-04700/K-79-0319
2. 15-055-20167-0000
3. 108 000 000
4. Cambria Oil Company
5. Faldtz #1-35
6. Hugoton
7. Finney KS
8. 3.4 million cubic feet
9. November 1, 1979
10. Northern Natural Gas Company

1. 80-04701/K-79-0504
2. 15-205-20330-0000
3. 108 000 000
4. Ox Bow Gas Co
5. Stryker #1
6. SE ¼ SE ¼ S36 T29 R14E
7. Wilson KS
8. 7.3 million cubic feet
9. November 1, 1979
10. Union Gas Co

1. 80-04702/K-79-00505
2. 15-205-20374-0000
3. 108 000 000
4. Ox Bow Gas Co
5. Holder #1
6. SE ¼ NE ¼ SIT 30 R 14 E
7. Wilson KS
8. 15.3 million cubic feet
9. November 1, 1979
10. Union Gas Co

1. 80-04722/K-79-0354
2. 15-129-20356-0000
3. 103 000 000
4. Anadarko Production Company
5. Fouts A No 1
6. Panoma Council Grove
7. Morton KS
8. 63.0 million cubic feet
9. November 1, 1979
10. Cimarron-Quinque System A Div of AP

1. 80-04723/K-79-0357
2. 15-047-00000-0000
3. 108 000 000
4. Getty Oil Company
5. E C Smith No 1
6. Edstaff
7. Edwards KS
8. 12.4 million cubic feet
9. November 1, 1979
10. Northern Natural Gas Co

1. 80-04724/K-79-0339
2. 15-007-20679-0000
3. 103 000 000
4. A L Abercrombie Inc
5. Simpson #1
6. Unnamed
7. Barber KS
8. 219.0 million cubic feet
9. November 1, 1979
10. Kansas Gas Supply Corporation

1. 80-04725/K-79-00340
2. 15-145-00000-0000
3. 108 000 000
4. Sterling Drilling Company
5. Van Vleet #1
6. Carpenter Extension
7. Pawnee KS
8. 4.7 million cubic feet
9. November 1, 1979
10. Kansas Nebraska Natural Gas Co Inc

1. 80-04726/K-79-0352
2. 15-047-20385-0000
3. 103 000 000
4. Continental Oil Co
5. E J Huff No 1
6. Clw-Mississippi (Formerly Charlet)
7. Edwards KS
8. 82.0 million cubic feet
9. November 1, 1979
10. Kansas-Nebraska Pipeline

1. 80-04727/K-79-0358

2. 15-007-00000-0000
3. 108 000 000
4. Getty Oil Company
5. Morrow A No 1
6. Aetna
7. Barber KS
8. 11.0 million cubic feet
9. November 1, 1979
10. Cities Service Co
1. 80-04728/K-79-0356
2. 15-047-00000-0000
3. 108 000 000
4. Getty Oil Company
5. F H Barstow No 1
6. Edstaff
7. Edwards KS
8. 17.9 million cubic feet
9. November 1, 1979
10. Northern Natural Gas Company
1. 80-04729/K-79-0362
2. 15-175-00000-0000
3. 108 000 000
4. R L Hatcher
5. Cook #1-26
6. Hugoton
7. Seward KS
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Company
1. 80-04730/K-79-0314
2. 15-189-20422-0000
3. 103 000 000
4. Anadarko Production Company
5. Guyer B-1 (Council Grove)
6. Panoma
7. Stevens KS
8. 100.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Company
1. 80-04731/K-79-0317
2. 15-055-20169-0000
3. 108 000 000
4. Cambria Oil Company
5. Reed #1-17
6. Hugoton
7. Finney KS
8. 5.9 million cubic feet
9. November 1, 1979
10. Northern Natural Gas Company
1. 80-04732/K-79-0649
2. 15-075-20211-0000
3. 103 000 000
4. Amoco Production Company
5. Overbey
6. Panoma/Council Grove
7. Hamilton KS
8. 110.0 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co
1. 80-04733/K-79-0650
2. 15-075-20240-0000
3. 103 000 000
4. Amoco Production Company
5. Frease Gas Unit #1
6. Panoma/Council Grove
7. Hamiltion KS
8. 110.0 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Co
1. 80-04734/K-79-0651
2. 15-093-20392-0000
3. 103 000 000
4. Amoco Production Company
5. Vernon G Kropp #2
6. Panoma/Council Grove
7. Kearny KS
8. 148.0 million cubic feet
9. November 1, 1979
10. Cities Service Gas Company
1. 80-04735/K-79-0652
2. 15-187-20255-0000
3. 103 000 000
4. Amoco Production Company
5. Julian Gas Unit C #2
6. Panoma/Council Grove
7. Stanton KS
8. 90.0 million cubic feet
9. November 1, 1979
10. Cities Service Gas Company
1. 80-04736/K-79-0653
2. 15-129-20329-0000
3. 103 000 000
4. Amoco Production Company
5. Light Gas Unit B #2
6. Panoma/Council Grove
7. Morton KS
8. 180.0 million cubic feet
9. November 1, 1979
10. Cities Service Gas Company
1. 80-04737/K-79-0654
2. 15-093-20388-0000
3. 103 000 000
4. Amoco Production Company
5. Krehbiel Gas Unit #2
6. Panoma/Council Grove
7. Kearny KS
8. 69.0 million cubic feet
9. November 1, 1979
10. Cities Service Gas Company

Montana Board of Oil and Gas Conservation

1. Control Number (FERC/State)
2. API well number
3. Section of NGPA
4. Operator
5. Well name
6. Field or OCS area name
7. County, State or block No.
8. Estimated annual volume
9. Date received at FERC
10. Purchaser(s)
1. 80-04634/9-79-266
2. 25-071-21427-0000
3. 108 000 000
4. Terra Resources Inc
5. Bowman 2-8
6. Swanson Creek
7. Phillips MT
8. 9.9 million cubic feet
9. October 31, 1979
10. Montana-Dakota Utilities Co
1. 80-04635/9-79-268
2. 25-071-21426-0000
3. 108 000 000
4. Terra Resources Inc
5. Bowman 1-8
6. Swanson Creek
7. Phillips MT
8. 7.5 million cubic feet
9. October 31, 1979
10. Montana-Dakota Utilities Co
1. 80-04636/9-79-265
2. 25-071-21231-0000
3. 108 000 000
4. Terra Resources Inc
5. Bowman 1-7
6. Swanson Creek
7. Phillips MT
8. 18.7 million cubic feet
9. October 31, 1979
10. Montana-Dakota Utilities Co

Oklahoma Corporation Commission

1. Control Number (F.E.R.C./State)
2. API well number
3. Section of NGPA
4. Operator
5. Well name
6. Field or OCS area name
7. County, State or block No.
8. Estimated annual volume
9. Date received at FERC
10. Purchaser(s)
1. 80-04703/00651
2. 35-071-21397-0000
3. 103 000 000
4. Shawnee Oil & Gas Corp
5. State #2
6. West-Newkirk
7. Kay OK
8. 29.0 million cubic feet
9. November 1, 1979
10. Eufaula Enterprises
1. 80-04704/00650
2. 35-071-21264-0000
3. 103 000 000
4. Shawnee Oil & Gas Corp
5. Kretchmar #3
6. West-Newkirk
7. Kay OK
8. 29.0 million cubic feet
9. November 1, 1979
10. Eufaula Enterprises
1. 80-04705/00649
2. 35-071-21262-0000
3. 103 000 000
4. Shawnee Oil & Gas Corp
5. Kaspar #3
6. West-Newkirk
7. Kay OK
8. 29.0 million cubic feet
9. November 1, 1979
10. Eufaula Enterprises
1. 80-04706/00648
2. 35-071-21237-0000
3. 103 000 000
4. Shawnee Oil & Gas Corp
5. State #1
6. West-Newkirk
7. Kay OK
8. 29.0 million cubic feet
9. November 1, 1979
10. Eufaula Enterprises
1. 80-04707/00647
2. 35-071-21263-0000
3. 103 000 000
4. Shawnee Oil & Gas Corp
5. Kretchmar #4
6. West-Newkirk
7. Kay OK
8. 29.0 million cubic feet
9. November 1, 1979
10. Eufaula Enterprises
1. 80-04708/00646
2. 35-071-21261-0000
3. 103 000 000
4. Shawnee Oil & Gas Corp
5. Kaspar #4
6. West-Newkirk
7. Kay OK
8. 29.0 million cubic feet
9. November 1, 1979
10. Eufaula Enterprises
1. 80-04709/00645
2. 35-071-21238-0000

3. 103 000 000
4. Shawnee Oil & Gas Corp
5. Kretchmar #2
6. West-Newkirk
7. Kay OK
8. 29.0 million cubic feet
9. November 1, 1979
10. Eufaula Enterprises

1. 80-04710/00644
2. 35-071-21240-0000
3. 103 000 000
4. Shawnee Oil & Gas Corp
5. Kaspar #2
6. West-Newkirk
7. Kay OK
8. 29.0 million cubic feet
9. November 1, 1979
10. Eufaula Enterprises

1. 80-04711/00643
2. 35-071-21399-0000
3. 103 000 000
4. Shawnee Oil & Gas Corp
5. McIntyre #2
6. West-Newkirk
7. Kay OK
8. 29.0 million cubic feet
9. November 1, 1979
10. Eufaula Enterprises

1. 80-04712/00642
2. 35-071-21235-0000
3. 103 000 000
4. Shawnee Oil & Gas Corp
5. Kretchmar #1
6. West-Newkirk
7. Kay OK
8. 29.0 million cubic feet
9. November 1, 1979
10. Eufaula Enterprises

1. 80-04713/00641
2. 35-071-21236-0000
3. 103 000 000
4. Shawnee Oil & Gas Corp
5. Kaspar #1
6. West-Newkirk
7. Kay OK
8. 29.0 million cubic feet
9. November 1, 1979
10. Eufaula Enterprises

1. 80-04714/00640
2. 35-071-21239-0000
3. 103 000 000
4. Shawnee Oil & Gas Corp
5. McIntyre #1
6. West-Newkirk
7. Kay OK
8. 29.0 million cubic feet
9. November 1, 1979
10. Eufaula Enterprises

1. 80-04715/00561
2. 35-043-20828-0000
3. 103 000 000
4. Getty Oil Company
5. P W Burton No 1-9
6. Putnam
7. Dewey OK
8. 53.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern P L Company

1. 80-04716/00560
2. 35-129-20239-0000
3. 103 000 000
4. Texas Pacific Oil Company Inc
5. Wright Unit #1
6. Reydon West
7. Roger Mills OK
8. 540.0 million cubic feet
9. November 1, 1979
10. Kansas-Nebraska Natural Gas Co Inc

1. 80-04717/00453
2. 35-079-20283-0000
3. 103 000 000
4. Jim L Hanna DBA Hanna Oil and Gas Co
5. Ellen Christian #1
6. West Cedars
7. Leflore OK
8. 200.0 million cubic feet
9. November 1, 1979
10.

1. 80-04718/00456
2. 35-135-20053-0000
3. 103 000 000
4. Jim L Hanna DBA Hanna Oil and Gas Co
5. Kay Rodgers #1
6. Paw Paw NE
7. Sequoyah OK
8. 187.0 million cubic feet
9. November 1, 1979
10. Arkansas Oklahoma Gas Corporation

1. 80-04719/00184
2. 35-059-20687-0000
3. 103 000 000
4. Lear Petroleum Corporation
5. German No 1-A
6. Clark Creek East
7. Harper OK
8. 274.0 million cubic feet
9. November 1, 1979
10. Northern Natural Gas Company

1. 80-04720/00764
2. 35-079-20268-0000
3. 103 000 000
4. Lear Petroleum Corporation
5. McClain No 1
6. West Cedars
7. Leflore OK
8. 593.0 million cubic feet
9. November 1, 1979
10. Arkansas Louisiana Gas Company

1. 80-04721/00173
2. 35-139-00000-0000
3. 108 000 000
4. Pan Eastern Exploration Company
5. Parkes #1-27
6. Guymon-Hugoton
7. Texas OK
8. 7.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Co

1. 80-04738/00761
2. 35-139-00000-0000
3. 108 000 000
4. Pan Eastern Exploration Company
5. Wilson #1-31
6. Guymon-Hugoton
7. Texas OK
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Company

1. 80-04739/00748
2. 35-139-00000-0000
3. 108 000 000
4. Pan Eastern Exploration Company
5. Gilmore 1-29
6. Guymon-Hugoton
7. Texas OK
8. 9.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipeline Company

1. 80-04740/00723
2. 35-087-00000-0000
3. 108 000 000
4. A C Richards
5. Jay Bearden No 1
6. Golden Trend
7. McClain OK
8. 8.0 million cubic feet
9. November 1, 1979
10. Warren Petroleum Company

1. 80-04741/00722
2. 35-051-00000-0000
3. 108 000 000
4. A C Richards
5. Walter Welch No 1
6. Golden Trend
7. Grady OK
8. 10.0 million cubic feet
9. November 1, 1979
10. Phillips Petroleum Co

1. 80-04742/00721
2. 35-049-00000-0000
3. 108 000 000
4. A C Richards
5. R C Kennedy No 1
6. Golden Trend
7. Garvin OK
8. 6.0 million cubic feet
9. November 1, 1979
10. Warren Petroleum Company

1. 80-04743/00720
2. 35-049-00000-0000
3. 108 000 000
4. A C Richards
5. O W Kennedy No 1
6. Golden Trend
7. Garvin OK
8. 13.0 million cubic feet
9. November 1, 1979
10. Warren Petroleum Co

1. 80-04744/00719
2. 35-049-00000-0000
3. 108 000 000
4. A C Richards
5. C E McKey No 3
6. Golden Trend
7. Garvin OK
8. 3.0 million cubic feet
9. November 1, 1979
10. Lone Star Gas Company

1. 80-04745/00718
2. 35-049-00000-0000
3. 108 000 000
4. A C Richards
5. C E McKey No 2
6. Golden Trend
7. Garvin OK
8. 3.0 million cubic feet
9. November 1, 1979
10. Lone Star Gas Company

1. 80-04746/00539
2. 35-059-20656-0000
3. 103 000 000
4. S K Tuthill & B J Barbee
5. Fee #1-33
6. Mocane-Laverne
7. Harper OK
8. 120.0 million cubic feet
9. November 1, 1979
10. Northern Natural Gas Co

1. 80-04747/00538
2. 35-059-20590-0000
3. 103 000 000
4. St Joe Petroleum (US) Corporation
5. Devore No 1
6.

7. Harper OK
8. 14.0 million cubic feet
9. November 1, 1979
10. Northern Natural Gas Company

1. 80-04748/00519
2. 35-019-21845-0000
3. 103 000 000
4. Gray Operating Company
5. Dudley #2
6. South Wilson
7. Carter OK
8. 7.0 million cubic feet
9. November 1, 1979
10. Oklahoma Natural Gas Company

1. 80-04749/00518
2. 35-019-21820-0000
3. 103 000 000
4. Gray Operating Company
5. Tadlock #1
6. South Wilson
7. Carter OK
8. 40.0 million cubic feet
9. November 1, 1979
10. Oklahoma Natural Gas Company

1. 80-04750/00358
2. 35-007-21316-0000
3. 103 000 000
4. Ladd Petroleum Corporation
5. Mehl #2
6. Boyd South
7. Beaver OK
8. 209.0 million cubic feet
9. November 1, 1979
10. Natural Gas Pipeline Co of America

1. 80-04751/00725
2. 35-151-00000-0000
3. 108 000 000
4. A C Richards
5. George Hager No 1
6. State Line
7. Woods OK
8. 5.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Co

1. 80-04752/00747
2. 35-139-00000-0000
3. 108 000 000
4. Pan Eastern Exploration Company
5. Allender #1-7
6. Guymon-Hugoton
7. Texas OK
8. 8.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Company

1. 80-04753/00746
2. 35-139-20624-0000
3. 108 000 000
4. Argonaut Energy Corporation
5. Myers #1 139-46811
6. Guymon-Hugoton
7. Texas OK
8. 6.5 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Company

1. 80-04754/00724
2. 35-073-00000-0000
3. 108 000 000
4. A C Richards
5. Mollie Hill No 1
6. Sooner Trend
7. Kingfisher OK
8. 10.0 million cubic feet
9. November 1, 1979
10. Phillips Petroleum Company

1. 80-04755/00763
2. 35-139-00000-0000
3. 108 000 000
4. Pan Eastern Exploration Company
5. Masin 1-20
6. Guymon-Hugoton
7. Texas OK
8. 20.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Company
Kansas-Nebraska Nat Gas Co

1. 80-04756/00405
2. 35-003-00141-0000
3. 108 000 000
4. Energy Reserves Group Inc
5. Maxey #1
6. Helena
7. Alfalfa OK
8. 11.0 million cubic feet
9. November 1, 1979
10. Union Texas Petroleum

1. 80-04757/00038
2. 35-007-21497-0000
3. 103 000 000
4. Sovereign Exploration Co
5. Sovereign No 1 Lewis
6. South Logan
7. Beaver OK
8. 1500.0 million cubic feet
9. November 1, 1979
10. Northern Natural Gas

1. 80-04758/00174
2. 35-135-20051-0000
3. 103 000 000
4. Lear Petroleum Corporation
5. Gunter No 1
6. Kinta
7. Sequoyah OK
8. 39.0 million cubic feet
9. November 1, 1979
10. Arkansas Louisiana Gas Company

1. 80-04759/00144
2. 35-063-20825-0000
3. 103 000 000
4. Texasgulf Inc
5. Cheyenne et al Shepherd No 1-20
6. Gilcrease
7. Hughes OK
8. 100.0 million cubic feet
9. November 1, 1979
10.

1. 80-04760/00408
2. 35-007-35235-0000
3. 108 000 000
4. Monsanto Company
5. Everette-State #1 OTC #007-08790
6. Mocane Morrow #6
7. Beaver OK
8. 16.7 million cubic feet
9. November 1, 1979
10. Northern Natural Gas Company

1. 80-04761/00537
2. 35-045-20699-0000
3. 103 000 000
4. Filon Exploration Corporation
5. Lois Brown No 1
6. West Shattuck
7. Ellis OK
8. 73.0 million cubic feet
9. November 1, 1979
10. Transwestern Pipeline Company

1. 80-04762/00520
2. 35-019-21857-0000
3. 103 000 000
4. Gray Operating Company
5. McGee #1
6. South Wilson
7. Carter OK
8. 3.7 million cubic feet
9. November 1, 1979
10. Aminoil USA Inc

1. 80-04763/00157
2. 35-061-20200-0000
3. 103 000 000
4. Exxon Corporation
5. Cummings Estate #2
6. Cromwell
7. Haskell OK
8. 183.0 million cubic feet
9. November 1, 1979
10. Delhi Gas Pipeline Co

1. 80-04764/00147
2. 35-049-20973-0000
3. 103 000 000
4. Texasgulf Inc
5. Cheyenne et al Bernice No 1-5
6. South Florence Chapel
7. Garvin OK
8. 6.0 million cubic feet
9. November 1, 1979
10. Warren Petroleum Company

1. 80-04765/00953
2. 35-139-00000-0000
3. 108 000 000
4. Graham-Michaelis Corporation
5. Gilliland #1
6. Camrick
7. Texas OK
8. 15.5 million cubic feet
9. November 1, 1979
10. Natural Gas Pipe Line

1. 80-04766/00778
2. 35-007-20903-0000
3. 108 000 000
4. Argonaut Energy Corporation
5. Hein #1
6. Unallocated
7. Beaver OK
8. 4.5 million cubic feet
9. November 1, 1979
10. Northern Natural Gas Company

1. 80-04767/00770
2. 35-139-00000-0000
3. 108 000 000
4. Pan Eastern Exploration Company
5. Lennen #1
6. Guymon-Hugoton
7. Texas OK
8. 14.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Company

1. 80-04768/00769
2. 35-139-00000-0000
3. 108 000 000
4. Pan Eastern Exploration Company
5. Kornele 1-10
6. Carthage Gas Area
7. Texas OK
8. 10.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Company

West Virginia Department of Mines, Oil and Gas Division

1. Control Number (F.E.R.C./State)
2. API well number
3. Section of NGPA
4. Operator
5. Well name
6. Field or OCS area name
7. County, State or block No.

8. Estimated annual volume
9. Date received at FERC
10. Purchaser(s)

1. 80–04637
2. 47–021–22724–0000
3. 108 000 000
4. Dennis D Blauser
5. M E Gainer #3
6. Dekalb
7. Gilmer WV
8. 2.0 million cubic feet
9. October 31, 1979
10. Equitable Gas Company

1. 80–04638
2. 47–021–22723–0000
3. 108 000 000
4. Dennis D Blauser
5. H H Gainer #2
6. Dekalb
7. Gilmer WV
8. 2.0 million cubic feet
9. October 31, 1979
10. Equitable Gas Company

1. 80–04639
2. 47–017–01817–0000
3. 108 000 000
4. Dennis D Blauser
5. F A Coulehan #2
6. West Union
7. Doddridge WV
8. 10.0 million cubic feet
9. October 31, 1979
10. Equitable Gas Company

1. 80–04640
2. 47–017–21770–0000
3. 108 000 000
4. Dennis D Blauser
5. G L Swentzel #1
6. West Union
7. Doddridge WV
8. 16.0 million cubic feet
9. October 31, 1979
10. Equitable Gas Company

1. 80–04641
2. 47–015–21178–0000
3. 108 000 000
4. Dennis D Blauser
5. E R C & L #12
6. Henry
7. Clay WV
8. 18.0 million cubic feet
9. October 31, 1979
10. Equitable Gas Company

1. 80–04642
2. 47–007–21218–0000
3. 108 000 000
4. Dennis D Blauser
5. Anne Hall #1
6. Birch
7. Braxton WV
8. 10.0 million cubic feet
9. October 31, 1979
10. Equitable Gas Company

1. 80–04643
2. 47–067–20359–0000
3. 108 000 000
4. Dennis D Blauser
5. ERC & L #4
6. Summersville
7. Nicholas WV
8. 1.0 million cubic feet
9. October 31, 1979
10. Equitable Gas Company

1. 80–04644
2. 47–085–23650–0000
3. 108 000 000
4. Dennis D Blauser
5. G P Bartlett #1
6. Union
7. Ritchie WV
8. 14.0 million cubic feet
9. October 31, 1979
10. Consolidated Gas Corporation

1. 80–04645
2. 47–097–01392–0000
3. 108 000 000
4. Allegheny Land & Mineral Co
5. A–441
6. Washington District
7. Upshur WV
8. 4.2 million cubic feet
9. October 31, 1979
10. Consolidated Gas Supply Corp

1. 80–04646
2. 47–033–00948–0000
3. 108 000 000
4. Allegheny Land & Mineral Co
5. A–578
6. Grant District
7. Harrison WV
8. 2.5 million cubic feet
9. October 31, 1979
10. Consolidated Gas Supply Corp

1. 80–04647
2. 47–041–01452–0000
3. 108 000 000
4. Allegheny Land & Mineral Company
5. A–307
6. Court House District
7. Lewis WV
8. 3.7 million cubic feet
9. October 31, 1979
10. Equitable Gas

1. 80–04648
2. 47–041–01507–0000
3. 108 000 000
4. Allegheny Land & Mineral Company
5. A–320
6. Hackers Creek District
7. Lewis WV
8. 5.9 million cubic feet
9. October 31, 1979
10. Equitable Gas

1. 80–04649
2. 47–097–21690–0000
3. 108 000 000
4. Seneca-Upshur Petroleum Co
5. Katherine Shahan #1
6. Banks
7. Upshur WV
8. 1.0 million cubic feet
9. October 31, 1979
10. Equitable Gas Co

U.S. Geological Survey, Metairie, La.

1. Control Number (F.E.R.C./State)
2. API well number
3. Section of NGPA
4. Operator
5. Well name
6. Field or OCS area name
7. County, State or block No.
8. Estimated annual volume
9. Date received at FERC
10. Purchaser(s)

1. 80–04653/G9–842
2. 17–708–40361–0000–0
3. 102 000 000
4. Transco Exploration Company
5. A–4
6. South Marsh Island
7. 107
8. 270.0 million cubic feet
9. October 31, 1979
10. Transco Gas Pipe Line Corp

1. 80–04654/G9–749
2. 17–710–40748–00S1–0
3. 102 000 000
4. Texaco Inc
5. OCS G–2608 No B–15
6. Eugene Island
7. 313
8. 1095.0 million cubic feet
9. October 31, 1979
10. Columbia Gas Trans Corp, Texas Eastern Transmission Corp

1. 80–04655/G9–843
2. 17–708–40402–0000–0
3. 102 000 000
4. Transco Exploration Company
5. A–6
6. South Marsh Island
7. 107
8. 140.0 million cubic feet
9. October 31, 1979
10. Transco Gas Pipe Line Corp

1. 80–04656/G9–779
2. 17–708–40394–0000–0
3. 102 000 000
4. Transco Exploration Company
5. A–7
6. South Marsh Island
7. 107
8. 1800.0 million cubic feet
9. October 31, 1979
10. Transco Gas Pipe Line Corp

1. 80–04657/G9–741
2. 17–708–40388–0000–0
3. 102 000 000
4. Transco Exploration Company
5. A–5
6. South Marsh Island
7. 107
8. 200.0 million cubic feet
9. October 31, 1979
10. Transco Gas Pipe Line Corp

United States Geological Survey, Casper, Wyo.

1. Control number (F.E.R.C./State)
2. API well number
3. Section of NGPA
4. Operator
5. Well name
6. Field or OCS area name
7. County, State or block No.
8. Estimated annual volume
9. Date received at FERC
10. Purchaser(s)

1. 80–04769/CC117–9
2. 05–103–07855–0000–0
3. 108 000 000
4. Lawrence Barker Jr
5. Government #10
6. South Douglas Creek
7. Rio Blanco CO
8. 10.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corporation

1. 80–04770/CC118–9
2. 05–103–07894–0000–0
3. 108 000 000
4. Lawrence Barker Jr
5. Government #12

6. South Douglas Creek
7. Rio Blanco CO
8. 1.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corporation

1. 80-04771/CC497-9
2. 05-045-06119-0000-0
3. 103 000 000
4. Provident Resources Inc
5. Government 11-10-5-102
6. Douglas Pass Unit
7. Garfield CO
8. 60.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corporation

1. 80-04772/CC645-9
2. 05-103-07921-0000-0
3. 108 000 000
4. Twin Arrow Inc
5. Continental 2-8
6. Cathedral
7. Rio Blanco CO
8. 9.1 million cubic feet
9. November 1, 1979
10. IGC Production Company

1. 80-04773/CC654-9
2. 05-103-08092-0000-0
3. 108 000 000
4. Twin Arrow Inc
5. Universal 4-19
6. Cathedral
7. Rio Blanco CO
8. 14.8 million cubic feet
9. November 1, 1979
10. IGC Production Company

1. 80-04774/CC678-9
2. 05-103-08091-0000-0
3. 102 000 000
4. Twin Arrow Inc
5. C & K 4-24
6. Cathedral
7. Rio Blanco CO
8. .0 million cubic feet
9. November 1, 1979
10. IGC Production Company

1. 80-04775/CC778-9
2. 05-081-05292-0000-0
3. 108 000 000
4. Texaco Inc
5. Government Helmke No 2
6. Williams Fork
7. Moffat CO
8. 3.0 million cubic feet
9. November 1, 1979
10. Western Slope Gas Company

1. 80-04776/CC814-9
2. 05-045-07449-0000-0
3. 108 000 000
4. Tipperary Oil and Gas Corp
5. USA 35-C-1
6. Soldier Canyon
7. Garfield CO
8. 18.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corp

1. 80-04777/CC810-9
2. 05-103-08095-0000-0
3. 103 000 000
4. Tipperary Oil and Gas Corp
5. USA 2-31-B
6. Cathedral
7. Rio Blanco CO
8. 16.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corp

1. 80-04778/CC811-9
2. 05-045-02639-0000-0
3. 108 000 000
4. Tipperary Oil and Gas Corp
5. USA 26-C-1
6. Soldier Canyon Unit
7. Garfield CO
8. 8.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corp

1. 80-04779/CC812-9
2. 05-045-06010-0000-0
3. 108 000 000
4. Tipperary Oil and Gas Corp
5. USA 11-E-1
6. Soldier Canyon
7. Garfield CO
8. 17.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corp

1. Control number (F.E.R.C./State)
2. API well number
3. Section of NGPA
4. Operator
5. Well name
6. Field or OCS area name
7. County, State or block No.
8. Estimated annual volume
9. Date received at FERC
10. Purchaser(s)

1. 80-04780/M200-9
2. 25-071-21449-0000-0
3. 102 000 000
4. Midlands Gas Corporation
5. 1870 #1 Federal
6. Bowdoin
7. Phillips MT
8. 12.0 million cubic feet
9. November 1, 1979
10. Kansas-Nebraska Natural Gas Co Inc

1. 80-04781/M201-9
2. 25-071-21450-0000-0
3. 102 000 000
4. Midlands Gas Corporation
5. 1970 #1 Federal
6. Bowdoin
7. Phillips MT
8. 10.0 million cubic feet
9. November 1, 1979
10. Kansas-Nebraska Natural Gas Co Inc

1. 80-04782/M234-9
2. 25-071-21584-0000-0
3. 102 000 000
4. Midlands Gas Corporation
5. 1270 1-1270 Federal
6. Bowdoin
7. Phillips MT
8. 60.0 million cubic feet
9. November 1, 1979
10. Kansas-Nebraska Natural Gas Co Inc

1. 80-04783/M241-9
2. 25-071-21437-0000-0
3. 108 000 000
4. Midlands Gas Corporation
5. 0351 Federal #1
6. Bowdoin
7. Phillips MT
8. 18.0 million cubic feet
9. November 1, 1979
10. Kansas-Nebraska Natural Gas Co Inc

1. 80-04784/M228-9
2. 25-071-21409-0000-0
3. 108 000 000
4. Midlands Gas Corporation
5. 3561 #1 Federal
6. Bowdoin
7. Phillips MT
8. 18.0 million cubic feet
9. November 1, 1979
10. Kansas-Nebraska Natural Gas Co Inc

1. 80-04785
2. 25-041-21579-0000-0
3. 108 000 000
4. Tricentrol United States Inc
5. Government 6-6X-30-16
6. Bullhook Unit-Tiger Ridge
7. Hill MT
8. 9.9 million cubic feet
9. November 1, 1979
10. Northern Natural Gas Company

1. Control Number (F.E.R.C./State)
2. API Well Number
3. Section of NGPA
4. Operator
5. Well name
6. Field or OCS area name
7. County, State or block No.
8. Estimated annual volume
9. Date received at FERC
10. Purchaser(s)

1. 80-04786/UC757-9
2. 43-047-30374-0000-0
3. 102 000 000
4. MAPCO Production Company
5. RBU No 7-21F
6. Island field
7. Uinta, UT
8. 150.0 million cubic feet
9. November 1, 1979
10. Mountain Fuel Supply Company

1. Control Number (F.E.R.C./State)
2. API Well Number
3. Section of NGPA
4. Operator
5. Well name
6. Field or OCS area name
7. County, State or block No.
8. Estimated annual volume
9. Date received at FERC
10. Purchaser(s)

1. 80-04787/W22-9A
2. 49-007-20304-0000-1
3. 102 000 000
4. Integrity Oil & Gas Company
5. Bicentennial 1-32 (Bunker)
6. Bunker Hill
7. Carbon, WY
8. 576.0 million cubic feet
9. November 1, 1979
10. Nautural Gas Pipeline Co of America

1. 80-04788/W22-9B
2. 49-007-20304-0000-2
3. 102 000 000
4. Integrity Oil & Gas Company
5. Bicentennial 1-32 (Frontier)
6. Bunker Hill
7. Carbon WY
8. 576.0 million cubic feet
9. November 1, 1979
10. Natural Gas Pipeline Co of America

1. 80-04789/W60-9
2. 49-013-20722-0000-0
3. 102 000 000
4. Monsanto Company
5. MDU Dolis #1-35
6. Madden
7. Fremont WY
8. 315.0 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Company

1. 80-04790/W61-9
2. 49-013-20656-0000-0
3. 102 000 000
4. Monsanto Company
5. Long Butte #1
6. Lysite
7. Fremont County WY
8. 897.0 million cubic feet
9. November 1, 1979
10. Michigan Wisconsin Pipe Line Company

1. 80-04791/W189-9
2. 49-029-20362-0000-0
3. 108 000 000
4. Phillips Petroleum Company
5. Seaboard -B No 2
6. Whistle Creek
7. Park WY
8. 10.0 million cubic feet
9. November 1, 1979
10. Montana-Dakota Utilities Co

1. 80-04792/W-361-9
2. 49-019-20419-0000-0
3. 103 000 000
4. Cities Service Company
5. Federal AH #1
6. Hartzog Draw
7. Johnson WY
8. 18.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Co

1. 80-04793/W372-9B
2. 49-005-24782-0000-0
3. 102 000 000
4. Gulf Oil Corp
5. Camblin USA 1-25
6. Hartzog Draw
7. Campbell WY
8. 8.0 million cubic feet
9. November 1, 1979
10. Phillips Petroleum Co

1. 80-04794/W687-9
2. 49-037-20697-0000-0
3. 108 000 000
4. Santa Fe Energy Company
5. Canyon Creek 7-10
6. Canyon Creek (Wasatch)
7. Sweetwater WY
8. 7.4 million cubic feet
9. November 1, 1979
10. Colorado Interstate Gas Company

1. 80-04795/W704-9
2. 49-005-24462-0000-0
3. 103 000 000
4. Woods Petroleum Corporation
5. Craig Anderson Federal #24-2
6. Hartzog Draw
7. Campbell WY
8. 20.0 million cubic feet
9. November 1, 1979
10. Panhandle Eastern Pipe Line Co

1. 80-04796/W830-9
2. 49-013-20724-0000-0
3. 103 000 000
4. Tom Brown Inc
5. #31-22 Tribal-Phillips
6. Wildcat
7. Fremont, WY
8. 45.9 million cubic feet
9. November 1, 1979
10. Montana-Dakota Utilities

1. 80-04797/W831-9
2. 49-013-20725-0000-0
3. 103 000 000
4. Tom Brown Inc
5. #30-11 Tribal-Chevron
6. Wildcat
7. Fremont, WY
8. 941.7 million cubic feet
9. November 1, 1979
10. Montana-Dakota Utilities

1. 80-04798/W850-9
2. 49-035-08043-0000-0
3. 108 000 000
4. Belco Petroleum Corporation
5. LIU 4-23-08043
6. Big Piney
7. Sublette, WY
8. 14.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corporation

The applications for determination in these proceedings together with a copy or description of other materials in the record on which such determinations were made are available for inspection, except to the extent such material is treated as confidential under 18 CFR 275.206, at the Commission's Office of Public Information, Room 1000, 825 North Capitol Street, N.E., Washington, D.C. 20426.

Persons objecting to any of these final determinations may, in accordance with 18 CFR 275.203 and 18 CFR 275.204, file a protest with the Commission within fifteen (15) days of the date of publication of this notice in the **Federal Register**.

Please reference the FERC control number in all correspondence related to these determinations.

Kenneth F. Plumb,

Secretary.

[FR Doc. 79-37060 Filed 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

Determinations by Jurisdictional Agencies Under the Natural Gas Policy Act of 1978

November 23, 1979.

The Federal Energy Regulatory Commission received notices from the jurisdictional agencies listed below of determinations pursuant to 18 CFR 274.104 and applicable to the indicated wells pursuant to the Natural Gas Policy Act of 1978.

Louisiana Office of Conservation

1. Control Number (F.E.R.C./State)
2. API Well Number
3. Section of NGPA
4. Operator
5. Well name
6. Field or OCS area name
7. County, State or Block No.
8. Estimated annual volume
9. Date received at FERC
10. Purchaser(s)

1. 80-05097/79-2630
2. 17-119-20210-0000
3. 102 000 000
4. Amarillo Oil Company
5. M L Cole et al No. 1
6. Cotton Valley
7. Webster Parish, LA
8. 182.0 million cubic feet
9. November 1, 1979
10.

1. 80-05098/79-2631
2. 17-053-20502-0000
3. 102 000 000
4. American Nat Gas Prod Co
5. T J Fear #1
6. Lacassine
7. Jefferson Davis, LA
8. 290.0 million cubic feet
9. November 1, 1979
10. Michigan Wisconsin Pipeline Co

1. 80-05099/79-2632
2. 17-053-20545-0000
3. 102 000 000
4. American Nat Gas Prod Co
5. Royne J Thibodeaux #1
6. N E Bon Air
7. Jefferson Davis, LA
8. 825.0 million cubic feet
9. November 1, 1979
10. Michigan Wisconsin Pipeline Co

1. 80-05100/79-2633
2. 17-045-20557-0000
3. 102 000 000
4. Continental Oil Company
5. Williams Inc C No 1
6. Bayou Long
7. Iberia, LA
8. 2740.0 million cubic feet
9. November 1, 1979
10.

1. 80-05101/79-2547
2. 17-111-01357-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No B2
6. Monroe
7. Union, LA
8. 8.8 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05102/79-2546
2. 17-111-01294-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Industries No B1
6. Monroe
7. Union, LA
8. 17.0 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05103/79-2545
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. L & E Reppond 1
6. Monroe
7. Union, LA
8. 3.7 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05104/79-2544
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. W B McKinnie 1
6. Monroe
7. Union, LA
8. 5.0 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05105/79-2543
2. 17-111-01939-0000
3. 108 000 000
4. Ashland Exploration Inc
5. N R Nolan 3
6. Monroe
7. Union, LA
8. 18.0 million cubie feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05106/79-2542
2. 17-111-00000-0000
3. 108-000-000
4. Ashland Exploration Inc
5. N R Nolan 2
6. Monroe
7. Union, LA
8. 12.9 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05107/79-2550
2. 17-111-01311-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Industries No B5
6. Monroe
7. Union, LA
8. 7.5 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05108/79-2549
2. 17-111-01308-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Industries No B4
6. Monroe
7. Union, LA
8. 4.0 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05109/79-2548
2. 17-111-01309-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Industries No B3
6. Monroe
7. Union, LA
8. 3.7 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05110/79-2626
2. 17-111-00482-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Hansell Harrell No 3
6. Monroe
7. Union, LA
8. 2.1 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05111/79-2627
2. 17-111-00477-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Rosa L McKinnie 1
6. Monroe
7. Union, LA
8. 5.0 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05112/79-2579
2. 17-057-21576-0000
3. 107 000 000
4. Bradco Oil & Gas Co
5. Marcellin Richard #1
6. Rousseau
7. LaFourche Parish, LA
8. 1460.0 million cubic feet
9. November 1, 1979
10. Transcontinental Gas P/L Co

1. 80-05113/79-2577
2. 17-019-20782-0000
3. 102 000 000
4. McMoran Exploration Co
5. Tobilar Inc #1
6. Chloe
7. Calcasieu, LA
8. 1400.0 million cubic feet
9. November 1, 1979
10. Transcontinental Gas P/L Corp

1. 80-05114/79-2576
2. 17-113-20846-000
3. 102 000 000
4. The Dow Chemical Company
5. Mv Ra Sua Thomas No 1
6. LeRoy
7. Vermilion, LA
8. 548.0 million cubic feet
9. November 1, 1979
10. The Dow Chemical Company

1. 80-05115/79-2575
2. 17-023-21335-0000
3. 102 000 000
4. IMC Exploration Company
5. Cameron Parish School Board #1
6. Chalkey
7. Cameron, LA
8. 274.0 million cubic feet
9. November 1, 1979
10. Texas Gas Transmission Corp.

1. 80-05116/79-2649
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Fannie H Meeks 1
6. Monroe
7. Union, LA
8. 5.6 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05117/79-2650
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Inc of No 2
6. Monroe
7. Union, LA
8. 13.4 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05118/79-2651
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind F No 3
6. Monroe
7. Union, LA
8. 5.4 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05119/79-2652
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind F No 4
6. Monroe
7. Union, LA
8. 11.9 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05120/79-2653
2. 17-111-01997-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Producing Co No B2
6. Monroe
7. Union, LA
8. 11.0 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05121/79-2562
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C6
6. Monroe
7. Union, LA
8. 9.3 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05122/79-2561
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C 5
6. Monroe
7. Union LA
8. 11.5 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05123/79-2560
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C 4
6. Monroe
7. Union LA
8. 18.0 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05124/79-2559
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C 3
6. Monroe
7. Union LA
8. 6.8 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05125/79-2558
2. 17-111-02592-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 9
6. Monroe
7. Union LA
8. 11.0 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05126/79-2557
2. 17-111-02590-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 8
6. Monroe
7. Union LA
8. 4.7 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80-05127/79-2556
2. 17-111-02590-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 6

6. Monroe
7. Union LA
8. 12.6 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05128/79–2555
2. 17–111–02595–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 5
6. Monroe
7. Union LA
8. 4.7 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05129/79–2554
2. 17–111–02596–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 4
6. Monroe
7. Union LA
8. 2.5 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05130/79–2553
2. 17–111–02597–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 3
6. Monroe
7. Union LA
8. 5.3 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05131/79–2552
2. 17–111–00000–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C 2
6. Monroe
7. Union LA
8. 16.8 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05132/79–2551
2. 17–111–00000–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C 1
6. Monroe
7. Union LA
8. 10.7 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05133/79–2537
2. 17–055–20142–0000
3. 108 000 000
4. North American Royalties Inc
5. Dixon Vincent #1 158248
6. Maurice
7. Lafayette LA
8. 100.0 million cubic feet
9. November 1, 1979
10. Texas Gas Transmission Corp

1. 80–05134/79–2536
2. 17–067–20973–0000
3. 108 000 000
4. Enerco Exploration & Management Co
5. Spyker E #2–#155360
6. Monroe
7. Morehouse LA
8. 7.3 million cubic feet
9. November 1, 1979
10. Southern Natural Gas

1. 80–05135/79–2535
2. 17–067–21003–0000
3. 108 000 000
4. Enerco Exploration & Management Co
5. Spyker E #22–#156291
6. Monroe
7. Morehouse LA
8. 5.8 million cubic feet
9. November 1, 1979
10. Southern Natural Gas

1. 80–05136/79–2534
2. 17–067–21002–0000
3. 108 000 000
4. Enerco Exploration & Management Co
5. Spyker E #24–#156261
6. Monroe
7. Morehouse LA
8. 5.8 million cubic feet
9. November 1, 1979
10. Southern Natural Gas

1. 80–05137/79–2533
2. 17–067–21010–000
3. 108 000 000
4. Enerco Exploration & Management Co
5. Spyker E #34–#156275
6. Monroe
7. Morehouse LA
8. 5.5 million cubic feet
9. November 1, 1979
10. Southern Natural Gas

1. 80–05138/79–2532
2. 17–067–21011–0000
3. 108 000 000
4. Enerco Exploration & Management Co
5. Spyker E #35–#15626
6. Monroe
7. Morehouse LA
8. 10.9 million cubic feet
9. November 1, 1979
10. Southern Natural Gas

1. 80–05139/79–2541
2. 17–111–02214–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Zollie C Rabeen 2
6. Monroe
7. Union LA
8. 9.8 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05140/79–2540
2. 17–111–01963–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Noe Inabnet Fee 1
6. Monroe
7. Union LA
8. 5.5 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05141/79–2580
2. 17–001–20750–0000
3. 102 000 000
4. Edwin L Cox
5. E Cobena No 1
6. Branch
7. Acadia LA
8. 250.0 million cubic feet
9. November 1, 1979
10. Texas Gas Transmission Corp

1. 80–05142/79–2636
2. 17–111–02397–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Ollie Ndan 1
6. Monroe
7. Union LA
8. 5.0 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05143/79–2637
2. 17–111–02321–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Lloyd Hodge No 1
6. Monroe
7. Union LA
8. .0 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05144/79–2638
2. 17–111–02045–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Producing Co No A14
6. Monroe
7. Union LA
8. 20.3 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05145/79–2571
2. 17–111–01364–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 10
6. Monroe
7. Union LA
8. 12.5 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05146/79–2570
2. 17–111–00000–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 7
6. Monroe
7. Union LA
8. 7.8 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05147/79–2569
2. 17–111–01462–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C 10
6. Monroe
7. Union LA
8. 6.5 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05148/79–2568
2. 17–111–00000–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C 8
6. Monroe
7. Union LA
8. 4.7 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05149/79–2567
2. 17–111–00000–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Guy H Holloway No 1
6. Monroe
7. Union LA
8. 3.8 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05150/79–2566
2. 17–111–02594–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 11
6. Monroe
7. Union LA
8. 9.6 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05151/79–2565
2. 17–111–00000–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 1
6. Monroe
7. Union LA
8. 4.0 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05152/79–2564
2. 17–111–00000–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No 1
6. Monroe
7. Union LA
8. 10.7 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05153/79–2563
2. 17–111–00000–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C 7
6. Monroe
7. Union LA
8. 8.7 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05154/79–2531
2. 17–067–21030–0000
3. 108 000 000
4. Enerco Exploration & Management Co
5. Spyker E #36–#156528
6. Monroe
7. Morehouse LA
8. 17.2 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05155/79–2530
2. 17–067–21033–0000
3. 108 000 000
4. Enerco Exploration & Management Co
5. Spyker E #37–#156574
6. Monroe
7. Morehouse LA
8. 14.2 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05156/79–2529
2. 17–067–21032–0000
3. 108 000 000
4. Enerco Exploration & Management Co
5. Young F #5–#156560
6. Monroe
7. Morehouse LA
8. 3.3 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05157/79–2528
2. 17–067–21031–0000
3. 108 000 000
4. Enerco Exploration & Management Co
5. Young F #4–#156559
6. Monroe
7. Morehouse LA
8. 5.1 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05158/79–2639
2. 17–111–02048–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Producing Co No A 15
6. Monroe
7. Union LA
8. 17.0 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05159/79–2640
2. 17–111–00000–0000
3. 108 000 000
4. Ashland Exploration Inc
5. E D Wilson No 1
6. Monroe
7. Union LA
8. 8.9 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05160/79–2641
2. 17–111–00000–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Perry Handy No 1
6. Monroe
7. Union LA
8. 8.1 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05161/79–2642
2. 17–111–02047–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Producing Co No A 16
6. Monroe
7. Union LA
8. 11.0 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05162/79–2643
2. 17–111–01389–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No D 9
6. Monroe
7. Union LA
8. 9.0 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05163/79–2644
2. 17–111–01441–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No D 10
6. Monroe
7. Union LA
8. 10.2 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05164/79–2645
2. 17–111–00000–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Ira T Matthews 1
6. Monroe
7. Union LA
8. 6.1 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05165/79–2646
2. 17–111–00394–0000
3. 108 000 000
4. Ashland Exploration Inc
5. M H Pace 1
6. Monroe
7. Union LA
8. 4.0 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05166/79–2647
2. 17–111–00000–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Sherman Pilgreen 1
6. Monroe
7. Union LA
8. 4.6 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05167/79–2648
2. 17–111–01408–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Viola H E Crow No 1
6. Monroe
7. Union LA
8. 10.5 million cubic feet
9. November 1, 1979
10. Southern Natural Gas Company

1. 80–05168/79–2634
2. 17–061–20175–0000
3. 103 000 000
4. Franks & Bass et al
5. CV Davis Ra Su II B R Pesnell No 1
6. Unionville
7. Lincoln LA
8. 219.0 million cubic feet
9. November 1, 1979
10. Olinkraft Inc

1. 80–05169/79–2665
2. 17–053–20571–0000
3. 102 000 000
4. Amoco Production Company
5. La Rice Milling Company No 6
6. South Thornwell
7. Jefferson Davis LA
8. 2,738.0 million cubic feet
9. November 1, 1979
10. Columbia Gas Transmission Corp

1. 80–05170/79–2666
2. 17–093–20175–0000
3. 102 000 000
4. Marion Corporation
5. Mai Rc Sua Deas No 1
6. College Point
7. St James LA
8. 72.0 million cubic feet
9. November 1, 1979
10. United Gas Pipe Line Company

1. 80–05171/79–2667
2. 17–045–20552–0000
3. 102 000 000
4. Shell Oil Company
5. Smith-Goodrich-Cocke No 6
6. Weeks Island
7. Iberia LA
8. 730.0 million cubic feet
9. November 1, 1979
10. United Gas Pipe Line Co, Morton-Norwich Products Inc

1. 80–05259/79–2538
2. 17–045–20582–0000
3. 107 000 000
4. Exxon Corporation

5. Petit Anse Co No 67
6. Avery Island
7. Iberia LA
8. 300.0 million cubic feet
9. November 5, 1979
10. Columbia Gas Trans Corp

1. 80–05260/79–2517
2. 17–073–00368–0000
3. 108 000 000
4. Ashland Exploration Inc
5. D Arbonne Lumber Co No 6 086122
6. Monroe
7. Quachita LA
8. 7.3 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80–05261/79–2516
2. 17–073–00208–0000
3. 108 000 000
4. Ashland Exploration Inc
5. D Arbonne Lumber Co No 5
6. Monroe
7. Quachita LA
8. 15.4 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80–05262/79–2589
2. 17–111–01582–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Elizabeth Nichols 2
6. Monroe
7. Union LA
8. 11.8 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80–05263/79–2590
2. 17–111–01972–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Lewis Reed 3
6. Monroe
7. Union LA
8. 19.3 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80–05264/79–2591
2. 17–111–01460–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C 15
6. Monroe
7. Union LA
8. 5.0 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80–05265/79–2592
2. 17–111–00000–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C 16
6. Monroe
7. Union LA
8. 13.4 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80–05266/79–2593
2. 17–111–01364–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C 17
6. Monroe
7. Union LA
8. 3.0 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80–05267/79–2594
2. 17–111–01451–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C 18
6. Monroe
7. Union LA
8. 13.8 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80–05268/79–2595
2. 17–061–20203–0000
3. 103 000 000
4. Franks & Bass et al
5. CV Davis Ra Sur Colvin Est D No 1
6. Unionville
7. Lincoln LA
8. 219.0 million cubic feet
9. November 5, 1979
10. Olinkraft Inc

1. 80–05269/79–2660
2. 17–111–01219–0000
3. 108 000 000
4. Ashland Exploration Inc
5. W C Martin 1 039926
6. Monroe
7. Union LA
8. 5.5 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80–05270/79–2620
2. 17–111–00542–0000
3. 108 000 000
4. Ashland Exploration Inc
5. J W B Roberson 2
6. Monroe
7. Union LA
8. 3.4 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80–05271/79–2621
2. 17–111–00480–0000
3. 108 000 000
4. Ashland Exploration Inc
5. J W B Roberson 3
6. Monroe
7. Union LA
8. 5.9 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80–05272/79–2622
2. 17–111–00000–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Producing Co No A 1
6. Monroe
7. Union LA
8. 5.5 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80–05273/79–2623
2. 17–111–02039–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Producing Co No A 13
6. Monroe
7. Union LA
8. 11.0 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80–05274/79–2624
2. 17–111–00397–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Hansell Harrell No 1
6. Monroe
7. Union LA
8. 2.3 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80–05275/79–2625
2. 17–111–00000–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Hansell Harrell No 2
6. Monroe
7. Union LA
8. 6.6 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80–05276/79–2611
2. 17–111–00446–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 21
6. Monroe
7. Union LA
8. 15.6 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80–05277/79–2612
2. 17–111–00000–0000
3. 108 000 000
4. Ashland Exploration Inc
5. J B Roberson 1
6. Monroe
7. Union LA
8. 6.8 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80–05278/79–2587
2. 17–111–01459–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C 13
6. Monroe
7. Union LA
8. 11.0 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80–05279/79–2588
2. 17–111–00000–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C 14
6. Monroe
7. Union LA
8. 6.2 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80–05280/79–2504
2. 17–111–01976–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Theodocia Jenny 1
6. Monroe
7. Union LA
8. 9.0 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80–05281/79–2503
2. 17–111–01780–0000
3. 108 000 000
4. Ashland Exploration Inc
5. Mary C Schwab 1
6. Monroe
7. Union LA
8. 6.4 million cubic feet

9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05282/79-2502
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Bessie McInnis 1
6. Monroe
7. Union LA
8. 6.5 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05283/79-2501
2. 17-111-01977-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Lewis Reed 2
6. Monroe
7. Union LA
8. 15.0 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05284/79-2527
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Lewis Reed 1
6. Monroe
7. Union LA
8. 15.2 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05285/79-2618
2. 17-111-00362-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 19
6. Monroe
7. Union LA
8. 7.6 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05286/79-2617
2. 17-111-00351-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 18
6. Monroe
7. Union LA
8. 13.2 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05287/79-2616
2. 17-111-01367-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C 20
6. Monroe
7. Union LA
8. 6.7 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05288/79-2610
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 20
6. Monroe
7. Union LA
8. 11.8 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05289/79-2615
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 17
6. Monroe
7. Union LA
8. 3.6 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05290/79-2614
2. 17-111-01583-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Elizabeth Nichols #3
6. Monroe
7. Union LA
8. 11.6 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05291/79-2613
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C 19
6. Monroe
7. Union LA
8. 11.6 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05292/79-2518
2. 17-073-00444-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Charles G Wall No 4
6. Monroe
7. Quachita LA
8. 5.7 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05293/79-2519
2. 17-073-00442-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Phil Chauvin No 2
6. Monroe
7. Quachita LA
8. 6.2 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05294/79-2520
2. 17-073-00443-0000
3. 108 000 000
4. Ashland Exploration Inc
5. H M McGuire 2
6. Monroe
7. Quachita LA
8. 8.4 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05295/79-2521
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Pauline Schwab 1
6. Monroe
7. Union LA
8. 3.4 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05296/79-2619
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. J W B Roberson 1
6. Monroe
7. Union LA
8. 6.8 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05297/79-2512
2. 17-073-20967-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Slagle-Johnson Fee Century #4
6. Monroe
7. Quachita LA
8. 4.1 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05298/79-2511
2. 17-073-20871-0000
3. 108 000 000
4. Ashland Exploration Inc
5. John J Potts 3
6. Monroe
7. Quachita LA
8. 18.0 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05299/79-2510
2. 17-073-20622-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Hatcher & Evans No 12
6. Monroe
7. Quachita La
8. 6.5 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05300/79-2509
2. 17-073-00198-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Carbons Consolidated Fee No 10A
6. Monroe
7. Quachita La
8. 19.3 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05301/79-2508
2. 17-073-00516-0000
3. 108 000 000
4. Ashland Exploration Inc
5. H M McGuire 4
6. Monroe
7. Quachita La
8. 14.0 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05302/79-2507
2. 17-073-00447-0000
3. 108 000 000
4. Ashland Exploration Inc
5. H M McGuire 3
6. Monroe
7. Quachita La
8. 6.0 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05303/79-2505
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Stovall Drilling Co Fee 2
6. Monroe
7. Union La
8. 7.0 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company
1. 80-05304/79-2506

2. 17-111-01747-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Stovall Drilling Co Fee 3
6. Monroe
7. Union La
8. 9.2 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80-05305/79-2525
2. 17-111-01779-0000
3. 108 000 000
4. Ashland Exploration Inc
5. J A Peak 1
6. Monroe
7. Union La
8. 9.2 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80-05306/79-2524
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. J G Trimble 1
6. Monroe
7. Union La
8. 9.8 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80-05307/79-2523
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exporation Inc
5. Zollie C Rabun #1
6. Monroe
7. Union La
8. 4.0 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80-05308/79-2526
2. 17-111-00531-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Elizabeth Nichols 1
6. Monroe
7. Union La
8. 8.0 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80-05309/79-2609
2. 17-111-01381-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No D 6
6. Monroe
7. Union La
8. 8.8 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80-05310/79-2608
2. 17-111-01360-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No D 5
6. Monroe
7. Union La
8. 7.4 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80-05311/79-2607
2. 17-111-01379-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No D 4
6. Monroe
7. Union La
8. 8.7 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80-05312/79-2606
2. 17-111-01386-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No D 3
6. Monroe
7. Union La
8. 10.3 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80-05313/79-2605
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No D 2
6. Monroe
7. Union La
8. 17.3 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80-05314/79-2604
2. 17-111-01270-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No D 1
6. Monroe
7. Union La
8. 8.4 million cubic feet
9. November 2, 1979
10. Southern Natural Gas Company

1. 80-05314/79-2669
2. 17-045-20542-0000
3. 102 000 000
4. Inecxo Oil Company
5. Beaullieu No 2
6. Big Bayou Pigeon
7. Iberia Parish La
8. 1277.5 million cubic feet
9. November 2, 1979
10. Texas Gas Transmission Corp

1. 80-05316/79-2716
2. 17-007-20277-0000
3. 102 000 000
4. Flynn Energy Corporation
5. E I Blanchard No 1
6. Oakley
7. Assumption La
8. 1642.0 million cubic feet
9. November 5, 1979
10.

1. 80-05317/79-2596
2. 17-111-21897-0000
3. 102 000 000
4. Bass Enterprises Production Co
5. CV Davis RB Sue J A Burgess No 1
6. Middlefork
7. Lincoln La
8. 350.0 million cubic feet
9. November 5, 1979
10. United Gas Pipe Line Company

1. 80-05318/79-2628
2. 17-111-00481-0000
3. 108 000 000
4. Ashland Exploration Inc
5. McKinnie W B & Arvis 1
6. Monroe
7. Union La
8. 5.1 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05319/79-2599
2. 17-111-01388-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No D 7
6. Monroe
7. Union La
8. 10.1 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05320/79-2600
2. 17-111-01387-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No D 8
6. Monroe
7. Union La
8. 4.4 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05321/79-2601
2. 17-111-01163-0000
3. 108 000 000
4. Ashland Exploration Inc
5. J B Lankford 1
6. Monroe
7. Union La
8. 6.8 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05322/79-2602
2. 17-111-01266-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No E 1
6. Monroe
7. Union La
8. 8.2 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05323/79-2603
2. 17-111-01267-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No E 2
6. Monroe
7. Union La
8. 8.2 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05324/79-2629
2. 17-023-21164-0000
3. 102 000 000
4. Williams Exploration Company
5. Melba Clark No 1 155368
6. No Creole
7. Cameron La
8. 730.0 million cubic feet
9. November 5, 1979
10. Louisiana Resources Company

1. 80-05325/79-2597
2. 17-111-01828-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Imperial O & G Co Fee A1
6. Monroe
7. Union La
8. 5.4 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05326/79-2598
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. A D Striplin 2
6. Monroe

7. Union La
8. 4.0 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05327/79-2515
2. 17-073-00459-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Charles G Wall No 3
6. Monroe
7. Quachita La
8. 4.5 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05328/79-2514
2. 17-073-00000-00000
3. 108 000 000
4. Ashland Exploration Inc
5. M S Van Horn No 3
6. Monroe
7. Quachita La
8. 6.3 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05329/79-2513
2. 17-073-20982-0000
3. 108 000 000
4. Ashland Exploration Inc
5. D W McEnery 10
6. Monroe
7. Quachita LA
8. 1.5 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05330/79-2522
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. E M White No 1
6. Monroe
7. Union LA
8. 5.5 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05331/79-2661
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. H E Armstrong No 1 040115
6. Monroe
7. Union LA
8. 9.0 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05332/79-2662
2. 17-111-01087-0000
3. 108 000 000
4. Ashland Exploration Inc
5. J A Hollis No 1
6. Monroe
7. Union LA
8. 9.5 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05333/79-2663
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind F No 1 040498
6. Monroe
7. Union LA
8. 5.5 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05334/79-2581
2. 17-111-01366-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C 12
6. Monroe
7. Union LA
8. 7.2 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05335/79-2584
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 14
6. Monroe
7. Union LA
8. 4.5 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05336/79-2585
2. 17-111-00363-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 15
6. Monroe
7. Union LA
8. 6.6 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05337/79-2582
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 12
6. Monroe
7. Union LA
8. 12.2 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05338/79-2583
2. 17-111-00566-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 13
6. Monroe
7. Union LA
8. 11.2 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05339/79-2586
2. 17-111-00352-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Frost Lumber Ind No 16
6. Monroe
7. Union LA
8. 13.0 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05340/79-2572
2. 17-111-01449-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Power Co No C 11
6. Monroe
7. Union LA
8. 6.0 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05341/79-2654
2. 17-111-01943-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Producing Co No B 5
6. Monroe
7. Union LA
8. 15.4 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05342/79-2655
2. 17-111-01427-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Perry Handy No 2 039628
6. Monroe
7. Union LA
8. 6.0 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05343/79-2656
2. 17-111-01999-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Producing Co No B 3
6. Monroe
7. Union LA
8. 8.0 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05344/79-2657
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Union Producing Co No B 4
6. Monroe
7. Union LA
8. 9.8 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05345/79-2658
2. 17-111-01426-0000
3. 108 000 000
4. Ashland Exploration Inc
5. J S Handy No 1 039529
6. Monroe
7. Union LA
8. 8.0 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05346/79-2659
2. 17-111-00000-0000
3. 108 000 000
4. Ashland Exploration Inc
5. J J Ward No 1 039715
6. Monroe
7. Union LA
8. 6.0 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

1. 80-05347/79-2539
2. 17-111-01748-0000
3. 108 000 000
4. Ashland Exploration Inc
5. Stovall Drilling Co Fee 4
6. Monroe
7. Union LA
8. 7.9 million cubic feet
9. November 5, 1979
10. Southern Natural Gas Company

Montana Board of Oil and Gas Conservation

1. Control Number (F.E.R.C./State)
2. API Well Number
3. Section of NGPA
4. Operator
5. Well Name
6. Field or OCS area name
7. County, State or Block No.
8. Estimated annual volume
9. Date received at FERC

10. Purchaser(s)
1. 80-05238/9-79-267
2. 25-071-21425-0000
3. 108 000 000
4. Terra Resources Inc
5. Bowman 2-7
6. Swanson Creek
7. Phillips MT
8. 13.7 million cubic feet
9. October 29, 1979
10. Montana-Dakota Utilities Company

Nebraska Oil and Gas Conservation Commission

1. Control Number (F.E.R.C./State)
2. API Well Number
3. Section of NGPA
4. Operator
5. Well Name
6. Field or OCS area name
7. County, State or Block No.
8. Estimated annual volume
9. Date received at FERC
10. Purchaser(s)
1. 80-05239/NGPA-37
2. 26-033-21608-0000
3. 102 000 000
4. Richard S Dougherty
5. #2 Schwasnick
6. Dome
7. Cheyenne NB
8. 36.5 million cubic feet
9. October 31, 1979
10. Kansas-Nebraska Natural Gas Co

New Mexico Department of Energy and Minerals, Oil Conservation Division

1. Control Number (F.E.R.C./State)
2. API Well Number
3. Section of NGPA
4. Operator
5. Well Name
6. Field or OCS area name
7. County, State or Block No.
8. Estimated annual volume
9. Date received at FERC
10. Purchaser(s)
1. 80-05240
2. 30-015-00000-0000
3. 108 000 000
4. Corinne Grace
5. Livingston Ridge #1-Y
6. Cabin Lake Atoka Gas
7. Eddy NM
8. .4 million cubic feet
9. November 2, 1979
10. El Paso Natural Gas Co
1. 80-05241
2. 30-015-00000-0000
3. 108 000 000
4. Corinne Grace
5. Cueva Unit #1
6. Sheep Draw Strawn
7. Eddy NM
8. .1 million cubic feet
9. November 2, 1979
10. El Paso Natural Gas Company

Oklahoma Corporation Commission

1. Control Number (F.E.R.C./State)
2. API Well Number
3. Section of NGPA
4. Operator
5. Well Name
6. Field or OCS area name
7. County, State or Block No.
8. Estimated annual volume
9. Date received at FERC
10. Purchaser(s)
1. 80-05242/00733
2. 35-025-20353-0000
3. 103 000 000
4. Argonaut Energy Corporation
5. Zimmerman #1 025-56349
6. Southwest Rice
7. Cimarron OK
8. 127.1 million cubic feet
9. November 2, 1979
10. Panhandle Eastern Pipeline Company
1. 80-05243/00734
2. 35-139-21067-0000
3. 103 000 000
4. Argonaut Energy Corporation
5. Hudson #1 139-56119
6. Southwest Rice
7. Texas County OK
8. 62.5 million cubic feet
9. November 2, 1979
10. Panhandle Eastern Pipeline Company
1. 80-05244/00629
2. 35-007-21435-0000
3. 103 000 000
4. Bettis Boyle & Stovall
5. Alexander #2
6. Knowles Council Grove
7. Beaver OK
8. 182.0 million cubic feet
9. November 2, 1979
10. Cities Service Gas Company
1. 80-05245/00616
2. 35-009-20247-0000
3. 107 000 000
4. Helmerich & Payne Inc.
5. Cupp B No 2
6. West Mayfield
7. Beckham OK
8. 1460.0 million cubic feet
9. November 2, 1979
10. Michigan Wisconsin P/L Co, Oklahoma Nat Gas Co
1. 80-05246/00752
2. 35-139-20997-0000
3. 103 000 000
4. W C Payne
5. Chuesberg #1
6. Camrick Upper Morrow
7. Texas OK
8. 210.0 million cubic feet
9. November 2, 1979
10. Panhandle Eastern Pipeline Co
1. 80-05247/00633
2. 35-007-21492-0000
3. 103 000 000
4. Newbourne Oil Company
5. Mehnert #2 ID #53258-1
6. Como (Tonkawa)
7. Beaver OK
8. 132.0 million cubic feet
9. November 2, 1979
10. Phillips Petroleum Company
1. 80-05248/00624
2. 35-007-21374-0000
3. 103 000 000
4. Unit Drilling Co
5. Riley-Tracy #1
6. Mocane-Laverne
7. Beaver OK
8. 180.0 million cubic feet
9. November 2, 1979
10. Northern Natural Gas Co
1. 80-05249/00623
2. 35-007-21528-0000
3. 103 000 000
4. Bettis Boyle & Stovall
5. Taylor #1
6. Knowles Council Grove
7. Beaver OK
8. 110.0 million cubic feet
9. November 2, 1979
10. Northern Natural Gas Company
1. 80-05250/00906
2. 35-151-35308-0000
3. 108 000 000
4. Kaiser Francis Oil Company
5. Whipple Gas Unit #1
6. Waynoka N E
7. Woods OK
8. 7.0 million cubic feet
9. November 2, 1979
10. Cities Service Gas Company

Oklahoma Corporation Commission

1. 80-05251/00834
2. 35-129-20260-0000
3. 107 000 000
4. El Paso Natural Gas Company
5. McGlothlin #1
6. South East Reydon
7. Roger Mills OK
8. 742.0 million cubic feet
9. November 2, 1979
10. El Paso Natural Gas Company
1. 80-05252/00753
2. 35-007-21330-0000
3. 103 000 000
4. Pan Eastern Exploration Company
5. Williams I #1
6. Mocane-Laverne
7. Beaver OK
8. 70.0 million cubic feet
9. November 2, 1979
10. Panhandle Eastern P/L Company, Northern Nat Gas Co
1. 80-05253/00745
2. 35-139-00000-0000
3. 103 000 000
4. Argonaut Energy Corporation
5. Clark #1 139-56257
6. Southwest Rice
7. Texas OK
8. 46.4 million cubic feet
9. November 2, 1979
10. Phillips Petroleum Company
1. 80-05254/00706
2. 35-045-20728-0000
3. 103 000 000
4. Filon Exploration Corporation
5. State No 1-36
6. None—Wildcat
7. Ellis OK
8. 182.0 million cubic feet
9. November 2, 1979
10. Transwestern Pipeline Co
1. 80-05255/01011
2. 35-139-00000-0000
3. 108 000 000
4. Graham-Michaelis Corporation
5. Spierling #1-20
6. Carthage
7. Texas OK
8. 7.5 million cubic feet
9. November 2, 1979
10. Northern Natural Gas Co
1. 80-05256/01009
2. 35-139-00000-0000

3. 108 000 000
4. Graham-Michaelis Corporation
5. Isom #1-17
6. Carthage Topeka
7. Texas OK
8. 14.0 million cubic feet
9. November 2, 1979
10. Panhandle Eastern Pipe Line

1. 80-05257/00717
2. 35-071-20919-0000
3. 103 000 000
4. El Dorado Drilling Inc
5. Tabor #1
6. Wildcat
7. Kay OK
8. 27.0 million cubic feet
9. November 2, 1979
10. Arkansas-Louisiana Gas Co

1. 80-05258/00751
2. 35-139-20971-0000
3. 103 000 000
4. W C Payne
5. West A #1
6. West Dombey
7. Texas OK
8. 20.0 million cubic feet
9. November 2, 1979
10. Panhandle Eastern Pipeline Co

Texas Railroad Commission, Oil and Gas Division

1. Control number (F.E.R.C./State)
2. API well number
3. Section of NGPA
4. Operator
5. Well name
6. Field or OCS area name
7. County, State or Block No.
8. Estimated annual volume
9. Date received at FERC
10. Purchaser(s)

1. 80-05172/07524
2. 42-103-00000-0000
3. 108 000 000
4. Warren Pet Co Div/Gulf Oil Corp
5. W N Wadell et al No 932
6. Sand Hills (Judkins)
7. Crane TX
8. 10.0 million cubic feet
9. November 1, 1979
10. H-T Gathering Company

1. 80-05173/07521
2. 42-103-00000-0000
3. 108 000 000
4. Warren Pet Co Div/Gulf Oil Corp
5. J B Tubb B (TR A) No 10
6. Sand Hills (Tubb)
7. Crane TX
8. 7.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Co

1. 80-05174/07520
2. 42-103-00000-0000
3. 108 000 000
4. Warren Pet Co Div/Gulf Oil Corp
5. Texas HH No 2
6. Dune
7. Crane TX
8. 10.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Co

1. 80-05175/06081
2. 42-365-00000-0000
3. 108 000 000
4. Pennzoil Producing Company
5. Morgan Unit No 2
6. Carthage (Pettit Upper)
7. Panola TX
8. 12.0 million cubic feet
9. November 1, 1979
10. United Gas Pipeline Company

1. 80-05176/04403
2. 42-233-00000-0000
3. 108 000 000
4. Donald W Jackson
5. Veta (00713) No 1
6. Panhandle Hutchinson County
7. Hutchinson TX
8. 4.5 million cubic feet
9. November 1, 1979
10. Phillips Petroleum Company

1. 80-05177/03496
2. 42-341-00000-0000
3. 108 000 000
4. W L Bruce Operator
5. Guleke #3 RRC 03432
6. Panhandle
7. Moore TX
8. 10.9 million cubic feet
9. November 1, 1979
10. Phillips Petroleum Co

West Virginia Department of Mines, Oil and Gas Division

1. Control number (F.E.R.C./State)
2. API well number
3. Section of NGPA
4. Operator
5. Well name
6. Field or OCS area name
7. County, State or Block No.
8. Estimated annual volume
9. Date received at FERC
10. Purchaser(s)

1. 80-05178
2. 47-043-01053-0000
3. 108 000 000
4. Industrial Gas Corporation
5. Koontz Realty Co 18-849
6.
7. Lincoln WV
8. 12.8 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc, Huntington Alloys Inc, Libbey-Owens-Ford Co, Owens-Illinois Inc

1. 80-05179
2. 47-043-01040-0000
3. 108 000 000
4. Industrial Gas Corporation
5. Koontz Realty Co 15-836
6.
7. Lincoln WV
8. 4.5 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc, Huntington Alloys Inc, Libbey-Owens-Ford Co, Owens-Illinois Inc

1. 80-05180
2. 47-043-01039-R000
3. 108 000 000
4. Industrial Gas Corporation
5. Koontz Realty Co 14-835
6.
7. Lincoln WV
8. 5.5 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc, Huntington Alloys Inc, Libbey-Owens-Ford Co, Owens-Illinois Inc

1. 80-05181
2. 47-043-01033-0000
3. 108 000 000
4. Industrial Gas Corporation
5. Koontz Realty Co 17-838
6.
7. Lincoln WV
8. 5.5 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc, Huntington Alloys Inc, Libbey-Owens-Ford Co, Owens-Illinois Inc

1. 80-05182
2. 47-043-01032-0000
3. 108 000 000
4. Industrial Gas Corporation
5. Island Creek Mining 6-843
6.
7. Lincoln WV
8. 13.7 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc, Huntington Alloys Inc, Libbey-Owens-Ford Co, Owens-Illinois Inc

1. 80-05183
2. 47-043-01015-0000
3. 108 000 000
4. Industrial Gas Corporation
5. Koontz Realty Co 13-833
6.
7. Lincoln WV
8. 3.5 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc, Huntington Alloys Inc, Libbey-Owens-Ford Co, Owens-Illinois Inc

1. 80-05184
2. 47-043-01014-0000
3. 108 000 000
4. Industrial Gas Corporation
5. Koontz Realty Co 16-837
6.
7. Lincoln WV
8. 2.4 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc, Huntington Alloys Inc, Libbey-Owens-Ford Co, Owens-Illinois Inc

West Virginia Department of Mines, Oil and Gas Division

1. 80-05185
2. 47-043-01010-0000
3. 108 000 000
4. Industrial Gas Corporation
5. Stein & McComas 16-824
6.
7. Lincoln, WV
8. 2.8 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80-05186
2. 47-043-01009-0000
3. 108 000 000
4. Industrial Gas Corporation
5. Island Creek Mining 5-826
6.
7. Lincoln, WV
8. 4.9 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc

Libbey-Owens-Ford Co
Owens-Illinois Inc

1. 80–05187
2. 47–043–01007–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Koontz Realty Co 12–830
6.
7. Lincoln, WV
8. 15.9 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc
Huntington Alloys Inc
Libbey-Owens-Ford Co
Owens-Illinois Inc

1. 80–05188
2. 47–043–01006–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Koontz Realty Co 10–822
6.
7. Lincoln, WV
8. 6.0 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc
Huntington Alloys Inc
Libbey-Owens-Ford Co
Owens-Illinois Inc

1. 80–05189
2. 47–043–01005–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Island Creek Mining 4–825
6.
7. Lincoln, WV
8. 3.6 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc
Huntington Alloys Inc
Libbey-Owens-Ford Co
Owens-Illinois Inc

1. 80–05190
2. 47–043–00996–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Koontz Realty Co 11–829
6.
7. Lincoln, WV
8. 9.0 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc
Huntington Alloys Inc
Libbey-Owens-Ford Co
Owens-Illinois Inc

1. 80–05191
2. 47–043–00994–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Stein & McComas 15–823
6.
7. Lincoln, WV
8. 2.7 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc
Huntington Alloys Inc
Libbey-Owens-Ford Co
Owens-Illinois Inc

1. 80–05192
2. 47–043–00992–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Koontz Realty Co 9–821
6.
7. Lincoln, WV
8. 4.0 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc
Huntington Alloys Inc
Libbey-Owens-Ford Co
Owens-Illinois Inc

1. 80–05193
2. 47–043–00989–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Stein & McComas 14–814
6.
7. Lincoln, WV
8. 7.1 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc
Huntington Alloys Inc
Libbey-Owens-Ford Co
Owens-Illinois Inc

1. 80–05194
2. 47–013–01343–0000
3. 108 000 000
4. Willie Hildreth % Hays & Co
5. Lona Wears #1
6.
7. Calhoun, WV
8. 2.0 million cubic feet
9. November 1, 1979
10. Consolidated Gas Supply Corp

1. 80–05195
2. 47–043–01132–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Koontz Realty Co 26–888
6.
7. Lincoln, WV
8. 6.7 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc
Huntington Alloys Inc
Libbey-Owens-Ford Co
Owens-Illinois Inc

1. 80–05196
2. 47–021–02954–0000
3. 108 000 000
4. Pace Pipe Line Company
5. Furr #1
6. Glenville
7. Gilmer, WV
8. 8.7 million cubic feet
9. November 1, 1979
10. Carnegie Natural Gas Co
Huntington Alloys Inc
Libbey-Owens-Ford Co
Owens-Illinois Inc

1. 80–05197
2. 47–085–03791–0000
3. 108 000 000
4. Openheimer Oil & Gas % Hayes & Co
5. James Spurgeon #563
6.
7. Ritchie, WV
8. 6.0 million cubic feet
9. November 1, 1979
10. Consolidated Gas Supply Corp

1. 80–05198
2. 47–085–03793–0000
3. 108 000 000
4. Openheimer Oil & Gas
5. M Stanlley #583
6.
7. Ritchie, WV
8. 17.0 million cubic feet
9. November 1, 1979
10. Consolidated Gas Supply Corp

1. 80–05199
2. 47–085–03830–0000
3. 108 000 000
4. Openheimer Oil & Gas
5. Gus Bee #593
6.
7. Ritchie, WV
8. 9.0 million cubic feet
9. November 1, 1979
10. Consolidated Gas Supply Corp

1. 80–05200
2. 47–085–03835–0000
3. 108 000 000
4. Openheimer Oil & Gas
5. J F & Frank Deem #597
6.
7. Ritchie, WV
8. 3.0 million cubic feet
9. November 1, 1979
10. Consolidated Gas Supply Corp

1. 80–05201
2. 47–085–03840–0000
3. 108 000 000
4. Openheimer Oil & Gas
5. Gus Bee #604
6.
7. Ritchie, WV
8. 6.0 million cubic feet
9. November 1, 1979
10. Consolidated Gas Supply Corp

1. 80–05202
2. 47–085–03841–0000
3. 108 000 000
4. Openheimer Oil & Gas
5. Gus Bee #605
6.
7. Ritchie, WV
8. 6.0 million cubic feet
9. November 1, 1979
10. Consolidated Gas Supply Corp

1. 80–05203
2. 47–085–03806–0000
3. 108 000 000
4. Openheimer Oil & Gas
5. B F Patton #574
6.
7. Ritchie, WV
8. 10.0 million cubic feet
9. November 1, 1979
10. Consolidated Gas Supply Corp

1. 80–05204
2. 47–085–03834–0000
3. 108 000 000
4. Openheimer Oil & Gas
5. J E & Frank Deem #596
6.
7. Ritchie, WV
8. 3.0 million cubic feet
9. November 1, 1979
10. Consolidated Gas Supply Corp

1. 80–05205
2. 47–085–03838–0000
3. 108 000 000
4. Openheimer Oil & Gas
5. James Anderson #602
6.
7. Ritchie, WV
8. 15.0 million cubic feet
9. November 1, 1979
10. Consolidated Gas Supply Corp

1. 80–05206
2. 47–033–01174–0000
3. 108 000 000
4. James F Scott
5. J H Mines #2 & Consol Gas Corp (S–246]
6. Coal District

7. Harrison, WV
8. 7.2 million cubic feet
9. November 1, 1979
10. Consolidated Gas Supply Corp

1. 80–05207
2. 47–033–01175–0000
3. 108 000 000
4. James F Scott
5. J H Mines B–1223 (S–244)
6. Coal District
7. Harrison, WV
8. 41.9 million cubic feet
9. November 1, 1979
10. Consolidated Gas Supply Corp

1. 80–05208
2. 47–033–01177–0000
3. 108 000 000
4. James F Scott
5. J H Mines #3 & Con Gas Corp (S–246)
6. Coal District
7. Harrison, WV
8. 7.2 million cubic feet
9. November 1, 1979
10. Consolidated Gas Supply Corp

1. 80–05209
2. 47–043–01092–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Koontz Realty Co 26–869
6.
7. Lincoln, WV
8. 12.0 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc

1. 80–05210
2. 47–043–01091–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Koontz Realty Co 21–868
6.
7. Lincoln, WV
8. 6.1 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc
Huntington Alloys Inc
Libbey-Owens-Ford Co
Owens-Illinois Inc

West Virginia Department of Mines, Oil and Gas Division

1. 80–05211
2. 47–043–01090–0000
3. 108 000 000
4. Industrial Gas Corporation
5. T H Harvey 2–858
6.
7. Lincoln, WV
8. 3.9 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05212
2. 47–043–01094–0000
3. 108 000 000
4. Industrial Gas Corporation
5. F F Starcher 3–864
6.
7. Lincoln, WV
8. 8.3 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05213
2. 47–043–01083–0000
3. 108 000 000
4. Industrial Gas Corporation
5. G J Alexander 1–863
6.
7. Lincoln, WV
8. 9.0 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05214
2. 47–043–01131–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Island Creek Mining 8–890
6.
7. Lincoln, WV
8. 7.0 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05215
2. 47–043–01122–0000
3. 108 000 000
4. Industrial Gas Corporation
5. F F Starcher 5–891
6.
7. Lincoln, WV
8. 7.3 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05216
2. 47–043–01119–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Stein & McComas 20–887
6.
7. Lincoln, WV
8. 2.9 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05217
2. 47–043–01113–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Koontz Realty Co 25–882
6.
7. Lincoln, WV
8. 5.7 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05218
2. 47–043–01114–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Stein & McComas 19–867
6.
7. Lincoln, WV
8. 5.8 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

West Virginia Department of Mines

Oil and Gas Division

1. 80–05219
2. 47–043–01113–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Koontz Realty Co 24–878
6.
7. Lincoln, WV
8. 9.7 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05220
2. 47–043–01110–0000
3. 108 000 000
4. Industrial Gas Corporation
5. F F Starcher 4–877
6.
7. Lincoln, WV
8. 6.6 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05221
2. 47–043–01105–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Koontz Realty Co 23–876
6.
7. Lincoln, WV
8. 7.0 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05222
2. 47–043–01104–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Island Creek Mining 7–875
6.
7. Lincoln, WV
8. 4.5 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05223
2. 47–043–01082–0000
3. 108 000 000
4. Industrial Gas Corporation
5. T H Harvey 1–857
6.
7. Lincoln, WV
8. 7.3 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05224
2. 47–043–01059–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Stein & McComas 17–832
6.
7. Lincoln, WV
8. 5.4 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05225
2. 47–043–01055–0000
3. 108 000 000
4. Industrial Gas Corporation

5. Koontz Realty Co 20–853
6.
7. Lincoln, WV
8. 5.6 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05226
2. 47–043–01054–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Koontz Realty Co 19–850
6.
7. Lincoln, WV
8. 6.1 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05227
2. 47–043–00988–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Stein & McComas 13–813
6.
7. Lincoln, WV
8. 13.3 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05228
2. 47–043–00987–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Koontz Realty Co 8–820
6.
7. Lincoln, WV
8. 6.2 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05229
2. 47–043–00983–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Pattie Porter 10–817
6.
7. Lincoln, WV
8. 12.3 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05230
2. 47–043–00982–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Island Creek Mining 3–818
6.
7. Lincoln, WV
8. 6.1 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05231
2. 47–043–01158–0000
3. 108 000 000
4. Industrial Gas Corporation
5. F F Starcher 7–896
6.
7. Lincoln, WV
8. 3.6 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05232
2. 47–043–01149–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Island Creek Mining 11–909
6.
7. Lincoln, WV
8. 8.3 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05233
2. 47–043–01148–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Island Creek Mining 10–903
6.
7. Lincoln, WV
8. 6.3 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc

1. 80–05234
2. 47–043–01147–0000
3. 108 000 000
4. Industrial Gas Corporation
5. Island Creek Mining 9–900
6.
7. Lincoln, WV
8. 6.9 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. 80–05235
2. 47–043–01143–0000
3. 108 000 000
4. Industrial Gas Corporation
5. F F Starcher 6–895
6.
7. Lincoln, WV
8. 4.0 million cubic feet
9. November 1, 1979
10. Houdaille Industries Inc Huntington Alloys Inc Libbey-Owens-Ford Co Owens-Illinois Inc

1. Control Number (F.E.R.C./State)
2. API well number
3. Section of NGPA
4. Operator
5. Well name
6. Field or OCS area name
7. County, State or block No.
8. Estimated annual volume
9. Date received at FERC
10. Purchaser(s)

1. 80–05236/G 9–563
2. 17–708–40169–0000–0
3. 102 000 000
4. Transco Exploration Company
5. SMI B1 107 A–1
6. South Marsh Island
7. 107
8. 275.0 million cubic feet
9. November 2, 1979
10. Transcontinental Gas Pipe Line Corp

1. 80–05237/G 9–571
2. 17–715–40132–00S1–0
3. 102 000 000
4. C & K Petroleum Inc
5. OCS–G–1960 No 3
6. South Timbalier
7. 108
8. .0 million cubic feet
9. November 2, 1979
10. Transcontinental Gas Pipe Line Corp

U.S. Geological Survey, Albuquerque, N. Mex.

1. Control Number (F.E.R.C./State)
2. API well number
3. Section of NGPA
4. Operator
5. Well name
6. Field or OCS area name
7. County, State or block No.
8. Estimated annual volume
9. Date received at FERC
10. Purchaser(s)

1. 80–05025/COA–3280–79
2. 05–067–05200–0000–0
3. 108 000 000
4. Northwest Pipeline Corporation
5. Colorado 32–8 #2
6. Ignacio Blanco
7. La Plata CO
8. 19.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corporation

1. 80–05032/COA–3289–79
2. 05–067–00000–0000–0
3. 108 000 000
4. Northwest Pipeline Corporation
5. Igancio 33–8 #4
6. Ignacio Blanco
7. La Plata CO
8. 9.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corporation

1. 80–05026/NM–3282–79
2. 30–045–11025–0000–0
3. 108 000 000
4. Northwest Pipeline Corporation
5. San Juan 32–8 Unit NP#20
6. Blanco
7. San Juan NM
8. 2.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corporation

1. 80–05027/NM–3284–79
2. 30–039–07965–0000–0
3. 108 000 000
4. Northwest Pipeline Corporation
5. Rosa Unit #25
6. Blanco
7. Rio Arriba NM
8. 18.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corporation, El Paso Natural Gas Company

1. 80–05028/NM–3285–79
2. 30–039–00000–0000–0
3. 108 000 000
4. Northwest Pipeline Corporation
5. Federal #22
6. Gavilan
7. Rio Arriba NM
8. 3.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corporation, EL Paso Natural Gas Company

1. 80–05029/NM–3286–79
2. 30–045–11066–0000–0
3. 108 000 000
4. Northwest Pipeline Corporation

5. San Juan 32-8 #22
6. Blanco
7. San Juan NM
8. 10.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corporation, El Paso Natural Gas Company

1. 80-05030/NM-3287-79
2. 30-045-13132-0000-0
3. 108 000 000
4. Northwest Pipeline Corporation
5. S/J 32-8 Unit #13
6. Blanco NV
7. San Juan NM
8. 16.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corporation, El Paso Natural Gas Company

1. 80-05031/NM-3288-79
2. 30-045-11135-0000-0
3. 108 000 000
4. Northwest Pipeline Corporation
5. San Juan 32-8 Unit #14
6. Blanco
7. San Juan NM
8. 19.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corporation, El Paso Natural Gas Company

1. 80-05033/NM-3307-79
2. 30-039-05798-0000-0
3. 108 000 000
4. Northwest Pipeline Corporation
5. Federal #19
6. Gavilan
7. Rio Arriba NM
8. 10.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corporation, El Paso Natural Gas Company

1. 80-05034/NM-3349-79
2. 30-039-21612-0000-0
3. 103 000 000
4. Amoco Production Company
5. Valencia Canyon Unit #35
6. Blanco Mesaverde
7. Rio Arriba NM
8. 365.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80-05035/NM-3350-79
2. 30-045-22928-0000-0
3. 103 000 000
4. Amoco Production Company
5. A L Elliott D #7
6. Blanco Pictured Cliffs
7. San Juan NM
8. 55.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80-05036/NM-3541-79
2. 30-041-20281-0000-0
3. 108 000 000
4. Tenneco Oil Company
5. Fasken Federal #2
6. Bluitt
7. Roosevelt NM
8. 3.5 million cubic feet
9. November 1, 1979
10. Cities Service Oil Company

1. 80-05037/NM-3540-79
2. 30-045-11805-0000-0
3. 108 000 000
4. Tenneco Oil Company
5. Florance No. 99
6. Blanco Picture Cliff
7. San Juan NM
8. 13.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80-05038/NM-3539-79
2. 30-045-11773-0000-0
3. 108 000 000
4. Tenneco Oil Company
5. Florance No. 91
6. Blanco Picture Cliff
7. San Juan NM
8. 10.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80-05039/NM-3538-79
2. 30-025-04405-0000-0
3. 108 000 000
4. Tenneco Oil Company
5. Bay Federal #1
6. Eumont
7. Lea NM
8. 7.2 million cubic feet
9. November 1, 1979
10. Phillips Petroleum Company

1. 80-05040/NM-3537-79
2. 30-025-04407-0000-0
3. 108 000 000
4. Tenneco Oil Company
5. Bay Federal #4
6. Eumont
7. Lea NM
8. 3.8 million cubic feet
9. November 1, 1979
10. Phillips Petroleum Co

1. 80-05041/NM-3536-79
2. 30-039-20004-0000-0
3. 108 000 000
4. John E Schalk
5. Cinco Diablos #4
6. Ballard Pictured Cliffs
7. Rio Arriba County NM
8. .0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80-05042/NM-3535-79
2. 30-039-02001-1000-0
3. 108 000 000
4. John E Schalk
5. Cinco Diablos #5
6. Ballard Pictured Cliffs
7. Rio Arriba County NM
8. .0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80-05043/NM-3533-79
2. 30-039-20061-0000-0
3. 108 000 000
4. John E Schalk
5. Cinco Diablos #7
6. Ballard Pictured Cliffs
7. Rio Arriba NM
8. .0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80-05044/NM-3534-79
2. 30-039-20058-0000-0
3. 108 000 000
4. John E Schalk
5. Cinco Diablos #6
6. Ballard Pictured Cliffs
7. Rio Arriba NM
8. .0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80-05045/NM-3281-79
2. 30-039-07970-0000-0
3. 108 000 000
4. Northwest Pipeline Corporation
5. Rosa Unit #12
6. Blanco
7. Rio Arriba NM
8. 20.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corporation, El Paso Natural Gas Company

1. 80-05046/NM-3546-79
2. 30-045-11804-0000-0
3. 108 000 000
4. Tenneco Oil Company
5. Florance No 98
6. Blanco Picture Cliff
7. San Juan NM
8. 12.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80-05047/NM-3544-79
2. 30-045-11755-0000-0
3. 108 000 000
4. Tenneco Oil Company
5. Florance No 71
6. Blanco Picture Cliff
7. San Juan NM
8. 16.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80-05048/NM-3543-79
2. 30-045-11756-0000-0
3. 108 000 000
4. Tenneco Oil Company
5. Florance No 96
6. Blanco Picture Cliff
7. San Juan NM
8. 7.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80-05049/NM-3542-79
2. 30-041-20258-0000-0
3. 108 000 000
4. Tenneco Oil Company
5. Fasken Federal #1
6. Bluitt
7. Roosevelt NM
8. 3.8 million cubic feet
9. November 1, 1979
10. Cities Service Oil Company

1. 80-05050/NM-3545-79
2. 30-045-11792-0000-0
3. 108 000 000
4. Tenneco Oil Company
5. Riddle A No 2
6. Blanco Picture Cliff
7. San Juan NM
8. 8.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80-05051/NM-1546-79
2. 30-025-11810-0000-0
3. 108 000 000
4. El Paso Natural Gas Company
5. Harrison 2
6. Jalmat-Yates Gas
7. Lea NM
8. 17.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80-05052/NM-3547-79
2. 30-045-11643-0000-0
3. 108 000 000
4. Tenneco Oil Company

5. Florance No 73
6. Blanco Picture Cliff
7. San Juan NM
8. 16.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80–05053/NM–3351–79
2. 30–039–21474–0000–0
3. 103 000 000
4. Amoco Production Company
5. Valencia Canyon Unit #5
6. Choza Mesa
7. Rio Arriba NM
8. 245.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80–05054/NM–3352–79
2. 30–039–21469–0000–0
3. 103 000 000
4. Amoco Production Company
5. Valencia Canyon Unit #13
6. Choza Mesa
7. Rio Arriba NM
8. 29.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80–05055/NM–3353–79–3
2. 30–039–21591–0000–0
3. 103 000 000
4. Amoco Production Company
5. Valencia Canyon Unit #23
6. Choza Mesa
7. Rio Arriba NM
8. 20.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80–05056/NM–3357–79
2. 30–039–21489–0000–0
3. 103 000 000
4. Amoco Production Company
5. Valencia Canyon Unit #14
6. Choza Mesa
7. Rio Arriba NM
8. 50.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80–05057/NM–3358–79–1
2. 30–039–21554–0000–0
3. 103 000 000
4. Amoco Production Company
5. Jicarilla Apache 102 #28
6. B S Mesa Gallup
7. Rio Arriba NM
8. 18.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80–05058/NM–3359–79
2. 30–039–21472–0000–0
3. 103 000 000
4. Amoco Production Company
5. Valencia Canyon Unit #11
6. Choza Mesa
7. Rio Arriba NM
8. 120.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80–05059/NM–3360–79
2. 30–045–22664–0000–0
3. 103 000 000
4. Amoco Production Company
5. A L Elliott B #2A
6. Blanco Mesaverde
7. San Juan NM
8. 60.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80–05060/NM–3361–79
2. 30–045–22339–0000–0
3. 103 000 000
4. Amoco Production Company
5. Elliott Gas Com B #1A
6. Blanco Mesaverde
7. San Juan NM
8. 130.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80–05061/NM–3364–79
2. 30–039–21599–0000–0
3. 103 000 000
4. Amoco Production Company
5. Valencia Canyon Unit #20
6. Choza Mesa
7. Rio Arriba NM
8. 7.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80–05062/NM–3367–79
2. 30–045–22294–0000–0
3. 103 000 000
4. Amoco Production Company
5. Sandoval Gas Com A #1A
6. Blanco Mesaverde
7. San Juan NM
8. 200.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80–05063/NM–3368–79
2. 30–045–22661–0000–0
3. 103 000 000
4. Amoco Production Company
5. Heath Gas Com D #1A
6. Blanco Mesaverde
7. San Juan NM
8. 130.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80–05064/NM–3369–79
2. 30–045–22761–0000–0
3. 103 000 000
4. Amoco Production Company
5. Heath Gas Com C #1A
6. Blanco Mesaverde
7. San Juan NM
8. 240.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80–05065/NM–3374–79
2. 30–045–22795–0000–0
3. 103 000 000
4. Amoco Production Company
5. Navajo Allotted Gas Com B #1A
6. Blanco Mesaverde
7. San Juan NM
8. 90.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80–05066/NM–3375–79
2. 30–045–22927–0000–0
3. 103 000 000
4. Amoco Production Company
5. A L Elliot A #3
6. Blanco Pictured Cliffs
7. San Juan NM
8. 100.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Co

1. 80–05067/NM–3377–79
2. 30–039–21388–0000–0
3. 103 000 000
4. Amoco Production Company
5. Jicarilla Apache 102 #19
6. Tapacito Pictured Cliffs
7. Rio Arriba NM
8. 55.0 million cubic feet
9. November 1, 1979
10. Southern Union Gathering Co

1. 80–05068/NM–3384–79
2. 30–045–22680–0000–0
3. 103 000 000
4. Amoco Production Company
5. Houck Gas Com A #1A
6. Blanco Mesaverde
7. San Juan NM
8. 200.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80–05069/NM–3401–79
2. 30–039–21323–0000–0
3. 103 000 000
4. Amoco Production Company
5. Jicarilla Apache 102 #27
6. Tapacito Pictured Cliffs
7. Rio Arriba NM
8. 50.0 million cubic feet
9. November 1, 1979
10. Gas Company of New Mexico

1. 80–05070/NM–3402–79
2. 30–039–21582–0000–0
3. 103 000 000
4. Amoco Production Company
5. Jicarilla Apache 102 #30
6. Blanco Mesaverde
7. Rio Arriba NM
8. 50.0 million cubic feet
9. November 1, 1979
10. Gas Company of New Mexico

1. 80–05071/NM–3405–79
2. 30–039–21470–0000–0
3. 103 000 000
4. Amoco Production Company
5. Valencia Canyon Unit #16
6. Choza Mesa
7. Rio Arriba NM
8. 225.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80–05072/NM–3406–79
2. 30–039–21597–0000–0
3. 103 000 000
4. Amoco Production Company
5. Valencia Canyon Unit #19
6. Choza Mesa
7. Rio Arriba NM
8. 365.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80–05073/NM–3407–79
2. 30–039–21598–0000–0
3. 103 000 000
4. Amoco Production Company
5. Valencia Canyon Unit #17
6. Choza Mesa
7. Rio Arriba NM
8. 80.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

1. 80–05074/NM–3425–79
2. 30–039–20568–0000–0
3. 108 000 000
4. Amoco Production Company
5. Jicarilla Contract 146 #23
6. Gonzales-Mesa Verde
7. Rio Arriba NM
8. 21.0 million cubic feet

9. November 1, 1979
10. El Paso Natural Gas Co
1. 80-05075/NM-3438-79
2. 30-039-21471-0000-0
3. 103 000 000
4. Amoco Production Company
5. Valenica Canyon Unit #8
6. Choza Mesa
7. Rio Arriba NM
8. 550.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company
1. 80-05076/NM-3441-79
2. 30-045-22668-0000-0
3. 103 000 000
4. Amoco Production Company
5. Cole Gas Com A #1A
6. Blanco Mesaverde
7. San Juan NM
8. 167.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company
1. 80-05077/NM-3443-79
2. 30-045-22665-0000-0
3. 103 000 000
4. Amoco Production Company
5. Elliott Gas Com A #1A
6. Blanco Mesaverde
7. San Juan NM
8. 140.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Co
1. 80-05078/NM-3444-79
2. 30-045-22337-0000-0
3. 103 000 000
4. Amoco Production Company
5. A L Elliott D #2A
6. Blanco Mesaverde
7. San Juan NM
8. 128.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Co
1. 80-05079/NM-3445-79
2. 30-045-22338-0000-0
3. 103 000 000
4. Amoco Production Company
5. A L Elliott D #1A
6. Blanco Mesaverde
7. San Juan NM
8. 128.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company
1. 80-05080/NM-3446-79
2. 30-045-22949-0000-0
3. 103 000 000
4. Amoco Production Company
5. UTE Mountain Tribal L #2
6. Undesignated
7. San Juan NM
8. 183.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company
1. 80-05081/NM-3449-79
2. 30-039-21703-0000-0
3. 103 000 000
4. Amoco Production Company
5. Rosa Unit #64
6. Basin Dakota
7. Rio Arriba NM
8. 161.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corp
1. 80-05082/NM-3450-79
2. 30-039-21758-0000-0
3. 103 000 000
4. Amoco Production Company
5. Rosa Unit #66
6. Basin Dakota
7. Rio Arriba NM
8. 539.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corp
1. 80-05083/NM-3452-79
2. 30-045-22335-0000-0
3. 103 000 000
4. Amoco Production Company
5. A L Elliott B #1A
6. Blanco Mesaverde
7. San Juan NM
8. 110.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company
1. 80-05084/NM-3453-79
2. 30-045-22681-0000-0
3. 103 000 000
4. Amoco Production Company
5. Elliott Gas Com H #1A
6. Blanco Mesaverde
7. San Juan NM
8. 170.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company
1. 80-05085/NM-3458-79
2. 30-045-22736-0000-0
3. 103 000 000
4. Amoco Production Company
5. Ute Mountain Gas Com M # 1
6. Ute Dome Paradox
7. San Juan NM
8. 1095.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company
1. 80-05086/NM-3459-79
2. 30-039-21593-0000-0
3. 103 000 000
4. Amoco Production Company
5. Valencia Canyon Unit #25
6. Choza Mesa
7. Rio Arriba NM
8. 180.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company
1. 80-05087/NM-3460-79
2. 30-039-21478-0000-0
3. 103 000 000
4. Amoco Production Company
5. Valencia Canyon Unit #7
6. Choza Mesa
7. Rio Arriba NM
8. 110.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company
1. 80-05088/NM-3461-79
2. 30-039-21350-0000-0
3. 103 000 000
4. Amoco Production Company
5. Valencia Canyon Unit #3
6. Choza Mesa
7. Rio Arriba NM
8. 50.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company
1. 80-05089/NM-3462-79
2. 30-039-21351-0000-0
3. 103 000 000
4. Amoco Production Company
5. Valencia Canyon Unit #4
6. Choza Mesa
7. Rio Arriba NM
8. 425.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company
1. 80-05090/NM-3471-79
2. 30-045-22682-0000-0
3. 103 000 000
4. Amoco Production Company
5. W D Heath B #1A
6. Blanco Mesaverde
7. San Juan NM
8. 150.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company
1. 80-05091/NM-3479-79
2. 30-039-21404-0000-0
3. 103 000 000
4. Amoco Production Company
5. Jicarilla Apache 102 #25
6. Tapacito Pictured Cliffs
7. Rio Arriba NM
8. 30.0 million cubic feet
9. November 1, 1979
10. Gas Company of New Mexico
1. 80-05092/NM-3483-79
2. 30-039-21581-0000-0
3. 103 000 000
4. Amoco Production Company
5. Jicarilla Apache 102 #29
6. Blanco Mesaverde
7. San Juan NM
8. 40.0 million cubic feet
9. November 1, 1979
10. Southern Union Gathering Co
1. 80-05093/NM-3485-79
2. 30-045-10267-0000-0
3. 108 000 000
4. Amoco Production Company
5. Stanolind A#2
6. Basin-Dakota
7. San Juan NM
8. 21.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Co
1. 80-05094/NM-3492-79
2. 30-039-21395-0000-0
3. 103 000 000
4. Amoco Production Company
5. Rosa Unit #63
6. Basin-Dakota
7. Rio Arriba NM
8. 49.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline Corporation
1. 80-05095/NM-3515-79
2. 30-039-06152-0000-0
3. 108 000 000
4. Amoco Production Company
5. Jicarilla Contract 148 #6
6. South Blanco-Pictured Cliffs
7. Rio Arriba NM
8. 21.0 million cubic feet
9. November 1, 1979
10. Northwest Pipeline
1. 80-05096/NM-3523-79
2. 30-039-21488-0000-0
3. 103 000 000
4. Amoco Production Company
5. Valencia Canyon Unit #9
6. Choza Mesa
7. Rio Arriba NM
8. 85.0 million cubic feet
9. November 1, 1979
10. El Paso Natural Gas Company

The applications for determination in these proceedings together with a copy

or description of other materials in the record on which such determinations were made are available for inspection, except to the extent such material is treated as confidential under 18 CFR 275.206, at the Commission's Office of Public Information, Room 1000, 825 North Capitol Street, N.E., Washington, D.C. 20426.

Persons objecting to any of these final determinations may, in accordance with 18 CFR 275.203 and 18 CFR 275.204, file a protest with the Commission within fifteen (15) days of the date of publication of this notice in the **Federal Register**.

Please reference the FERC control number in all correspondence related to these determinations.

Kenneth F. Plumb,

Secretary.

[FR Doc. 79-37066 Filed 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

[Project No. 2944]

Connecticut Valley Electric Co. and City of Claremont, N.H.; Application for Preliminary Permit

November 26, 1979.

Take notice that the Connecticut Valley Electric Company and the City of Claremont, New Hampshire filed jointly on October 12, 1979, an application for preliminary permit [pursuant to the Federal Power Act, 16 U.S.C. Section 791a 825(r)] for a proposed water power project to be known as the Sugar River Project, FERC No. 2944, located on the Sugar River in Sullivan County, New Hampshire. Correspondence with the Applicants should be directed to: Darrow R. McLeod, Connecticut Valley Electric Company, Inc., 77 Grove Street, Rutland, Vermont 05701; and Charles P. Puksta, Mayor of the City of Claremont, Claremont, N.H. 03743.

Purpose of Project—Project Energy would be utilized by the Applicants for public utility purposes.

Proposed Scope and Cost of Studies Under Permit—Applicants seek issuance of a preliminary permit for a period of three years, during which time they would prepare feasibility studies, cost analyses, and studies of the project's environmental effects. Depending upon the outcome of the studies, the Applicants would decide whether to prepare an application for FERC license, including an environmental report. Applicants estimate the cost of studies under the permit would be at least $55,000.

Project Description—The proposed project would be located at the sites of three former hydroelectric developments, all within the City limits of Claremont, New Hampshire. The sites would be: (1) the Monadnock Mill Dam, located just upstream and diagonally under the Broad Street Bridge over the Sugar River. The existing structure is a concrete gravity dam approximately six feet in height; (2) the Sullivan Machine Company Dam, located approximately 350 yards downstream from the Broad Street Bridge. The existing structure is a concrete gravity dam averaging 18 feet in height; and (3) the Lafayette Street Development, which is presently owned by one of the Applicants, the Connecticut Valley Electric Company. The existing structure is a 220 foot long diversion wall running parallel to the north shore of the river.

New penstocks, powerhouses, transmission lines, and appurtenant works would be constructed at the sites. Applicants estimate that the total installed generating capacity of all sites would be between 1350 and 1500 KW.

Purpose of Preliminary Permit—A preliminary permit does not authorize construction. A permit, if issued, gives the Permittee, during the term of the permit, the right of priority of application for license while the Permittee undertakes the necessary studies and examinations to determine the engineering, economic and environmental feasibility of the proposed project, the market for power, and all other necessary information for inclusion in an application for a license.

Agency comments—Federal, State, and local agencies that receive this notice through direct mailing from the Commission are invited to submit comments on the described application for preliminary permit. (A copy of the application may be obtained directly from the Applicant.) Comments should be confined to substantive issues relevant to the issuance of a permit and consistent with the purpose of a permit as described in this notice. No other formal request for comments will be made. If an agency does not file comments within the time set below, it will be presumed to have no comments.

Protests and Petitions to Intervene—Anyone desiring to be heard or to make any protest about this application should file a petition to intervene or a protest with the Federal Energy Regulatory Commission, in accordance with the requirements of the Commission's Rules of Practice and Procedure, 18 CFR § 1.8 or 1.10 (1979). Comments not in the nature of a protest may also be submitted by conforming to the procedures specified in § 1.10 for protests. In determining the appropriate action to take, the Commission will consider all protests or other comments filed, but a person who merely files a protest or comments does not become a party to the proceeding. To become a party, or to participate in any hearing, a person must file a petition to intervene in accordance with the Commission's Rules. Any comments, protest, or petition to intervene must be filed on or before January 21, 1980. The Commission's address is: 825 North Capitol Street NE., Washington, D.C. 20426.

The application is on file with the Commission and is available for public inspection.

Kenneth F. Plumb,

Secretary.

[FR Doc. 79-37061 Filed 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

[Docket No. RE80-15]

Georgia Power Co.; Application for Exemption

November 26, 1979.

Take notice that Georgia Power Company (Georgia Power), on November 1, 1979, filed an application for exemption from certain requirements of Part 290 of the Commission's regulations (Order 48, 44 FR 58687). Exemption is sought from the requirement to file, on or before November 1, 1980, information on the costs of providing electric service as specified in Sections 290.404(d) (5) and (6), 290.406(a), 290.501(a), 290.501(b)(1)(iii), 290.501(b)(3)(iii), and 290.502(a) of Part 290 of the Commission's regulations issued pursuant to Section 133 of PURPA.

In its application for exemption, Georgia Power states that it should not be required to file the specified data for the following reason:

> Based on existing load research data, Georgia Power cannot at the present time identify "commercial office buildings" under any definition and does not know whether or not they consume more than 5 percent of retail kilowatt hour sales in any month. Thus, Georgia Power will have to survey its entire commercial class once a definition of "commercial office buildings" is determined in order to comply.

Copies of the application for exemption are on file with the Commission and are available for public inspection. The Commission's regulations require that said utility also apply to any State regulatory authority having jurisdiction over it to have the application published in any official State publication in which electric rate change applications are usually noticed, and that a summary of the application be published in newspapers of general circulation in the affected jurisdiction.

Any person desiring to present written views, arguments, or other comments on the application for exemption should file such information with the Federal Energy Regulatory Commission, 825 North Capitol Street NE., Washington, D.C. 20426, on or before January 15, 1980.

Kenneth F. Plumb,

Secretary.

[FR Doc. 79-37062 Filed 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

[Docket No. EL79-24]

Kennebunk Light & Power District; Declaration of Intention To Redevelop Hydroelectric Facilities

November 26, 1979.

Take notice that on August 3, 1979, Kennebunk Light and Power District (Declarant) filed, pursuant to the Federal Power Act [16 U.S.C. 791(a)–825(r)], a declaration of its intention to redevelop three hydroelectric generating sites. The intended redevelopment would occur at dam sites located on the Mousam River in York County, Maine. Correspondence with the Declarant regarding the declaration of intention should be sent to: Phillip R. Davis, General Manager, Kennebunk Light and Power District, 36 Water Street, Kennebunk, Maine 04043.

Declarant intends to remove three breached timber crib dams and replace the breached structures with concrete dams of sufficient height to restore historical water levels. Generating equipment and appurtenant facilities would be installed or redeveloped so that the projects would utilize existing water rights and would be operated as run-of-the-river plants. Power generated by the projects would be used in Declarant's distribution system.

As described in the declaration of intention, the three projects would be:

(A) The Dane Perkins Project which would consist of: (1) an 8-foot-high concrete dam replacing a wood crib dam breached in 1977; (2) a 10-acre reservoir; (3) a new powerhouse with a single 80-kW generator and; (4) appurtenant facilities.

(B) The Twine Mill Project which would consist of: (1) a 22-foot-high concrete dam replacing a wood crib dam breached in 1960; (2) a 12-acre reservoir; (3) an existing powerhouse with a single 375-kW generator and; (4) appurtenant facilities.

(C) The Rogers Fiber Project which would consist of: (1) a 22-foot-high concrete dam replacing a wood crib dam breached in 1960; (2) a 6-acre reservoir; (3) an existing powerhouse with a single 400-kW generator and; (4) appurtenant facilities.

The declaration of intention was filed in accordance with section 23(b) of the Federal Power Act (Act), 16 U.S.C. § 817(b). As required by the Act, the Commission will commence an investigation to determine if FERC licenses will be required for the proposed projects.

Anyone desiring to be heard or to make any protest about this declaration of intention should file a petition to intervene or a protest with the Federal Energy Regulatory Commission, Rules of Practice and Procedure, 18 CFR 1.8 or 1.10 (1979). Comments not in the nature of a protest may also be submitted by conforming to the procedures specified in § 1.10 for protests. In determining the appropriate action to take, the Commission will consider all protests or other comments filed, but a person who merely files a protest or comments does not become a party to the proceeding. To become a party, or to participate in any hearing, a person must file a petition to intervene in accordance with the Commission's Rules. Any comments, protest, or petition to intervene must be filed on or before January 7, 1980. The Commission's address is: 825 North Capitol Street, N.E., Washington, D.C. 20426. The application is on file with the Commission and is available for public inspection.

Kenneth F. Plumb,

Secretary.

[FR Doc. 79-37063 Filed 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

[Project No. 2911]

Ketchikan Public Utilities; Availability of Staff Draft Environmental Impact Statement

November 26, 1979.

Notice is hereby given in the captioned project, that on or about December 4, 1979, as required by 18 CFR 2.81(b), a draft environmental impact statement prepared by the staff of the Federal Energy Regulatory Commission was made available for comments. This statement deals with the environmental impact of the issuance of a Federal Energy Regulatory Commission license to Ketchikan Public Utilities for the construction, operation, and maintenance of the proposed Swan Lake Dam, reservoir, power tunnel, switchyard, transmission line, and access facilities. The project would have an installed capacity of 22,000 kW.

This statement has been circulated for comments to Federal, State, and local agencies, has been placed in the public files of the Commission, and is available for public inspection both in the Commission's Office of Public Information, Room 1000, 825 North Capitol Street, N.E., Washington, D.C. 20426 and its San Francisco Regional Office located at 555 Battery Street, San Francisco, California 94111.

Copies may be ordered from the Commission's Office of Public Information, Washington, D.C. 20426.

Any person who wishes to do so may filed comments on the staff draft statement for the Commission's consideration. All comments must be filed on or before January 18, 1980.

Any person who wishes to present evidence regarding environmental matters in this proceeding must file with the Commission a petition to intervene pursuant to 18 CFR 1.8. Petitioners must also file timely comments on the draft statement in accordance with 18 CFR 2.81(c).

All petitions to intervene must be filed on or before January 18, 1980.

Kenneth F. Plumb,

Secretary.

[FR Doc. 79-37064 File 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

[Project No. 2890]

Kings River Conservation District; Availability of Staff Draft Environmental Impact Statement

November 26, 1979.

Notice is hereby given in the captioned project, that on or about November 27, 1979, as required by 18 CFR 2.81(b), a draft environmental impact statement prepared by the staff of the Federal Energy Regulatory Commission was made available for comments. This statement deals with the environmental impact of the issuance of a Federal Energy Regulatory Commission license to Kings River Conservation District for the construction, operation, and maintenance of the proposed diversion facilities, Dinkey Creek dam and reservoir, power tunnels and penstocks, two powerplants, and access facilities. The project would have an installed capacity of 120,000 kW.

This statement has been circulated for comments to Federal, State, and local agencies, has been placed in the public files of the Commission, and is available for public inspection both in the Commission's Office of Congressional and Public Affairs, Room 1000, 825 North Capitol Street, N.E., Washington, D.C. 20426 and its San Francisco Regional Office located at 555 Battery Street, San Francisco, California 94111.

Copies may be ordered from the Commission's Office of Congressional and Public Affairs, Washington, D.C. 20426.

Any person who wishes to do so may file comments on the staff draft statement for the Commission's consideration. All comments must be filed on or before January 7, 1980.

Any person who wishes to present evidence regarding environmental matters in this proceeding must file with the Commission a petition to intervene pursuant to 18 CFR 1.8. Petitioners must also file timely comments on the draft statement in accordance with 18 CFR 2.81(c).

All petitions to intervene must be filed on or before January 7, 1980.

Kennth F. Plumb,

Secretary.

[FR Doc. 79-37065 Filed 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

[Docket No. RE80-18]

Monongahela Power Co., Application for Exemption

November 26, 1979.

Take notice that Monongahela Power Company (Monongahela), on Novemeber 1, 1979, filed an application for exemption from certain requirements of Part 290 of the Commission's regulations (Order 48, 44 FR 58687). Monongahela requests that it be permitted to furnish the following information set forth in parts A through E of Part 290 under Section 133 of PURPA on a company-wide basis rather than separately for each regulatory jurisdiction:

Subpart C—Sec. 290.302	Generation Cost Information
Subpart C—Sec. 290.303	Energy Cost Information
Subpart C—Sec. 290.304	Transmission Cost Information

In its application for exemption, Monongahela states that it should not be required to file the specified data for the following reasons:

"The Company gathers cost information in its accounting records substantially without regard to regulatory jurisdiction. All of its customers, regardless of jurisdiction, receive energy from the same generating stations, are served by the same extra high voltage and lower voltage transmission facilities. Distribution facilities for serving customers in one of its jurisdictions are similar in design and cost as those for serving similar situated customers in its other jurisdictions. Experience has shown that MP's cost of serving it various customers classes and subdivisions within such customer classes in one jurisdiction are relatively the same as in any of its other jurisdictions."

"MP believes that to undertake the burdensome and costly task of providing the cost information separately for each jurisdiction is unnecessary to meet the PURPA requirement which is 'to make a determination concerning whether or not it is appropriate to implement . . . (rate-making) standards' specified in the Act."

Further, "MP believes it unnecessarily burdensome and costly to undertake load research studies separately for each of the three jurisdictions inasmuch as the results can be expected to produce relatively similar customer load and use patterns."

Copies of the application for exemption are on file with the Commission and are available for public inspection. The Commission's regulations require that said utility also apply to any State regulatory authority having jurisdiction over it to have the application published in any official State publication in which electric rate change applications are usually noticed, and that a summary of the application be published in newspapers of general circulation in the affected jurisdiction.

Any person desiring to present written views, arguments, or other comments on the applicaton for exemption should file such information with the Federal Energy Regulatory Commission, 825 North Capitol Street, N.E., Washington, D.C. 20426, on or before January 16, 1980.

Kenneth F. Plumb,

Secretary.

[FR Doc. 79-37067 Filed 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

[Docket No. RE80-20]

New Bedford Gas & Edison Light Co.; Application for Exemption

November 26, 1979.

Take notice that New Bedford Gas and Edison Light Company (New Bedford), on November 1, 1979, filed an application for exemption from certain requirements of Part 290 of the Commission's regulations (Order 48, 44 FR 58687). Exemption is sought from the requirement to file, on or before November 1, 1980, information on the costs of providing electric service as specified in Sections 290.303(a), 290.303(c), 290.303(f), 290.403(a), and 290.404(d) (4), (5), (6) of Part 290 of the Commission's regulations issued pursuant to Section 133 of PURPA.

In its application for exemption, New Bedford states that it should not be required to file the specified data for the following reasons:

(1) Although New Bedford is prepared to supply typical hourly marginal energy costs for the actual known reporting year, the Company presently does not prepare or have available such data with respect to future years. New Bedford's human and financial resources would be better utilized for achievement of the purposes of Section 133 by directing its efforts towards compliance with the 1982 filing requirement.

(2) New Bedford's request for exemption of pool hourly marginal energy costs is only to the extent that its power pool, NEPOOL, is unable to provide the requested data.

(3) New Bedford requests exemption from the requirements under Section 290.303(f) to the extent that they relate to exemptions previously requested as stated in items 1 and 2 above.

(4) New Bedford believes that the purposes of Section 133 would be better achieved by applying its resources under Section 290.403(a) towards the filing which is scheduled for 1982.

(5) New Bedford requests exemption from the reporting requirements of Section 290.404(d) (4), (5), (6) because it is not now the Company's practice to record any data separately with respect to these specified classes.

Copies of the application for exemption are on file with the Commission and are available for public inspection. The Commission's regulations require that said utility also apply to any State regulatory authority having jurisdiction over it to have the application published in any official State publication in which electric rate change applications are usually noticed, and that a summary of the application be published in newspapers of general circulation in the affected jurisdiction.

Any person desiring to present written views, arguments, or other comments on the application for exemption should file such information with the Federal Energy Regulatory Commission, 825 North Capitol Street, NE., Washington, D.C. 20426, on or before January 16, 1980.

Kenneth F. Plumb,

Secretary.

[FR Doc. 79-37068 Filed 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

[Docket No. RE80-19]

Pacific Power & Light Co.; Application for Exemption

November 26, 1979.

Take notice that Pacific Power & Light Company (Pacific), on November 1, 1979, filed an application for exemption from certain requirements of Part 290 of the Commission's regulations (Order 48, 44 FR 58687). Exemption is sought from the requirement to file, on or before November 1, 1980, information on the costs of providing electric service as specified in Sections 290.202(a), 290.303(a), 290.303(g), and 290.303(h) of Part 290 of the Commission's regulations

issued pursuant to Section 133 of PURPA.

In its application for exemption, Pacific states that it should not be required to file the specified data for the following reasons:

(1) Pacific requests an exemption from the hourly average energy cost estimates specified by the second sentence of Section 290.202(a). Such estimates for Pacific's system would not be likely to carry out the purposes of Section 133 of PURPA.

(2) The Company requests an exemption from compliance with the requirements of Section 290.303(a). The required information would not be likely to carry out the purposes of Section 133 because Pacific's system is operated on an economic scheduling, rather than an economic dispatch, basis to meet total system requirements, including non-firm sales for re-sale.

(3) For the same reasons as enumerated in the exemption statement to Section 290.303(a), reporting of short run marginal energy costs as defined in Section 290.303(a) would not be likely to further the purposes of Section 133.

(4) For the same reasons as enumerated in the exemption statement to Section 290.303(a), reporting of short run marginal energy costs as defined in Section 290.303(a) would not be likely to further the purposes of Section 133.

Copies of application for exemption are on file with the Commission and are available for public inspection. The Commission's regulations require that said utility also apply to any State regulatory authority having jurisdiction over it to have the application published in any official State publication in which electric rate change applications are usually noticed, and that a summary of the application by published in newspapers of general circulation in the affected jurisdiction.

Any person desiring to present written views, arguments, or other comments on the application for exemption should file such information with the Federal Energy Regulatory Commission, 825 North Capitol Street, N.E., Washington, D.C. 20426, on or before January 16, 1980.

Kenneth F. Plumb,

Secretary.

[FR Doc. 79-37069 Filed 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

[Docket No. RE80-17]

The Potomac Edison Co.; Application for Exemption

November 26, 1979.

Take notice that The Potomac Edison Company (Potomac Edison), on November 1, 1979, filed an application for exemption from certain requirements of Part 290 of the Commission's regulations (Order 48, 44 FR 58687). Potomac Edison requests that it be permitted to furnish the following information set forth in parts A through E of Part 290 under Section 133 of PURPA on a company-wide basis rather than separately for each regulatory jurisdiction:

Subpart C—Sec. 290.302	Generation Cost Information
Subpart C—Sec. 290.303	Energy Cost Information
Subpart C—Sec. 290.304	Transmission Cost Information

In its application for exemption, Potomac Edison states that it should not be required to file the specified data for the following reasons:

"The Company gathers cost information in its accounting records substantially without regard to regulatory jurisdiction. All of its customers, regardless of jurisdiction, receive energy from the same generating stations, are served by the same extra high voltage and lower voltage transmission facilities. Distribution facilities for serving customers in one of its jurisdictions are similar in design and cost as those for serving similarly situated customers in its other jurisdictions. Experience has shown that PE's cost of serving its various customer classes and subdivisions within such customer classes in one jurisdiction are relatively the same as in any of its other jurisdictions."

"PE believes that to undertake the burdensome and costly task of providing the cost information separately for each jurisdiction is unnecessary to meet the PURPA requirement which is 'to make a determination concerning whether or not it is appropriate to implement . . . (rate-making) . . . standards' specified in the Act."

Further, "PE believes it is unnecessarily burdensome and costly to undertake load research studies separately for each of the four jurisdictions inasmuch as the results can be expected to produce relatively similar customer load and use patterns."

Copies of the application for exemption are on file with the Commission and are available for public inspection. The Commission's regulations require that said utility also apply to any State regulatory authority having jurisdiction over it to have the application published in any offical State publication in which electric rate change applications are usually noticed, and that a summary of the application be published in newspapers of general circulation in the affected jurisdiction.

Any person desiring to present written views, arguments, or other comments on the application for exemption should file such information with the Federal Energy Regulatory Commission, 825 North Capitol Street, N.E., Washington, D.C. 20426, on or before January 16, 1980.

Kenneth F. Plumb,

Secretary.

[FR Doc. 79-37070 Filed 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

[Docket No. RP80-51

Sea Robin Pipeline Co.; Filing of Original and Revised Tariff Sheets

November 26, 1979.

Take notice that Sea Robin Pipeline Company (Sea Robin), on November 19, 1979, tendered for filing, as part of its FERC Gas Tariff, Original Volume 1, the following tariff sheets:

Fourth Revised Sheet No. 5.
Third Revised Sheet No. 6.
Fourth Revised Sheet No. 7.
Original Sheet No. 7–A.
Original Sheet No. 7–B.
Original Sheet No. 7–C.
Original Sheet No. 7–D.
Original Sheet No. 12.
Original Sheet No. 13.
Original Sheet No. 14.
Original Sheet No. 15.
Original Sheet No. 16.
Original Sheet No. 17.
Original Sheet No. 18.
Original Sheet No. 19.
Original Sheet No. 20.
Original Sheet No. 21.
Original Sheet No. 22.

Sea Robin states it has revised Section 1 and added new Sections 3, 4 and 5 to its FERC Gas Tariff, Original Volume No. 1. The revision of Section 1 and the addition of the new sections are in response to Commission Order 49, issued September 28, 1979, pursuant to which the Commission promulgated regulations implementing the incremental pricing provisions of the Natural Gas Policy Act of 1978. The proposed tariff sheets will change the method of computing the rates to become effective January 1, 1980 but will not affect the rates in effect prior to that date.

The proposed tariff provisions provide generally that Sea Robin will bill each of its two customers an incremental pricing surcharge equal to fifty percent of the total incremental gas costs incurred by Sea Robin. Sea Robin respectfully requests waiver of the Commission regulations to the extent that such waiver may be required to permit implementation of incremental pricing as set out on the proposed tariff sheets and to make such tariff sheets effective on December 1, 1979, as required by Order No. 49.

Copies of the proposed tariff sheets will be mailed to Sea Robin's customers and interested state commission.

Any person desiring to be heard or to protest said filing should file a petition to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street NE., Washington, D.C. 20426, in accordance with Sections 1.8 and 1.10 of the Commission's Rules of Practice and Procedure (18 CFR 1.8, 1.10). All such petitions or protests should be filed on or before December 10, 1979. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene. Copies of this filing are on file with the Commission and are available for public inspection.

Kenneth F. Plumb,

Secretary.

[FR Doc. 79-37071 Filed 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

[Docket No. RP73-64]

Southern Natural Gas Co.; Proposed Changes in FERC Gas Tariff

November 26, 1979.

Take notice that Southern Natural Gas Company (Southern), on November 16, 1979, tendered for filing proposed changes in its FPC Gas Tariff, Sixth Revised Volume No. 1, to become effective January 1, 1980. Such filing is pursuant to Section 17 (Purchased Gas Adjustment) of the General Terms and Conditions of Southern's FERC Gas Tariff, Sixth Revised Volume No. 1. The proposed changes would increase Southern's rates as a result of the following items.

(1) A Current Adjustment, factored to reflect recovery over all resale volumes, pursuant to Section 17.3 of the General Terms and Conditions of Southern's FPC Gas Tariff, reflecting an annual increase in cost of purchased gas to jurisdictional customers of $84,315,093, or approximately 14.577¢ per Mcf.

(2) A Surcharge Adjustment, pursuant to Section 17.4 of the General Terms and Conditions of Southern's FPC Gas Tariff, for Unrecovered Purchased Gas Cost of (.590¢) per Mcf which is a reduction of .547¢ below the present Surcharge Adjustment. The total of Unrecovered Purchased Gas Costs to be recovered is ($1,772,892) and will be collected over the estimated sales for the six-month period commencing January 1, 1980.

(3) A Surcharge Adjustment for estimated Demand Charge Credits pursuant to Section 9.6(3) of the General Terms and Conditions of Southern's FPC Gas Tariff of .446¢ per Mcf which is an increase of 1.499¢ above the present Surcharge Adjustment.

(4) A GRI Surcharge Adjustment of .480¢ per Mcf pursuant to FERC Opinion No. 64 (Docket No. RP79-75) dated October 2, 1979 which is an increase of .130¢ above the present GRI Surcharge Adjustment.

(5) A Use Tax Adjustment Rate for the Recovery of Louisiana First Use Tax pursuant to Section 21 of the General Terms and Conditions of Southern's FPC Gas Tariff of 1.828¢ per Mcf which is an increase of .165¢ above the present Use Tax Adjustment Rate.

(6) A reduction in the Base Tariff Rates of 9.464¢ per Mcf to reflect the impact of elimination of a surcharge mechanism as approved by the Commission in Docket No. RP79-72 for imported LNG purchased by Southern Energy Company.

Copies of the filing are being served upon the company's jurisdictional customers and interested state commissions.

Any person desiring to be heard or to protest said filing should file a petition to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street NE., Washington, D.C. 20426, in accordance with Sections 1.8 and 1.10 of the Commission's Rules of Practice and Procedure (18 CFR 1.8, 1.10). All such petitions or protests should be filed on or before December 10, 1979. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene. Copies of this filing are on file with the Commission and are available for public inspection.

Kenneth F. Plumb,

Secretary.

[FR Doc. 79-37072 Filed 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

[Docket No. RP78-24]

Transco Gas Supply Co.; Tariff Filing

November 26, 1979.

Take notice that Transco Gas Supply Company (Gasco) on Nov. 16, 1979, tendered for filing Third Substitute Second Revised Sheet No. 106 and Third Revised Sheet No. 106 to its FERC Gas Tariff, Original Volume No. 2. Gasco states that such sheets provide for percentages of 15.73% and 15.26%, respectively, applicable to return and income taxes on Gasco's rate base and are proposed to become effective as of January 1, 1978 and January 1, 1979, respectively.

On January 27, 1978 Gasco tendered Second Substitute Second Revised Sheet No. 106 providing for a return and income tax factor of 16.52% to be effective January 1, 1978. Such factor was based upon the rate of return and income tax factor contained in the general rate increase filing of Transcontinental Gas Pipe Line Corporation (Transco) of June 30, 1977. The tariff sheet reflecting the return and income tax factor of 16.52% was accepted by the Commission in the instant docket on February 21, 1978 to be effective January 1, 1978, subject to refund.

Gasco states that the Commission, by letter order dated October 11, 1979, accepted and approved Transco's Settlement Agreement filed September 25, 1978 and the Supplemental Agreement filed July 26, 1979 in Docket No. RP77-108. The rate of return and income tax factors reflected in the rates of Transco to be effective January 1, 1978 and January 1, 1979 under the Agreements are lower than the factor contained in Gasco's currently effective tariff and the instant filing is being made to reflect said lower rate of return and income tax factors in compliance with Section 1B of Appendix A of Gasco's FERC Gas Tariff and the Commission's letter order of February 1, 1978.

Gasco requests a waiver of such of the Commission's regulations as may be necessary in order that the revised tariff sheets become effective as proposed and the instant proceeding terminated. Gasco also states that upon acceptance of the revised tariff sheets, it will make necessary refunds to Transco and shall commence collecting prospective rates based upon the reduced rate of return and income tax factor.

Gasco states that copies of the filing have been mailed to Transco and for information purposes to each of Transco's jurisdictional customers and interested State Commissions.

Any persons desiring to be heard or to protest said filing should file a petition to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street NE., Washington, D.C. 20426, in accordance with Sections 1.8 and 1.10 of the Commission's Rules of Practice and Procedure (18 CFR 1.8, 1.10). All such petitions or protests should be filed on or before December 10, 1979. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene. Copies of this filing are on file

with the Commission and are available for public inspection.

Kenneth F. Plumb,

Secretary.

[FR Doc. 79-37073 Filed 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

[Docket No. RP77-108]

Transcontinental Gas Pipe Line Corp.; Tariff Filing

November 26, 1979.

Take notice that Transcontinental Gas Pipe Line Corporation (Transco) on November 16, 1979 tendered for filing certain revised tariff sheets as enumerated in Appendix A attached hereto.

Transco states that the purpose of this filing is to reflect (1) an advance payment "tracking" rate reduction of 0.3¢ per dt in the commodity rate or delivery charge of Transco's sales and firm transportation rate schedules and (2) an increase of 0.13¢ per dt in the Gas Research Institute (GRI) charge applicable to sales and transportation deliveries to distributors for resale, to pipelines which are not members of GRI and to ultimate consumers.

Transco also states that the rate reduction related to advance payments is being filed in accordance with Article VII of Transco's "Agreement as to Rates" filed September 25, 1978 in Docket No. RP77-108 and approved, along with Transco's "Supplemental Agreement as to Rates" filed July 26, 1979, by Commission letter order dated October 11, 1979. Article VII provides for adjustments to Transco's jurisdictional rates to give effect to inclusion in rate base of net increases or decreases in the amount of outstanding advance payments made by Transco provided such net increases or decreases result in an adjustment of 0.3¢ per dt when computed to the nearest one-tenth of one cent. The rate reduction proposed herein is occasioned by a decrease of $11,855,999 in the advance payment balance of Transco from the amount included in Transco's settlement rates in such docket as of July 1, 1979.

On October 2, 1979, the Commission issued Opinion No. 64 in Docket No. RP79-75. The Opinion provides that, as a member of GRI, Transco may file under its Gas Research Institute Charge Adjustment Provision to collect in advance of payments to GRI, 0.48¢ per Mcf (which on Transco's system equates to 0.47¢ per dt) on sales and transportation deliveries to distributors for resale, to pipelines which are not members of GRI and to ultimate consumers. Transco further states that this adjustment charge will replace the currently effective charge of 0.34¢ per dt.

Also, Transco states that the net tracking reduction is being applied to the approved settlement rates in Docket No. RP77-108 adjusted for (1) the approved tracking changes which became effective September 1, 1979 pursuant to letter order dated November 9, 1979 in Docket No. RP73-3 (PGA No. 79-2a) and (2) new zone differentials determined on a mileage basis pursuant to Commission Opinion No. 59 issued August 6, 1979 in Docket Nos. RP76-136 and RP77-26. In respect to the issue of zone differentials, there are pending in the United States Court of Appeals for the District of Columbia Circuit motions to stay the effect of such opinion. Transco states that revisions to such tariff sheets being filed herewith may be required should a stay be granted by the Court.

The Company states that copies of the filing were served upon the Company's jurisdictional customers and interested state commissions.

Any persons desiring to be heard or to protest said filing should file a petition to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street, N.E., Washington, D.C. 20426, in accordance with Sections 1.8 and 1.10 of the Commission's Rules of Practice and Procedure (18 CFR 1.8, 1.10).

All such petitions or protests should be filed on or before December 10, 1979. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene. Copies of this filing are on file with the Commission and are available for public inspection.

Kenneth F. Plum,

Secretary.

[FR Doc. 79-37074 Filed 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

[Docket No. RE80-16]

West Penn Power Co.; Application for Exemption

November 26, 1979.

Take notice that West Penn Power Company (West Penn), on November 1, 1979, filed an application for exemption from certain requirements of Part 290 of the Commission's regulations (Order 48, 44 FR 58687). West Penn requests that it be permitted to furnish the following information set forth in parts A through E of Part 290 under section 133 of PURPA on a company-wide basis rather than separately for each regulatory jurisdiction:

Subpart C—Sec. 290.302 Generation Cost Information.
Subpart C—Sec. 290.303 Energy Cost Information.
Subpart C—Sec. 290.304 Transmission Cost Information.

In its application for exemption, West Penn states that it should not be required to file the specified data for the following reasons:

"The Company gathers cost information in its accounting records substantially without regard to regulatory jurisdiction. All of its customers, regardless of jurisdiction, receive energy from the same generating stations, are served by the same extra high voltage and lower voltage transmission facilities. Experience has shown that WP's cost of servicing various customer classes and subdivisions within such customer classes in one jurisdiction are relatively the same as in any of its other jurisdictions."

"WP believes that to undertake the burdensome and costly task of providing the cost information separately for each jurisdiction is unnecessary to meet the PURPA requirement which is 'to make a determination concerning whether or not it is appropriate to implement * * * (rate-making) * * * standards' specified in the Act."

Further, "WP believes it unnecessarily burdensome and costly to undertake load research studies separately for each of the four jurisdictions inasmuch as the results can be expected to produce relatively similar customer load and use patterns."

Copies of the application for exemption are on file with the Commission and are available for public inspection. The Commission's regulations require that said utility also apply to any State regulatory authority having jurisdiction over it to have the application published in any official State publication in which electric rate change applications are usually noticed, and that a summary of the application be published in newspapers of general circulation in the affected jurisdiction.

Any person desiring to present written views, arguments, or other comments on the application for exemption should file such information with the Federal Energy Regulatory Commission, 825 North Capitol Street, N.E., Washington, D.C. 20426, on or before January 16, 1980.

Kenneth F. Plumb,

Secretary.

[FR Doc. 79-37075 Filed 11-30-79; 8:45 am]

BILLING CODE 6450-01-M

ENVIRONMENTAL PROTECTION AGENCY

[FRL 1357-4]

Standards of Performance for New Stationary Sources; Delegation of Authority to the State of Maryland

On June 14, 1974, 39 FR 20791, pursuant to Section 111 of the Clean Air Act, as amended, the Administrator promulgated regulations establishing standards of performance for five categories of new stationary sources. The Administrator has since promulgated regulations establishing standards of performance for additional categories of new stationary sources 40 CFR Part 60. Section 111(c) requires the Administrator to delegate authority to implement and enforce the standards to any State which submits an adequate procedure. Nevertheless, the Administrator retains concurrent authority to implement and enforce the standards following delegation of authority to a State.

The Regional Administrators forwarded to the States in their respective Regions information setting forth the requirements for an adequate procedure for implementing and enforcing the standards. On July 21, 1978, the Acting Governor of the State of Maryland submitted to the EPA Regional Office in Philadelphia a request for delegation of authority. The categories of sources requested were:

1. Steam generators of more than 250 million BTU per hour heat input;
2. Incinerators capable of charging more than 50 tons of refuse per 24 hour day;
3. Portland cement plants;
4. Sulfuric acid plants;
5. Nitric acid plants;
6. Asphalt batch plants;
7. Petroleum refineries;
8. Petroleum storage having a capacity of 40,000 gallons;
9. Secondary lead smelters;
10. Secondary brass and bronze ingot plants;
11. Iron and steel plants;
12. Sewage sludge incinerators;
13. Coal preparation plants;
14. Primary copper smelters;
15. Primary zinc smelters;
16. Primary lead smelters;
17. Primary aluminum reduction plants;
18. Wet process phosphoric acid plants;
19. Superphosphoric acid plants;
20. Diammonium phosphate plants;
21. Triple superphosphate plants;
22. Granular triple superphosphate storage facilities;
23. Feroalloy production facilities; and
24. Electric arc furnaces.

The Regional Administrator determined that the procedure for implementing and enforcing the standards was adequate, and pursuant to authority delegated to him by the Administrator, notified the Acting Governor on September 15, 1978, that authority to implement and enforce the standards of performance for these new stationary sources was delegated to the State of Maryland. The text of the Regional Administrator's notice to the Acting Governor follows:

Honorable Blair Lee, III
Acting Governor, State of Maryland, State House, Annapolis, Maryland

Re: Delegation of Authority for New Source Performance Standards to the State of Maryland

Dear Governor Lee: I am pleased to announce that the U.S. Environmental Protection Agency hereby delegates to the State of Maryland the authority to administer and enforce the New Source Performance Standards. EPA has determined that the pertinent laws of the State of Maryland and the rules and regulations of the Maryland Bureau of Air Quality are adequate to administer and enforce these regulations. This program will be the primary responsibility of the Maryland Bureau of Air Quality. If Maryland determines that implementation or enforcement of this program is not feasible and so notifies EPA or if Maryland acts in a manner inconsistent with the delegation, EPA will exercise its concurrent enforcement authority pursuant to Section 113 of the Clean Air Act.

Acceptance of this delegation of presently promulgated NSPS does not commit the State to request or accept delegation of future standards and requirements. A new request for delegation will be required for any standards not included in the State's request of July 21, 1978.

Upon approval of the Regional Administrator of Region III, the Maryland Bureau of Air Quality may subdelegate its authority to implement and enforce NSPS to air pollution control authorities in the State when such authorities have demonstrated that they have equivalent or more stringent programs in force.

The State of Maryland will not grant a variance from compliance with the applicable NSPS regulations if such variance delays compliance with the Federal Standards 40 CFR Part 60. Should Maryland grant such a variance, EPA will consider the source receiving the variance to be in violation of the applicable Federal regulation and may initiate enforcement action against the source pursuant to Section 113 of the Clean Air Act. The granting of such variances by Maryland shall also constitute grounds for revocation of delegation by EPA.

The Maryland Bureau of Air Quality and EPA will develop a system of communication sufficient to guarantee that each office is always fully informed regarding the interpretation of applicable regulations. In instances where there is a conflict between a State interpretation and a Federal interpretation of applicable regulations, the Federal interpretation must be applied if it is more stringent than that of the State.

If the State does not have the authority to enforce the more stringent Federal regulation, this portion of the delegation may be revoked.

The Maryland Bureau of Air Quality will utilize the methods specified in 40 CFR Part 60 in performing source tests pursuant to the regulations.

If the Regional Administrator determines that a State program for enforcing or implementing the NSPS regulations is inadequate or is not being effectively carried out, this delegation may be revoked in whole or in part. Any such revocation shall be effective as of the date specified in a Notice of Revocation to the Maryland Bureau of Air Quality.

A Notice announcing this delegation will be published in the **Federal Register** in the near future. The Notice will state, among other things, that, effective immediately, all reports required pursuant to the Federal NSPS by sources located in the State of Maryland should be submitted to the Maryland Bureau of Air Quality. Any such reports which have been or may be received by EPA, Region III will be promptly transmitted to Maryland.

Since this delegation is effective immediately, there is no requirement that the State notify EPA of its acceptance. Unless EPA receives from the State written notice of objections within 10 days of receipt of this letter, the State of Maryland will be deemed to have accepted all of the terms of the delegation.

Sincerely yours,

Jack J. Schramm,
Regional Administrator.

Copies of the request for delegation of authority are available for public inspection at the Environmental Protection Agency, Region III, Curtis Publishing Company Building, 6th & Walnut Streets, Philadelphia, Pennsylvania 19106.

Effective immediately, all reports required pursuant to the standards of performance for new stationary sources should be submitted to the Maryland Bureau of Air Quality and Noise Control, O'Conor State Office Building, 201 West Preston Street, Baltimore, Maryland 21201.

Dated: October 16, 1979.

R. Sarah Compton,
Director, Enforcement Division.

[FR Doc. 79-37031 Filed 11-30-79; 8:45 am]
BILLING CODE 6560-01-M

[FRL 1369-1]

Intent to Prepare an Environmental Impact Statement

AGENCY: Surveillance and Analysis Division, Environmental Impact Statement Branch, Region IV, Environmental Protection Agency.

ACTION: Notice of Intent to Prepare a Draft Environmental Impact Statement (EIS).

PURPOSE: In accordance with Section 102(2)(C) of the National Environmental

Policy Act, the EPA has identified a need to prepare an EIS and therefore publishes this Notice of Intent pursuant to 40 CFR 1501.7.

FOR FURTHER INFORMATION CONTACT: Eugene G. Raybuck, U.S. Environmental Protection Agency, 345 Courtland Street, NE., Atlanta, Ga. 30308, FTS 257–7458; (404) 881–7458.

SUMMARY: The Environmental Protection Agency, Region IV will prepare an Environmental Impact Statement (EIS) on the proposed issuance of funds to Blount County for construction of municipal wastewater transmission, treatment and disposal facilities for the Blount County 201 facilities planning area. The 201 facilities plan prepared by the County includes interceptor sewers, force-mains, and pumping stations to serve the projected 1998 populations.

DESCRIPTION OF ALTERNATIVES: Municipalities within the Blount County study area are:

Alcoa, Townsend, Walland, Shooks Gap, Friendsville and Rockford.

One regional wastewater treatment facility is proposed to service the entire planning area. This is one alternative to be considered in the EIS. Other alternatives for wastewater treatment and disposal include: Construction of treatment plants in various municipalities, individual on-lot systems, and land application treatment systems at one or more locations. The "no-action" alternative, defined as no EPA funding participation, will also be considered in this EIS.

PUBLIC PARTICIPATION: Participation by interested Federal, State and local agencies as well as other interested private organizations and parties are invited.

The significant issues to be discussed in the EIS include: land use patterns, secondary impacts, to the Little River Basin from development and secondary impacts to the Great Smokey Mountain National Park.

SCOPING: A Public Scoping meeting will be held at 7:30 p.m. on Tuesday, December 18, 1979 at the Blount County Courthouse, Maryville, Tennessee. The Public is invited to attend and provide information to be considered in preparing the Environmental Impact Statement.

TIMING: The Draft EIS is tentatively scheduled for issuance by December 1981.

All interested parties are encouraged to submit their name and address to the person indicated above for inclusion on the distribution list for the draft EIS and related public notices.

Dated: November 26, 1979.

William N. Hedeman, Jr.,

Director, Office of Environmental Review (A–104).

[FR Doc. 79–37013 Filed 11–30–79; 8:45 am]

BILLING CODE 6560–01–M

[FRL 1369–2; OPP–00109]

Federal Insecticide, Fungicide, and Rodenticide Act, Scientific Advisory Panel; Open Meeting

AGENCY: Office of Pesticide Programs, Environmental Protection Agency (EPA).

ACTION: Notice of open meeting.

SUMMARY: There will be a two-day meeting of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Scientific Advisory Panel from 9:00 a.m. to 5:00 p.m. daily on Wednesday and Thursday, December 19 and 20, 1979. The meeting will be held in the Terrace Room, Quality Inn—Pentagon City, 300 Army Navy Drive, Arlington, Va., and will be open to the public.

FOR FURTHER INFORMATION CONTACT: Dr. H. Wade Fowler, Jr., Executive Secretary, FIFRA Scientific Advisory Panel, Office of Pesticide Programs (TS–766), EPA, Room 803, Crystal Mall, Building No. 2, 1921 Jefferson Davis Highway, Arlington, Va. 22202, Telephone: 703/557–7560.

SUPPLEMENTARY INFORMATION: In accordance with section 25(d) of the amended FIFRA, the Scientific Advisory Panel will comment on the impact of regulatory actions under sections 6(b) and 25(a) on health and the environment prior to implementation. The agenda for this meeting will include the following topics:

1. Formal review and conclusion by the Panel on proposed and final rulemaking concerning Subpart D—Chemistry Requirements: Product Chemistry, §§ 163.61–7 (proposed) and Product Chemistry §§ 163.61–1 through 163.61–6, and 163.61–8 through 163.61–11 (final);

2. Completion of any unfinished business from previous Panel meetings; and

3. In addition, the Agency may present status reports on other ongoing programs of the Office of Pesticide Programs.

Copies of draft documents concerning item 1 may be obtained by contacting Dr. William Preston, Hazard Evaluation Division (TS–769), Room: 800, Crystal Mall, Building No. 2, at the address given above, Telephone: 703/557–1405.

Any member of the public wishing to attend or submit a paper should contact Dr. H. Wade Fowler, Jr., at the address or phone listed above to be sure that the meeting is still scheduled and to confirm that the Panel will review all of the agenda items. Interested persons are permitted to file written statements before or after the meeting, and may, upon advance notice to the Executive Secretary, present oral statements to the extent that time permits. Written or oral statements will be taken into consideration by the Panel in formulating comments or in deciding to waive comments. Persons desirous of making oral statements must notify the Executive Secretary and submit the required number of copies of a summary no later than December 14, 1979.

Individuals who wish to file written statements are advised to contact the Executive Secretary in a timely manner to be instructed on the format and the number of copies to submit to ensure appropriate consideration by the Panel.

The tentative date for the next Scientific Advisory Panel meeting is January 17 and 18, 1980.

(Sec. 25(d) of FIFRA, as amended in 1972, 1975, and 1978 (92 Stat. 819; (7 U.S.C. 136)) sec. 10(a)(2) of the Federal Advisory Committee Act (Pub. L. 92–463; 86 Stat. 770))

Dated: November 27, 1979.

Edwin L. Johnson,

Deputy Assistant Administrator for Pesticide Programs.

[FR Doc. 79–37014 Filed 11–30–79; 8:45 am]

BILLING CODE 6560–01–M

FEDERAL COMMUNICATIONS COMMISSION

[Report No. A–7]

FM Broadcast Applications Accepted for Filing and Notification of Cut-off Date

Released: November 27, 1979.

Cut-off date: January 18, 1980.

Notice is hereby given that the applications listed in the attached appendix are hereby accepted for filing. They will be considered to be ready and available for processing after January 18, 1980. An application, in order to be considered with any application appearing on the attached list or with any other application on file by the close of business on January 18, 1980 which involves a conflict necessitating a hearing with any application on this list, must be substantially complete and tendered for filing at the offices of the Commission in Washington, D.C., not later than the close of business on January 18, 1980.

Petitions to deny any application on this list must be on file with the

Commission not later than the close of business on January 18, 1980.

Federal Communications Commission.

William J. Tricarico,

Secretary.

Appendix

BPH–10496, KBCO, Boulder, Colorado, Centennial Wireless, Inc. HAS: 97.3 MHZ; Channel No. 247C., ERP: 2 kW; HAAT: –750 ft. (LIC). REQ: 97.3 MHZ; channel No. 247C., ERP: 25 kW; HAAT: 918 ft.

BPH–781211AJ, WRUL, Carmi, IlliNois, Carmi Broadcasting Company. HAS: 97.3 MHZ; Channel No. 247B. ERP: 11 kW; HAAT: 210 ft. (LIC). REQ: 97.3 MHZ; channel No. 247B., ERP: 50 kW; HAAT: 193 ft.

BPH–790423AT, WKXA–FM, Brunswick, Maine, Amcom Corporation HAS: 98.9 MHZ; Channel No. 255B., ERP: 80 kW; HAAT: 205 ft. (LIC). REQ: 98.9 MHZ; channel No. 255B., ERP: 50 kW; HAAT: 500 ft.

BPH–790612AD, WNFM, Dayton, Tennessee, WDNT Broadcasting Company, Inc. REQ: 104.9 MHZ; channel No. 285A., ERP: .65 kW; HAAT: 857 ft.

BPH–790613AA, KLOO–FM, Corvallis, Oregon, Kloo, Inc. HAS: 106.1 MHZ; Channel No. 291C., ERP: 27.5 kW; HAAT: –87 ft. (LIC). REQ: 106.1 MHZ; channel No. 291C., ERP: 100 kW; HAAT: 1253 ft.

BPH–790622AB, (new), Gunnison, Colorado, Gunnison Broadcasting Co. REQ: 98.3 MHZ; channel No. 252A., ERP: 3 kW; HAAT: 304 ft.

BPH–790720AE, (new), Stonington, Connecticut, Metro Broadcasting Inc. REQ: 102.3 MHZ; channel No. 272A., ERP: 3 kW; HAAT: 300 ft.

BPH–790723AC, WLXN, Lexington, North Carolina, Davidson County Broadcasting Co., Inc. HAS: 94.1 MHZ; Channel No. 231C., ERP: 10 kW; HAAT: 195 ft. (LIC). REQ: 94.1 MHZ; channel No. 231C., ERP: 50 kW; HAAT: 193 ft.

BPH–790723AD, WBAG–FM, Burlington-Graham, North Carolina, Burlington-Graham B/cting Co., Inc. HAS: 93.9 MHZ; Channel No. 230C., ERP: 10 kW; HAAT: 300 ft. (LIC). REQ: 93.9 MHZ; channel No. 230C., ERP: 50 kW; HAAT: 229 ft.

BPH–790725AC, (new), St. Marys, West Virginia, Employee-Owned Broadcasting Corp. REQ: 101.7 MHZ; channel No. 269A., ERP: 1.8 kW; HAAT: 375 ft.

BPH–790803AA, KKLF, Conway, Arkansas, Coastal Communications, Ltd. HAS: 105.1 MHZ; Channel No. 286C., ERP: 28.5 kW; HAAT: 320 ft. (LIC). REQ: 105.1 MHZ; channel No. 286C., ERP: 97 kW; HAAT: 530 ft.

BPH–790920AF, KRNN–FM, Rosebush, Michigan, Northcom, Inc. HAS: 95.3 MHZ; Channel No. 237A., ERP: 3 kW; HAAT: 160 ft. (LIC). (Clare, Michigan) REQ: 95.3 MHZ; channel No. 237A., ERP: 3 kW; HAAT: 300 ft. (Rosebush, Michigan)

BMPH–790628AI, KNDI–FM, Sullivan, Indiana, WKQV, Inc. HAS: 95.3 MHZ; Channel No. 237A., ERP: 3 kW; HAAT: 300 ft. (CP). REQ: 95.3 MHZ; channel No. 237A., ERP: 3 kW; HAAT: 148 ft.

BPED–2642, KFAI, Minneapolis, Minnesota, Fresh Air, Inc. HAS: 90.3 MHZ; Channel No. 212D., TPO: .01 kW; (LIC). REQ: 90.3 MHZ; channel No. 212A., ERP: .125 kW; HAAT: 442 ft.

BPED–790419AA, KDCR, Sioux Center, Iowa, Dordt College, Inc. HAS: 91.3 MHZ; Channel No. 217C., ERP: 48 kW; HAAT: 300 ft. (LIC). REQ: 88.5 MHZ; channel No. 203C., ERP: 100 kW; HAAT: 470 ft.

BPED–790629AE, (new), Frederick Maryland, Ethnic Public B/cting Foundation REQ: 88.1 MHZ; channel No. 201B., ERP: 11.2 kW; HAAT: 204 ft.

[FR Doc. 79–37054 Filed 11–30–79; 8:45 am]

BILLING CODE 6712–01–M

[FCC 79–740; BC Docket No. 79–301; File No. BMPCT–790423KH]

King Communications, Inc. (WGSE(TV)); Application for Extension of Construction Time

Adopted: November 6, 1979.

Released: November 28, 1979.

In re application of King Communications, Inc. (WGSE(TV)) Myrtle Beach, South Carolina, for extension of time to construct.

By the Commission:

1. The Commission has before it for consideration the above-captioned application of King Communciations, Inc., permittee of Station WGSE(TV), channel 43, Myrtle Beach, South Carolina, requesting additional time within which to construct the station. The construction permit for State WGSE(TV) was granted November 23, 1977. On April 23, 1979, the permittee filed the instant application indicating that equipment had not yet been ordered. The explanation for this failure is the permittee's apparent inability to obtain a network affiliation. The permittee states:

> The permittee has had extensive negotiations with network representatives regarding the availability of an affiliation. It will be noted that the application proposed CBS affiliation, but that expectancy, submitted in all good faith, has not yet materialized. The corporation has not yet ordered equipment, awaiting favorable developments regarding network availability.

2. In effect, the permittee now advises the Commission that it will not build unless it gets a network affiliation. The permittee made no such representation in its original application. This is a business judgment and does not appear to constitute a failure to construct because of reasons beyond the permittee's control. There is no assurance that a network affiliation can ever be obtained and, therefore, a possibility exists that the station may not be constructed at all. Under these circumstances, we are unable to find that a grant of the application would be in the public interest.

3. On August 30, 1979, the Chief, Broadcast Bureau, dismissed the application for more time within which to construct, cancelled the construction permit, and deleted the call sign. The letter to the permittee advised the permittee that if a hearing on the application was desired, the permittee could request reinstatement by letter and, upon receipt of such a request, the application would be set for oral argument before the Review Board. By letter dated October 1, 1979, the permittee requested reinstatement.

4. For the reasons stated, we are of the opinion that the application should be reinstated and designated for oral argument. Accordingly, it is ordered, that the above-captioned application of King Communications, Inc., is reinstated and designated for oral argument before the Review Board in Washington, D.C. at a time and date to be specified in a subsequent Order, upon the following issue:

> To determine whether the reasons advanced by the permittee in support of its request for an extension of its completion date constitute a showing that failure to complete construction was due to causes not under the control of the permittee, or constitute a showing of other matters sufficient to warrant a further extension of time within the meaning of section 319(b) of the Communications Act of 1934 and § 73.3534(a) of the Commission's Rules.

5. It is further ordered, that, to avail itself of the opportunity to be heard, the applicant, in person or by attorney, shall, within ten (10) days of the mailing of this Order, file with the Commission an original and twelve (12) copies of a written appearance stating an intention to appear on the date fixed for the oral argument and present arguments on the issue specified in this Order.

Federal Communications Commission.

William J. Tricarico,

Secretary.

[FR Doc. 79–37058 Filed 11–30–79; 8:45 am]

BILLING CODE 6712–01–M

[Report No. 1201]

Petitions for Reconsideration of Actions in Rule Making Proceedings Field, November 20, 1979

Docket or RM No.	Rule No.	Subject	Date received
20780	15	Amendment of Part 15 to redefine and clarify the rules governing restricted radiation devices and low-power communication devices. Filed by:	
		Ernest W. Jennes & Paul J. Berman, Attorneys for Association of Maximum Service Telecasters, Inc.	11-13-79
		James M. Baisley & Daniel L. Bart, Attorneys for GTE Automatic Electric Incorporated.	11-15-79
		Joseph M. Kittner & Lawrence J. Movshin, Attorneys for General Electric Company.	11-15-79
		S. H. Beach, Vice President & General Counsel, The Computer Company for Control Data Corporation.	11-15-79
		Donna M. Sherry & T. F. Neils, Attorneys for Honeywell, Inc.	11-15-79
		John W. Pettit & Joe D. Edge, Attorneys for Tandy Corporation	11-15-79
		W. E. Schwieder for Ford Motor Company	11-15-79
		Joseph M. Kittner, Lawrence J. Movshin & John S. Voorhees, Attorneys for Computer and Business Equipment Manufacturers Association.	11-15-79
		Joseph M. Kittner & Lawrence J. Movshin, Attorneys for Apple Computer, Inc.	11-15-79
		John Sodolski, Vice President for Electronic Industries Association Communications Division.	11-15-79

NOTE: Oppositions to petitions for reconsideration must be filed within 15 days after publication of this Public Notice in the FEDERAL REGISTER. Replies to an oppositon must be filed within 10 days after time for filing oppositions has expired.

Federal Communications Commission.

William J. Tricarico,

Secretary.

[FR Doc. 79-37053 Filed 11-30-79; 8:45 am]

BILLING CODE 6712-01-M

[FCC 79-748; BC Docket No. 79-313; File No. BP-20,153]

Radio Nevada Corp.; Memorandum Opinion and Order Designating Application for Hearing

Adopted: November 9, 1979.

Released: November 28, 1979.

In re application of Radio Nevada Corporation (KDWN), Las Vegas, Nevada, Has: 720 kHz, 10 kW, 50 kW-LS, DA-N, U Req: 720 kHz, 50 kW, DA-N, U; For construction permit.

By the Commission:

1. The Commission has before it for consideration (i) the above-captioned application, as amended, of Radio Nevada Corp. [KDWN], proposing to increase nighttime power to 50 kW; (ii) a petition to deny filed by WGN Continental Broadcasting Company [WGN], licensee of co-channel Class I-A Station WGN, Chicago, Illinois; and (iii) related pleadings in opposition and reply.

2. The petitioner claims standing as a party in interest within the meaning of Section 309(d)(1) of the Communications Act of 1934, as amended, stating that the proposed nighttime directional antenna array is unstable, cannot be adjusted and maintained as proposed and, consequently, would cause objectionable interference to WGN's 0.5 mV/m-50 percent skywave service area. We find that WGN has standing as a party in interest within the meaning of Section 309(d) of the Communications Act of 1934, as amended. *F.C.C.* v. *National Broadcasting Co., Inc. (KOA)*, 319 U.S. 239 (1943).

3. KDWN is a Class II-A AM broadcast station and, as such, must provide protection to the secondary service area (0.5 mV/m-50% skywave contour) of the dominant Class I-A station on the channel (WGN), pursuant to the provisions of Sections 73.22(d)(1), 73.182(a)(1) and 73.182(v) of the Commission's Rules, during nighttime hours of operation. The station is currently authorized to operate at night with a three-tower directional antenna system utilizing 10 kilowatts of power. Because that operation had been previously found to be sensitive to minor parameter variations, it is conditioned to maintain current ratio deviations and phase deviations to within plus or minus 1.0 percent and 1.0 degree, respectively. As proposed, KDWN would continue to use the authorized three-tower directional antenna array but with changed antenna parameters to produce a different directional antenna pattern and with power increased to 50 kW.

4. WGN argues that the subject proposal would not afford adequate nighttime protection to its 0.5 mV/m-50% skywave service area. Among its numerous studies in support of its position, WGN included the results of a computerized stability study which indicates that, with minor parameter variations, the proposal would radiate in excess of the maximum expected values of radiation (MEOV's) specified in the direction of the 0.5 mV/m-50% skywave contour of WGN, thereby causing prohibited interference within the WGN secondary service area.

5. KDWN's challenge of the WGN arguments is based primarily on the fact that it has successfully constructed and adjusted its presently authorized 10 kW operation. In addition, that operation is currently being maintained within the licensed tolerances. On this basis, since no new construction is necessary, KDWN asserts that its proposal can be adjusted and maintained so that no interference would be caused to WGN.

6. As we noted in *Home Service Broadcasting Corporation (WGTR)*, 68 FCC 2d 1135 (1978), while we do not rely exclusively on computerized stability studies, they are useful tools in determining the stability of directional antenna arrays. Utilizing our computerized stability study and that adopted in *Home Service Broadcasting Corporation, supra*, we agree with the petitioner that the proposal exhibits a condition of inherent instability. For example, we find that with parameter variations as small as 0.1 percent current ratio deviation and 0.1 degree phase deviation, the specified MEOV's in the direction of WGN would be exceeded. It has been our policy to consider directional antenna arrays which do not exceed their radiation limits (MEOV's or Standard Patterns) with 1.0 percent and 1.0 degree current ratio and phase deviation, respectively, as being generally stable. Those arrays which exceed their radiation limits with parameter variations of 0.1 percent and 0.1 degree are considered highly unstable. Such arrays which exceed their radiation limits with parameter variations between those extremes are considered on a case-by-case basis taking into consideration other factors which bear upon the stability of an array.

7. A determination of stability involves consideration of factors both external and internal to the array. Since only design changes are herein involved (internal factors), and since computerized stability studies indicate that the proposed directional antenna array is inherently sensitive to minor

parameter variations, notwithstanding the fact that other indicia of stability (i.e., RSS/RMS ratio and driving point impedances) favor the proposal, we are unable to determine at this time that the proposed directional antenna array can be adjusted and maintained within the proposed MEOV's. Accordingly, exploration of the proposed operation is required at hearing.

8. Except as indicated by the issues specified below, the applicant is qualified to construct and operate as proposed. However, in view of the foregoing, the Commission is unable to make the statutory finding that a grant of the subject application would serve the public interest, convenience and necessity, and is of the opinion that the application must be designated for hearing on the issues set forth below.

9. Accordingly, it is ordered, That, pursuant to Section 309(e) of the Communications Act of 1934, as amended, the application of Radio Nevada Corp., is designated for hearing at a time and place to be specified in a subsequent Order, upon the following issues:

1. To determine whether the proposed antenna system can be adjusted and maintained within the proposed limits of radiation (MEOV's).

2. To determine in the light of the evidence adduced pursuant to the foregoing issue, whether a grant of the application would serve the public interest, convenience and necessity.

10. It is further ordered, That the petition to deny filed by WGN Continental Broadcasting Company is granted to the extent indicated above and is denied in all other respects.

11. It is further ordered, That WGN Continental Broadcasting Company, licensee of AM Station WGN, Chicago, Illinois, is made a party to the proceeding.

12. It is further ordered, That, in the event of a grant of the application, the construction permit shall contain the following conditions:

(a) An antenna monitor of sufficient accuracy and repeatability, and having a minimum resolution of 0.1 degree phase deviation and 0.1 percent sample current ratio deviation shall be installed and continuously available to indicate the relative phase and magnitude of the sample currents of each element in the array to insure maintenance of the radiated fields within the authorized values of radiation.

(b) Upon receipt of operating specifications and before issuance of a license, permittee shall submit the results of observations made daily of the base currents and their ratios, relative phases, sample currents and their ratios and sample current ratio deviations for each element of the array along with the final amplifier plate voltage and current, the common point current and field intensities of each monitoring point for both non-directional and directional operations for a period of at least thirty days to demonstrate that the array will be maintained within the specified tolerances.

13. It is further ordered, That, to avail themselves of the opportunity to be heard, the parties herein, pursuant to Section 1.221(c) of the Commission's Rules, in person or by attorney shall, within twenty days of the mailing of this Order, file with the Commission, in triplicate, a written appearance stating an intention to appear on the date fixed for the hearing and present evidence on the issues specified in this Order.

14. It is further ordered, That the applicant herein shall, pursuant to Section 311(a)(2) of the Communications Act of 1934, as amended, and Section 73.3594 of the Commission's Rules, give notice of the hearing within the time and in the manner prescribed in such Rule, and shall advise the Commission of the publication of such notice as required by Section 73.3594(g) of the Rules.

Federal Communications Commission.

William J. Tricarico,

Secretary.

[FR Doc. 79-37057 Filed 11-30-79; 8:45 am]

BILLING CODE 6712-01-M

Radio Technical Commission for Marine Services; Meeting

In accordance with Pub. L. 92-463, "Federal Advisory Committee Act," the schedule of future Radio Technical Commission for Marine Services (RTCM) meetings is as follows:

Special Committee No. 74
"Digital Selective Calling"
Notice of 8th Meeting
Tuesday, December 18, 1979—9:30 a.m.
Wednesday, December 19, 1979—8:00 a.m.
(Full-day meetings)
Conference Room 7202/7204
Nassif (DOT) Building
400 Seventh Street, SW. (at D Street)
Washington, D.C.

Agenda

December 18, 1979
1. Call to Order; Chairman's Report.
2. Administrative Matters.
3. Meeting of Ship Station Working Group and Coast Station Working Group.

December 19, 1979
1. Administrative Matters.
2. Working Group Reports:

CDR J. G. Williams, Chairman, SC-74, U.S. Coast Guard Headquarters, Washington, D.C. Phone: (202) 426-1345.

Executive Committee Meeting
Notice of December Meeting
Thursday, December 20, 1979—9:30 a.m.
Conference Room 3328
Nassif (DOT) Building
400 Seventh Street, SW., at D Street
Washington, D.C.

Agenda

1. Administrative Matters.
2. Discussion on proposal to establish SC-75, "Automatic Coordinate Conversion Systems."
3. Acceptance of FY-1979 Audit Report.
4. Appointment of Nominating Committee for RTCM Officers.

The RTCM has acted as a coordinator for maritime telecommunications since its establishment in 1947. All RTCM meetings are open to the public. Written statements are preferred, but by previous arrangement, oral presentations will be permitted within time and space limitations.

Those desiring additional information concerning the above meeting(s) may contact either the designated chairman or the RTCM Secretariat (phone: (202) 632-6490).

Federal Communications Commission.

William J. Tricarico,

Secretary.

[FR Doc. 79-37055 Filed 11-30-79; 8:45 am]

BILLING CODE 6712-01-M

[Report A-4]

TV Broadcast Applications Accepted for Filing and Notification of Cut-Off Date

Released: November 26, 1979.

Cut-off Date: January 18, 1980.

Notice is hereby given that the applications listed in the attached appendix are hereby accepted for filing. They will be considered to be ready and available for processing after January 18, 1980. An application, in order to be considered with any application appearing on the attached list or with any other application on file by the close of business on January 18, 1980 which involves a conflict necessitating a hearing with any application on this list, must be substantially complete and tendered for filing at the offices of the Commission in Washington, D.C. no later than January 18, 1980.

Petitions to deny any application on this list must be on file with the Commission not later than the close of business on January 18, 1980.

Federal Communications Commission.

William J. Tricarico,

Secretary.

[FR Doc. 79-37056 Filed 11-30-79; 8:45 am]

BILLING CODE 6712-01-M

[Report No. B-3]

TV Broadcast Applications Accepted for Filing and Notification of Cut-off Date

Released: November 29, 1979.

Cut-off date: January 25, 1980.

Notice is hereby given that the applications listed below are hereby accepted for filing. Because the applications listed below are in conflict with applications which were accepted for filing and listed previously as subject to a cut-off date for conflicting applications, no application which would be in conflict with the applications listed below will be accepted for filing.

Petitions to deny the applications listed below and minor amendments thereto must be on file with the Commission not later than the close of business on January 25, 1980. Any application previously accepted for filing and in conflict with the applications listed below may also be amended as a matter of right not later than the close of business on January 25, 1980. Amendments filed pursuant to this notice are subject to the provisions of Section 73.3572(b) of the Commission's Rules.

BPCT-790815KE, Medford, Oregon, Sunshine Television, Inc., Channel 12, ERP: Vis. 190 kW; HAAT: 2690 feet.

BPCT-790815KG, Medford, Oregon, Medford Channel 12 Limited Partnership, Channel 12, ERP: Vis. 191 kW; HAAT: 2690 feet.

Federal Communications Commission.

William J. Tricarico,

Secretary.

[FR Doc. 79-37059 Filed 11-30-79; 8:45 am]

BILLING CODE 6712-01-M

FEDERAL MARITIME COMMISSION

Agreements Filed

The Federal Maritime Commission hereby gives notice that the following agreements have been filed with the Commission for approval pursuant to section 15 of the Shipping Act, 1916, as amended (39 Stat. 733, 75 Stat. 763, 46 U.S.C. 814).

Interested parties may inspect and obtain a copy of each of the agreements and the justifications offered therefor at the Washington Office of the Federal Maritime Commission, 1100 L Street, N.W., Room 10218; or may inspect the agreements at the Field Offices located at New York, N.Y.; New Orleans, Louisiana; San Francisco, California; Chicago, Illinois; and San Juan, Puerto Rico. Interested parties may submit comments on each agreement, including requests for hearing, to the Secretary, Federal Maritime Commission, Washington, D.C. 20573, on or before December 24, 1979. Comments should include facts and arguments concerning the approval, modification, or disapproval of the proposed agreement. Comments shall discuss with particularity allegations that the agreement is unjustly discriminatory or unfair as between carriers, shippers, exporters, importers, or ports, or between exporters from the United States and their foreign competitors, or operates to the detriment of the commerce of the United States, or is contrary to the public interest, or is in violation of the Act.

A copy of any comments should also be forwarded to the party filing the agreements and the statement should indicate that this has been done.

Agreement No. T-2590-6.

Filing Party: Francis W. Barrett, Curry and Dolan, 716 Southern Building, Washington, D.C. 20005.

Summary: Agreement No. T-2590-6, between the Albany Port District (Port) and United Brands Company (United), is the sixth option to renew the basic agreement between the parties. The amendment extends the terms of the initial agreement until November 30, 1980. As compensation, United will pay Port an annual rental of $26,250.00.

Agreements Nos. T-3878 and T-3878-A.

Filing Party: W. H. Black, Jr., Chief Administrative Officer, Alabama State Docks Department, P.O. Box 1568, Mobile, Alabama 36601.

Summary: Agreement No. T-3878, between the Alabama State Docks Department (State) and Kinark Corporation (Kinark), provides for the 20-year lease of a portion of the Montgomery State Dock to Kinark for use as a bulk liquid storage and loading/unloading facility. As compensation, Kinark will pay State an annual rental of $2,100.00 as well as a fee of $.23 per short ton of bulk liquid cargo handled or stored. Agreement No. T-3878-A, between Kinark Corporation and the Industrial Development Board of the City of Montgomery (Board), provides for the transfer of the dock facilities lease described above to the Board and the issuance by the Board of mortgage revenue bonds in the amount of $3,000,000.00 in order to finance the costs of acquiring, constructing, and equipping the industrial project of which the bulk liquid storage/loading facility is a part.

Agreement No. 4610-28.

Filing Party: Nathan J. Bayer, Esquire, Brauner Baron Rosenzweig Kligler, Sparber & Bauman, Attorneys at Law, 120 Broadway, New York, New York 10005.

Summary: Agreement No. 4610-28, modifies the United States Atlantic and Gulf-Jamaica Conference agreement to establish a minimum service requirement for retention of voting privileges on all matters except changes in the agreement.

Agreement No. 10027-8.

Filing Party: Frank R. A. Levier, Executive Administrator, Inter-American Freight Conference, Av. Rio Branco, 156-27°, Andar Grupos 2707/2711, Rio de Janeiro, Brazil.

Summary: Agreement No. 10027-8 amends the basic Brazil/U.S. Atlantic Coast Ports Pool by providing that all cargo, shipped from ports of the Coast of Brazil and destined to Atlantic ports of the United States of America, shall be subject to this pool, including transshipment cargo to U.S. Atlantic ports and other than U.S.A. destinations and discharged at U.S. Atlantic ports, such cargo hereinafter referred to as pooled cargo, with the exception of (1) refrigerated cargo; (2) lumber, rough, sawn, and logs; (3) iron and steel items when open-rated; (4) open-rated dry bulk and liquid bulk cargoes other than vegetable oils; (5) mail, corpses, livestock; and (6) woodpulp in minimum lots of 1000 tons. The parties further agree that during the terms of this Agreement none will promote nor sponsor the diversion to the Gulf, Pacific Coast or Great Lake ports of the United States of America (either to their own service or to that of any Line) of cargoes destined to the interior of the United States normally tributary to the Atlantic ports.

Agreement No. 10379.

Filing Party: Neal M. Mayer, Esquire, Coles & Coertner, 1000 Connecticut Avenue N.W., Washington, D.C. 20036.

Summary: Agreement No. 10379 establishes an Equipment Interchange and Lease Agreement between Companhia de Navegacao Lloyd Brasileiro and Moore-McCormack Lines, Incorporated in the trade between the United States Atlantic and Gulf Coast and Brazil, Argentina and Uruguay.

By Order of the Federal Maritime Commission.

Dated: November 28, 1979.

Francis C. Hurney,

Secretary.

[FR Doc. 79-37096 Filed 11-30-79; 8:45 am]

BILLING CODE 6730-01-M

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Office of the Assistant Secretary for Education

Fund for the Improvement of Postsecondary Education; Comprehensive Program

AGENCY: Office of the Assistant Secretary for Education, HEW.

ACTION: Preapplication and Application Notices for Receipt of Preapplications and Applications for New Awards for Fiscal Year 1980.

SUMMARY: Preapplications and applications are invited for new awards under the Comprehensive Program of the Fund for the Improvement of Postsecondary Education.

Preapplications for awards must be mailed (postmarked) or hand delivered by January 29, 1980. Applications must be mailed (postmarked) or hand

delivered by April 8, 1980. Only applications submitted by those applicants whose preapplications are approved will be considered.

SUPPLEMENTARY INFORMATION: Authority for this program is contained in section 404 of the General Education Provisions Act (20 U.S.C. 1221d), as amended. This program issues awards to institutions of postsecondary education and other public and private educational institutions and agencies. The purpose of the awards is to improve postsecondary education.

Preapplications and applications delivered by mail: A preapplication or application sent by mail must be addressed to the Comprehensive Program, Attention: 13.925A, Fund for the Improvement of Postsecondary Education, Office of the Assistant Secretary for Education, DHEW, 400 Maryland Avenue, S.W., Room 3123, Washington, D.C. 20202.

To establish proof of mailing, an applicant must show one of the following: (1) a legibly dated U.S. Postal Service postmark; (2) a legible mail receipt with the date of mailing stamped by the U.S. Postal Service; (3) a dated shipping label, invoice, or receipt from a commercial carrier; or (4) any other proof of mailing acceptable to the Assistant Secretary for Education.

If an application is sent through the U.S. Postal Service, the Assistant Secretary does not accept a private metered postmark or a mail receipt that is not dated by the U.S. Postal Service as a proof of mailing. An applicant should note that the U.S. Postal Service does not uniformly provide a dated postmark. Before relying on this method, an applicant should check with its local post office.

An applicant is encouraged to use registered or at least first class mail. Each late applicant will be notified that its application will not be considered.

Preapplications and Applications Delivered by Hand: A preapplication or application that is hand delivered must be taken to the Comprehensive Program, Attention: 13.925A, Fund for the Improvement of Postsecondary Education, Office of the Assistant Secretary for Education, DHEW, 400 Maryland Avenue, S.W., Room 3123, Washington, D.C. 20202.

The Office of the Assistant Secretary will accept hand delivered preapplications and applications between 8:00 a.m. and 4:30 p.m. (Washington, D.C. time) daily, except Saturdays, Sundays, and Federal holidays.

Preapplications that are hand delivered will not be accepted after 4:30 p.m. on January 29, 1980. Applications that are hand delivered will not be accepted after 4:30 p.m. on April 8, 1980.

Program Information: This competition solicits proposals for projects that will further one or more of the objectives of the Fund for the Improvement of Postsecondary Education. The objectives of the Fund are set out at 45 CFR 1501.8. Preapplications are required and will be evaluated in accordance with the criteria set out at 45 CFR 1501.7. Only applicants whose preapplications have been approved will be asked to submit applications. The Fund's objectives, evaluation criteria, and application procedures are described in the publication "Program Information and Application Procedures," which may be obtained from the Fund for the Improvement of Postsecondary Education, 400 Maryland Avenue, S.W., Room 3123, Washington, D.C. 20202.

Available Funds: Approximately $7,000,000 is estimated to be available for new awards in FY 1980. It is estimated that these funds could support approximately 85 new awards. The estimated amount for new awards will be between $5,000 and $250,000 for a 12-month period. Applicants may request approval of a multi-year work plan of up to 3 years in duration.

The estimates set forth in the preceding paragraph do not bind the Assistant Secretary for Education except as may be required by applicable statute and regulations.

Preapplication and Application Forms: Preapplication and application forms and program information packages will be sent directly to everyone on the mailing list for the Fund for the Improvement of Postsecondary Education. Institutions and persons not on the list can obtain the material from the Fund for the Improvement of Postsecondary Education, Office of the Assistant Secretary for Education, DHEW, Attention: 13.925A, 400 Maryland Avenue, S.W., Room 3123, Washington, D.C. 20202.

Applications must be prepared and submitted in accordance with the regulations, instructions, and forms included in the program information packages.

Applicable Regulations: The regulations governing awards made by the Fund for the Improvement of Postsecondary Education are set forth in 45 CFR Part 1501. Awards are also subject to the provisions set forth in 45 CFR Parts 100 and 100a, except that awards are not subject to the provisions of 45 CFR 100a.26(b) relating to criteria for awards. When the proposed Education Division General Administrative Regulations (EDGAR) become final, the post-award provisions of EDGAR will apply to awards make in response to this application notice.

FURTHER INFORMATION: For further information, contact the Fund for the Improvement of Postsecondary Education, Attention: 13.925A, Office of the Assistant Secretary for Education, DHEW, 400 Maryland Avenue, S.W., Room 3123, Washington, D.C. 20202. Telephone: (202) 245-8091.

(20 U.S.C. 1221d)

Dated: November 27, 1979.

Mary F. Berry,

Assistant Secretary for Education.

(Catalog of Federal Domestic Assistance No. 13.925, Fund for the Improvement of Postsecondary Education)

[FR Doc. 79-36978 Filed 11-30-79; 8:45 am]

BILLING CODE 4110-99-M

Fund for the Improvement of Postsecondary Education; Comprehensive Program, Special Focus Program

AGENCY: Office of the Assistant Secretary for Education, HEW.

ACTION: Application Notice for Receipt of Applications for Noncompeting Continuation Awards for Fiscal Year 1980.

SUMMARY: Applications are invited for noncompeting continuation grants under the Comprehensive Program and Special Focus Program of the Fund for the Improvement of Postsecondary Education.

Applications for awards should be mailed (postmarked) or hand delivered by March 1, 1980.

If the application is late, the Office of the Assistant Secretary for Education may lack sufficient time to review it with other noncompeting continuation applications and may decline to accept it.

SUPPLEMENTARY INFORMATION: Authority for these programs is contained in section 404 of the General Education Provisions Act (20 U.S.C. 1221d), as amended. These programs issue awards to institutions of postsecondary education and other public and private educational institutions and agencies. The purpose of the awards is to improve postsecondary education.

Applications Delivered by Mail: An application delivered by mail must be addressed to the Comprehensive Program (or Special Focus Program), Attention: 13.925D, Fund for the Improvement of Postsecondary Education, office of the Assistant

Secretary for Education, DHEW, 400 Maryland Avenue, SW., Room 3123, Washington, D.C. 20202.

To establish proof of mailing, an applicant must show one of the following: (1) a legibly dated U.S. Postal Service postmark; (2) a legible mail receipt with the date of mailing stamped by the U.S. Postal Service; (3) a dated shipping label, invoice, or receipt from a commercial carrier; or (4) any other proof of mailing acceptable to the Assistant Secretary for Education.

If an application is sent through the U.S. Postal Service, the Assistant Secretary does not accept a private metered postmark or a mail receipt that is not dated by the U.S. Postal Service as proof of mailing. An applicant should note that the U.S. Postal Service does not uniformly provide a data postmarked. Before relying on this method, an applicant should check with its local post office.

Applicants are encouraged to use registered or at least class mail.

Applications Delivery by Hand: An application that is hand delivered must be taken to the Fund for the Improvement of Postsecondary Education, Office of the Assistant Secretary for Education, DHEW, Attention: 13.925D, 400 Maryland Avenue, SW., Room 3123, Washington, D.C. 20202.

The Office of the Assistant Secretary will accept hand delivered applications between 8:00 a.m. and 4:30 p.m. (Washington, D.C. time) daily, except Saturdays, Sunday, and Federal holidays, until 4:30 p.m., March 1, 1980.

Program Information: Program information is contained in the publication "Program Information and Application Procedures" which may be obtained from the Fund for the Improvement of Postsecondary Education, Attention: 13.925D, 400 Maryland Avenue, SW., Room 3123, Washington, D.C. 20202.

Available Funds: It is estimated that approximately $6,500,000 will be available for continuation awards in FY 1980. It is estimated that these funds could support approximately 100 continuation awards. The estimated size of continuation awards is between $5,000 and $250,000 for a twelve month period. In past years, awards have averaged $70,000 for a twelve month period.

These estimates set forth in the preceding paragraph do not bind the Assistant Secretary for Education except as may be required by the applicable statute and regulations.

Application Forms: Application forms and program information packages are expected to be ready for mailing by January 2, 1980. They will be sent directly to everyone on the Fund for the Improvement of Postsecondary Education's mailing list who is eligible for a continuation award. Institutions and persons not on the list can obtain the material from the Fund for the Improvement of Postsecondary Education, Attention: 13.925D, Office of the Assistant Secretary for Education, DHEW, 400 Maryland Avenue, S.W., Room 3123, Washington, D.C. 20202.

Applications must be prepared and submitted in accordance with the regulations, instructions, and forms included in the program information packages.

Applicable Regulations: The regulations governing awards made by the Fund for the Improvement of Postsecondary Education are set forth in 45 CFR Part 1501. Awards are also subject to the provisions set forth in 45 CFR Parts 100 and 100a, except that awards are not subject to the provisions of 45 CFR 100a. 26(b) relating to criteria for awards. When the proposed Education Division General Administrative Regulations (EDGAR) become final, the post-award provisions of EDGAR will apply to awards made in response to this application notice.

FURTHER INFORMATION: For further information, contact the Fund for the Improvement of Postsecondary Education, Attention: 13.925D, Office of the Assistant Secretary for Education, DHEW, 400 Maryland Avenue, SW., Room 3123, Washington, D.C. 20202. Telephone: (202) 245–8091.

(20 U.S.C. 1221d)

Dated: November 27, 1979.

(Catalog of Federal Domestic Assistance No. 13.925, Fund for the Improvement of Postsecondary Education)

Mary F. Berry,

Assistant Secretary for Education.

[FR Doc. 79-36879 Filed 11-30-79; 8:45 am]

BILLING CODE 4110-89-M

National Institutes of Health

Arteriosclerosis, Hypertension, and Lipid Metabolism Advisory Committee; Meeting

Pursuant to Pub. L. 92–463, notice is hereby given of the meeting of the Arteriosclerosis, Hypertension and Lipid Metabolism Advisory Committee, National Heart, Lung, and Blood Institute, January 25, 1980, Conference Room 4, 1st Floor, A-Wing, Building 31, National Institutes of Health, Bethesda, Maryland 20205. The entire meeting will be open to the public from 9:00 a.m. to 5:00 p.m. on Friday, January 25, to evaluate program support in Arteriosclerosis, Hypertension, and Lipid Metabolism. Attendance by the public will be limited on a space available basis.

Mr. York Onnen, Chief, Public Inquiries and Report Branch, NHLBI, Room 4A–21, Building 31, National Institutes of Health, Bethesda, Maryland 20205, Phone (301) 496–4236, will provide summaries of the meeting and rosters of committee members.

Dr. Gardner C. McMillan, Associate Director for Etiology of Arteriosclerosis and Hypertension Program, NHLBI, Room 4C–12, Federal Building, National Institutes of Health, Bethesda, Maryland 20205, Phone (301) 496–1613, will furnish substantive program information.

Dated: November 19, 1979.

Suzanne L. Fremeau,

Committee Management Officer, NIH.

[FR Doc. 79-37028 Filed 11-30-79 8:45 am]

BILLING CODE 4110-08-M

Blood Diseases and Resources Advisory Committee; Meeting

Pursuant to Pub. L. 92–463, notice is hereby given of the meeting of the Blood Diseases and Resources Advisory Committee, National Heart, Lung, and Blood Institute, January 21 and 22, 1980, National Institutes of Health, Building 31, Conference Room 8, Bethesda, Maryland 20205.

The entire meeting will be open to the public from 9:00 AM–5:00 PM, January 21, and from 8:30 AM–4:30 PM, January 22, 1980, to discuss the status of the Blood Diseases and Resources program, needs, and opportunities. Attendance by the public will be limited to space available.

Mr. York Onnen, Chief, Public Inquiries and Reports Branch, National Heart, Lung, and Blood Institute, Building 31, Room 4A21A, National Institutes of Health, Bethesda, Maryland 20205, phone: (301) 496–4236, will provide summaries of the meeting and rosters of the committee members.

Dr. Fann Harding, Special Assistant to the Director, Division of Blood Diseases and Resources, National Heart, Lung, and Blood Institute, Federal Building, Room 514, National Institutes of Health, Bethesda, Maryland, 20205, phone: (301) 496–1817, will furnish substantive program information.

Dated: November 26, 1979.

Suzanne L. Fremeau,

Committee Management Officer, NIH.

[FR Doc. 79-37025 Filed 11-30-79 8:45 am]

BILLING CODE 4110-08-M

Microbiology and Infectious Diseases Advisory Committee; Meeting

Pursuant to Pub. L. 92–463, notice is hereby given of the meeting of the Microbiology and Infectious Diseases Advisory Committee, National Institute of Allergy and Infectious Diseases on December 12, 1979, at the National Institutes of Health, Building 31, Conference Room 9, Bethesda, Maryland.

This meeting will be open to the public from 8:30–9:00 a.m. to discuss program policies and is a continuation of reviews held on October 25–26, 1979, at the Linden Hill Hotel, Bethesda, Maryland.

In accordance with the provisions set forth in Sections 552b(c)(4) and 552b(c)(6), Title 5, U.S. Code and Section 10(d) of Pub. L. 92–463, the meeting of the Committee will be closed to the public from 9:00 a.m. on December 12 until adjournment for the review, discussion, and evaluation of individual contract proposals. These proposals and discussions could reveal confidential trade secrets or commercial property such as patentable material, and personal information concerning individuals associated with the proposals, the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

Mr. Robert L. Schreiber, Chief, Office of Research Reporting and Public Response, NIAID, National Institutes of Health, Building 31, Room 7A32, Bethesda, Maryland 20205, (301) 496–5717, will provide summaries of the meeting, and rosters of the Committee members.

Dr. Thelma N. Fisher, Executive Secretary, Microbiology and Infectious Diseases Advisory Committee, NIAID, National Institutes of Health 20205, (301) 496–7465, will provide substantive program information.

(Catalog of Federal Domestic Assistance Program No. 13.855, National Institutes of Health)

Dated: November 26, 1979.

Suzanne L. Fremeau,

Committee Management Officer, NIH.

[FR Doc. 79–37021 Filed 11–30–79; 8:45 am]

BILLING CODE 4110–08–M

National Advisory Neurological and Communicative Disorders and Stroke Council; Meeting

Pursuant to Pub. L. 92–463, notice is hereby given of the meeting of the National Advisory Neurological and Communicative Disorders and Stroke Council, National Institutes of Health, January 24 and 25, 1980, at 9 a.m. in Building 31–C, Conference Room 6, Bethesda, Maryland 20205. The meeting will be open to the public from 9 a.m. until 11:30 a.m. on January 24, 1980, to discuss program planning and program accomplishments. Attendance by the public will be limited to space available. In accordance with the provisions set forth in Sections 552b(c)(4), and 552b(c)(6) of Title 5, U.S. Code and Section 10(d) of Pub. L. 92–463, the meeting will be closed to the public from 11:30 a.m. on January 24, 1980, until the conclusion of the meeting that day, and from 8:30 a.m. until 6 p.m. on January 25, 1980, for review, discussion and evaluation of Research Grant applications and applications for Teacher-Investigator Awards, Research Career Development Awards, and Institutional National Research Service Awards. These applications and the discussion could reveal confidential trade secrets or commercial property such as patentable material and personal information concerning individuals associated with the applications, disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

The Chief, Office of Scientific and Health Reports, Miss Sylvia Shaffer, Building 31, Room 8A06, NIH, NINCDS, Bethesda, Maryland 20205, telephone (301) 496–5751, will furnish summaries of the meeting and rosters of committee members.

Dr. John C. Dalton, Executive Secretary, Federal Building, Room 1016, Bethesda, Maryland 20205, telephone (301) 496–9248, will furnish substantive program information.

(Catalog of Federal Domestic Assistance Program Nos. 13.851, 13.852, 13.853, 13.854, National Institutes of Health)

Dated: November 26, 1979.

Suzanne L. Fremeau,

Committee Management Officer, National Institutes of Health.

[FR Doc. 79–37023 Filed 11–30–79; 8:45 am]

BILLING CODE 4110–08–M

National Advisory Neurological and Communicative Disorders and Stroke Council Planning Subcommittee; Meeting

Pursuant to Pub. L. 92–463, notice is hereby given of the meeting of the National Advisory Neurological and Communicative Disorders and Stroke Council Planning Subcommittee, January 23, 1980, at 1 p.m. in Building 31, Room 8A30, National Institutes of Health, Bethesda, Maryland 20205. The meeting will be open to the public from 1 p.m. to 3 p.m. on January 23, 1980, to discuss program planning and program accomplishments. Attendance by the public will be limited to space available. In accordance with the provisions set forth in Sections 552b(c)(4) and 552b(c)(6) of Title 5, U.S. Code and Section 10(d) of Pub. L. 92–463, the meeting will be closed to the public from 3 p.m. to adjournment on January 23, 1980. The portion of the meeting being closed involves the review, discussion, and evaluation of individual grant applications. These applications and the discussion could reveal confidential trade secrets or commercial property such as patentable material, and personal information concerning individuals associated with the applications, disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

The Chief, Office of Scientific and Health Reports, Miss Sylvia Shaffer, Building 31, Room 8A06, NIH, NINCDS, Bethesda, Maryland 20205, telephone: (301) 496–5751, will furnish summaries of the meeting and rosters of committee members.

Dr. John C. Dalton, Executive Secretary of the Committee, Room 1016, Federal Building, NIH, NINCDS, Bethesda, Maryland 20205, telephone: (301) 496–9248, will provide substantive program information.

(Catalog of Federal Domestic Assistance Program Nos. 13.851, 13.852, 13.853, 13.854, National Institutes of Health)

Dated: November 26, 1979.

Suzanne L. Fremeau,

Committee Management Officer, National Institutes of Health.

[FR Doc. 79–37024 Filed 11–30–79; 8:45 am]

BILLING CODE 4110–08–M

National Arthritis Advisory Board; Meeting

Pursuant to Pub. L. 92–463, notice is hereby given of a meeting of the National Arthritis Advisory Board on January 17, 1980, 9:00 a.m. to 5:00 p.m., at the National Institutes of Health, Building 31, Conference Room 7, Bethesda, Maryland, to discuss the Board's activities and to continue the evaluation of the implementation of the long-range plan to combat arthritis. The meeting will be open to the public. Attendance is limited to space available.

In addition, certain Work Groups of the Board will meet the day before, January 16. Further information, times and meeting locations of the Work Groups may be obtained by contacting Mr. William Plunkett, Executive Director, National Arthritis Advisory Board, P.O. Box 30286, Bethesda, Maryland 20014, (301) 496–1991.

Summaries of the meetings and a roster of the Members of the Board also may be obtained from the above office.

(Catalog of Federal Domestic Assistance Program No. 13.846, National Institutes of Health)

Dated: November 26, 1979.

Suzanne L. Fremeau,

Committee Management Officer, NIH.

[FR Doc. 79-37027 Filed 11-30-79; 8:45 am]

BILLING CODE 4110-08-M

Health Resources Administration

National Council on Health Planning and Development, Agenda Planning Subcommittee; Meeting

In accordance with section 10(a)(2) of the Federal Advisory Committee Act (Pub. L. 92-463), announcement is made of the following National Advisory body scheduled to meet during the month of December 1979:

Name: Agenda Planning Subcommittee of the National Council on Health Planning and Development.

Date and time: December 11, 1979, 3:30 p.m.

Place: Conference Room 10-54, Center Building, 3700 East-West Highway, Hyattsville, Maryland 20782 (Meeting by Conference Call).

Due to the limited time of subcommittee members, a conference call meeting will be substituted for the regular scheduled meeting. Open for entire meeting.

Purpose

The objectives of the Agenda Planning Subcommittee are to (1) assist the Chairperson in planning the order and timing of agenda topics for full Council consideration and action to assure that the Secretary will receive advice and/or recommendations on each ot its three areas of functional responsibilities under section 1503(a) in an appropriate time and manner; (2) coordinate information about and among subcommittee activities and plans; and (3) provide preliminary review of proposed changes in Council operations.

Agenda

The Subcommittee will plan the agenda for the January 11, 1980, meeting of the National Council on Health Planning and Development, which will be held in Washington, D.C. In addition, prelimary plans will be made for Subcommittee and Council meetings to be held in Denver, Colorado on March 13 and 14, 1980.

Anyone requiring information regarding the subject Subcommittee should contact Mrs. S. Judy Silsbee, Executive Secretary, National Council on Health Planning and Development, Room 10-27, Center Building, 3700 East-West Highway, Hyattsville, Maryland, 20782. Telephone (301) 436-7175.

Agenda items are subject to change as priorities dictate.

Dated: November 28, 1979.

Note.—This notice is late due to the regular scheduled meeting of the Subcommittee being cancelled and a conference call meeting being substituted.

James A. Walsh,

Associate Administrator for Operations and Management.

[FR Doc. 79-37011 Filed 11-30-79 8:45 am]

BILLING CODE 4110-83-M

National Institutes of Health

High Blood Pressure Working Group; Rescheduled Meeting

Notice is hereby given of a change in the meeting of the High Blood Pressure Working Group sponsored by the National Heart, Lung, and Blood, which was published in the **Federal Register** on October 25, 1979, 44 FR 61461.

This Working Group was to have convened at 9:00 a.m. on January 14, 1980, but has been changed to 9:00 a.m. to 5:00 p.m., January 18, 1980, National Institutes of Health, Building 31—C Wing, Conference Room 10, Bethesda, Maryland 20205.

This meeting will be open to the public to adjournment.

Date: November 19, 1979.

Suzanne L. Fremeau,

Committee Management Officer, NIH.

[FR Doc. 79-37028 Filed 11-30-79; 8:45 am]

BILLING CODE 4110-08-M

Meeting; President's Cancer Panel

Pursuant to Pub. L. 92-463, notice is here by given of the meeting of the President's Center Panel, December 13, 1979, Building 31C, Conference Room 7, National Cancer Institute, National Institutes of Health, 9000 Rockville Pike, Bethesda, Maryland 20205.

The entire meeting will be open to the public from 9:30 a.m. to adjournment, to hear reports on activities of the President's Cancer Panel and the National Cancer Program. Attendance by the public will be limited to space available.

Mrs. Marjorie F. Early, Committee Management Officer, National Cancer Institute, Building 31, Room 4B43, National Institutes of Health, Bethesda, Maryland 20205 (301/496-5708) will provide summaries of the meeting and rosters of Panel members, upon request.

Dr. Richard A. Tjalma, Executive Secretary, National Cancer Institute, Building 31, Room 11A46, National Institutes of Health, Bethesda, Maryland 20205 (301/496-5854) will furnish substantive program information.

Date: November 21, 1979.

Suzanne L. Fremeau,

Committee Managment Officer, NIH.

[FR Doc. 79-37022 Filed 11-30-79; 8:45 am]

BILLING CODE 4110-08-M

Meeting of Research Manpower Review Committee

Pursuant to Pub. L. 92-463, notice is hereby given of the meeting of the Research Manpower Review Committee, National Heart, Lung and Blood Institute, on December 5, 6, and 7, 1979, Linden Hill Hotel, 5400 Pooks Hill Road, Bethesda, Maryland.

This meeting will be open to the public on December 5, 1979 from 8:00 a.m. to 10:00 p.m. and on December 6, 1979 from 8:00 a.m. to approximately 8:30 a.m. to discuss administrative details and to hear reports concerning the current status of the National Heart, Lung and Blood Institute. Attendance by the public will be limited to space available.

In accordance with the provisions set forth in Section 552b(c)(6), Title 5, U.S.C. and 10(d) of Pub. L. 92-463, the meeting will be closed to the public on December 6, 1979 from 8:30 a.m. until adjournment on December 7, 1979 for the review, discussion and evaluation of individual grant applications. These applications and the discussions could reveal personal information concerning individuals associated with the applications, disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

Mr. York E. Onnen, Chief, Public Inquiries and Reports Branch, NHLBI, NIH, Room 4A21, Building 31, Bethesda, Maryand 20205, phone (301) 496-4236, will provide summaries of the meeting and rosters of the committee members.

Dr. Charles L. Turbyfill, Executive Secretary, NHLBI, NIH, Room 553, Westwood Building, Bethesda, Maryland 20205, phone (301) 496-7351, will furnish substantive program information.

Date: November 20, 1979.

(Catalog of Federal Domestic Assistance Program No. 13.837, National Institutes of Health)

Suzanne L. Fremeau,

Committee Management Officer, NIH.

[FR Doc. 79-37019 Filed 11-30-79; 8:45 am]

BILLING CODE 4110-08-M

Meeting of Research Manpower Review Committee

Pursuant to Pub. L. 92–463, notice is hereby given of the meeting of the Research Manpower Review Committee, National Heart, Lung and Blood Institute, on December 9, 10, 11, and 12, 1979, Chevy Chase Holiday Inn, Chevy Chase, Maryland.

This meeting will be open to the public on December 9, 1979 from 8:30 p.m. to 10:00 p.m. and on December 10, 1979 from 8:00 a.m. to approximately 8:30 a.m. to discuss administrative details and to hear reports concerning the current status of the National Heart, Lung and Blood Institute. Attendance by the public will be limited to space available.

In accordance with the provisions set forth in Section 552b(c)(6), Title 5, U.S.C. and 10(d) of Pub. L. 92–463, the meeting will be closed to the public on December 10, 1979 from 8:30 a.m. until adjournment on December 12, 1979 for the review, discussion and evaluation of individual grant applications. These applications and the discussions could reveal personal information concerning individuals associated with the applications, disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

Mr. York E. Onnen, Chief, Public Inquiries and Reports Branch, NHLBI, NIH, Room 4A21, Building 31, Bethesda, Maryland 20205, Phine (301) 496–4236, will provide summaries of the meeting and rosters of the committee members.

Dr. Charles L. Turbyfill, Executive Secretary, NHLBI, NIH, Room 553, Westwood Building, Bethesda, Maryland 20205, phone (301) 496–7351, will furnish substantive program information.

Date: November 20, 1979.

(Catalog of Federal Domestic Assistance Program No. 13.837, 13.838, 13.839, National Institutes of Health)

Suzanne L. Fremeau,

Committee Management Officer, NIH.

[FR Doc. 79-37020 Filed 11-30-79; 8:45 am]

BILLING CODE 4110-08-M

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[AA-13358]

Alaska Native Claims Selection

On December 17, 1974, the village corporations of Chickaloon, Tyonek, Seldovia, Ninilchik and Knik, filed village selection applications AA–8489–B, AA–6707–F, AA–6701–F, AA–6685–D and AA–8485–B and AA–8485–C, respectively, under Sec. 12(a) of the Alaska Native Claims Settlement Act (hereinafter ANCSA) of December 18, 1971 (85 Stat. 688, 701; 43 U.S.C. 1601, 1611 (1976)), for lands withdrawn under Sec. 11(a)(3) of ANCSA. Sec. 11(a)(3) authorizes the Secretary of the Interior to withdraw deficiency lands from the nearest unreserved, vacant and unappropriated public lands when the lands withdrawn by Secs. 11(a)(1) and 11(a)(2) of ANCSA are insufficient to permit a village or regional corporation the acreage it is entitled to select. Because of the unresolved eligibility status of Alexander Creek and Salamatoff, currently in litigation, their applications were filed in four different methods to cover all alternatives in the event both, either or neither Alexander Creek and Salamatoff were determined eligible.

In 1976, each of the applications was considered for compliance with the statutory and regulatory requirements of ANCSA. The selections filed did not comply with the mandatory selection requirements for compactness and contiguity and included lands not available for selection. Decisions rejecting these applications for these reasons were issued on May 10 through 17 of 1976. These rejections greatly reduced the village entitlements under Sec. 12(a) of ANCSA.

A petition for reconsideration of the decisions was filed with the Bureau of Land Management on May 26, 1976, and denied on June 7, 1976. On June 8 and 18, 1976, notices of appeal were filed by the villages. On July 2, 1976, the Bureau of Land Management requested that the Alaska Native Claims Appeal Board remand the decisions for reconsideration in accordance with a memorandum from the Acting Assistant Secretary, Land and Water Resources, dated June 14, 1976. The Alaska Native Claims Appeal Board remanded the decisions to the Bureau of Land Management on July 8, 1976, and suspended the appeals pending reconsideration and further action by the Bureau of Land Management.

Since the validity of the selections filed by the eligible villages was questioned, and Alexander Creek and Salamatoff are still pending a determination on their eligibility, no conveyances of lands within the Sec. 11(a)(3) withdrawals could be made without some remedial action. To resolve the problems of validity, the villages entered into a conveyance agreement with Cook Inlet Region, Inc., on August 28, 1976, which provided that upon conveyance of the deficiency lands to Cook Inlet Region, Inc., the surface estate of the lands under their Sec. 12(a) selections will be reconveyed by Cook Inlet Region, Inc., to the village corporations entitled thereto. (See Appendix B of the agreement of August 31, 1976.)

Cook Inlet Region, Inc., and the Secretary of the Interior entered into an agreement on August 31, 1976, wherein the Secretary of the Interior shall convey to Cook Inlet Region, Inc., the surface and subsurface estates of all public lands, subject to valid existing rights, so described in Appendix A to said agreement. Cook Inlet Region, Inc., shall then reconvey the surface estate of some of the lands to certain village corporations pursuant to the conveyance agreement dated August 28, 1976, between Cook Inlet Region, Inc., and the affected village corporations.

On October 4, 1976, Pub. L. 94–456 (90 Stat. 1934, 1935) was passed in which Sec. 4 amended ANCSA to authorize the Secretary of the Interior to convey lands under application for selection by village corporations within Cook Inlet Region to Cook Inlet Region, Inc., for reconveyance by the region to such village corporations, such conveyances constituting a portion of their Sec. 12(a) entitlement.

On June 28, 1977, Cook Inlet Region, Inc., filed selection application AA–13358 under the provisions of Sec. 12(a) of the Alaska Native Claims Settlement Act of December 18, 1971 (85 Stat. 688, 701; 43 U.S.C. 1601, 1611), as amended by Sec. 4 of Pub. L. 94–456 (90 Stat. 1934, 1935).

Upon the conveyance of these lands to Cook Inlet Region, Inc., the Sec. 12(a) selection applications of the above-named village corporations for the lands involved, and serialized as AA–6685–D, AA–6707–F, AA–8485–B, and AA–8489–B, are considered as rejected and will be removed from the official land status records for the lands conveyed. This will include all lands selected within Power Site Classification No. 443.

Also, on December 15, 16 and 17, 1975, the village corporations of Chickaloon, Seldovia, Tyonek, Knik, Ninilchik, Alexander Creek and Salamatoff, filed selection applications AA–8489–A2, AA–6701–B2, AA–6707–B2, AA–8485–A2, AA–6685–A2, AA–8487–B2 and AA–6698–B2, respectively, under Sec. 12(b) of ANCSA. (The eligibility of Alexander Creek and Salamatoff as village corporations under the Alaska Native Claims Settlement Act has not been determined; however, the corporations formed for these communities are parties to the conveyance agreement of August 28, 1976, whereby it was agreed that the lands involved should be conveyed to Cook Inlet Region, Inc.)

These identical applications cover all lands withdrawn under Sec. 11(a)(3) of ANCSA. Since some of these lands are to be conveyed to Cook Inlet Region, Inc., pursuant to Sec. 4(a) of Pub. L. 94–456, these applications are hereby rejected as to the lands herein approved for conveyance.

On December 15, 1975, Seldovia Native Association, Inc. also filed selection application AA–6701–A2 under Sec. 12(b) of ANCSA. Some of the lands are within the Sec. 11(a)(3) withdrawal area. Since these lands are to be conveyed to Cook Inlet Region, Inc., pursuant to Sec. 4(a) of Pub. L. 94–456, this application is hereby rejected as to the lands herein approved for conveyance.

On December 17, 1975, Cook Inlet Region, Inc., filed selection application AA–11153–20 under the provisions of Sec. 12(c) of ANCSA. The application includes lands withdrawn under Sec. 11(a)(3) of ANCSA. Since these lands are to be conveyed to Cook Inlet Region, Inc., pursuant to Sec. 4(a) of Pub. L. 94–456, the application is hereby rejected as to the lands herein approved for conveyance.

The Gold Creek-Susitna Native Association, Inc., filed selection application AA–11160 on January 15, 1976, under the provisions of Sec. 14(h)(2) of the Alaska Native Claims Settlement Act of December 18, 1971. Since Sec. 14(h) authorizes conveyance of unreserved and unappropriated public lands located outside areas withdrawn under Secs. 11 and 16 of ANCSA, and some of the lands in the application were withdrawn under Sec. 11(a)(3) of ANCSA, this application is hereby rejected as to the lands herein approved for conveyance.

On November 14, 1978, as amended, the State of Alaska filed general grant applications under the Alaska Statehood Act of July 7, 1958 (72 Stat. 339; 48 U.S.C. Ch. 2, Sec. 6(b)). The lands selected had been withdrawn by Public Land Order 5255 dated September 12, 1972, under Sec. 11(a)(3) of ANCSA, were selected by village corporations under Secs. 12(a) and 12(b) of ANCSA, and therefore were not available for selection by the State of Alaska. Additionally, portions of the lands selected are also under applications filed pursuant to various public land laws or were reserved by Power Site Classification No. 443, February 13, 1958, and were not available for selection. In view of this, the following State selections are hereby rejected as to the lands described below:

Serial Number and Description—Seward Meridian, Alaska (Unsurveyed)

AA–21417—T. 31 N., R. 1 E.; Secs. 1 to 5, inclusive, all. Containing approximately 3,200 acres.
AA–21427—T. 32 N., R. 1 E.; Secs. 31, 32 and 33, all. Containing approximately 1,886 acres.
AA–21418—T. 31 N., R. 2 E.; Secs. 1, all; Sec. 5 to 6, all; Secs. 12 and 13, all. Containing approximately 3,167 acres.
AA–21428—T. 32 N., R. 2 E.; Secs. 32 to 36, inclusive, all. Containing approximately 3,200 acres.
AA–21419—T. 31 N., R. 3 E.; Secs. 18 to 24, inclusive, all. Containing approximately 4,424 acres.
AA–21420—T. 31 N., R. 4 E.; Secs. 2 and 3, all; Sec. 10, all; Secs. 15 and 16, all; Secs. 19, 20 and 21, all. Containing approximately 5,093 acres.
AA–21430—T. 32 N., R. 4 E.; Sec. 25, all; Secs. 35 and 36, all. Containing approximately 1,920 acres.
AA–21431—T. 32 N., R. 5 E.; Secs. 26, 27 and 28, all; Secs. 30 to 33, inclusive, all. Containing approximately 4,410 acres.
AA–21540—T. 32 N., R. 1 W.; Secs. 25 to 28, inclusive, all; Secs. 31 to 36, inclusive, all. Containing approximately 6,366 acres.

The State-selected lands rejected above aggregate approximately 33,666 acres. These State selections were not valid selections, and the 33,666 acres will not be charged against the village corporations as State selected lands. Further action on the subject State selection applications as to those lands not rejected herein will be taken at a later date.

As to the lands described below, the application, filed by Cook Inlet Region, Inc., AA–13358, as amended, is properly filed and meets the requirements of the Alaska Native Claims Settlement Act, as amended by Sec. 4 of Pub. L. 94–456, and of the regulations issued pursuant thereto. These lands do not include any lawful entry perfected under or being maintained in compliance with laws leading to acquisition of title. They do include the lands and interests in lands within the exterior boundaries of Power Site Classification No. 443, February 13, 1958. Sec. 12(e) of Pub. L. 94–204 (89 Stat. 1145, 1153), authorizes the Secretary to convey those lands and interests in lands selected by the Native corporations within the exterior boundaries of Power Site Classification No. 443, subject to Sec. 24 of the Federal Power Act of June 10, 1920 (41 Stat. 1063, 1065; 16 U.S.C. 791, 818). This conveyance shall be considered and treated as a conveyance under ANCSA.

In view of the foregoing, the surface and subsurface estates of the following described lands, aggregating 33,666 acres, are considered proper for acquisition by Cook Inlet Region, Inc., and are hereby approved for conveyance:

Seward Meridian, Alaska (Unsurveyed)

T. 31 N., R. 1 E.; Secs. 1 to 5, inclusive, all. Containing approximately 3,200 acres.
T. 32 N., R. 1 E.; Secs. 31, 32 and 33, all. Containing approximately 1,886 acres.
T. 31 N., R. 2 E.; Sec. 1, all; Secs. 5 and 6, all; Secs. 12 and 13, all. Containing approximately 3,167 acres.
T. 32 N., R. 2 E.; Secs. 32 to 36, inclusive, all. Containing approximately 3,200 acres.
T. 31 N., R. 3 E.; Secs. 18 to 24, inclusive, all. Containing approximately 4,424 acres.
T. 31 N., R. 4 E.; Secs. 2 and 3, all; Sec. 10, all; Secs. 15 and 16, all; Secs. 19, 20 and 21, all. Containing approximately 5,093 acres.
T. 32 N., R. 4 E.; Sec. 25, all; Secs. 35 and 36, all. Containing approximately 1,920 acres.
T. 32 N., R. 5 E.; Secs. 26, 27 and 28, all; Secs. 30 to 33, inclusive, all. Containing approximately 4,410 acres.
T. 32 N., R. 1 W.; Secs. 25 to 28, inclusive, all; Secs. 31 to 36, inclusive, all. Containing approximately 6,366 acres.

Aggregating approximately 33,666 acres.

Pursuant to Sec. 4(a) of Pub. L. 94–456, the lands described above will be conveyed as partial satisfaction of the statory entitlement of certain village corporations within Cook Inlet Region. "Statutory entitlement" of village corporations includes only the land entitlements granted under Sec. 12(a) of ANCSA. Therefore, the lands described above, and under 12(a) selections, will be charged against the 12(a) entitlement of the participating village corporations.

Section E of the agreement of August 31, 1976, provides that if the Secretary has conveyed more land to Cook Inlet Region, Inc., pursuant to this agreement than the village corporations are actually entitled to receive under Sec. 12 of ANCSA, when added to lands otherwise received by such village corporations, the excess acreage shall be retained by Cook Inlet Region, Inc., and shall be regarded as conveyances of land outside the boundaries of Cook Inlet Region pursuant to Paragraph I (C)(1) of the Terms and Conditions for Land Consolidation and Management in the Cook Inlet Area, and the corporation's out-of-region entitlements will be adjusted accordingly.

Therefore, any lands conveyed herein which are not reconveyed to any village corporation by Cook Inlet Region, Inc., will be charged against the out-of-region entitlement of Cook Inlet Region, Inc., under Paragraph I (C)(1) of the Terms and Conditions, and the Sec. 12(a) entitlement of the village corporations will be adjusted accordingly.

There are no easements to be reserved to the United States pursuant to Sec. 17(b) of the Alaska Native Claims Settlement Act (ANCSA).

The grant of the lands shall be subject to:

1. Issuance of a patent confirming the boundary description of the lands hereinabove granted after approval and filing by the Bureau of Land Managment of the official plat of survey covering such lands;

2. Valid existing rights therein, if any, including but not limited to those created by any lease (including a lease issued under Sec. 6(g) of the Alaska Statehood Act of July 7, 1958 (72 Stat. 339, 341; 48 U.S.C. Ch. 2, Sec. 6(g))), contract, permit, right-of-way, or easement, and the right of the lessee, contractee, permittee, or grantee to the complete enjoyment of all rights, privileges, and benefits thereby granted to him. Further, pursuant to Sec. 17(b)(2) of the Alaska Native Claims Settlement Act of December 18, 1971 (85 Stat. 688, 708; 43 U.S.C. 1601, 1616(b)), any valid existing right recognized by ANCSA shall continue to have whatever right of access as is now provided for under existing law;

3. The terms and conditions of the agreement dated August 31, 1976, between Cook Inlet Region, Inc., and the Secretary of the Interior. A copy of the agreement shall be attached to and become a part of the conveyance document and shall be recorded therewith. A copy of the agreement is located in the Bureau of Land Management easement case file for Cook Inlet Region, Inc., serialized AA–16637. Any person wishing to examine this agreement may do so at the Bureau of Land Management, Alaska State Office, 701 C Street, Box 13, Anchorage, Alaska 99513; and

4. Those lands and interests in the lands conveyed within the exterior boundaries of Power Site Classification No. 443, February 13, 1958, are subject to Sec. 24 of the Federal Power Act of June 10, 1920 (41 Stat. 1063, 1065; 16 U.S.C. 791, 818), pursuant to Sec. 12(e) of Pub. L. 94–204 (89 Stat. 1145, 1153).

There are no inland water bodies considered to be navigable within the above described lands.

Conveyance of the remaining entitlement to Cook Inlet Region, Inc., of Sec. 11(a)(3) lands shall be made at a later date.

In accordance with Departmental regulation 43 CFR 2650.7(d), notice of this decision is being published once in the **Federal Register** and once a week, for four (4) consecutive weeks in the Anchorage Times. Any party claiming a property interest in lands affected by this decision may appeal the decision to the Alaska Native Claims Appeal Board, P.O. Box 2433, Anchorage, Alaska 99510 with a copy served upon both the Bureau of Land Management, Alaska State Office, 701 C Street, Box 13, Anchorage, Alaska 99513 and the Regional Solicitor, Office of the Solicitor, 510 L Street, Suite 408, Anchorage, Alaska 99501, also:

1. Any party receiving service of this decision shall have 30 days from the receipt of this decision to file an appeal.

2. Any unknown parties, any parties unable to be located after reasonable efforts have been expended to locate, and any parties who failed or refused to sign the return receipt shall have until January 2, 1980, to file an appeal.

3. Any party known or unknown who may claim a property interest which is adversely affected by this decision shall be deemed to have waived those rights which were adversely affected unless an appeal is timely filed with the Alaska Native Claims Appeal Board.

To avoid summary dismissal of the appeal, there must be strict compliance with the regulations governing such appeals. Further information on the manner of and requirements for filing an appeal may be obtained from the Bureau of Land Management, 701 C Street, Box 13, Anchorage, Alaska 99513.

If an appeal is taken, the parties to be served with a copy of the notice of appeal are:

Cook Inlet Region, Inc., P.O. Drawer 4–N, Anchorage, Alaska 99509
Ninilchik Natives Association, Inc., P.O. Box 173, Ninilchik, Alaska 99639
Salamatoff Native Association, Inc., P.O. Box 2682, Kenai, Alaska 99611
Seldovia Native Association, Inc., P.O. Box 185, Seldovia, Alaska 99663
Tyonek Native Corporation, 445 E. 5th Avenue, Suite 9, Anchorage, Alaska 99501
Knikatnu, Inc., P.O. Box 2130, Wasilla, Alaska 99687
Alexander Creek, Inc., 8126 Tri-Lake Road, Anchorage, Alaska 99502
Chickaloon Moose Creek Native Association, Inc., 2600 Fairbanks Street, Anchorage, Alaska 99501
Gold Creek-Susitna Native Association, Inc., Mile 263, c/o Alaska Railroad, Gold Creek, Alaska 99695
State of Alaska Division of Research and Development, 323 East Fourth Avenue, Anchorage, Alaska 99501.

Sue Wolf,

Chief, Branch of Adjudication.

[FR Doc. 79-37012 Filed 11-30-79; 8:45 am]

BILLING CODE 4310-84-M

Use of Planning Regulation Provisions in Plans Being Prepared and Projected Schedule of New Planning Starts

AGENCY: Bureau of Land Management, Interior.

ACTION: Transition Schedule and Call for Comments on Projected New Starts.

SUMMARY: This notice is to advise the public which portions of the Rules and Regulations for Public Land and Resource Planning (43 CFR Part 1600) will be used in the completion of plans in progress as required by § 1601.8, *Transition Period.* New planning starts for the next three fiscal years are also projected for public review and comment.

DATES: Comments on the projected new starts will be accepted until March 1, 1980.

ADDRESS: Comments or suggestions should be sent to: Director (202), Bureau of Land Management, 1800 C Street, NW, Washington, D.C. 20240.

FOR FURTHER INFORMATION CONTACT: Gordon A. Knight, (202) 343–5682.

SUPPLEMENTARY INFORMATION: Regulations governing land use planning for Bureau of Land Management administered public lands were published in the **FEDERAL REGISTER** on Tuesday, August 7, 1979. Section 1601.8(a) of those regulations required that:

> All management framework plans in the process of being prepared at the time these regulations are issued shall be reviewed, and the Director shall establish those portions of these regulations which are to be used in the completion of (management framework plans), given time and budgetary constraints established through Federal budgets and legally mandated schedules. This determination shall be made and published in the planning schedule which is to be published early in fiscal year 1980.

The regulations also required, at Section 1601.3, that:

> The Director shall, early in each fiscal year, publish a planning schedule which shall advise the public of the status of each plan in process or to be started during that fiscal year, the major action on each plan during that fiscal year and projected new planning starts for the three succeeding fiscal years. The notice shall call for comments on planning priorities for those three fiscal years so that such comments can be considered in refining priorities for those fiscal years.

The following notices comply with the above stated requirements of the planning regulations.

Regulations To Be Applied to Ongoing Planning

In analyzing the status of plans in the process of being prepared, the Bureau found it useful to subdivide that planning into four major categories and to prescribe those portions of the regulations which would, *as a minimum,* be applied to each category, unless specific exceptions are noted.

A plan in the process of being prepared is defined as a sequence including three major phases—(1)

preplanning and inventory, (2) completion of old Bureau Planning System documents, including management framework plans, and (3) environmental impact statement preparation, if required, for some portion of the plan such as the livestock grazing or timber management decisions. When an EIS is required, that portion of the plan associated with the action proposed in the EIS is not completed until after the final EIS is filed. These three phases normally take 4 years for a specific planning area. When the new planning regulations are fully implemented, the Bureau intends that these three phases will be superseded by the Resource Management Planning process prescribed in those regulations.

Budgets and schedules were committed in the President's Fiscal Year 1980 budget (January 1979) for all planning in progress and for Fiscal Year 1980 new starts. Therefore, only limited application of the new planning regulations will be possible prior to Fiscal Year 1981 and subsequent new starts. adjustments have made it possible to schedule five of the Fiscal Year 1980 new starts as pilot resource management plans. These pilots will be for refinement of planning procedure.

All Fiscal Year 1981 and subsequent new starts will comply with the planning regulations in full. The transition paragraph (1601.8) requirements for use of management framework plans, either existing or in preparation, and for amending management framework plans were effective on September 6, 1979.

The four categories and *minimum requirements* for use of the new regulations follow. Additional provisions of the regulations may be used as available budgets and committed schedules permit.

Category A

Status: Planning sequence to be completed no later than the end of Fiscal Year 1980. The management framework plan is nearly finished and the grazing or timber environmental impact statement (if required) is in preparation.

FY 80 Action: Complete and file the environmental impact statement and finish the plan.

Regulation requirements to be applied, as a minimum:

1. Guidance for planning (1601.1–1(a) and (b)), as it currently exists in issued Departmental, Bureau, and State Director policy directives.

2. Interdisciplinary approach for remainder of sequence (1601.1–3).

3. Those aspects of public participation applicable to the remainder of the sequence (1601.3).

4. Establishment of monitoring and evaluation standards and intervals (1601.5–9) for those aspects of the plan which are involved in environmental impact statements and to the extent possible with the available data base.

5. Conformity and implementation following approval of the plan (1601.6–2).

6. Process records (1601.7–1).

Category B

Status: Inventory and data interpretation portions of the old Bureau planning system (e.g. Unit Resource Analysis) are complete. Management framework plan preparation is underway. The grazing or timber environmental impact statement (if required) remains to be prepared. The sequence will be completed no later than the end of Fiscal Year 1981.

FY 80 Action: Complete the management framework plan and start the environmental impact statement, if required.

Regulation requirements to be applied, as a minimum, to the balance of the sequence:

All of Category A plus:

1. Identification of issues as required by Council on environmental Quality regulations on the National Environmental Policy Act of 1969 and as related to the required environmental impact statement (1601.5–1).

2. Coordination by District Manager and Consistency requirements as applicable to the remainder of the process (1601.4).

3. Consideration and designation of Areas of Critical Environmental Concern (ACEC) (1601.6–7).

4. Discrete section in planning document for Areas of Critical Environmental Concern and coal (1601.7–3(e)(1) and (2).

Category C

Status: Inventories are in progress and about one half complete. Old Bureau planning system documents and any required environmental impact statement remain to be completed. The planning sequence will be completed no later than the end of Fiscal Year 1982.

FY 80 Action: Complete inventories and data collection.

Regulation requirements to be applied, as a minimum, to the balance of the sequence:

All of Category A and B requirements plus:

1. Coordination by the State Director (1601.4–1).

2. Development and use of planning criteria (1601.5–2) for remainder of planning sequence and where process (e.g. inventory) commitments have not been made.

3. Inventory and information collection for remainder of inventory period (1601.5–3).

4. Establishment of monitoring and evaluation standards and intervals (1601.5–9) for all aspects of the plan.

Category D

Status: Preplanning is completed and inventories have started (these are considered Fiscal Year 1980 new planning starts). Inventories, old Bureau planning system documents and any required environmental impact statement remain to be completed. The planning sequence will be completed no later than the end of Fiscal Year 1983.

FY 80 Action: Inventory and data collection.

Regulation requirements to be applied, as a minimum, to the balance of the sequence:

1. All of Category A, B, and C features.

2. For designated pilot plans only (see following table) all of planning regulation requirements will be applied except that some plans may not conform exactly to Resource Area (1601.1–2) where, for example, a portion of the Resource Area has been included in a recently completed plan.

The above described categories are applied to plans in progress as follows, along with any exceptions to the minimum requirements. Further information about each plan may be obtained from the appropriate Bureau of Land Management State Director.

State and district	Resource area	Plan name	Category and exception footnotes
Alaska:			
Anchorage District	Glennallen	Southcentral	A.[1]
	McGrath	Lower Yukon	B.[1]
Fairbanks District	Fortymile	Fortymile	A.[1]
	Artic-Kobuk	Northwest	B.[1]
Arizona:			
Phoenix District	Kingman	Hualapai-Aquarius	B.
	Lower Gila	Lower Gila North	C.
California:			
Desert Planning Office		California Desert Conservation Area.	A.
Bakersfield District	Bishop	Benton-Owens Valley	B.
	Bishop	Bodie-Colville	B.
	Caliente	South Sierra Foothills	D.

State and district	Resource area	Plan name	Category and exception footnotes
Folsom District	North Motherlode Bay Sierra.	Sierra	C.
Redding District	Siskiyou	Mount Dome	B.
	Four Rivers, Ishe, Siskiyou.	Redding	D.
Riverside District	El Centro	East San Diego County	A.
	El Centro, Indio	West San Diego County	D.
	El Centro	Ohay	D.
Susanville District	Surprise	Cowhead Massacre	A.
	Eagle Lake	Cal-Neva	B.
	Eagle Lake	Willow Creek	C.
	Pit River	Pit River	D—Pilot RMP.
Ukiah District	North Coast, Mendocino	Scattered Block	B.
	Clear Lake	Clear Lake	D.
	Clear Lake	Makayo	D.
Colorado:			
Canon City District	Royal Gorge	Royal Gorge	A.
	Northeast	Sandy Plains	B.
	Northeast	Front Range	C.
Craig District	White River	White River	A.
	Kremmling	Kremmling	D—Pilot RMP.
Grand Junction District	Glenwood Springs	Glenwood Springs	C.
Montrose District	Gunnison Basin	Gunnison Basin-American Flats.	A.
Eastern States Office:			
Duluth, MN Area Office		Minnesota	A.
		Wisconsin	B.
		Michigan	C.
Alexandria, VA Office		Florida	D.
Tuscaloosa, AL Office		Alabama	D.
Idaho:			
Boise District	Owyhee	Owyhee	A.
	Bruneau	Bruneau-Kuna	C.
Burley District	Bannock-Oneida	Bannock-Oneida	A.
	Magic	Twin Falls	C.
Coeur d'Alene District	Emerald-Cottonwood	North Idaho	B.
Idaho Falls District	Big Butte	Big Desert	B.
	Big Butte	Big Lost-Mackay	D.
Salmon District	Pahsimeroi	Ellis	C.
Shoshone District	Monument, Bennett Hills	Sun Valley	B.
Montana:			
Butte District	Headwaters	Headwaters	D—Pilot RMP.
Dickinson District	West River	West Central	A.
	East River and West River.	Williams-McKenzie Burke.	C.
	West River	Southwest	D.
Lewistown District	Valley, Phillips, and Havre.	Prairie Potholes	A.[2]
Miles City District	Big Dry	New Prairie	C.
	Big Dry	Jordan-North Rosebud	C.
Nevada:			
Battle Mountain	Tonopah	Tonopah	A.
Carson City District	Lohontan and Walker-Mina.	Reno	C.[3]
Elko District	Wells	Wells	D—Pilot RMP.
Ely District	Schell	Schell	C.[3]
Las Vegas District	State Line-Esmeralda, and Caliente-Virgin Valley.	Clark	C.[3]
Winnemucca District	Paradise-Denio	Paradise-Denio	B.
	Sonoma-Gerlack	Sonoma-Gerlack	B.
New Mexico:			
Albuquerque District	Farmington	Chaco-San Juan	C.
	Oklahoma	Southeast Oklahoma	A.
Las Cruces District	Las Cruces-Lordsburg and White Sands.	Southern Rio Grande	B.
	White Sands	Sacramento	D.
Socorro District	San Augustine	Divide	C.
Oregon:			
Baker District	Baker	Baker	A.
Burns District	Riley	Riley	C.
	Andrews	Andrews	C.
Coos Bay District	Smith Umpqua, Loon Lake, Coos River, Burnt Mountain, and Myrtlewood.	South Coast	A.[4]
Eugene District	Mohawk and Dorena	Upper Willamette	C.[3,4]
	Lorane and Noti	Siuslaw	C.[3,4]
Lakeview District	Lost River	Lost River	B.
	High Desert	High Desert	B.
	Warner Lakes	Warner Lakes	B.
Prineville District	Central Oregon and Deschutes.	Brothers	C.
Roseburg District	N. Umpqua, Drain, Dillard and S. Umpqua.	Douglas-South Umpqua	C.[3,4]
Salem District	Tillamook, Yamhill and Alsea.	Westside	B.[3,4]
	Clackamas and Santiam	Eastside	B.[3,4]
Vale District	N. Malheur	Northern Malheur	A.
	S. Malheur	Southern Malheur	D.

State and district	Resource area	Plan name	Category and exception footnotes
Utah:			
Cedar City District	Kanab and Escalante	Kanab-Escalante	A.
	Beaver River	Pinyon	C.
Moab District	Price River	Price River	B.
	Grand	Grand	D—Pilot RMP.
Richfield District	Sevier	Mountain Valley	A.
	Henry Mountain	Henry Mountain	C.
Salt Lake District	Pony Express	Tooele	D.
Vernal District	Diamond Mountain	Ashely Creek-Duchesne	B.
Wyoming:			
Casper District	Newcastle	Newcastle	A.[1]
Rawlins District	Lander	Green Mountain	A.
	Divide	Divide-Ferris	D.
	Overland	Overland	D.
Rock Springs District	Big Sandy	Sandy-Pilot Butte	B.
	Salt Wells	Salt Wells	B.
Worland District	Grass Creek	Grass Creek	B.

[1] No grazing, timber, or other environmental impact statement associated with this planning sequence.
[2] Livestock grazing impact statements to be filed in 1981, utilizing existing planning documents.
[3] Inventory and resource analysis are completed so 1601.5-2 and .5-3 will not apply.
[4] Related environmental impact statement on forest management must be filed by December 31, rather than at the end of the fiscal year (September 30).

Projected New Planning Starts

Comment from the public, local and state government, and other Federal agencies is invited on the priorities reflected in these projected new starts. Comment will be received until March 1, 1980, and should be sent to the Director, Mail Code 202, Bureau of Land Management, U.S. Department of the Interior, Washington, D.C. 20240. Questions may be addressed to appropriate State Directors, or to the Branch of Planning in Washington (202) 343-5682. All of the new starts will fully use the new planning regulations. Exceptions will be granted, where necessary, to deviate from Resource Areas as the planning base. Preplanning activities in connection with fiscal year 1981 new starts will take place in fiscal year 1980. This activity may involve review of existing inventories, baseline data gathering and, in some instances, public meetings.

State and district	Resource area	Resource management plan name	Major resource issues
Fiscal Year 1981 New Starts			
Alaska:			
Anchorage District	Peninsula	Bristol Bay-SE-Aleutians	Multiple programs.
Fairbanks District	Yukon	Arctic-Koyukuk	Multiple programs.
Arizona:			
Phoenix District	Lower Gila	Lower Gila-South	Rangeland.
Safford District	Gila	Gila	Rangeland.
Yuma District	Havasu	Havasu	Rangeland.
California:			
Bakersfield District	Caliente	South Sierra-Foothills	Rangeland.
	Caliente	Coast Valley	Rangeland.
Folsom District	Diablo	Coast	Rangeland.
Redding District	Siskiyou, Ishe, Four Rivers	Redding	Rangeland.
Susanville District	Eagle Lake	Honey Lake-Beckworth	Rangeland.
Colorado:			
Canon City District	Northeast	Front Range	Multiple programs.
Craig District	Little Snake	Little Snake	Coal and Rangeland.
Montrose District	San Juan	San Juan-San Miguel	Multiple programs.
Idaho:			
Boise District	Cascade	Cascade	Rangeland.
	Jarbridge	Jarbridge	Rangeland.
Burley District	Raft River-Twin Falls	Cassia	Rangeland.
Idaho Falls District	Caribou	Caribou	Rangeland.
Shoshone District	Monument	Monument	Rangeland.
Montana:			
Dickinson District	West River	Southwest	Coal.
Lewistown District	Billings	Billings	Multiple Programs.
Miles City District	Powder River	Powder River	Multiple Programs.
Nevada:			
Battle Mountain District	Shoshone-Eureka	Shoshone-Eureka	Rangeland and Mining.
Carson City District	Lahontan	Lahontan	Rangeland.
Ely District	Egan	Egan	Rangeland.
New Mexico:			
Las Cruces District	Las Cruces-Lordsburg	Las Cruces-Lordsburg	Rangeland.
Oregon:			
Burns District	John Day	John Day	Rangeland.
Utah:			
Cedar City District	Beaver River	Beaver/Cedar	Rangeland and Coal.
	Kanab	Garfield	Rangeland and Wilderness.
Richfield District	House Range	Tintic/Topaz	Rangeland and Wilderness.
Salt Lake District	Beau River	Park Valley	Rangeland and Wilderness.
Vernal District	Book Cliffs	Bonanza/Seep Ridge	Rangeland and Wilderness.
Wyoming:			
Casper District	Platte River	Platte River	Multiple programs.
Rawlins District	Lander	Below-the-Rim	Rangeland.
Rock Springs District	Kemmerer	Kemmerer	Rangeland.

State and district	Resource area	Resource management plan name	Major resource issues
Fiscal Year 1982 New Starts			
Arizona:			
Phoenix District	Phoenix	Phoenix	Rangeland.
Colorado:			
Grand Junction District	Grand Junction	Grand Junction	Multiple programs.
Idaho:			
Idaho Falls District	Medicine Lodge	Medicine Lodge	Rangeland.
Salmon District	Lemhi	Lemhi	Rangeland.
Montana:			
Butte District	Garnett	Garnett	Multiple programs.
Nevada:			
Elko District	Elko	Elko	Rangeland, Mining, and Wildlife.
Las Vegas District	State Line Esmeralda	Esmeralda	Rangeland.
New Mexico:			
Albuquerque District	Taos (Rio Grande)	Taos	Rangeland.
Roswell District	Roswell	Roswell	Rangeland.
Oregon:			
Prineville District	Central Oregon-Deschutes	Two Rivers	Rangeland.
Spokane District	Basin-Border	Spokane	Rangeland.
Utah:			
Moab District	San Juan	Monticello/Montezuma South San Juan/Reef Basin.	Rangeland and Wilderness.
Salt Lake District	Bear River	Grouse Creek/Promontory	Rangeland and Wilderness.
Wyoming:			
Casper District	Buffalo	Buffalo	Rangeland and Wilderness.
Worland District	Washakie	Washakie	Rangeland.
Fiscal Year 1983 New Starts			
Arizona:			
Yuma District	Yuma	Yuma	Rangeland.
Colorado:			
Montrose District	Umcompaghre	Umcompaghre	Multiple Programs.
Idaho:			
Boise District	Cascade	Horseshoe Bend	Rangeland.
Montana:			
Lewistown District	Valley	Valley	Multiple Programs.
Miles City District	South Dakota	South Dakota	Multiple Programs.
Nevada:			
Carson City District	Walker	Walker	Rangeland.
New Mexico:			
Albuquerque District	Rio Puerco	Rio Puerco	Rangeland.
Oregon:			
Baker District	Grande Ronde	Grande Ronde	Rangeland.
Utah:			
Richfield District	Warm Springs	Warm Springs/Confusion	Rangeland and Wilderness.
Salt Lake District	Bear River	Park City/Coalville	Rangeland.
Salt Lake District	Pony Express	Utah Lake	Rangeland.
Wyoming:			
Casper District	New Castle	New Castle	Rangeland.
Rawlins District	Medicine Bow	Medicine Bow	Rangeland.
Rock Springs District	Pinedale	Pinedale	Rangeland.

Dated: November 23, 1979.

Ed Hastey,

Associate Director.

[FR Doc. 79-36802 Filed 11-30-79; 8:45 am]

BILLING CODE: 4310-84-M

Rock Springs District Grazing Advisory Board; Meeting

November 21, 1979

Notice is hereby given in accordance with Pub. L. 92-463 that a meeting of the Rock Springs District Grazing Advisory Board will be held on January 7, 1980.

The meeting will begin at 9:00 a.m. in the conference room of the Bureau of Land Management office on Highway 187 North, Rock Springs, Wyoming.

The agenda for the meeting will include: (1) briefing on the Salt Wells planning and Allotment Management Plan (AMP) schedule, (2) review of the Pinedale Area Desert Common AMP, (3) review and discussion of AMPs for the Sandy Grazing Environmental Statement Area, and; (4) a reading of written statements and public comment period.

The meeting is open to the public. Interested persons may make oral statements to the Board between 2:30 and 3:00 p.m., or file written statements for the Board's consideration. Anyone wishing to make an oral statement must notify the District Manager, Bureau of Land Management, P.O. Box 1869, Rock Springs, Wyoming 82901 by January 4, 1980. Depending on the number of persons wishing to make oral statements, a per person time limit may be established by the District Manager.

Summary minutes of the board meeting will be maintained in the District Office and be available for public inspection and reproductions (during regular business hours) within 30 days following the meeting.

Jerry K. Ostrom,

Assistant District Manager.

[FR Doc. 79-36974 Filed 11-30-79; 8:45 am]

BILLING CODE 4310-84-M

Office of the Secretary

[INT FEIS 79-62]

Final Timber Management Environmental Impact Statement, Jackson and Klamath Sustained Yield Units; Availability of Final Environmental Impact Statement

Pursuant to Section 102(2)(c) of the National Environmental Policy Act of

1969, the Department of Interior has prepared a final environmental impact statement for the Jackson and Klamath Sustained Yield Units in southwestern Oregon. The statement anayzes the impacts which would result from the proposed timber management program along with five alternatives to that program.

The environmental impact statement considers the impacts of implementing a 10-year timber managaement plan for the 488,258 acres of public land in the two sustained yield units. Treatments specified by the proposal include: harvest predominately by two-stage shelterwood system, clearcutting in suitable locations and single tree selection in specific areas; slash disposal; site preparation; planting; fertilization; thinning; road construction and vegetation control.

A limited number of copies are available upon request from the Bureau of Land Management, Oregon State Office, or the Medford District Office at the addresses listed below.

Public reading copies will be available for review at the following locations:

Bureau of Land Management, Office of Public Affairs, 18th and C Streets, Washington, D.C. 20240.
Bureau of Land Management, Office of Public Affairs, 729 N.E. Oregon Street, Portland, Oregon 97208.
Bureau of Land Management, Medford District Office, 3040 Biddle Road, Medford, Oregon 97501.
Oregon State Library, State Library Building, Salem, Oregon 97310.
Oregon State University Library, Government Document Section, Corvallis, Oregon 97331.
Portland State University Library, 724 S.W. Morrison, Portland, Oregon 97201.
Southern Oregon State College Library, Ashland, Oregon 97520.
Jackson County Library, 413 Main Street, Medford, Oregon 97501.

Dated: November 15, 1979.

Guy R. Martin,

Assistant Secretary.

[FR Doc. 79-38997 Filed 11-30-79; 8:45 am]

BILLING CODE 4310-84-M

INTERNATIONAL COMMUNICATION AGENCY

Culturally Significant Objects Imported for Exhibition; Determination

Notice is hereby given of the following determination: Pursuant to the authority vested in me by the act of October 19, 1965 (79 Stat. 985, 22 U.S.C. 2459) and Executive Order 12047 of March 27, 1978 (43 FR 13359, March 29, 1978), I hereby determine that the objects in the exhibit "Wonders of the Age: Masterpieces of Early Safavid Painting, 1501–1576," (included in the list [1] filed as a part of this determination) imported from abroad for the temporary exhibition without profit within the United States are of cultural significance. These objects are imported pursuant to various loan agreements between the foreign lenders and the Fogg Art Museum of Cambridge, Massachusetts. I also determine that the temporary exhibition or display of the listed imported exhibit objects at the National Gallery of Art, Washington, D.C., and the Fogg Art Museum, Cambridge, Massachusetts, for approximately a six month period terminating before December 31, 1980 is in the national interest.

Public notice of this determination is ordered to be published in the **Federal Register.**

John E. Reinhardt,

Director, International Communication Agency.

November 29, 1979.

[FR Doc. 79-37290 Filed 11-30-79; 8:45 am]

BILLING CODE 8230-01-M

INTERNATIONAL DEVELOPMENT COOPERATION AGENCY

Agency for International Development

Board for International Food and Agricultural Development; Meeting

Pursuant to Executive Order 11769 and the provisions of Section 10(a), (2), Pub. L. 92–463, Federal Advisory Committee Act, notice is hereby given of the thirty-third meeting of the Board for International Food and Agricultural Development (BIFAD) on December 21, 1979.

The purpose of the meeting is to: receive and discuss the progress reports of the Joint Research Committee (JRC) and the Joint Committee for Agricultural Development (JCAD); and discuss future major agenda topics for BIFAD and IDCA (U.S. International Development Cooperation Agency).

The meeting will begin at 9:00 a.m. and adjourn at 4:00 p.m.; and will be held in Room 1107 New State Department Building, 22nd and C Streets, N.W., Washington, D.C. The meeting is open to the public. Any interested person may attend, may file written statements with the Board before or after the meeting, or may present oral statements in accordance with procedures established by the Board, and to the extent the time available for the meeting permits. An escort from the "C" Street Information Desk (Diplomatic Entrance) will conduct you to the meeting room.

Dr. Erven J. Long, Director, Office of Title XII Coordination and University Relations, Development Support Bureau, A.I.D., is designated as A.I.D. Advisory Committee Representative at the meeting. It is suggested that those desiring further information write to him in care of the Agency for International Development, State Department, Washington, D.C. 20523, or telephone him at (703) 235–8929.

Dated: November 20, 1979.

Dr. Erven J. Long,

A.I.D. Advisory Committee Representative, Board for International Food and Agricultural Development.

[FR Doc. 79-38975 Filed 11-30-79; 8:45 am]

BILLING CODE 4710-02-M

[1] An itemized list of objects included in the exhibit is filed as part of the original document.

DEPARTMENT OF JUSTICE

Drug Enforcement Administration

[Docket No. 79-6]

Galler Drug Co.; Denial of Registration

On December 19, 1978, the Administrator of the Drug Enforcement Administration (DEA) issued to Galler Drug Company (Respondent) of Chicago, Illinois, an Order to Show Cause proposing to deny the Respondent's pending application for registration as a distributor of controlled substances in Schedules II through V. The Respondent requested a hearing on the issues raised by the Order to Show Cause and subsequently, pursuant to notice published in the **Federal Register** (44 FR 16968), a hearing was held in Chicago, Illinois, on April 10, 1979. Administrative Law Judge Francis L. Young presided. The Government was represented at the hearing by the Office of the Chief Counsel, Drug Enforcement Administration, and the Respondent appeared by its self-styled owner, Mr. Gerald Galler.

On July 24, 1979, pursuant to procedures then effective, the Administrative Law Judge certified the record of these proceedings to the Administrator. Simultaneously, copies of the Administrative Law Judge's Opinion and Recommended Ruling, Findings of Fact, Conclusions of Law and Decision were forwarded to both the Respondent and Government counsel. The Respondent's copy was sent via registered mail and was subsequently returned to the Judge's office, marked "unclaimed," by the U.S. Postal Service. A second copy was forwarded to the Respondent by regular mail on August 14, 1979. To date, this second mailing has not been returned to the Drug

Enforcement Administration and it must be assumed that it has been received by the Respondent. At least sixty days have elapsed since the Judge's opinion was re-mailed to the Respondent and no exceptions, as provided for in 21 CFR 1316.66, have been filed by either the Government or the Respondent. Accordingly, the Administrator has now considered the record of these proceedings, in their entirety, and, pursuant to 21 CFR 1316.67, hereby publishes his Final Order in this matter.

As set forth by the Administrative Law Judge, the issues to be considered in this case are as follow:

1. Whether the Respondent has failed to provide adequate electrical or electronic security measures as required of all distributors of controlled substances by 21 CFR 1301.72, whereby the Respondent has failed to establish and maintain effective controls against the diversion of controlled substances.

2. Whether, due to its failure to establish and maintain effective controls against the diversion of controlled substances, the continued registration of the Respondent is inconsistent with the public interest. And,

3. Whether, therefore, the Respondent's application for registration as a distributor of controlled substances in Schedules II, III, IV and V should be denied.

Judge Young, after making detailed findings of fact with respect to the Respondent's operation of its controlled substance business, concluded that the Respondent had failed to meet the security standards for such registrants as set forth in 21 CFR 1301.72–1301.76. Judge Young's findings are part of the record of these proceedings and it is not necessary to restate them here; the Administrator adopts them in their entirety.

As did the Administrative Law Judge, the Administrator concludes that the Respondent has failed to maintain and provide effective controls against the diversion of controlled substances. The three issues, as stated by the Administrative Law Judge, must be answered in the affirmative. There is, therefore, a lawful or statutory basis for the denial of the respondent's application to distribute controlled substances pursuant to 21 U.S.C. 823(b)(1) and 823(d)(1). The Administrator adopts Judge Young's conclusions of law as they are set forth in his report.

The diversion of controlled substances from legitimate medical and scientific channels into the illicit market is a serious problem. One aspect of this diversion is the theft of controlled substances from legitimate handlers such as the Respondent. Manufacturers and distributors, because of the nature of their businesses, are authorized by their registrations to acquire and store large quantities of controlled substances. Accordingly, such registrants are required to maintain certain minimum standards of security. The Respondent in this case has, for a number of years, failed to meet these minimum standards. The Administrator, therefore, concludes that the continued registration of Galler Drug Company would not be consistent with the public interest.

Accordingly, pursuant to the authority vested in the Attorney General by Sections 303 and 304 of the Controlled Substances Act, 21 U.S.C. sections 823 and 824, and redelegated to the Administrator of the Drug Enforcement Administration in 28 CFR § 0.100, the Administrator hereby orders that the application of Galler Drug Company, for registration as a distributor of controlled substances in Schedules II–V, be, and it hereby is, denied, effective December 28, 1979.

During the period from the date of publication of this Final Order until its effective date, the Respondent may in any lawful manner sell or return for credit, or surrender to the Drug Enforcement Administration, all controlled substances remaining in its possession. On or before December 28, 1979, the Respondent shall also surrender to the Drug Enforcement Adminstration its DEA Certificate of Registration, PG0036663, and any unused DEA order forms remaining in its possession.

Dated: November 26, 1979.

Peter B. Bensinger,

Administrator, Drug Enforcement Administration

[FR Doc. 79-37093 Filed 11-30-79; 8:45 am]

BILLING CODE 4410-09-M

Law Enforcement Assistance Administration

Coordinating Council on Juvenile Justice and Delinquency Prevention; Meeting

Notice is hereby given that the Coordinating Council on Juvenile Justice and Delinquency Prevention will meet Wednesday, December 19, 1979 at 633 Indiana Avenue, N.W., Washington, D.C., 13th Floor Conference Room. The meeting will be open to the public.

The meeting will begin at 10:00 a.m. Agenda items include a discussion of a draft workplan of Council activities for 1980, an update and discussion of contract support for the Council, presentation on proposed OJJDP participation in the Urban Crime Prevention Initiative with HUD, and a discussion of the draft 1979 Annual Analysis and Evaluation prepared by OJJDP. Time will be available for updates from member agencies.

For further information contact Mr. James C. Shine, Executive Assistant and Special Counsel, Office of Juvenile Justice and Delinquency Prevention, Law Enforcement Assistance Administration, Department of Justice, 633 Indiana Avenue, N.W., Washington, D.C. 20531.

David D. West,

Acting Associate Administrator, Office of Juvenile Justice and Delinquency Prevention.

[FR Doc. 79-37098 Filed 11-30-79; 8:45 am]

BILLING CODE 4410-18-M

Office of Criminal Justice Education and Training; LEEP Eligibility

Institutional applications for participation in the Law Enforcement Education Program (LEEP) for academic year 1980–81 will be mailed to current institutional participants in mid-December. LEEP is a program of grants and loans to criminal justice students administered under provisions of the Omnibus Crime Control and Safe Streets Act of 1968, as amended (42 U.S.C. 3701 et sequitur).

Since no funds were appropriated for the 1980–81 academic year, the program will be operated with reversionary funds. Because of this limitation, funding resources will be restricted to criminal justice students who received a LEEP award during the 1979–80 academic year and who are either *transferring* with an associate degree from a two-year institution participating in LEEP to a four-year institution in order to continue progress toward the baccalaureate degree, or who are *returning* recipients. *Returning* students refers to those students who participated in LEEP at the same institution during the previous academic year. Excluded from this definition are students who are commencing graduate study. No new students and no new institutions of higher education will be admitted to the program.

In addition to general institutional eligibility requirements, institutions must continue to meet the following criteria concerning curriculum to be considered for awards: (excerpts from LEEP Guideline Manual M 5200.1C).

1. (Chapter 3, paragraph 31) *General Curricula Criteria*

(a) Each course shall be approved by the regular curriculum approving body

of the institution, e.g., by the student-faculty senate, the curriculum committee, etc., and shall be creditable toward a catalog-listed academic degree or certificate which has been approved by the responsible state higher education authority.

(b) Each class shall be open to all students. The scheduling of two identical classes for the same course does not satisfy the requirement if one class serves pre-service students and the other serves in-service students. Courses shall be convened in academic or neutral environments with ready access to adequate library facilities. A police department squad room for example, would not be considered a neutral setting.

(c) The instructor shall have full-time or part-time faculty status at the institution, be paid by the institution, and possess required credentials comparable to those of instructors in other academic fields offered at the institution. The use of qualified guest lecturers is not precluded, provided the major responsibility for the course rests with the qualified faculty member of record.

(d) Transferability of credits is required. At least ninety percent of all credits shall be applicable towards bachelor's degrees offered by regionally accredited institutions.

The following restrictions apply to course work offered by institutions which seek participation in LEEP: (Chapter 3, paragraphs 32–35; chapter 4, paragraph 49)

32. *Training Programs and Courses Prohibited*

Basic recruit and in-service training programs shall not be supported by LEEP funds even though the institution may offer credit or give credit equivalency for them. If credit or credit equivalency is given, it shall not be considered as part of the student's academic load in determining full-time status for loan eligibility.

33. *Institutes and Short Courses*

Study done in short seminars, short-term institutes, or workshops normally is not eligible for LEEP funds. These short courses are usually training oriented, and training cannot be supported by LEEP monies. The institution will be required to restore any grant or loan funds awarded to students for attendance at any short seminar, short-term institute or other short course that is not approved in writing by OCJET. Approval of a LEEP grant for the institution does not indicate automatic approval of short courses that may be identified in the annual institutional application for funds.

34. *Remedial Courses*

Remedial courses required as a prerequisite for enrollment in an academic program cannot be supported with LEEP funds. A remedial course which is part of an approved academic program in which the student already is enrolled may be paid from LEEP funds.

35. *Off-campus or Extension Courses*

Extension courses, external degree programs, and courses taught at sites off the main campus are ineligible for LEEP funds unless specifically approved by LEAA in a SPECIAL CONDITION to the Grant Award document. If the institution requests funds for off-campus locations, it must demonstrate to OCJET that the courses meet all the criteria in paragraph 31 and all other LEAA requirements for academic offerings. To be approved for LEEP funds an off-campus course must:

(a). *Fill an educational need* for criminal justice personnel as identified through systematic planning,

(b.) *Provide an academic offering* not otherwise available in the designated geographic area, and

(c.) *Operate within the state* where the main campus is located.

49. *Academy Courses*

Sometimes State and local criminal justice training academies contract with institutions of higher education for college-level courses that satisfy agency certification requirements. These courses are eligible for LEEP support if the following stipulations are met and prior written approval is obtained from OCJET:

(a.) The course must comply with the criteria set forth in paragraph 31;

(b.) The student must be offered the option of using funding sources other than LEEP and shall be counseled regarding financial or employment obligations incurred by the use of LEEP funds;

(c.) The student shall not be required to repeat a course which he/she already has completed successfully;

(d.) The course shall not be basic recruit training or the equivalent;

(e.) If the student resigns or is dismissed by the criminal justice agency, the educational institution shall permit the student to complete the course(s) in which he/she is enrolled.

The deadline for institutional application for academic year 1980–81 is March 15, 1980. For further information, please call 301/492–9040 and ask for the LEEP Coordinator responsible for your state.

Dated: November 21, 1979.

J. Price Foster,

Director, Office of Criminal Justice, Education and Training.

[FR Doc. 79-37068 Filed 11-30-79; 8:45 am]

BILLING CODE 4410-18-M

DEPARTMENT OF LABOR

Steel Tripartite Committee, Working Group on Labor and Community Adjustment Assistance; Meeting

The Steel Tripartite Committee was established under the Federal Advisory Committee Act, 5 U.S.C. App (1976) to advise the Secretary of Labor and Secretary of Commerce on international and domestic issues affecting the U.S. Steel Industry, labor and public.

Notice is hereby given that the Steel Tripartite Committee's Working Group on Labor and Community Adjustment Assistance will meet at 10 am., on December 5, 1979, in Room S 2217, U.S. Department of Labor, 200 Constitution Ave., N.W., Washington, D.C. 20210.

Items to be discussed are the labor and community adjustment assistance impact of the recent decision by the United States Steel Corporation and the Jones & Laughlin Steel Corporation to close a number of steel and steel-related facilities. Due to the emergency nature of the situation, insufficient time was available to give 15 days advance notice of the Working Group meeting. The public is invited to attend. A limited number of seats will be available to the public on a first-come basis.

For additional information contact Mr. David L. Mallino, Executive Secretary, Steel Tripartite Committee, Bureau of International Labor Affairs, U.S. Department of Labor, Washington, D.C., 20210, telephone (202) 523–7481.

Official records of the meeting will be available for public inspection at N 5631, U.S. Department of Labor, Washington, D.C. 20210.

Signed at Washington, D.C. this 29th day of November 1979.

Herbert N. Blackman,

Deputy Under Secretary for International Affairs (Acting), U.S. Department of Labor.

[FR Doc. 79-37253 Filed 11-30-79; 8:45 am]

BILLING CODE 4510-28-M

NATIONAL SCIENCE FOUNDATION

Permit Applications Received Under the Antarctic Conservation Act of 1978

AGENCY: National Science Foundation.

ACTION: Notice of Permit Applications Received Under Antarctic Conservation Act of 1978.

SUMMARY: The National Science Foundation (NSF) is required to publish notice of permit applications received to conduct activities regulated under the Antarctic Conservation Act of 1978. NSF has published regulations under the Antarctic Conservation Act of 1978 at Title 45 Part 670 of the Code of Federal Regulations. This is the required notice of permit applications received.

DATE: Interested parties are invited to submit written data, comments, or views with respect to these permit applications by January 4, 1980. Permit applications may be inspected by interested parties at the Permit Office, address below.

ADDRESS: Comments should be addressed to Permit Office, Room 627, Division of Polar Programs, National Science Foundation, Washington, D.C. 20550.

FOR FURTHER INFORMATION CONTACT: Charles E. Myers at the above address or (202) 632–4238.

SUPPLEMENTARY INFORMATION: The National Science Foundation, as directed by the Antarctic Conservation Act of 1978 (Public Law 95–541), has developed regulations that implement the "Agreed Measures for the Conservation of Antarctic Fauna and Flora" for all United States citizens. The Agreed Measures, developed in 1964 by the Antarctic Treaty Consultative Parties, recommended establishment of a permit system for various activities in Antarctica and designation of certain mammals and certain geographic areas as requiring special protection. The Regulations were presented for public comment in draft form in the 6 March 1979 **Federal Register**. They appeared in final draft form in the 7 June 1979 **Federal Register**. Additional information was published in the 11 October 1979 **Federal Register**, page 58818.

The application received is:

1. *Applicant:* Charlene J. Denys, DePaul University, Department of Biological Sciences, Chicago, Illinois 60614.

Activity for which Permit Requested: Take Penguins. Twenty Adelie penguin adolescents will be sacrificed to obtain retinal and liver samples for use in research studies of visual pigments.

Import into USA—Some retinal and liver samples will be returned to the U.S. for further study.

Location: Torgersen Island, Antarctica.

Dates: February 1, 1980 to March 31, 1980.

Authority to take this action has been delegated by the Director, NSF to the Director, Division of Polar Programs and the Deputy Division Director DPP under National Science Foundation Staff Memorandum O/D 79–16, of May 29, 1979.

A. N. Fowler,

Deputy Division Director, Office of Polar Programs.

[FR Doc. 79–36980 Filed 11–30–79; 8:45 am]

BILLING CODE 7555–01–M

NUCLEAR REGULATORY COMMISSION

Advisory Committee on Reactor Safeguards; Meeting

In accordance with the purposes of Sections 29 and 182b. of the Atomic Energy Act (42 U.S.C. 2039, 2232 b.), the Advisory Committee on Reactor Safeguards will hold a meeting on December 6–8, 1979, in Room 1046, 1717 H Street, NW, Washington, DC. Notice of this meeting was published on November 21, 1979 (44 FR 67000).

The agenda for the subject meeting will be as follows:

Thursday, December 6, 1979

8:30 a.m.—12:30 p.m.: Executive Session (Open)—The Committee will hear and discuss the report of the ACRS Chairman regarding miscellaneous matters relating to ACRS activities.

The Committee will discuss proposed ACRS comments and recommendations regarding the NRC regulatory process.

1:30 p.m.—8:30 p.m.: Executive Session (Open)—The Committee will hear and discuss reports from ACRS Subcommittee chairman and designated ACRS members related to the safety and procedural aspects of the report of the President's Commission on the Accident at Three Mile Island; ACRS comments and recommendations regarding the NRC regulatory process; the proposed pause in licensing of nuclear facilities; the conceptual design of the Floating Nuclear Plant core ladle and its application to land-based nuclear plants.

Portions of this session will be closed as necessary to discuss Proprietary Information applicable to these items.

Friday, December 7, 1979

8:30 a.m.—12:00 Noon: Meeting with NRC Staff (Open)—The Committee will hear reports and will discuss proposed plans for NRC Implementation of the recommendations of the President's Commission on the Accident at Three Mile Island and the TMI–2 Lessons Learned Task Force Final Report (NUREG–0585).

1:00 p.m.—2:30 p.m: Meeting with NRC Staff (Open)—The Committee will hear presentations and discuss the proposed pause in nuclear power plant licensing, and proposed alternatives, with representatives of the NRC Staff and the nuclear industry including an extended low-power start-up program for the Sequoyah Nuclear Plant.

2:30 p.m.—3:30 p.m: Executive Session (Open)—The Committee will hear a report by one of its members and will discuss proposed plans by the President to implement recommendations of the President's Commission on Three Mile Island (tentative).

3:30 p.m.—4:30 p.m: Meeting with Nuclear Regulatory Commission (Open)—The Committee will meet with the members of the Nuclear Regulatory Commission to discuss proposed plans for implementation of lessons learned from the accident at Three Mile Island and the related pause in licensing of nuclear power facilities. A portion of this session, if necessary, will be devoted to discussion of recent ACRS reports to the Commission on the NRC Safety Research Program (NUREG–0603) and Evaluation of Licensee Event Reports (NUREG–0572).

4:30 p.m.—5:45 p.m.: Meeting with NRC Staff (Open)—The Committee will hear a report and will discuss with members of the NRC Staff a proposed revision of NUREG–0606, Unresolved Safety Issues.

Saturday, December 8, 1979

8:30 a.m.—4:00 p.m.: Executive Session (Open)—The Committee will continue its discussion of proposed ACRS comments and recommendations regarding the NRC regulatory process and will also discuss proposed ACRS comments and recommendations regarding proposed action to implement the recommendations of the President's Commission on Three Mile Island; the TMI–2 Lessons Learned Task Force Final Report; and the proposed pause in nuclear power plant licensing and appropriate alternatives.

The Committee will discuss proposed replies to NRC Commissioners regarding follow-up and implementation of ACRS recommendations, and ACRS recommendations regarding NRC regulatory requirements which may warrant changes.

The Committee will discuss candidates nominated and will elect its officers for Calendar Year 1980.

The Committee will hear a report from its Subcommittee on the Mark I Pressure Suppression Containment Long Term Program.

The future schedule for Committee activities will also be discussed.

The Committee will complete discussion of items considered during this meeting.

Portions of this session will be closed as necessary to discuss Proprietary Information related to matters being considered, and to protect information the release of which would represent an unwarranted invasion of personal privacy.

Procedures for the conduct of and participation in ACRS meetings were published in the Federal Register on October 1, 1979 (44 FR 56408). In accordance with these procedures, oral or written statements may be presented by members of the public, recordings will be permitted only during those portions of the meeting when a transcript is being kept, and questions may be asked only by members of the Committee, its consultants, and Staff. Persons desiring to make oral statements should notify the ACRS Executive Director as far in advance as practicable so that appropriate arrangements can be made to allow the necessary time during the meeting for such statements. Use of still, motion picture and television cameras during this meeting may be limited to selected portions of the meeting as determined by the Chairman. Information regarding the time to be set aside for this purpose may be obtained by a telephone call to the ACRS Executive Director (R. F. Fraley) prior to the meeting. In view of the possibility that the schedule for ACRS meetings may be adjusted by the Chairman as necessary to facilitate the conduct of the meeting, persons planning to attend should check with the ACRS Executive Director if such rescheduling would result in major inconvenience.

I have determined in accordance with Subsection 10(d) Pub. L. 92–463 that it is necessary to close portions of this meeting as noted above to protect Proprietary Information (5 U.S.C. 552b(c)(4)) and to protect information the release of which would represent an unwarranted invasion of personal privacy (5 U.S.C. 552b(c)(6)).

Further information regarding topics to be discussed, whether the meeting has been cancelled or rescheduled, the Chairman's ruling on requests for the opportunity to present oral statements and the time allotted therefor can be obtained by a prepaid telephone call to the ACRS Executive Director, Mr. Raymond F. Fraley (telephone 202/634–3265), between 8:15 A.M. and 5:00 P.M. EST.

Dated: November 28, 1979.

John C. Hoyle,

Advisory Committee Management Officer.

[FR Doc. 79-37041 Filed 11-30-79; 8:45 am]

BILLING CODE 7590-01-M

[Docket No. 50-348]

Alabama Power Co.; Granting of Interim Relief From ASME Section XI Inservice Testing Requirements

The U.S. Nuclear Regulatory Commission (the Commission) has granted relief from certain requirements of the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components" to the Joseph M. Farley Nuclear Plant, Unit No. 1 (the facility) located in Houston County, Alabama. The relief relates to the inservice testing program for the facility. The ASME Code requirements are incorporated by reference into the Commission's rules and regulations in 10 CFR Part 50. The interim relief is effective as of its date of issuance.

The relief is granted on an interim basis, pending completion of our detailed review from those inservice testing requirements of the ASME Code that the licensee has determined to be impractical within the limitations of design, geometry and materials of construction of components, because compliance would result in hardships or unusual difficulties without a compensating increase in the level of quality or safety.

The request for relief complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the letter granting relief. Prior public notice of this action was not required since the granting of this relief from ASME Code requirements does not involve a significant hazards consideration.

The Commission has determined that the granting of this relief will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with this action.

For further details with respect to this action, see (1) the request for relief dated May 1, 1979, and (2) the Commission's letter to the licensee dated November 16, 1979.

These items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C. and at the George S. Houston Memorial Library, 212 W. Berdeshaw Street, Dothan, Alabama 36303. A copy of item (2) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland this 16th day of November, 1979.

For the Nuclear Regulatory Commission.

A. Schwencer,

Chief, Operating Reactors Branch #1, Division of Operating Reactors.

[FR Doc. 79-37048 Filed 11-30-79; 8:45 am]

BILLING CODE 7590-01-M

[Docket No. 50-261]

Carolina Power & Light Co.; Issuance of Amendment to Facility Operating License

The U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 44 to Facility Operating License No. DPR–23, issued to the Carolina Power and Light Company, (the licensee), which revised Technical Specifications for operation of the H. B. Robinson Steam Electric Plant Unit NO. 2 (the facility) located in Darlington County, Hartsville, South Carolina. The amendment is effective as of the date of its issuance.

The amendment establishes Technical Specifications to assure inspection and reporting requirements for a program of inservice inspection of steam generator tubing consistent with the requirements of Revision 1 of Regulatory Guide 1.83.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and pursuant to 10 CFR 51.5(d)(4) an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated November 4, 1976, as supplemented June 30, July 29, 1977, June 4, August 9, 1978 and April 9, 1979, (2) Amendment No. 44 to License No. DPR–23, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C.

and at the Hartsville Memorial Library, Home and Fifth Avenues, Hartsville, South Carolina. A copy of items (2) and (3) may be obtained upon request addressed to the U.S Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 17th day of November, 1979.

For the Nuclear Regulatory Commission.

A. Schwencer,

Chief, Operating Reactors Branch #1, Division of Operating Reactors.

[FR Doc. 79-37050 Filed 11-30-79; 8:45 am]

BILLING CODE 7590-01-M

Draft Regulatory Guide; Issuance and Availability

The Nuclear Regulatory Commission has issued for public comment a draft of a proposed revision to a guide in its Regulatory Guide Series together with a draft of the associated value/impact statement. This series has been developed to describe and make available to the public methods acceptable to the NRC staff of implementing specific parts of the Commission's regulations and, in some cases, to delineate techniques used by the staff in evaluating specific problems or postulated accidents and to provide guidance to applicants concerning certain of the information needed by the staff in its review of applications for permits and licenses.

The draft, temporarily identified by its task number, SC 814-5 (which should be mentioned in all correspondence concerning this draft guide), is proposed Revision 2 to Regulatory Guide 1.136 and is entitled "Materials, Construction, and Testing of Concrete Containments (Articles CC-1000, -2000, and -4000 through -7000 of the 'Code for Concrete Reactor Vessels and Containments')." The guide is being developed to provide some bases acceptable to the NRC staff for complying with the Commission's regulations with regard to the materials, construction, and testing of concrete containments. This guide endorses and supplements Articles CC-1000, -2000, and -4000 through -7000 of the "Code for Concrete Reactor Vessels and Containments."

This draft guide and the associated value/impact statement are being issued to involve the public in the early stages of the development of a regulatory position in this area. They have not received complete staff review, have not been reviewed by the NRC Regulatory Requirements Review Committee, and do not represent an official NRC staff position.

Public comments are being solicited on both drafts, the guide (including any implementation schedule) and the draft value/impact statement. Comments on the draft value/impact statement should be accompanied by supporting data. Comments on both drafts should be sent to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch, by January 31, 1980.

Although a time limit is given for comments on these drafts, comments and suggestions in connection with (1) items for inclusion in guides currently being developed or (2) improvements in all published guides are encouraged at any time.

Regulatory guides are available for inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C. Requests for single copies of draft guides (which may be reproduced) or for placement on an automatic distribution list for single copies of future draft guides in specific divisions should be made in writing to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Technical Information and Document Control. Telephone requests cannot be accommodated. Regulatory guides are not copyrighted, and Commission approval is not required to reproduce them.

(5 U.S.C. 552(a))

Dated at Rockville, Md, this 26th day of November 1979.

For the Nuclear Regulatory Commission.

Guy A. Arlotto,

Director, Division of Engineering Standards, Office of Standards Development.

[FR Doc. 79-37044 Filed 11-30-79; 8:45 am]

BILLING CODE 7590-01-M

[Dockets Nos. 50-250 and 50-251]

Florida Power & Light Co.; Issuance of Amendment to Facility Operating License

The U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 51 to Facility Operating License No. DPR-31, and Amendment No. 42 to Facility Operating License No. DPR-41 issued to Florida Power and Light Company (the Licensee), which revised Technical Specifications for operation of Turkey Point Nuclear Generating, Unit Nos. 3 and 4 (the facilities) located in Dade County, Florida. The amendments are effective as of the date of issuance.

The amendments delete the requirement that the screen wash system modifications be completed no later than November 1979.

The application for the amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments. Prior public notice of these amendments was not required since the amendments do not involve a significant hazards consideration.

The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR § 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of these amendments.

For further details with respect to this action, see (1) the application for amendments dated September.20, 1979, (2) Amendment Nos. 51 and 42 to License Nos. DPR-31 and DPR-41, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, NW., Washington, D.C. and at the Environmental and Urban Affairs Library, Florida International University, Miami, Florida 33199. A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 13th day of November, 1979.

For the Nuclear Regulatory Commission.

A. Schwencer,

Chief, Operating Reactors Branch #1, Division of Operating Reactors.

[FR Doc. 79-37046 Filed 11-30-79; 8:45 am]

BILLING CODE 7590-01-M

International Atomic Energy Agency Draft Safety Guide; Availability of Draft for Public Comment

The International Atomic Energy Agency (IAEA) is developing a limited number of internationally acceptable codes of practice and safety guides for nuclear power plants. These codes and guides will be developed in the following five areas: Government Organization, Siting, Design, Operation, and Quality Assurance. The purpose of these codes and guides is to provide IAEA guidance to countries beginning nuclear power programs.

The IAEA Codes of Practice and Safety Guides are developed in the following way. The IAEA receives and collates relevant existing information used by member countries. Using this collection as a starting point, an IAEA Working Group of a few experts then develops a preliminary draft. This preliminary draft is reviewed and modified by the IAEA Technical Review Committee to the extent necessary to develop a draft acceptable to them. This draft Code of Practice or Safety Guide is then sent to the IAEA Senior Advisory Group which reviews and modifies the draft as necessary to reach agreement on the draft and then forwards it to the IAEA Secretariat to obtain comments from the Member States. The Senior Advisory Group then considers the Member State comments, again modifies the draft as necessary to reach agreement and forwards it to the IAEA Director General with a recommendation that it be accepted.

As part of this program, Safety Guide SG–QA11, "Quality Assurance in the Procurement, Design and Manufacture of Nuclear Fuel Assemblies," has been developed. The Working Group, consisting of Mr. C. Carrier of France; Mr. R. von Jan of the Federal Republic of Germany; Mr. V. A. Chandramouli of India; and Mr. J. E. Vessely (Florida Power & Light Company) of the United States of America, developed the initial draft of this Safety Guide from an IAEA collation during a meeting on January 15–19, 1979. The Working Group draft was modified by the IAEA Technical Review Committee in a meeting on June 25–29, 1979, and we are soliciting comments on this modified draft. Comments on this draft received by February 1, 1980 will be useful to the U.S. representatives to the Technical Review Committee and Senior Advisory Group in evaluating its adequacy prior to the next IAEA discussion.

Single copies of this draft may be obtained by a written request to the Director, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

(5 U.S.C. 522(a))

Dated at Rockville, Md. this 23rd day of November 1979.

For the Nuclear Regulatory Commission.

Robert B. Minogue,

Director, Office of Standards Development.

[FR Doc. 79-37045 Filed 11-30-79; 8:45 am]

BILLING CODE 7590-01-M

[Docket No. 50-272]

Public Service Electric & Gas Co., et al., Issuance of Amendment to Facility Operating License

The U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 21 to Facility Operating Licehse No. DPR–70, issued to Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company and Atlantic City Electric Company (the licensees), which revised Technical Specifications for operation of the Salem Nuclear Generating Station, Unit No. 1 (the facility) located in Salem County, New Jersey. The amendment will become effective twenty days from the date of publication of this notice of issuance unless a hearing has been requested.

The amendment adds a license condition pertaining to the completion of facility modifications to improve the fire protection program.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the licensee's submittals dated September 14, 1977, December 19, 1977, July 19, 1978, July 26, 1978, September 8, 1978, September 21, 1978, February 15, 1979, March 2, 1979 and November 5, 1979, (2) Amendment No. 21 to License No. DPR–70, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C. and at the Salem Free Public Library, 112 West Broadway, Salem, New Jersey. A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 20th day of November, 1979.

For the Nuclear Regulatory Commission.

A. Schwencer,

Chief, Operating Reactors Branch #1, Division of Operating Reactors.

[FR Doc. 79-37049 Filed 11-30-79; 8:45 am]

BILLING CODE 7590-01-M

[Docket No. 50-272]

Public Service Electric & Gas Co., et al.; Issuance of Amendment to Facility Operating License

The U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 22 to Facility Operating License No. DPR–70, issued to Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company and Atlantic City Electric Company (the licensees), which revised Facility Operating License No. DPR–70 for operation of the Salem Nuclear Generating Station, Unit No. 1 (the facility) located in Salem County, New Jersey. The amendment is effective as of the date of issuance.

The amendment deletes Section 2.C(3) thereby lifting a restriction on auxiliary feedwater level rise rate whenever the secondary water level in a steam generator is below the level of the feedwater sparger.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) Amendment No. 22 to License No. DPR–70, and (2) the Commission's related Satety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C. and at the Salem Free Public Library, 112 West Broadway, Salem, New Jersey. A copy of items (2) and (3) may be obtained upon request

addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 20th day of November, 1979.

For the Nuclear Regulatory Commission.

A. Schwencer,

Chief, Operating Reactors Branch #1, Division of Operating Reactors.

[FR Doc. 79-37051 Filed 11-30-79; 8:45 am]

BILLING CODE 7590-01-M

[Dockets Nos. 50-266 and 50-301]

Wisconsin Electric Power Co.; Issuance of Amendment to Facility Operating License

The U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 41 to Facility Operating License No. DPR-24, and Amendment No. 46 to Facility Operating License No. DPR-27 issued to Wisconsin Electric Power Co. (the licensee), which revised Technical Specifications for operation of Point Beach Nuclear Plant, Unit Nos. 1 and 2 (the facilities) located in the Town of Two Creeks, Manitowac County, Wisconsin. The amendments are effective in 90 days from the date of issuance.

These amendments increase the minimum fire brigade size from four to five members.

The application for the amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments. Prior public notice of these amendments was not required since the amendments do not involve a significant hazards consideration.

The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of these amendments.

For further details with respect to this action, see (1) the application for amendments dated October 1, 1979 (2) Amendment Nos. 41 and 46 to License Nos. DPR-24 and DPR-27, and (3) the Commission's related letters dated August 21, 1979 and November 13, 1979. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W, Washington, D.C. and at the Document Department, University of Wisconsin, Stevens Point Library, Stevens Point, Wisconsin 54451. A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 13th day of November, 1979.

For the Nuclear Regulatory Commission.

A. Schwencer,

Chief, Operating Reactors Branch #1, Division of Operating Reactors.

[FR Doc. 79-37047 Filed 11-30-79; 8:45 am]

BILLING CODE 7590-01-M

OFFICE OF MANAGEMENT AND BUDGET

Agency Forms Under Review

Background

November 28, 1979.

When executive departments and agencies propose public use forms, reporting, or recordkeeping requirements, the Office of Management and Budget (OMB) reviews and acts on those requirements under the Federal Reports Act (44 USC, Chapter 35). Departments and agencies use a number of techniques including public hearings to consult with the public on significant reporting requirements before seeking OMB approval. OMB in carrying out its responsibility under the Act also considers comments on the forms and recordkeeping requirements that will affect the public.

List of Forms Under Review

Every Monday and Thursday OMB publishes a list of the agency forms received for review since the last list was published. The list has all the entries for one agency together and grouped into new forms, revisions, extensions, or reinstatements. Each entry contains the following information:

The name and telephone number of the agency clearance officer;

The office of the agency issuing this form;

The title of the form;

The agency form number, if applicable;

How often the form must be filled out;

Who will be required or asked to report;

An estimate of the number of forms that will be filled out;

An estimate of the total number of hours needed to fill out the form; and

The name and telephone number of the person or office responsible for OMB review.

Reporting or recordkeeping requirements that appear to raise no significant issues are approved promptly. In addition, most repetitive reporting requirements or forms that require one half hour or less to complete and a total of 20,000 hours or less annually will be approved ten business days after this notice is published unless specific issues are raised; such forms are identified in the list by an asterisk (*).

Comments and Questions

Copies of the proposed forms and supporting documents may be obtained from the agency clearance officer whose name and telephone number appear under the agency name. Comments and questions about the items on this list should be directed to the OMB reviewer or office listed at the end of each entry.

If you anticipate commenting on a form but find that time to prepare will prevent you from submitting comments promptly, you should advise the reviewer of your intent as early as possible.

The timing and format of this notice have been changed to make the publication of the notice predictable and to give a clearer explanation of this process to the public. If you have comments and suggestions for further improvements to this notice, please send them to Stanley E. Morris, Deputy Associate Director for Regulatory Policy and Reports Management, Office of Management and Budget, 726 Jackson Place, Northwest, Washington, D.C. 20503.

DEPARTMENT OF COMMERCE

Agency Clearance Officer—Edward Michals—377-3627

New Forms

Bureau of the Census
Transformers (Shipment)
MA-36G
Annually
Manufacturers of transformers; 280 responses; 280 hours
Office of Federal Statistical Policy and Standard, 673-7974

Industry and Trade Administration
*Export Assistance Services End User Survey
ITA-4078P
On occasion
U.S. firms: Bed End Users; 5,000 responses; 2,500 hours
Richard Sheppard, 395-3211

Revisions

Bureau of the Census

*Shipments of Closures for Containers
M–34H
Monthly
Manufacturers of closures for containers; 1,320 responses; 440 hours
Office of Federal Statistical Policy and Standard, 673–7974

Bureau of the Census
*Tractors (Production and Shipments)
M–35S
Monthly
Manufacturers of farm and construction tractors; 144 responses; 24 hours
Office of Federal Statistical Policy and Standard, 673–7974

DEPARTMENT OF ENERGY

Agency Clearance Officer—John Gross—633–8558

New Forms

Building Inspection or Site Visit Report
CS–418
On occasion
Building owners and managers; 100,000 responses; 46,666 hours
Jefferson B. Hill, 395–5867

Capacity of Petroleum Refineries
EIA–177 (formerly BOM 6–1334–7)
Annually
Petroleum refineries; 320 responses; 1,920 hours
Jefferson B. Hill, 395–5867

Revisions

Data Gathering Provisions of Regulations for Hydroelectric Power Projects Loan Program
RA–181R
On occasion
Applicants for hydro-loan funding; 250 responses; 12,500 hours
Jefferson B. Hill, 395–5867

Extensions

Annual Report for Municipal Electric Utilities (Having Annual Electric Revenues of $25,000 or More)
ERA–412
Annually
Municipal Electric Utilities; 728 responses; 29,120 hours
Jefferson B. Hill, 395–5867

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Agency Clearance Officer—William Riley—245–7488

New Forms

Center for Disease Control
*1980 and 1981 Immunization Tracking Survey
Annually
Individuals over 18 in U.S. population; 2,000 responses; 1,000 hours
Office of Federal Statistical Policy and Standard, 673–7974

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Agency Clearance Officer—Robert G. Masarsky—755–5184

Revisions

Community Planning and Development Expenditures Budget (NDP)
HUD–6275
Annually
Local public agency with still-active NDP programs; 50 responses; 200 hours
Arnold Strasser, 395–5080

DEPARTMENT OF LABOR

Agency Clearance Officer—Philip M. Oliver—523–6341

Revisions

Bureau of Labor Statistics
Survey of individual hours and earnings of nonsupervisory employees, May 1980
BLS 1130 A, B
Single time
Nonfarm business establishments; 19,000 responses; 38,000 hours
Office of Federal Statistical Policy and Standard, 673–7974

Extensions

Employment and Training Administration
Extended benefit data
ETA 5–39
Weekly
SESA's; 2,756 responses; 2,067 hours
Arnold Strasser, 395–5080

DEPARTMENT OF TRANSPORTATION

Agency Clearance Officer—Bruce H. Allen—426–1887

New Forms

Departmental and other
Survey of freight transportation service to small communities
Single time
Shippers in small towns; 600 responses; 300 hours
Steed, Diane K., 395–3176

ACTION

Agency Clearance Officer—W. D. Baldridge—254–7845

New Forms

Vista volunteers study—efforts and effects
Single time
Vista proj dir./super., vol. constitutent; 960 responses; 672 hours
Barbara F. Young, 395–6132

ENVIRONMENTAL PROTECTION AGENCY

Agency Clearance Officer—John J. Stanton—245–3063

New Forms

Hazardous and trace emissions system (Hatrems) input
Data forms
Hatrems forms
Annually
55 State air pollution control agencies; 55 responses, 302 hours
Edward H. Clarke, 395–5867

EXECUTIVE OFFICE OF THE PRESIDENT, OTHER

Agency Clearance Officer—Jack Stoehr—254–5300

New Forms

Pilot for CSA/volume 1 and forms grantee program
Management system manual 395, 509, 510, 511, 512, 513, 514 and 515
Single time
40 grantees for test; 40 responses; 200 hours
Barbara F. Young, 395–6132

NATIONAL ENDOWNMENT FOR THE ARTS

Agency Clearance Officer—Paul G. Zarbock—634–6160

New Forms

Required reports to the challenge program
Attachment A–1
Other (see SF–83)
Arts organization (nonprofit); 120 responses; 2,400 hours
Laverne V. Collins, 395–3214

RAILROAD RETIREMENT BOARD

Agency Clearance Officer—Pauline Lohens—312–751–4693

Extensions

*Employee's certification
G–346
On occasion
RRA spouse applicant's—husband/wife; 20,000 responses; 1,667 hours
Barbara F. Young, 395–6132

Stanley E. Morris,

Deputy Associate Director for Regulatory Policy and Reports Management.

[FR Doc. 79–37089 Filed 11–30–79; 8:45 am]

BILLING CODE 3110–01–M

Delay in Publication of Semi-annual Agenda

November 29, 1979.

AGENCY: Office of Management and Budget.

ACTION: Delay in Publication of Semi-annual Agenda.

SUMMARY: The publication of OMB's semi-annual agenda of upcoming actions

on OMB directives was to be published in the Federal Register December 3, 1979. Delays have caused this date to slip to December 12, 1979.

FOR FURTHER INFORMATION CONTACT:
Mr. David R. Leuthold, Budget and Management Officer, Room 5208, New Executive Office Building, Washington, D.C. 20503, (202) 395-7250.

David R. Leuthold,

Budget and Management Officer.

[FR Doc. 79-37193 Filed 11-30-79; 8:45 am]

BILLING CODE 3110-01-M

SECURITIES AND EXCHANGE COMMISSION

[Release No. 34-16359/November 21, 1979; File No. SR-NYSE-79-45]

New York Stock Exchange, Inc.; Self-Regulatory Organizations; Proposed Rule Changes

Proposed rule changes by: New York Stock Exchange, Inc., relating to: Responses to the Recommendations of the Special Study of the Options Markets as promulgated by the Securities and Exchange Commission in Release No. 34-15575.

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934, 15 U.S.C. 78s(b)(1) as amended by Pub. L. No. 94-29, 16 (June 4, 1975), notice is hereby given that on November 2, 1979, the New York Stock Exchange, Inc. ("NYSE") filed with the Securities and Exchange Commission the proposed rule changes as described in Items I, II and III below, which have been prepared by the self-regulatory organization. The Commission is publishing this notice to solicit comments on the proposed rule changes from interested persons.

The Commission has determined that it is necessary and appropriate to provide additional time for Commission consideration of the proposed rule changes. Because the subject filing contains numerous rule proposals which, if approved, would affect significantly the operation of the standardized options markets, the Commission believes that additional time is necessary to enable the Commission to give the proposals the careful consideration they warrant before determining whether to approve the proposals or to initiate proceedings to determine whether they should be disapproved. Additional time for Commission consideration also will permit the Commission to make a single determination with respect to similar rule proposals by other self-regulatory organizations.[1]

Accordingly, the Commission, pursuant to Section 19(b)(2) of the Act, hereby extends until 90 days from the date of publication of notice of filing of the proposed rule changes captioned above the time period within which the Commission must either approve the proposed rule changes or institute proceedings to determine whether the proposed rule changes should be disapproved.

Self-Regulatory Organization's Statement of Terms of Substance of the Proposed Rule Changes

The following is a summary of the rule changes proposed by NYSE. The text of the proposed rule changes is attached as Exhibit A to this notice, with [brackets] used to indicate words to be deleted and *italic* for words to be added.

Rule 351 The Rule is proposed to be amended to call for written notification to the NYSE of significant disciplinary action taken by the member or member organization against its associated persons.

Rule 477 The period of continued disciplinary jurisdiction over terminated persons is proposed to be extended if an inquiry is commenced within one year following notice of termination.

Rule 700 This rule contains the basic definitions of terms utilized throughout the options rules.

Rule 720 This rule stipulates that a member organization could not transact business directly with the public in options contracts unless the individuals involved in management pertaining to options are registered and approved by the Exchange as options principals.

Rule 721 This rule provides for the collection and recording of minimum background and financial information concerning customers in order to support the approval of their accounts for options transactions. Such information would have to be furnished to each new options customer (that is a natural person) for his verification. Such information must again be sent to a customer whenever the firm is aware of any material change in the customer's financial condition.

Rule 722 This rule provides for the diligent supervision of customer accounts by a general partner or officer of the member organization who is designated as a Senior Registered Options Principal ("SROP"). Additionally, member organizations would also have to specifically identify a Compliance Registered Options Principal ("CROP") having no sales functions to be responsible for the review of the member's options compliance program. The requirement for a non-sales CROP will not apply to member organizations earning less than $1,000,000 in gross commissions on options business for either of the preceding two years or having 10 or less options registered representatives. The rule also requires that background and financial information of customers who have been approved for options transactions be maintained at the office servicing the customers' account and the supervisory office have jurisdiction over that branch office. Copies of account statements for options customers shall also be maintained at both offices for the most recent six-month period, and all other records necessary to the proper supervision of accounts shall be maintained at a place easily accessible to both offices.

Rule 723 The rule prohibits a member, member organization, allied member or employee from recommending any opening transaction to a customer unless he has a reasonable basis for believing that the customer is able to evaluate the risks of the transaction and is financially able to bear them.

Rule 724 This rule stipulates the procedures to be followed by a member, allied member or employee of a member organization before he may exercise any discretionary power with respect to trading in options contracts in a customer's account, and contains procedures for the supervision of discretionary trading. The rule also states that, where the discretionary account utilizes options programs involving systematic use of one or more options strategies, the customer shall be furnished with a written explanation meeting the requirements of Rule 791 of the nature and risks of such programs. The rule also contains recordkeeping requirements for and prohibitions on options transactions in discretionary accounts.

Rule 725 This rule requires every member and member organization to furnish customers written confirmations of transactions and outlines the minimum information to be included.

Rule 726 This rule requires member organizations to deliver a current Prospectus to each customer at or prior to approval of the account for options trading. The rule also provides for any new or revised Prospectus to be distributed to every customer.

Rule 727 This rule prohibits member organizations from accepting orders for the account of any corporation which is the issuer of an underlying stock as well

[1] *See* File Nos. SR-CBOE-79-9, SR-Amex-79-18, SR-PSE-79-13, SR-Phlx-79-7, and SR-MSE-79-18.

as from writing a call option contract with respect to such underlying stock.

Rule 728 This rule provides that a member organization may not accept or deliver an underlying stock, which may not be sold by the holder pursuant to the provisions of the Securities Act of 1933.

Rule 730 This rule provides for a statement of account to be furnished to a customer no less frequently than once every month where there has been an entry in the account. The rule also requires that each statement contain a legend requesting the customer to promptly advise the member organization of any material change in the customer objectives or financial situation.

Rule 732 This rule would require firms to maintain a central, firm-wide file containing specified information concerning all options-related complaints. Copies of such complaints would be required to be forwarded to the central location and maintained at the branch office that is the subject of the complaint.

Rule 781 This rule requires member organizations to establish fixed procedures for the allocation of exercise notices to customers and to inform its customers in writing of the method, manner of operation, and consequences of its system. Such methods of allocation may be either on a "first in, first out" basis, an automated random basis that has been approved by the Exchange, or a manual random selection basis that has been specified by the Exchange. The rule also requires that records relating to exercise allocation be preserved for three years.

Rule 782 This rule requires that the delivery of shares of an underlying stock upon the exercise of an option contract and payment of the aggregate exercise price be in accordance with the rules of the Options Clearing Corporation.

Rule 790 This rule requires that any stock transfer or similar tax be paid in accordance with applicable laws and regulations.

Rule 791 The Rule requires the approval by the CROP or his designee of all communications to customers and further defines the standards applicable to such communications. The rule would, however, exempt advertisements from certain of the approval requirements if such adverstisements had been previously submitted to another self-regulatory organization having comparable standards regarding advertising. Supplementary material contains further detail concerning what should or should not be included in particular types of communications to customers. Relevant costs and other assumptions used in computing annualized rates of return would also be required to be disclosed. The rule also contains other standards and disclosure requirements pertaining to projected performance figures, and imposes requirements applicable to options work sheets utilized by member firms, including the requirement that such work sheets must be uniform within a given firm. Complete work sheets would be required to be retained by member firms the same as all other written communications to customers. The rule requires that performance reports be approved by a ROP and be retained by the firm, and establishes standards for their content.

Self-Regulatory Organization's Statement of Purpose

The rule changes filed herewith represent responses to the recommendations of the Special Study of the Options Markets as promulgated by the Commission in Release No. 34–15575.

A discussion of the purpose of each of the rule changes included in this filing is presented below under the caption of the respective recommendation of the Option Study to which the rule change is responsive. To facilitate the Commission's review, the captions of the various responses to recommendations of the Options Study are keyed to the numbering system used in Release No. 34–15575.

In addition, the NYSE is augmenting its current surveillance efforts of member organizations, pursuant to the NYSE's general business practice and supervision rules, by codifying present policies and practices dealing with options customer protection into more explicit options-related rules.

The additional rules establish a cohesivie scheme of upstairs regulation. These rules apply to member organizations that engage in listed options activities either directly or through clearing members at an options exchange, and are based on existing rules of other options exchanges. An individual statement of purpose for each proposed rule that is not specifically responsive to Release No. 34–15575 is given at the end of this item.

I.A.1.a. b. and c. (Rule 721)

These related recommendations call for the collection and recording of background and financial information concerning customers in order to support the approval of their accounts for options transactions and subsequent suitability determinations, and they also call for the verification by the customer of this information. In response, we include Supplementary Material .10 to Rule 721, governing the opening of accounts, that lists specific categories of minimum information that a member organization must seek to obtain before opening an options account for a customer. We have not required that all member organizations adopt a uniform options customer information form, since we believe it appropriate to permit the firms to have some flexibility in this regard, so long as the minimum information required by Supplementary Material .10 is included. However, we understand on the basis of discussions with representatives of the Securities Industry Association that the SIA expects to develop and make available contemporaneously with the effective date of .10 of this rule a standard options customer information form that would satisfy the new requirements.

We also propose to include record keeping requirements applicable to options customer information by including in paragraph (b) of Rule 721 a cross-reference to the provisions of Rule 722 that state how options customer information should be maintained. (See I.A.1.d. below).

Paragraph (c) to Rule 721 will require that every new options customer, who is a natural person, be sent for verification the background and financial information reflected in the customer's account information form within 15 days of the approval of the account for options transactions. In addition, this information must again be sent to the customer for verification whenever the firm is aware of any material change in the customer's financial situation. Customer account statements will contain a legend asking that customers notify the firm of any changes in their financial situation (see proposed Rule 730).

I.A.1.d. (Rule 722)

In response to this recommendation concerning the maintenance of records of customer background and financial information, we propose to include in Rule 722 a requirement that background and financial information of customers approved for options transactions must be maintained both at the branch office and at the principal supervisory office having jurisdiction over the branch office. In addition, Rule 722 will require that monthly account statements for the most recent six months be maintained at both offices and that other records necessary to the proper supervision of accounts be easily accessible to both offices. With these new record keeping requirements, not only the registered representative servicing a customer's account, but also the persons responsible for supervising the

registered representative, will have easy access to all relevant information concerning the customers and his account.

I.A.1.e. (Rule 723)

The purpose of proposed Rule 723 is to make applicable to all recommended opening options transactions the stringent suitability requirements that the customer be able to evaluate the risks of the transaction and be financially able to bear them. Under the proposed suitability rule, a broker-dealer would be prohibited from recommending any opening options transaction to a customer unless these requirements are met.

I.A.1.f. (Rule 732)

In response to the recommendation that copies of customer complaints be maintained at a central office and at relevant branch offices, we propose to require member firms to maintain a central, firm-wide file of all options-related complaints containing specified information concerning each complaint. Copies of the complaints themselves would also be forwarded to and maintained at the same central location. In addition, a copy of every options-related complaint would be maintained at the branch office that is the subject of the complaint.

I.A.1.g. (Rule 722)

Proposed Rule 722 would require member firms that do a public business to specifically identify a Compliance Registered Options Principal (CROP) having no sales functions to be responsible for the review of the firm's options compliance program and to propose any appropriate remedial action. Final responsibility for supervision over all of the firm's options activities would remain with the Senior Registered Options Principal (SROP), although the CROP would be required to furnish reports on a regular basis directly to the firm's senior management. The separation of responsibilities between the CROP and the SROP (except in those firms that choose to have a non-sales SROP) provides for audit of compliance by someone having no sales functions, and yet recognizes that the leadership of most securities firms appropriately has and will continue to have sales functions in combination with supervisory responsibilities. In order to avoid placing unacceptable economic burdens upon similar firms, the requirement for a non-sales CROP will not apply to firms earning less than $1,000,000 in options commissions or having 10 or less options registered representatives.

I.A.1.h. (Rules 351 and 477)

The proposed amendment to existing Rule 351(a) provides for notification to the Exchange of significant disciplinary action taken by the member against its associated persons. It should be noted that the Exchange has modified the language adopted by other SROs as we believe that Rule 351 already provides specific obligations and standards regarding the reporting of non-internal disciplinary actions. In particular, the language of Rule 351 is designed to exclude the reporting of information unrelated to the furtherance of the purposes of the Act, such as traffic tickets and Building or Health Code violations. (See SR–NYSE 78–67.)

The proposed amendment to Rule 477 extends the period of continued disciplinary jurisdiction over terminated registered employees so long as an inquiry is commenced within one year following notice of termination.

I.A.1.i. j. k. and l.

and

I.A.3.a. b. and c. (Rule 791)

Proposed Rule 791, deals with advertisements, market letters and sales literature, so as to cover all communications to customers and incorporates a number of different recommendations of the Options Study.

Rule 791 requires the approval by the Compliance Registered Options Principal or his designee of all communications to customers and to further define the standards applicable to such communications. The Rule also provides for better coordination among the self-regulatory organizations with respect to the approval of advertisements. Supplemental Material .10, .20 and .30 contain further detail concerning what should or should not be included in particular types of communications to customers.

The recommendation that relevant costs and other assumptions used in computing annualized rates of return must be disclosed is included in .30 under the Rule. This Supplementary Material also contains other standards and disclosure requirements pertaining to projected performance figures. Other provisions of .30 impose requirements applicable to options work sheets utilized by member firms, including the requirement that such work sheets must be uniform within a given firm. Completed work sheets would be required to be retained by member firms the same as all other written communications to customers. Proposed .30 of the rule also includes performance reports within the definition of "sales literature" and requires that they be approved by a Registered Options Principal and retained by the firm, and it contains standards for performance reports to assure that each such report is confined to a specifically identifiable and relevant universe.

Finally, the Rule contemplates the distribution to all member firms of a publication entitled "Guidelines for Options Communications" that would provide further information concerning the standards applicable to communications to customers.

I.A.1.m. (Rule 781)

Proposed Rule 781 requires members who choose to utilize a random allocation of exercise notices to use either an automated method that has been approved by an SRO, or the manual method that has been uniformly specified by all of the SROs. FIFO methods of allocation must also be approved by an SRO. Members will be required to notify their customers of the method of allocation utilized, explaining how it works.

I.A.1.n. (Rule 781)

Proposed Rule 781 also contains a requirement that records relating to exercise allocation be preserved for three years. This period of retention will facilitate auditing compliance with required methods of exercise allocation.

I.A.2.b. (Rule 722)

This proposed Rule will also require every branch manager to be qualified as an ROP, unless the branch office has not more than three RRs, and is otherwise under the supervision of a ROP. This requirement is one of a number of changes intended to improve internal supervision of firms' options activities.

I.A.2.c.

and

I.A.2.d. (Rule 724)

This proposed Rule will require that customers over whose accounts members and member organizations exercise investment discretion must be furnished with a written explanation of the risks involved in the systematic use of one or more options strategies in these accounts. All such descriptive material would be required to meet the "sales literature" minimum standards of the proposed "Communications to Customers" rule. The amendment would also require that the SROP review the acceptance of each discretionary account to determine whether the ROP accepting the account had a reasonable

basis for believing that the customer was able to understand and bear the risks of the proposed strategies or transactions. Under proposed Rule 724, a ROP must personally accept every discretionary account, and the added step of a SROP's review of the ROP's acceptance is intended to provide an additional level of supervisory audit over the acceptance of these kinds of accounts.

Self-Regulatory Organization's Statement of Purpose for Rules which are not Specifically Responsible to Options Study Recommendations

Rule 700 This rule contains the basis definitions of terms utilized throughout the options rules.

Rule 720 The purpose of this rule is to ensure that all persons transacting business with the public in options contracts are under the supervision of, or themselves are, a registered options principal. Each member organization must designate a senior registered options principal responsible for supervision and training relevant to options transactions.

Rule 725 The purpose of this rule is to ensure that every member and member organization furnishes to customers written confirmations of transactions, and outlines the minimum information to be included in each confirmation.

Rule 726 This rule requires member organizations to deliver a current Prospectus to each customer at or prior to approval of the account for options trading. The rule also provides that any new or revised Prospectus be distributed to every customer.

Rule 727 This rule prohibits member organizations from accepting orders for the account of any corporation which is the issuer of an underlying stock as well as from writing a call option contract with respect to such underlying stock.

Rule 728 This rule provides that a member organization may not accept or deliver an underlying stock, which may not be sold by the holder pursuant to the provisions of the Securities Act of 1933.

Rule 782 This rule requires that the delivery of shares of an underlying stock upon the exercise of an option contract and payment of the aggregate exercise price be in accordance with the rules of the Options Clearing Corporation.

Rule 790 This rule requires that any stock transfer or similar tax be paid in accordance with applicable laws and regulations.

Statutory Basis for Proposed Rule Changes

The statutory basis for these rule changes, as stated in Release No. 34–15575, is that the implementation of the recommendations of the Options Study is "[c]onsistent with the scheme of self-regulation embodied in the Securities Exchange Act of 1934."

Self-Regulatory Organization's Statement on Comments Received from Members, Participants, or Others on Proposed Rule Changes

Comments on the proposed rule changes resulting from SRO Task Force recommendations were solicited and received from members in several ways. First, representatives of the Securities Industry Association attended and actively participated in most of the meetings of the joint SRO task force that developed the rule changes. Second, a preliminary draft of the rule changes was mailed to every member of each of the SROs involved, with a request that comments be forwarded to any one of the seven signatory SROs. A large number of detailed comments were received in response to this mailing; these are available for inspection and copying in the Commission's Public Reference Room. Many of the comments received in response to the preliminary draft led to revisions in the rule changes that are reflected in the proposals. Where the SROs determined not to make changes in response to member comments, often the SROs were sympathetic to member comments, often the SROs were sympathetic to the concerns raised by the commentators, but felt that these concerns were outweighed by the emphasis that the Commission had placed upon the particular rule change that was the subject of the comment. The following is a summary of those comments received from members that are relevant to the proposed rule changes in their present form.

Recommendations I.A.1.a.–c. (*Opening of Accounts*)

A number of members commented that many customers will consider it burdensome and an invasion of privacy to have to provide personal financial information to their brokers, and will refuse to do so. Others questioned the relevance of much of the information that must be sought. In response to these comments, the list of information that must be obtained has been reduced, as explained above. Verification of customer information was subject to much criticism as being very expensive (especially for smaller firms) and not likely to be meaningful. While much of this comment was directed at the requirement for periodic verification, which has since been significantly reduced, the requirement for *any* verification was criticized by many members. One member criticized the inclusion of specific time requirements governing when the record of a new customer's background information must be first sent to him for verification, claiming that such time limits are arbitrary and artificial.

Recommendation I.A.1. d. and f. (*Record-Keeping*)

Many members criticized as unnecessarily duplicative and expensive the requirement that customer account records be kept both at headquarters and at the branch office.

Recommendation I.A.1.e. (*Suitability*)

Several firms expressed the belief that expanded concepts of suitability exposed firms to inappropriate risks of liability. Other comments were that customers should be able to make their own investment decisions without having to satisfy a third party, and that strict options suitability rules would drive customers into other, riskier, less regulated products. Specific criticism was made of the requirement that a broker must assess the customer's ability to evaluate risks, claiming that this goes beyond traditional concepts of suitability.

Recommendation I.A.1.g. (*Non-Sales Options Compliance Person*)

This proposal drew many comments pointing out the cost it would present for small firms. The expanded exemptive provisions of the rule as filed are included in response to this concern. Other comments objected to the concept of separating the sales function from compliance and supervision functions, while others expressed the view that the non-sales compliance officer would amount to a token appointment, but at a high cost. Many comments noted that the costs of complying with this requirement would place smaller firms at a competitive disadvantage.

Recommendation I.A.1.h. (*Disciplinary Reports and Jurisdiction*)

Some firms observed that a reporting requirement might inhibit firms from taking disciplinary action. Others noted the absence of clear standards defining what constitutes disciplinary action. Several comments objected to the apparent need to file duplicate reports (which will be eliminated upon the implementation of proposed 17d–2 plans). One comment endorsed the extension of SRO disciplinary jurisdiction over former members, while another comment expressed the view that this was improper and inconsistent with the spirit of the Act.

Recommendation I.A.1. i. j. k. and l. and

Recommendation I.A.3.a.–c. (Communications to Customers)

Commentators suggested that this rule imposed too many responsibilities on the CROP, that centralized approval of communications to customers is unworkable, especially in a large firm, and that advance SRO approval of advertising is contrary to the trend in such matters. Many comments were addressed to the requirements applicable to specific types of written communications, generally criticizing them for being inflexible, unworkable, expensive to administer, and enlarging the firms' exposure to liabilities.

Recommendation I.A.1. m. and n. (Allocation of Exercise Notices)

Comments suggested that firms should be given more flexibility than this rule would permit, and that an explanation of exercise allocation would be confusing to customers. Others noted the expense involved in conforming data processing equipment to required methods allocation.

Recommendation I.A.2.b. (ROP Qualification of Branch Managers)

This requirement was criticized as being costly and not likely to result in improved supervision. Some suggested that it should be sufficient if an assistant manager or other supervisor is ROP-qualified, without requiring that the branch manager be so qualified.

Recommendation I.A.2. c. and d. (Discretionary Accounts)

Several firms commented that these requirements would be so onerous as to inhibit firms from offering discretionary accounts. The requirement for providing an explanation of each strategy utilized in the account was the focus of special criticism. The SRO Task Force has attempted to respond to this criticism by making the requirement apply to "programs" for trading options, but not to each separate strategy that might be used.

Self-Regulatory Organization's Statement on Burden on Competition

The Exchange recognizes that, as is pointed out in several of the comments received from members, certain of the proposed rule changes will increase the costs to members in handling customers' options transactions, which in turn may place smaller member organizations at a competitive disadvantage. The Commission will have to determine whether the possible competitive burden of these rule changes is necessary or appropriate in furtherance of the Act in deciding whether to approve these rule changes.

On or before March 3, 1980, the Commission will:

(A) By order approve such proposed rule change, or

(B) Institute proceedings to determine whether the proposed rule change should be disapproved.

Interested persons are invited to submit written data, views and arguments concerning the foregoing. Persons desiring to make written submissions should file six copies thereof with the Secretary of the Commission, Securities and Exchange Commission, Washington, D.C. 20549. Copies of the filing with respect to the foregoing and all written submissions will be available for inspection in the Public Reference Room, 1100 L Street, NW., Washington, D.C. Copies of such filing will also be available for inspection at the principal office of the above-mentioned self-regulatory organization. All submissions should refer to file number referenced in the caption above and should be submitted on or before December 24, 1979.

For the Commission by the Division of Market Regulation, pursuant to delegated authority.

George A. Fitzsimmons,

Secretary.

November 21, 1979.

Exhibit A

Existing Rules

Rule 351 Reporting Requirements

I.A.1.h. Rule 351(a) Each member not associated with a member organization and each member organization shall promptly report to the Exchange whenever such member or member organization, or any other member, allied member or registered or non-registered employee associated with such member or member organization:

* * * * *

(10) *Is the subject of any disciplinary action taken by the member against any of its associated persons involving suspension, termination, the withholding of commissions or imposition of fines in excess of $2,500, or any other significant limitation on activities.*

* * * * *

Rule 477 Retention of Jurisdiction—Failure to Cooperate

I.A.1.h.

Rule 477 If, prior to termination, or during the period of [90 days] *one year* immediately following the receipt by the Exchange of written notice of the termination, of a person's status as a member, member organization, allied member, approved person, or registered or non-registered employee of a member or member organization, the Exchange serves (as provided in paragraph (d) of Rule 476) written notice on such person that it is making inquiry into, or serves a Charge Memorandum on such person with respect to, any matter or matters occurring prior to the termination of such person's status as a member, member organization, allied member, approved person, or registered or non-registered employee of a member or member organization, the Exchange may thereafter require such person to comply with any requests of the Exchange to appear, testify, submit books, records, papers, or tangible objects, respond to written requests and attend hearings in every respect in conformance with the Constitution and Rules of the Exchange in the same manner and to the same extent as if such person had remained a member, member organization, allied member, approved person, or registered or non-registered employee of a member or member organization.

* * * * *

700

General Rules Relating to Options Applicability, Definitions and References

Rule 700 (a) Applicability—The Rules in this 700 series (Rules 700 through 791) shall be applicable to the handling of orders and the conduct of accounts an other matters relating to options contracts issued by the Options Clearing Corporation dealt in by any member or member organization.

Except as specifically provided in the rules in this series, Rules 45 through 298 shall not apply to such options transactions.

(b) Definitions—The following terms as used in the Rules in this Section shall, unless the context otherwise indicates, have the meanings herein specified:

(1) Options Clearing Corporation—The term "Options Clearing Corporation" means the Options Clearing Corporation, a subsidiary of the Participating Exchanges.

(2) Rules of the Options Clearing Corporation—The term "rules of the Options Clearing Corporation" means the by-laws and the rules of the Options Clearing Corporation, and all written interpretations thereof, as the same may be in effect from time to time.

(3) Clearing Member—The term "clearing member" means an Exchange member or member organization who or which has been admitted to membership in the Options Clearing Corporation

pursuant to the provisions of the rules of the Options Clearing Corporation.

(4) Participating Exchange—The term "Participating Exchange" means a national securities exchange which has qualified for participation in the Options Clearing Corporation pursuant to the provisions of the rules of the Options Clearing Corporation.

(5) Option Contract—The term "option contract" means a put or a call issued, or subject to issuance, by the Options Clearing Corporation pursuant to the rules of the Options Clearing Corporation.

(6) Option Transaction—The term "option transaction" means a transaction effected on the Floor of a national securities exchange between members thereof for the purchase or sale of an option contract, or for the closing out of a long or short position in an option contract.

(7) Type of Option—The term "type of option" means the classification of an option contract as either a put or a call.

(8) Call—The term "call" means an option contract under which the holder of the option has the right, in accordance with the terms of the option, to purchase from the Options Clearing Corporation the number of shares of the underlying stock covered by the option contract.

(9) Put—The term "put" means an option contract under which the holder of the option has the right, in accordance with the terms of the option, to sell to the Options Clearing Corporation the number of shares of the underlying stock covered by the option contract.

(10) Class of Options—The term "class of options" means all option contracts of the same type of option covering the same underlying stock.

(11) Series of Options—The term "series of options" means all option contracts of the same class of options having the same expiration date, exercise price and unit of trading.

(12) Underlying Stock—The term "underlying stock" in respect of an option contract means the security which the Options Clearing Corporation shall be obligated to sell (in the case of a call) or purchase (in the case of a put) upon the valid exercise of such option contract.

(13) Exercise Price—The term "exercise price" in respect of an option contract means the stated price per share at which the underlying stock may be purchased (in the case of a call) or sold (in the case of a put) upon the exercise of such option contract.

(14) Aggregate Exercise Price—The term "aggregate exercise price" means the exercise price of an option contract multiplied by the number of shares of the underlying stock covered by such option contract.

(15) Expiration Month—The term "expiration month" in respect of an option contract means the month and year in which such option contract expires.

(16) Expiration Date—The term "expiration date" in respect of an option contract means the day and time fixed by the rules of the Options Clearing Corporation for the expiration of all option contracts having the same expiration month as such option contract.

(17) Long Position—The term "long position" means the number of outstanding option contracts of a given series of options held by a person (purchaser).

(18) Short Position—The term "short position" means the number of outstanding option contracts of a given series of options with respect to which a person is obligated as a writer (seller).

(19) Opening Purchase Transaction—The term "opening purchase transaction" means an option transaction in which the purchaser's intention is to create or increase a long position in the series of options involved in such transacton.

(20) Opening Writing Transaction—The term "opening writing transaction" means an option transaction in which the seller's (writer's) intention is to create or increase a short position in the series of options involved in such transaction.

(21) Closing Sale Transaction—The term "closing sale transaction" means an option transaction in which the seller's intention is to reduce or eliminate a long position in the series of options involved in such transaction.

(22) Closing Purchase Transaction—The term "closing purchase transaction" means an option transaction in which the purchaser's intention is to reduce or eliminate a short position in the series of options involved in such transaction.

(23) Covered

(i) The term "covered" in respect of a short position in a call option contract means that the writer's obligation is secured by a "specific deposit" or an "escrow deposit" meeting the conditions of Rule 610(f) or 610(h), respectively, of the rules of the Options Clearing Corporation or the writer holds in the same account as the short position, on a share-for-share basis, a long position either in the underlying stock or in an option contract of the same class of options having an exercise price equal to or less than the exercise price of the option contract in such short position.

(ii) The term "covered" in respect of a short position in a put option contract means that the writer holds in the same account as the short position, on a share-for-share basis, a long position in an option contract of the same class of options having an exercise price equal to or greater than the exercise price of the option contract in such short position.

(24) Uncovered—The term "uncovered" in respect of a short position in an option contract means that the short position is not covered.

(25) Outstanding—The term "outstanding" in respect of an option contract means an option contract which has been issued by the Options Clearing Corporation and has neither been the subject of a closing sale transaction on a Participating Exchange nor been exercised nor reached its expiration date.

(26) Primary Market—The term "primary market" in respect of an underlying stock means the principal market in which the underlying stock is traded.

(27) Options Trading—The term "options trading" means trading in any option issued by the Options Cleaning Corporation.

(c) References—Pursuant to the provisions of Rule 3 of the Board of Directors, option contracts (as defined above) are included within the definition of "security" or "securities" as such terms are used in the Construction and the Rules of the Exchange.

(d) Local Time—All time are stated in these Rules in terms of the local time in effect in New York City.

720

Registration of Options Principals

Rule 720 No member organization shall transact any business with the public in option contracts unless those persons engaged in the management of the member organization's business pertaining to option contracts are registered with and approved by the Exchange as Options Principles. No individual member shall transact any business directly with the public in option contracts unless he is registered with and approved by the Exchange as an Options Principal. In connection with their registration, Options Principals shall file an application with the Exchange on a form prescribed by the Exchange and shall successfully complete an examination prescribed by the Exchange for the purpose of demonstrating an adequate knowledge of options trading generally, the Rules of the Exchange applicable to trading of

option contracts and the rules of the Options Clearing Corporation. In the event the employment of any Registered Options Principal is terminated or any Registered Options Principal ceases to act in such capacity, such fact shall be reported promptly to the Exchange together with a brief statement of the reason therefor.

. . . Supplementary Material

.10 Each member organization shall be required to designate a Senior Registered Options Principal who is a general partner or officer as the person responsible for overall supervision and training in areas relating to transactions in option contracts.

.20 The Exchange may waive the examination prescribed by this Rule if the applicant previously has passed an examination and is currently approved as a Registered Options Principal by another exchange or association having standards of approval acceptable to the Exchange.

.30 See Rule 722 for additional requirements regarding the duties and responsibilities of Registered Options Principals, Senior Registered Options Principals, Complaiance Options Principals and Branch Office Managers.

721

(I.A.1.a.b. and c.) Opening of Accounts

Rule 721 Except to the extent that specific provisions relating to transacting business with the public in options contracts govern, the provisions of all other rules relating to conduct of accounts (Rules 401–413) shall be applicable, unless the context otherwise requires.

(a) Approval Required—No member or member organization shall accept an order from a customer to purchase or write an option contract unless the customer's account has been approved for options trading in accordance with the Provisions of this Rule.

(b) Diligence in Opening Account—In approving a customer's account for options transactions, a member or member organization shall exercise due diligence to learn the essential facts as to the customer and his investment objectives and financial situation, and shall make a record of such information which shall be retained in accordance with Rule 722 (Supervision of Accounts). Based upon such information, the branch office manager or other Registered Options Principal shall approve in writing the customer's account for options transactions; provided, that if the branch office manager is not a Registered Options Principal, his approval shall be confirmed within a reasonable time by a Registered Options Principal.

(c) Verification of Customer Background and Financial Information—The background and financial information upon which the account of every new customer that is a natural person has been approved for options trading, unless the information is included in the customer's account agreement, shall be sent to the customer for verification within fifteen (15) days after the customer's account has been approved for options transactions. A copy of the background and financial information on file with the member organization shall also be sent to the customer for verification within fifteen (15) days after the member organization becomes aware of any material change in the customer's financial situation.

(d) Agreements To Be Obtained—Within fifteen (15) days after a customer's account has been approved for options transactions, a member organization shall obtain from the customer a written agreement that the account shall be handled in accordance with the Rules of the Exchange and the Rules of the Options Clearing Corporation and that such customer, acting alone or in concert with others, will not violate the position or exercise limits set forth in the Rules of a Participating Exchange.

(e) Prospectus to be Furnished—At or prior to the time a customer's account is approved for options transactions, a member organization shall furnish the customer with a current Prospectus as defined in Rule 726.

. . . Supplementary Material:

.10 In fulfilling its obligations pursuant to paragraph (b) of this Rule with respect to options customers who are natural persons, a member organization shall seek to obtain the following information at a minimum (information shall be obtained for all participants in a joint account):

(1) Investment objective (e.g., safety of principal, income, growth, trading profits, speculation.)

(2) Employment status (name of employer, self-employed or retired.)

(3) Estimated annual income from all sources.

(4) Estimated net worth (exclusive of family residence.)

(5) Estimated liquid net worth (cash, securities, other.)

(6) Marital status; number of dependents.

(7) Age.

(8) Investment experience and knowledge (e.g., number of years, size, frequency and types of transactions) for options, stocks and bonds, commodities, other.

In addition, the customer's account records shall contain the following information, if applicable:

a. Source or sources of background and financial information (including estimates) concerning the customer.

b. Discretionary trading authorization: agreement on file, name, relationship to customer and experience of person holding trading authority.

c. Date prospectus furnished to customer.

d. Types of transactions for which account is approved (e.g., buying, covered writing, uncovered writing, spreading.)

e. Name of registered principal or employee.

f. Name of ROP approving account; date of approval.

g. Dates of verification of currency of account information.

The member organization should consider utilizing a standard account approval form so as to ensure the receipt of all the required information.

.20 Refusal of a customer to provide any of the information called for in Supplementary Material .10 of this Rule shall be so noted on the customer's records at the time the account is opened. Information provided shall be considered together with the other information available in determining whether and to what extent to approve the account for options transactions.

.30 The requirement of paragraph (c) of this Rule for the initial and subsequent verification of customer background and financial information is to be satisfied by sending to the customer the information required in Items (1) through (8) of Supplementary Material .10 above as contained in the member's records and providing the customer with an opportunity to correct or complete the information. In all cases, absent advice from the customer to the contrary, the information will be deemed to be verified.

722

(I.A.1.d. and g.) Supervision of Accounts

(I.A.2.b)

Rule 722 (a) Senior Registered Options Principal—

In addition to the requirements of Rule 405, every member organization shall provide for the diligent supervision, by a general partner or officer of the member organization who is a Registered Options Principal and who has been specifically identified to the Exchange as the member organization's Senior Registered

Options Principal, of all its customer accounts, and all orders in such accounts, to the extent such accounts and orders relate to option contracts.

(b) Compliance Registered Options Principal—Member organizations shall designate and specifically identify to the Exchange a Compliance Registered Options Principal, who may be the Senior Registered Options Principal and who shall have no sales functions and who shall be responsible to review and to propose appropriate action to secure the member organization's compliance with securities laws and regulations and Exchange rules in respect of its options business. The Compliance Registered Options Principal shall regularly furnish reports directly to the compliance officer (if the Compliance Registered Options Principal is not himself the compliance officer) and to other senior management of the member organization. The requirement that the Compliance Registered Options Principal have no sales functions shall not apply to a member organization that has received less than $1,000,000 in gross commissions on options business as reflected in its FOCUS Report for either of the preceding two fiscal years or that currently has ten or less Registered Options Representatives.

(c) Maintenance of Customer Records—Background and financial information of customers who have been approved for options transactions shall be maintained at both the branch office servicing the customer's account and the principal supervisory office having jurisdiction over that branch office. Copies of account statements of options customers shall be maintained at both the branch office supervising the accounts and the principal supervisory office having jurisdiction over that branch for the most recent six-month period. Other records necessary to the proper supervision of accounts shall be maintained at a place easily accessible both to the branch office servicing the customer's account and to the principal supervisory office having jurisdiction over that branch office.

(d) Branch Office. No branch office of a member organization shall transact options business with the public unless the principal supervisor of such branch office accepting options transactions has been qualified as a Registered Options Principal; Provided, That this requirement shall not apply to branch offices in which not more than three Registered Options Representatives are located, so long as the options activities of such branch offices are appropriately supervised by a Registered Options Principal.

* * * Supplementary Material

.10 The Senior Registered Options Principal, in meeting his responsibility for supervision of customer accounts and orders, may delegate to qualified principals or employees, including other Registered Options Principals, responsibility and authority for supervision and control of any branch office customer transactions in option contracts: Provided, That such Senior Registered Options Principal shall have overall authority and responsibility for establishing appropriate procedures of supervision and control to determine that such delegated responsibility and authority is being properly exercised.

723

(I.A.l.e.) Suitability

Rule 723 No member organization or member, allied member or employee thereof shall recommend to a customer an opening transaction in any option contract unless the person making the recommendation has a reasonable basis for believing, at the time of making the recommendation, that the customer has such knowledge and experience in financial matters that he may reasonably be expected to be capable of evaluating the risks of the recommended transaction, and is financially able to bear the risks of the recommended position in the option contract.

724

(I.A.2.c. and d.) Discretionary Accounts

Rule 724 (a) Authorization and Approval Required—

No member, allied member or employee of a member organization shall exercise any discretionary power with respect to trading in options contracts in a customer's account unless such customer has given prior written authorization and the account has been accepted in writing by a Registered Options Principal. The Senior Registered Options Principal shall review the acceptance of each discretionary account to determine that the Registered Options Principal accepting the account had a reasonable basis for believing that the customer was able to understand and bear the risks of the strategies or transactions proposed, and he shall maintain a record of the basis for his determination. Each discretionary order shall be approved and initialed on the day entered by the branch office manager or other Registered Options Principal, Provided That if the branch office manager is not a Registered Options Principal, his approval shall be confirmed within a reasonable time by a Registered Options Principal. Every discretionary order shall be identified as discretionary on the order at the time of entry. Discretionary accounts shall receive frequent appropriate supervisory review by the Compliance Registered Options Principal. The provisions of this paragraph shall not apply to discretion as to the price at which or the time when an order given by a customer for the purchase or sale of a definite number of option contracts in a specified security shall be executed.

(b) Options Programs—Where the discretionary account utilized options programs involving the systematic use of one or more options strategies, the customer shall be furnished with a written explanation meeting the requirements of Rule 791 (Communications to Customers) of the nature and risks of such programs.

(c) Prohibited Transactions—No member, allied member or employee of a member organization having discretionary power over a customer's account shall, in the exercise of such discretion, execute or cause to be executed therein any purchases or sales of option contracts which are excessive in size or frequency in view of the financial resources in such account.

(d) Record of Transactions—A record shall be made of every transaction in option contracts in respect to which a member, allied member or employee of a member organization has exercised discretionary authority, clearly reflecting such fact and indicating the name of the customer, the designation and number of the option contracts, the premium and the date and time when such transaction was effected.

725

Confirmations

Rule 725 Every member and member organization shall promptly furnish to each customer a written confirmation of each transaction in option contracts for such customer's account. Each such confirmation shall show the type of option, the underlying stock, the expiration month, the exercise price, the number of option contracts, the premium, commissions, the transaction and settlement dates, whether the transaction was a purchase or a sale (writing) transaction, whether the transaction was an opening or a closing transaction, and whether the transaction was effected on a principal or agency basis.

726

Delivery of Current Prospectus

Rule 726 Every member and member organization shall deliver a current Prospectus to each customer at or prior to the time such customer's account is approved for options trading. Thereafter, each new or revised current Prospectus shall be distributed to every customer having an account approved for options trading, or, in the alternative, shall be distributed not later than the time a confirmation of a transaction is delivered to each customer who enters into an option transaction. The term "current Prospectus" means that edition of the prospectus of The Options Clearing Corporation as registrant which at the time it is to be furnished to a given customer, meets the requirements of Section 10(a)(3) of the Securities Act of 1933.

. . . Supplementary Material:

.10 Where the customer of a member or member organization is a broker or dealer entering his orders with the member or member organization in a single omnibus account, such member or member organization shall take reasonable steps to assure that such broker or dealer is furnished reasonable quantities of current Prospectuses, as requested by him in order to enable him to comply with the requirements of the Securities Act of 1933.

.20 Where a broker or dealer enters order for his customers with, or clears transactions through, a member organization on a fully disclosed basis and such member organization carries the accounts of such customers, the responsibility for delivering a current Prospectus as provided in this Rule shall rest with the carrying member organization. However, such member organization may rely upon the good faith representation of the introducing broker or dealer that a current Prospectus has been delivered in compliance with this Rule.

727

Transactions With Issuers

Rule 727 No member or member organization shall accept an order for the account of any corporation which is the issuer of an underlying stock, for the sale (writing) of a call option contract with respect to that underlying stock.

728

Restricted Stock

Rule 728 For the purpose of: (i) Covering a short position in a call option contract, or (ii) delivery pursuant to the exercise of a put option contract, (iii) satisfying an exercise notice assigned in respect of a call option contract, no member or member organization shall accept or deliver shares of an underlying stock, which may not be sold by the holder thereof except upon registration pursuant to the provisions of the Securities Act of 1933 or pursuant to SEC rules promulgated under the Securities Act of 1933, unless, at the time such securities are accepted or delivered, applicable provisions of the Securities Act of 1933 and the Rules thereunder have been complied with by the holder of such securities.

730

(I.A.1.c.) Statement of Accounts

Rule 730 In addition to the statements of account required by Rule 409, statements shall be sent not less frequently than once every month to each customer in whose account there has been an entry during the preceding month with respect to an option contract. The statement shall bear a legend requesting the customer to promptly advise the member or member organization of any material change in the customer's investment objectives or financial situation.

732

(I.A.1.f.) Customer Complaints

Rule 732 Every member organization conducting customer business shall maintain and keep current a separate central log, index or other file for all options-related complaints, through which these complaints can easily be identified and retrieved. The central file shall be located at the principal place of business of the member organization or such other principal office as shall be designated by the member organization. At a minimum, the central file shall include: (i) Identification of complainant, (ii) date complaint was received, (iii) identification of registered principal or employee servicing the account, (iv) a general description of the matter complained of, and (v) a record of what action, if any, has been taken by the member organization with respect to the complaint. The term "options-related complaint" shall mean any written statement by a customer or person acting on behalf of a customer alleging a grievance arising out of or in connection with listed options. Each options-related complaint received by a branch office of a member organization shall be forwarded to the office in which the separate, central file is located not later than 30 days after receipt by the branch office. A copy of every options-related complaint shall be maintained at the branch office that is the subject of the complaint.

781

Allocation of Exercise Assignment Notices

(I.A.1.m. and n.)

Rule 781 (a) Each member organization shall establish fixed procedures for the allocation of exercise notices assigned in respect of a short position in option contracts in such member organization's customers' account. Such allocation shall be on a "first in, first out" or automated random selection basis that has been approved by the Exchange or on a manual random selection basis that has been specified by the Exchange. Each member organization shall inform its customers in writing of the method it uses to allocate exercise notices to its customers' accounts, explaining its manner of operation and the consequences of that system.

(b) Each member organization shall report its proposed method of allocation to the Exchange and obtain the Exchange's prior approval thereof, and no member organization shall change its method of allocation unless the change has been reported to and been approved by the Exchange. The requirements of this paragraph shall not be applicable to allocation procedures submitted to and approved by another Exchange having comparable standards pertaining to methods of allocation.

(c) Each member organization shall preserve for a three-year period sufficient work papers and other documentary materials relating to the allocation of exercise assignment notices to establish the manner in which allocation of such exercise notices is in fact being accomplished.

782

Delivery and Payment

Rule 782 Delivery of the shares of underlying stock upon the exercise of an option contract and payment of the aggregate exercise price in respect thereof, shall be effected in accordance with the rules of the Options Clearing Corporation. As promptly as practicable after the exercise of an option contract by a customer, the member organization shall require the customer to make full cash payment of the aggregate exercise price in the case of a call option contract or to deposit the underlying stock in the case of a put option contract, or, in either case, to make the required margin deposit in respect thereof if such transaction is effected in a margin account, in accordance with these Rules and the applicable

regulations of the Federal Reserve Board. As promptly as practicable after the assignment to a customer of an exercise notice, the member organization shall require the customer to deposit the underlying stock in the case of a call option contract if the underlying stock is not carried in the customer's account, or to make full cash payment of the aggregate exercise price in the case of a put option contract, or in either case, to make the required margin deposit in respect thereof if such transaction is effected in a margin account, in accordance with these Rules and the applicable regulations of the Federal Reserve Board.

790

Stock Transfer Tax

Rule 790 Any stock transfer or similar tax payable in accordance with applicable laws and regulations of a taxing jurisdiction upon the sale, transfer or delivery of securities pursuant to the exercise of an option contract shall be the responsibility of the seller (writer) to whom the exercise notice is assigned in the case of a call option contract, except that (1) in the case of a call option contract where the incidents of the tax are attributable solely to the exercising holder, the member organization representing such holder or another member organization which acts on its behalf as a clearing member of the Options Clearing Corporation, the tax shall be the responsibility of the exercising holder, and (2) in the case of a put option contract where the incidents of the tax are attributable solely to the seller (writer) to whom the exercise notice is assigned, the member organization representing such seller (writer) or another member organization which acts on its behalf as a clearing member of the Options Clearing Corporation, the tax shall be the responsibility of such seller (writer). Each delivery of securities subject to such tax must be accompanied by a sales ticket stamped in accordance with the regulations of the State imposing such tax or, if required by applicable law, such tax shall be remitted by the clearing member having responsibility therefore to the clearing corporation through which it customarily pays stock transfer taxes, in accordance with the applicable rules of such clearing corporation.

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(I.A.1.i.j.k.l.)

(I.A.3.a.b.c.)

Rule 791 (a) General Rule—No member organization, member, allied member or employee thereof, shall utilize any advertisement, sales literature or other communications to customers or the public concerning options which:

(i) Contains any untrue statement or omission of a material fact or is otherwise false or misleading;

(ii) Contains promises of specific results, exaggerated or unwarranted claims, opinions for which there is no reasonable basis or forecasts of future events which are unwarranted or which are not clearly labeled as forecasts;

(iii) Contains hedge clauses or disclaimers which are not legible, which attempt to disclaim responsibility for the content of such literature or for opinions expressed therein, or which are otherwise inconsistent with such advertisement or sales literature;

(iv) Fails to meet general standards of good taste and truthfulness; or

(v) Would constitute a prospectus as that term is defined in the Securities Act of 1933, unless it meets the requirements of Section 10 of said Act.

(b) Approval by Compliance Registered Options Principal—All advertisements and sales literature (except completed worksheets) issued by a member or member organization pertaining to options shall be approved in advance by the Compliance Registered Options Principal or his designee. Copies thereof, together with the names of the persons who prepared the material, the names of the persons who approved the material and, in the case of sales literature, the source of any recommendations contained therein, shall be retained by the member or member organization and be kept at an easily accessible place for examination by the Exchange for a period of three years.

(c) Exchange Approval Required for Options Advertisements—In addition to the approval required by paragraph (b) of this Rule, every advertisement of a member or member organization pertaining to options shall be submitted to the Exchange at least ten days prior to use (or such shorter period as the Exchange may allow in particular instances) for approval and, if changed or expressly disapproved by the Exchange, shall be withheld from circulation until any changes specified by the Exchange have been made or, in the event of disapproval, until the advertisement has been resubmitted for, and has received, Exchange approval. The requirements of this paragraph shall not be applicable to:

(i) Advertisements submitted to another self-regulatory organization having comparable standards pertaining to advertisements; and

(ii) Advertisements in which the only reference to options is contained in a listing of the services of a member organization.

(d) Except as otherwise provided in the Supplementary Material of the Rule, no written materials respecting options may be disseminated to any person who has not previously or contemporaneously received a current prospectus of The Options Clearing Corporation.

(e) Definitions—For purposes of this Rule, the following definitions shall apply:

(i) The term "advertisement" shall include any sales material that reaches a mass audience, through public media such as newspapers, periodicals, magazines, radio, television, telephone recording, motion picture, audio or video device, billboards, signs or through written communications to customers or the public not required to be accompanied or preceded by a current prospectus of The Options Clearing Corporation.

(ii) The term "sales literature" shall include any written communication (not defined as an "advertisement") distributed or made available to customers or the public that contains any analysis, performance report, projection or recommendation with respect to options, underlying securities or market conditions, any standard forms of worksheets, or any seminar text which pertains to options and which is communicated to customers or the public at seminars, lectures or similar such events, or any Exchange-produced materials pertaining to options.

. . . Supplementary Material:

.10 The special risks attendant to options transactions and the complexities of certain investment strategies shall be reflected in any communication which discusses the uses or advantages of options. In the preparation of communications respecting options, the following guidelines shall be observed:

A. Any statement referring to the potential opportunities or advantages presented by options should be balanced by a statement of the corresponding risks. The risk statement should reflect the same degree of specificity as the statement of opportunities, and broad generalities should be avoided. Thus, a statement such as "with options, an investor has an opportunity to earn profits while limiting his risk of loss", should be balanced by a statement such as "of course, an options investor may lose the

entire amount committed to options in a relatively short period of time."

B. It should not be suggested that options are suitable for all investors. All communications discussing the use of options should include a warning to the effect that options are not for everyone.

C. Statements suggesting the certain availability of a secondary market for options should not be made.

.20 Advertisements pertaining to options shall conform to the following standards:

A. Advertisements may only be used (and copies of the advertisements may be sent to persons who have not received a prospectus of The Options Clearing Corporation) if the material meets the requirements of Rule 134 under the Securities Act of 1933, as that Rule has been interpreted as applying to options. Under Rule 134, advertisements must be limited to general descriptions of the security being offered and of its issuer. Advertisements under this Rule shall state the name and address of the person from whom a current prospectus of The Options Clearing Corporation may be obtained. Such advertisements may have the following characteristics:

(i) The Text of the advertisement may contain a brief description of such options, including a statement that the issuer of every such option is The Options Clearing Corporation. The text may also contain a brief description of the general attributes and methods of operation of the exchange or exchanges on which such options are traded and of The Options Clearing Corporation, including a discussion of how the price of an option is determined on the trading floor(s) of such exchange(s);

(ii) The advertisement may include any statement required by any state law or administrative authority;

(iii) Advertising designs and devices, including borders, scrolls, arrows, pointers, multiple and combined logos and unusual type faces and lettering as well as attention-getting headlines and photographs and other graphics may be used: Provided, Such material is not misleading.

B. The use of recommendations or of past or projected performance figures, including annualized rates of return, is not permitted in any advertisement pertaining to options.

.30 Written communications (other than advertisements) pertaining to options shall conform to the following standards:

A. Such communications shall state that supporting documentation for any claims (including any claims made on behalf of options programs or the options expertise of sales persons), comparisons, recommendations, statistics or other technical data, will be supplied upon request.

B. Such communications may contain projected performance figures (including projected annualized rates of return): Provided, That:

(i) No suggestion of certainty of future performance is made;

(ii) Parameters relating to such performance figures are clearly established (e.g., to indicate exercise price of option, purchase price of the underlying stock and its market price, option premium, anticipated dividends, etc.);

(iii) All relevant costs, including commissions and interest charges (if applicable with regard to margin transactions) are disclosed;

(iv) Such projections are plausible and are intended as a source of reference or a comparative device to be used in the development of a recommendation;

(v) All material assumptions made in such calculations are clearly identified (e.g., "assume option exercised," etc);

(vi) The risks involved in the proposed transactions are also discusssed;

(vii) In communications relating to annualized rates of return, that such returns are not based upon any less than a sixty-day experience; any formulas used in making calculations are clearly displayed; and a statement is included to the effect that the annualized returns cited might be achieved only if the parameters described can be duplicated and that there is no certainty of doing so.

C. Such communications may feature records and statistics which portray the performance of past recommendations of or actual transactions: Provided, That:

(i) Any records or statistics must be confined to a specific "universe" that can be fully isolated and circumscribed and that covers at least the most recent 12-month period;

(ii) Such communications include or offer to provide the date of each initial recommendation or transaction, the price of each such recommendation or transaction as of such date, and the date and price of each recommendation or transaction at the end of the period or when liquidation was suggested or effected, whichever was earlier;

(iii) Such communications disclose all relevant costs, including commissions and interest charges (if applicable with regard to margin transactions) and, whenever annualized rates of return are used, all material assumptions used in the process of annualization;

(iv) In the event such records or statistics are summarized or averaged, such communications include the number of items recommended or transacted, the number that advanced and the number that declined;

(v) An indication is provided of the general market conditions during the period(s) covered, and any comparison made between such records and statistics and the overall market (e.g., comparison to an index) is valid;

(vi) Such communications state that the results presented should not and cannot be viewed as an indicator of future performance; and

(vii) A Registered Options Principal determines that the records or statistics fairly present the status of the recommendations or transactions reported upon and so initials the report.

D. In the case of an options program (i.e., an investment plan employing the systematic use of one or more options strategies), the cumulative history or unproven nature of the program and its underlying assumptions shall be disclosed.

E. Standard forms of options worksheets utilized by member organizations, in addition to complying with the requirements applicable to sales literature, must be uniform within a member organization.

F. Communications that portray performance of past recommendations or actual transactions and completed worksheets shall be kept at a place easily accessible to the sales office for the accounts or customers involved.

Effectiveness Timetable*

NYSE rule	No. of days following Commission approval
721(b)	30 days.
721(c)	30 days for initial verification; 60 days for subsequent verification.
730	60 days.
723	30 days.
732	60 days.
722(a)	30 days.
722(b)	90 days.
722(c)	90 days.
351	30 days.
477	Immediately.
791(a)	Immediately.
791(b)	90 days.
791 (c), (d) and (e)	Immediately.
781(a)	60 days.
781(b)	Immediately.
781(c)	60 days.
722(d)	90 days.
724(a)	60 days.
724(b)	90 days.

*This timetable is responsive to the Options Study Recommendations only. All other rules contained in this filing will become effective immediately upon approval.

[FR Doc. 79-36988 Filed 11-30-79; 8:45 am]

BILLING CODE 8010-01-M

[Rel. No. 10950; 812-4554]

Fidelity Daily Income Trust; Application

November 23, 1979.

Notice is hereby given that Fidelity Daily Income Trust ("Applicant"), 82 Devonshire Street, Boston, Massachusetts 02109, registered under the Investment Company Act of 1940 ("Act") as an open-end, diversified, management investment company, filed an application on October 17, 1979, and amendments thereto on November 5, 1979, and November 14, 1979, requesting an order of the Commission, pursuant to Section 6(c) of the Act, exempting Applicant from the provisions of Section 2(a)(41) of the Act and Rules 2a–4 and 22c–1 thereunder, to the extent necessary to permit Applicant to value its portfolio securities using the amortized cost method of valuation. All interested persons are referred to the application on file with the Commission for a statement of the representations contained therein, which are summarized below.

Applicant states that it is a "money market fund" offering to individuals, corporations, fiduciaries and institutions a means to invest in a professionally managed portfolio of money market instruments with the objective of obtaining as high a level of current income as is consistent with the preservation of capital and liquidity. Applicant further states that its shares are sold without a sales charge.

Applicant asserts that it invests exclusively in various high-grade money market instruments including U.S. government and federal agency obligations, obligations of the largest banks, prime commercial paper, and high-grade corporate obligations which are rated AAA or AA by Standard & Poor's Corporation or Aaa or Aa by Moody's Investor Services, Inc. The minimum initial investment in shares of the Applicant is $5000 with additional investments accepted in amounts of $500 or more. Applicant represents that at the close of business on September 28, 1979, its aggregate net assets were approximately $2,136,886,000.

According to the application, Applicant currently declares and pays its net income as a dividend to its shareholders on a daily basis. Applicant presently defines "net income" for this purpose to consist of (i) all interest income accrued on the portfolio assets of the Applicant, (ii) plus or minus all realized and unrealized losses on the portfolio assets of the Applicant, and (iii) less all expenses of the Applicant. Unrealized gains or losses are determined by valuing the Applicant's portfolio securities at their market value. In this regard, Applicant states that securities for which market quotations are readily available are valued at their most recent bid price (generally expressed on a yield basis) as obtained from a major market for such securities. Applicant further states that short-term investments underlying repurchase agreements are valued at cost plus accrued interest.

Since the Applicant's daily dividend is paid in the form of additional shares of Applicant, which dividend includes both realized and unrealized gains and losses on portfolio securities, Applicant asserts that its per share net asset value remains at a constant $1.00 amount. By the same token, Applicant further asserts that its dividend as a percentage of net asset value can fluctuate significantly as compared with other investment vehicles designed for the investment of temporary cash reserves.

Applicant states that a shareholder derivative action entitled *Untermeyer* v. *Fidelity Daily Income Trust et al.* is pending in the U.S. District Court (D. Mass 76–1802–T) against the Applicant and certain of its Trustees, Fidelity Management & Research Company ("FMR") (Applicant's investment adviser), and FMR Service Company (a division of FMR Corporation), the transfer and servicing agent of Applicant. Applicant represents that, among other things, the complaint alleges that the Applicant's practices of valuation, initially on an amortized cost basis and subsequently at valuations based on bid prices, have violated the provisions of the Act. It is plaintiff's contention that these valuation procedures have undervalued the Trust's portfolio securities, thereby resulting in higher yield quotations leading to increased assets and the payment of excessive management and shareholder servicing fees to FMR and FMR Service Company. According to the application, FMR denies the allegations of the complaint and believes that they are without merit. FMR further takes the position that Applicant's valuation practices have been consistent with the Act and with interpretations of the Commission thereof.

The application states that Applicant's Trustees gave consideration to the pendency of this litigation in the course of their deliberations on the proposal to change the Applicant's portfolio valuation methods to amortized cost and determined that, for the reasons described in this application, such a change is in the best interests of the Applicant's shareholders regardless of the outcome of the litigation.

As here pertinent, Section 2(a)(41) of the Act defines value to mean: (1) with respect to securities for which market quotations are readily available, the market value of such securities, and (2) with respect to other securities and assets, fair value as determined in good faith by the board of directors. Rule 22c–1 adopted under the act provides in part, that no registered investment company or principal underwriter therefore issuing any redeemable security shall sell, redeem or repurchase any such security except at a price based on the current net asset value of such security which is next computed after receipt of a tender of such security for redemption or of an order to purchase or sell such security. Rule 2a–4 adopted under the act provides, as here relevant, that the "current net asset value" of a redeemable security issued by a registered investment company used in computing its price for the purposes of distribution, redemption and repurchase shall be an amount which reflects calculations made substantially in accordance with the provisions of that rule, with estimates used where necessary or appropriate. Rule 2a–4 further states that portfolio securities with respect to which market quotations are readily available shall be valued at current market value, and that other securities and assets shall be valued at fair value as determined in good faith by the board of directors of the registered company. Prior to the filing of the application, the Commission expressed its view that, among other things, (1) Rule 2a–4 under the Act requires that portfolio instruments of "money market" funds be valued with reference to market factors, and (2) it would be inconsistent, generally, with the provisions of Rule 2a–4 for a "money market" fund to value its portfolio instruments on an amortized cost basis (Investment Company Act Release No. 9786, May 31, 1977). In view of the foregoing, Applicant requests exemptions from the provisions of Section 2(a)(41) of the Act, and Rules 2a–4 and 22c–1 thereunder, to the extent necessary to permit Applicant to value its portfolio securities by means of the amortized cost method of valuation (i.e., valuing securities at cost, adjusted for amortization of premium or accretion of discount).

Section 6(c) of the Act provides, in part, that the Commission may, by order upon application, conditionally or unconditionally exempt any person, security, or transaction, or any class or classes of persons, securities, or

transactions, from any provision or provisions of the Act or of the rules thereunder, if and to the extent that such exemption is necessary or appropriate in the public interest and consistent with the protection of investors and the purposes fairly intended by the policy and provisions of the Act.

In support of the relief requested, Applicant states that sophisticated professional and institutional investors own shares representing in excess of a majority of the Applicant's total asset and that those shareholders, as well as investors with similar circumstances, represent an increasingly important source of potential investments in the Applicant. In this regard, Applicant states that its experience has been that in order to continue to attract such investors and retain them as shareholders, the Applicant must have a stable net asset value, preferably at $1.00 per share, and a constant and steady flow of investment income. Applicant further asserts, however, that its current practice of including in dividends realized and unrealized gains and losses on portfolio securities results in payments which are not reflective of the Applicant's earned net income and which, according to the Applicant, represent a record keeping inconvenience for those investors desiring segregation of principal and interest payments. Applicant further states that it has never owned portfolio securities having maturities exceeding one year, and only for occassional short periods of time has the average portfolio maturity of the Applicant ever exceeded 120 days. Applicant further states that its experience has been that with respect to money market instruments maturing in 120 days or less, there is normally a negligible discrepancy between market value and the amortized cost value of such securities. On the basis of the foregoing, Applicant believes that the valuation of its portfolio securities on the amortized cost basis will benefit its shareholders by enabling Applicant to more effectively maintain its $1.00 price per share while providing shareholders with the opportunity to receive a flow of investment income less subject to fluctuation than under its present procedures.

Applicant consents to the following conditions being contained in any order of the Commission granting the exemptive relief requested:

(1) In supervising Applicant's operations and delegating special responsibilities involving portfolio management to Applicant's investment adviser, Applicant's Board of Trustees undertakes—as a particular responsibility within the overall duty of care owed to its shareholders—to establish procedures reasonably designed, taking into account current market conditions and Applicant's investment objectives, to stabilize Applicant's net asset value per share, as computed for the purpose of distribution, redemption and repurchase at $1.00 per share.

(2) Included within the procedures to be adopted by the Board of Trustees shall be the following:

(a) Review by the Board of Trustees, as it deems appropriate and at such intervals as are reasonable in light of current market conditions, to determine the extent of deviation, if any, of the net asset value per share as determined by using available market quotations from Applicant's $1.00 amortized cost price per share, and maintenance of records of such review.[1]

(b) In the event such deviation from the $1.00 amortized cost price per share exceeds ½ of 1 percent, a requirement that the Board of Trustees will promptly consider what action, if any, should be initiated.

(c) Where the Board of Trustees believes the extent of any deviation from Applicant's $1.00 amortized cost price per share may result in material dilution or other unfair results to investors or existing shareholders, it shall take such action as it deems appropriate to eliminate or to reduce to the extent reasonably practicable such dilution or unfair results, which action may include: redemption of shares in kind; the sale of portfolio instruments prior to maturity to realize capital gains or losses, or to shorten Applicant's average portfolio maturity; withholding dividends; or utilizing a net asset value per share as determined by using available market quotations.

(3) Applicant will maintain a dollar-weighted average portfolio maturity appropriate to its objective of maintaining a stable net asset value per share; provided, however, that Applicant will not (a) purchase any instrument with a remaining maturity of greater than one year, or (b) maintain a dollar-weighted average portfolio maturity in excess of 120 days.[2]

(4) Applicant will record, maintain and preserve permanently in an easily accessible place a written copy of the procedures (and any modifications thereto) described in condition 1 above, and Applicant will record, maintain and preserve for a period of not less than six years (the first two years in an easily accessible place) a written record of the Board of Trustees' considerations and actions taken in connection with the discharge of its responsibilities, as set forth above, to be included in the minutes of the Board of Trustees' meetings. The documents preserved pursuant to this condition shall be subject to inspection by the Commission in accordance with Section 31(b) of the Act as though such documents were records required to be maintained pursuant to rules adopted under Section 31(a) of the Act.

(5) Applicant will limit its portfolio investments, including repurchase agreements, to those U.S. dollar-denominated instruments which the Board of Trustees determines present minimal credit risks, and which are of high quality as determined by any major rating service or, in the case of any instrument that is not so rated, of comparable quality as determined by the Board of Trustees.

(6) Applicant will include in each quarterly report, as an attachment to Form N–1Q, a statement as to whether any action pursuant to condition 2(c) was taken during the preceding fiscal quarter, and, if any action was taken, will describe the nature and circumstances of such action.

The Applicant represents that its Trustees have determined in good faith that in light of the characteristics of the Applicant as described above and, subject to compliance with the above conditions, absent unusual or extraordinary circumstances, the amortized cost method of valuing portfolio securities is appropriate and preferable for the Applicant and reflects fair value of such securities. Applicant further represents that the granting of the requested exemptions is appropriate in the public interest and consistent with the protection of investors and the purposes fairly intended by the policy and provisions of the Act.

Notice is further given that any interested person may, not later than

[1] Applicant states that to fulfill this condition, it intends to use actual quotations or estimates of market value reflecting current market conditions chosen by its Board of Trustees in the exercise of its discretion to be appropriate indicators of value. In addition, Applicant states that the quotations or estimates utilized may include, *inter alia*, (1) quotations or estimates of market value for individual portfolio instruments, or (2) values obtained from yield data relating to classes of money market instruments published by reputable sources.

[2] In fulfilling this condition, if the disposition of a portfolio instrument results in a dollar-weighted average portfolio maturity in excess of 120 days, Applicant will invest its available cash in such a manner as to reduce its dollar-weighted average portfolio maturity to 120 days or less as soon as reasonably practicable.

December 18, 1979, at 5:30 p.m., submit to the Commission in writing a request for a hearing on the application accompanied by a statement as to the nature of his interest, the reasons for such request, and the issues, if any, of fact or law proposed to be controverted, or he may request that he be notified if the Commission shall order a hearing thereon. Any such communication should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request shall be served personally or by mail upon Applicant at the address stated above. Proof of such service (by affidavit or, in the case of an attorney-at-law, by certificate) shall be filed contemporaneously with the request. As provided by Rule 0–5 of the Rules and Regulations promulgated under the Act, an order disposing of the application herein will be issued as of course following said date unless the Commission thereafter orders a hearing upon request or upon the Commission's own motion. Persons who request a hearing, or advice as to whether a hearing is ordered, will receive any notices and orders issued in this matter, including the date of the hearing (if ordered) and any postponements thereof.

For the Commission, by the Division of Investment Management, pursuant to delegated authority.

George A. Fitzsimmons,

Secretary.

[FR Doc. 79-36985 Filed 11-30-79; 8:45 am]

BILLING CODE 8010-01-M

[Rel. No. 10951; 812-4555]

InterCapital Liquid Asset Fund, Inc.; Application

November 23, 1979.

Notice is hereby given that InterCapital Liquid Asset Fund Inc. ("Applicant"), One Battery Park Plaza, New York, New York 10004, registered under the Investment Company Act of 1940 ("Act") as a diversified open-end management investment company, filed an application on October 22, 1979, for an order pursuant to Section 6(c) of the Act exempting Applicant from the provisions of Rules 2a–4 and 22c–1 thereunder, to the extent necessary to permit it to value its assets using the "amortized cost" method of valuation. All interested persons are referred to the application on file with the Commission for a statement of the representations contained therein, which are summarized below.

Applicant states that it is a "money market fund," designed primarily as an investment vehicle for investors with temporary cash balances or cash reserves, and that its investment objectives are to provide high current income, preservation of capital and liquidity. Dean Witter Reynolds InterCapital Inc., a wholly-owned subsidiary or Dean Witter Reynolds Organization Inc., acts as its investment adviser. According to the application, Applicant's portfolio may be invested in a variety of money market instruments including United States Government securities, bank obligations, commercial paper and corporate obligations maturing in one year or less. Applicant states that there is a pending proposal to shareholders to modify its fundamental investment policy to permit investments in certificates of deposit of savings institutions having assets of $1 billion or more. Applicant states that the maintenance of a constant net asset value is a crucial factor to its shareholders, and that enhanced liquidity is also important.

According to the application, from September 22, 1975, until November 30, 1977, Applicant valued its portfolio securities on an amortized cost basis and monitored the results of such valuation to assure that any deviations between "mark to market" valuations and amortized cost did not exceed ½ cent per share on a $1 per share price. Subsequent to October 26, 1978, pursuant to an order of the Commission (Investment Company Act Release No. 10451), Applicant valued its portfolio securities with maturities in excess of 60 days on a mark to market basis but rounded its calculation of the net asset value per share to the nearest penny.

Rule 2a–4 adopted under the Act provides, as here relevant, that the "current net asset value" of a redeemable security issued by a registered investment company used in computing its price for the purposes of distribution and redemption shall be an amount which reflects calculations made substantially in accordance with the provisions of that rule, with estimates used where necessary or appropriate. Rule 2a–4 further provides that portfolio securities with respect to which market quotations are readily available shall be valued at current market value, and that other securities and assets shall be valued at fair value as determined in good faith by the board of directors of the registered company. Prior to the filing of the application, the Commission expressed its view that, among other things, (1) Rule 2a–4 under the Act requires that portfolio instruments of "money market" funds be valued with reference to market factors, and (2) it would be inconsistent, generally, with the provisions of Rule 2a–4 for a "money market" fund to value its portfolio instruments on an amortized cost basis (Investment Company Act Release No. 9789, May 31, 1977).

Rule 22c–1 adopted under the Act provides, in part, that no registered investment company or principal underwriter therefor issuing any redeemable security shall sell, redeem or repurchase any such security except at a price based on the current net asset value of such security which is next computed after receipt of a tender of such security for redemption or of an order to purchase or sell such security.

Section 6(c) of the Act provides, in part, that the Commission, upon application, may conditionally or unconditionally exempt any person, security or transaction or any class or classes of persons, securities, or transactions from any provision or provisions of the Act or of the rules thereunder, if and to the extent that such exemption is necessary or appropriate in the public interest and consistent with the protection of investors and the purposes fairly intended by the policy and provisions of the Act.

Applicant has requested an order pursuant to Section 6(c) of the Act exempting it from the provisions of Rules 2a–4 and 22c–1 thereunder to the extent that the amortized cost valuation method as employed by Applicant (1) may be deemed not fully to comply with the requirements of Rules 2a–4 and 22c–1; and (2) constitutes a different method of valuation than contemplated in the undertakings contained in Applicant's previous amended application dated October 16, 1978.

Applicant asserts that its prior experience is valuing at amortized cost and monitoring on a mark to market basis has shown that, given the unique nature of its policies and operations, there is an immaterial discrepancy between prices obtained by amortizing cost and those obtained by valuation by the mark to market method. Applicant asserts that, given the immaterial variances between the amortized cost method of valuation and values based on the mark to market method, Applicant's directors determined in good faith that the amortized cost method of valuation of portfolio securities was appropriate, and that by valuing at amortized cost Applicant would be able to meet the needs and objectives of its shareholders.

As a condition to the granting of the exemptions requested, Applicant represents as follows:

1. In supervising Applicant's operations and delegating special

responsibilities involving portfolio management to its investment adviser, Applicant's board of directors undertakes—as a particular responsibility within the overall duty of care owed to its shareholders—to establish procedures reasonably designed, taking into account current market conditions and Applicant's investment objectives, to stabilize its net asset value per share, as computed for the purpose of distribution, redemption and repurchase, at $1.00 per share.

2. Included with the procedures to be adopted by the board of directors shall be the following:

(a) Review by the board of directors as it deems appropriate and at such intervals as are reasonable in light of current market conditions, to determine the extent of deviation, if any, of the net asset value per share as determined by using available market quotations from the $1.00 amortized cost price per share and maintenance of records of such review.[1]

(b) In the event such deviation from the $1.00 amortized cost price per share exceeds ½ of 1%, a requirement that the board of directors will promptly consider what action, if any, should be initiated.

(c) Where the board of directors believes the extent of any deviation from Applicant's $1.00 amortized cost price per share may result in material dilution or other unfair results to investors or existing shareholders, it shall take such action as it deems appropriate to eliminate or to reduce to the extent reasonably practicable such dilution or unfair results, which action may include: selling portfolio instruments prior to maturity to realize capital gains or losses, or to shorten Applicant's average portfolio maturity; withholding dividends; or utilizing a net asset value per share as determined by using available market quotations.

3. Applicant will maintain a dollar-weighted average portfolio maturity appropriate to its objective of maintaining a stable net asset value per share; provided, however, that it will not (a) purchase any instrument with a remaining maturity of greater than one year, or (b) maintain a dollar-weighted average portfolio maturity in excess of 120 days.[2]

4. Applicant will record, maintain and preserve permanently in an easily accessible place a written copy of the procedures (and any modifications thereto) described in condition 1 above, and Applicant will record, maintain and preserve for a period of not less than six years (the first two years in an easily accessible place) a written record of the board of directors' considerations and actions taken in connection with the discharge of its responsibilities, as set forth above, to be included in the minutes of the board of directors' meetings. The documents preserved pursuant to this condition shall be subject to inspection by the Commission in accordance with Section 31(b) of the Act as though such documents were records required to be maintained pursuant to rules adopted under Section 31(a) of the Act.

5. Applicant will limit its portfolio investments, including repurchase agreements, to those United States dollar denominated instruments which the board of directors determines present minimal credit risks, and which are of high quality as determined by any major rating service or, in the case of any instrument that is not rated, of comparable quality as determined by the board of directors.

6. Applicant will include in each quarterly report, as an attachment to Form N–1Q, a statement as to whether any action pursuant to condition 2(c) was taken during the preceding fiscal quarter, and, if any action was taken, will describe the nature and circumstances of such action.

Applicant asserts that the requested exemption is appropriate in the public interest and consistent with the protection of investors and the purposes fairly intended by the policy and provisions of the Act.

Notice is further given that any interested person may, not later than December 18, 1979, at 5:30 p.m., submit to the Commission in writing a request for a hearing on the matter accompanied by a statement as to the nature of his interest, the reason for such request, and the issues, if any, of fact or law proposed to be controverted, or he may request that he be notified if the Commission shall order a hearing thereon. Any such communication should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request shall be served personally or by mail upon Applicant at the address stated above. Proof of such service (by affidavit or, in the case of an attorney-at-law, by certificate) shall be filed contemporaneously with the request. As provided by Rule 0–5 of the Rules and Regulations promulgated under the Act, an order disposing of the application will be issued as of course following said date unless the Commission thereafter orders a hearing upon request or upon the Commission's own motion. Persons who request a hearing, or advice as to whether a hearing is ordered, will receive any notices and orders issued in this matter, including the date of the hearing (if ordered) and any postponements thereof.

For the Commission, by the Division of Investment Management, pursuant to delegated authority.

George A. Fitzsimmons,

Secretary.

[FR Doc. 79–36987 Filed 11–30–79; 8:45 am]

BILLING CODE 8010–01–M

[1] Applicant states that to fulfill this condition it intends to use actual quotations or estimates of market value reflecting current market conditions chosen by its board of directors in the exercise of their discretion to be appropriate indicators of value. The quotations or estimates utilized may include, *inter alia*, (1) quotations or estimates of market value for individual portfolio instruments, or (2) values obtained from yield data relating to classes of money market instruments published by reputable sources such as Telerate Systems Incorporated.

[2] In fulfilling this condition, if the disposition of a portfolio instrument results in a dollar-weighted average portfolio maturity in excess of 120 days, Applicant will invest its available cash in such a manner as to reduce its dollar-weighted average portfolio maturity to 120 days or less as soon as reasonably practicable.

[Rel. No. 16361; SR–MSE–79–19]

Midwest Stock Exchange, Inc.; Filing of Proposed Rule Change and Order Approving Proposed Rule change

November 23, 1979.

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934, 15 U.S.C. 78(s)(b)(1) (the "Act"), notice is hereby given that on October 29, 1979, the Midwest Stock Exchange, Incorporated filed with the Commission copies of a proposed rule change which amends the definition of spread and straddles orders, defines combination orders, and accords to combination orders the same limited priority which is accorded to spread and straddle orders.

Interested persons are invited to submit written data, views and arguments concerning the submission on or before December 24, 1979. Persons desiring to make written comments should file six copies thereof with the Secretary of the Commission, Securities and Exchange Commission, 500 North Capitol Street, Washington, D.C. 20549. Reference should be made to File No. SR–MSE–79–19.

Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change which are filed with the Commission, and of all written communications relating to the proposed rule change between the Commission and any person, other than those which may be withheld from the public in

accordance with the provisions of 5 U.S.C. 552, will be available for inspection and copying at the Commission's Public Reference Room, 1100 L Street, N.W., Washington, D.C.

The Commission finds that the proposed rule change is consistent with the requirements of the Act and the rules and regulations thereunder applicable to a national securities exchange and in particular, the requirements of Section 6 and the rules and regulations thereunder.

The Commission finds good cause for approving the proposed rule change prior to the thirtieth day after the date of publication of notice of filing thereof, in that the Commission, by publication of a Commission Release (Securities Exchange Act Release No. 16114, August 16, 1979) and by publication in the **Federal Register** (44 FR 49538, August 23, 1979) gave notice and opportunity to comment upon a similar rule proposal by the Chicago Board Options Exchange, Incorporated (SR–CBOE–79–8), which the Commission subsequently approved. No comments were received on the CBOE rule filing.[1]

It is therefore ordered, pursuant to Section 19(b)(2) of the Act, that the proposed rule change referenced above be, and it hereby is, approved.

For the Commission, by the Division of Market Regulation pursuant to delegated authority.

George A. Fitzsimmons,

Secretary.

[FR Doc. 79–36984 Filed 11–30–79; 8:45 am]

BILLING CODE 8010–01–M

[Rel. No. 10947; 812–2524]

Sentry Variable Annuity Account I; Application

November 20, 1979.

Notice is hereby given that Sentry Variable Annuity Account I ("Applicant"), 1800 North Point Drive, Stevens Point, WI 54481, a separate account of Sentry Life Insurance Company ("Sentry Life") which is registered under the Investment Company Act of 1940 ("Act") as a unit investment trust has on September 10, 1979, filed an application pursuant to Section 8(f) of the Act, for an order of the Commission declaring that the Applicant has ceased to be an investment company as defined in the Act. All interested persons are referred to the application on file with the Commission for a statement of the representations contained therein, which are summarized below.

Applicant is a variable annuity separate account of Sentry Life established pursuant to the state law of Wisconsin on August 7, 1974, and registered as a unit investment trust under the Act on September 20, 1974. Its registration statement under the Securities Act of 1933 was filed on February 1, 1975, and became effective on November 6, 1975, after which date it made a public offering of individual variable annuity contracts. By the end of 1978 only 59 contracts were included in the Applicant's account. As of the close of business on June 30, 1979 the total value of the Applicant's remaining assets, all of which relate to a single variable annuity contract, was $1,764.32.

At a meeting of the Board of Directors of Sentry Life held on May 1, 1979, a majority of the Directors authorized its officers, after substantially all of the Applicant's assets have been distributed, to file an application with the Securities and Exchange Commission pursuant to Section 8(f) of the Act for an order declaring that the Applicant has ceased to be an investment company. At the same meeting a majority of the Directors directed that all outstanding shares of Sentry Fund, Inc., Applicant's underlying investment medium, owned by Sentry Life be submitted for redemption.

Applicant currently has only those assets as stated above, and only one securityholder, and concludes that it has ceased to be an investment company.

Section 8(f) of the Act provides, in pertinent part, that whenever the Commission, upon application, finds that a registered investment company has ceased to be an investment company, it shall so declare by order and, upon the taking effect of such order, the registration of such company shall cease to be in effect.

Accordingly, Applicant has requested the Commission to issue an order pursuant to Section 8(f) of the Act declaring that it has ceased to be an investment company.

Notice is further given that any interested person may, not later than December 17, 1979, at 5:30 p.m., submit to the Commission in writing a request for a hearing on the matter accompanied by a statement as to the nature of his or her interest, the reason for such request, and the issues, if any, of fact or law proposed to be controverted, or he or she may request that they be notified if the Commission should order a hearing thereon. Any sush communication should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request shall be served personally or by mail upon Applicant at the address stated above.

Proof of such service (by affidavit or, in the case of an attorney at law, by certificate) shall be filed contemporaneously with the request. As provided by Rule 0–5 of the Rules and Regulations promulgated under the Act, an order disposing of the application will be issued as of course following December 17, 1979, unless the Commission thereafter orders a hearing upon request or upon the Commission's own motion. Persons who request a hearing, or advice as to whether a hearing is ordered, will receive any notices and orders issued in this matter, including the date of the hearing (if ordered) any any postponements thereof.

For the Commission, by the Division of Investment Management, pursuant to delegated authority.

George A. Fitzsimmons,

Secretary.

[FR Doc. 79–36986 Filed 11–30–79; 8:45 am]

BILLING CODE 8010–01–M

[1] *See* Securities Exchange Act Release No. 16127 (September 21, 1979), 44 FR 56413 (October 1, 1979). The Commission subsequently approved on an accelerated basis a similar rule proposal by the American Stock Exchange, Inc. (SR-Amex–79–18). *See* Securities Exchange Act Release No. 16333 (November 9, 1979).

DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

Calendar of Meetings Open to the Public

Below is a list of NHTSA-sponsored meetings which are planned over the next 2 years and in which public interest or participation is expected. The list, which will be revised and republished periodically, is for planning. Meeting dates and places, particularly those scheduled for the second year, are subject to change.

December 10–11, 1979

National Conference on Child Passenger Protection

Sheraton-Park Hotel, Virginia Suite, Washington, D.C.

Purpose: Specialists in the field of highway safety and child development will meet to exchange information on ways to increase the use of child restraints designed for motor vehicles.

Coordinator: Elaine Winestein, Traffic Safety Programs (NTS–14), 202–426–2180.

December 12, 1979

Public Meeting on Child Safety and Motor Vehicles

Sheraton-Park Hotel, Virginia Suite, Washington, DC.

Purpose: To broaden NHTSA's knowledge of the hazards vehicles pose to children and determine possible regulatory and other means of reducing those hazards. Representatives of special interest groups and organizations, doctors, medical examiners, educational advisors, and interested individuals will testify.

Coordinator: Ann Mitchell, Office of Public Affairs and Consumer Participation (NOA–41), 202–426–0670.

January 22, 1980

Panel Meeting on Heavy Truck Safety

DOT Headquarters Building, Washington, D.C.

Purpose: To follow-up the Heavy Truck Safety Meeting issues presented during the September 1979 hearings with actions by each of the sectors represented by the panel members.

Coordinator: Mr. Anees A. Adil, Rulemaking (NRM–11), 202–426–2715.

January 15–17, 1980

National Highway Safety Advisory Committee Meeting

DOT Headquarters Building, Room 2230, Washington, D.C.

Purpose: Progress reports of the Committee's task forces will be heard. Reports and recommendations for the Secretary of Transportation may be prepared.

Coordinator: Robert Doherty, Executive Secretariat (NOA–11), 202–426–2872.

January 16, 1980

10:00 a.m.–1:00 p.m.

Innovators Seminar No. 4: Radar Braking

DOT Headquarters Building, Room 4234, Washington, D.C.

Purpose: To review the status and potential of radar braking systems for motor vehicles.

Coordinator: Carl C. Clark, Research and Development (NRD–12), 202–426–4850.

January 23, 1980

NHTSA-Public-Industry Technical Meeting

DOT Headquarters Building, Room 2230, Washington, D.C.

Purpose: Technical, interpretative or procedural questions from the public and industry regarding NHTSA's bumper, vehicle safety and consumer information programs will be answered. Questions may relate to the research and development, rulemaking, or enforcement (including defects) phases of these activities. Other meeting dates follow: April 16, Ann Arbor, Michigan; July, Washington, D.C.; October, Ann Arbor, Michigan.

Coordinator: Michael Finkelstein, Rulemaking (NRM–01), 202–426–1810.

January 31–February 1, 1980

Side Impact Protection Conference

FAA Auditorium (FOB–10A), Seventh and Independence Avenue, S.W., Washington, D.C.

Purpose: To provide a public forum for the exchange of information on side impact protection and to inform the public, press and industry of the status of the NHTSA rulemaking activities in upgrading side impact protection.

Coordinator: William C. Brubaker, Rulemaking (NRM–12), 202–426–2242.

February 20, 1980

Motorcycle Accident Factors Research

DOT Headquarters Building, Washington, D.C.

Purpose: Results of a research study to determine the cause of motorcycle accidents, the causes of injuries, the severity of the injuries and effective methods of reducing accidents, deaths and injuries will be reported.

Coordinator: Nicholas G. Tsongas, Research and Development (NRD–32), 202–426–4820.

February 25–26, 1980

National Accident Sampling System (NASS) Advisory Committee Meeting

Washington, D.C.

Purpose: Initial meeting of Committee to review NASS and to make recommendations concerning further implementation plans.

Coordinator: Russell A. Smith, Research and Development (NRD–32), 202–426–4820.

March 1980

Restraint System Usage and Comfort and Convenience of Safety Belt in 1980 Vehicles; Final Contractor's Briefing

DOT Headquarters Building, Washington, D.C.

Purpose: To present the results of two contracted research studies. One study assessed restraint system usage in the U.S. and the second evaluated the comfort and convenience of safety belts in 1980 model vehicles.

Coordinator: Peter N. Ziegler, Research and Development (NRD–41), 202–755–8753.

March 5, 1980

Biomechanics Advisory Committee Meeting

DOT Headquarters Building, Washington, D.C.

Purpose: The Committee will review NHTSA's procedures, programs and projects requiring the use of live and deceased humans for research in order to validate the need for such use, to minimize the risk of injury to volunteers, and to assure the rights and dignity of the subjects.

Coordinator: Kathy Hasse, Executive Secretariat (NOA–11), 202–426–2872.

April 1980

Transit Bus Fuel Economy Tests

Transportation Research Center, East Liberty, Ohio.

Purpose: To determine fuel economy baselines for transit buses with new fuel saving engines.

Coordinator: William Sulak, Research and Development (NRD–20), 202–426–9502.

May or June 1980

International Symposium on Automobile Ratings

Washington, D.C.

Purpose: To exchange information on the "state-of-the-art" of automobile ratings. The Symposium will provide a forum for an in-depth examination of the various methods used to rate crashworthiness, damageability and ease of diagnosis and repair. Experienced technical experts, rating groups, insurance and auto industry representatives and consumer representatives will present their veiws on current and proposed ways used to rate automobiles.

Coordinator: Jack Gillis, Rulemaking (NRM–30), 202–426–1740.

June 17–19, 1980

National Highway Safety Advisory Committee Meeting

DOT Headquarters Building, Washington, D.C.

Purpose: Progress reports of the Committee's task forces will be heard. Reports and recommendations for the Secretary of Transportation may be presented.

Coordinator: Robert Doherty, Executive Secretariat (NOA–11), 202–426–2872.

Fall 1980

Automotive Fuel Economy Contractors' Coordination Meeting

(Location undetermined)

Purpose: Progress reports on the contracts which have been funded through the Automotive Fuel Economy Research Program will be given. How individual tasks fit into the research and rulemaking program and the thrust of the Automotive Fuel Economy Program will be explained.

Coordinator: Charles L. Gauthier, Research and Development (NRD–13), 202–426–2957.

October 21–24, 1980

Eighth International Technical Conference on Experimental Safety Vehicles

Wolfsburg, West Germany.

Purpose: The ESV Conferences are conducted to provide a forum for exchanging the results of integrated vehicle development. Various automobile manufacturers, as well as NHTSA Contractors, have designed and developed vehicles which incorporate advanced systems to satisfy national goals in safety, fuel economy, and vehicle emissions. This meeting will be hosted by the Federal Republic of Germany. The Governments of the Federal Republic of Germany, France, Great Britain, Italy, Japan, Sweden and the United States as well as manufacturers of these countries and others will participate.

Coordinator: James C. Shively, Research and Development (NRD–10), 202–426–2957.

October 29–31, 1980

Fatal Accident Reporting System (FARS) Annual Workshop

(Location undetermined)

Purpose: To solve interpretation and operations problems and to provide a mechansim for installing system changes and updating training. This is a regularly schedule working meeting of FARS State Analysts and NHTSA regional and headquarters technical managers. Schedule for future meeting: October 28–30, 1981.

Coordinator: Robert Schweitz, Research and Development (NRD–33), 202–426–4844.

November 1981

Second International Conference on Automotive Fuel Economy Research

(Location undetermined)

Purpose: Government Status Reports on Automotive Transportation Conservation Programs and reports of research in automotive technology for improved fuel economy will be presented.

Coordinator: James C. Shively, Research and Development (NRD–10), 202–426–2957.

Persons desiring additional information on a particular meeting may write or phone the coordinator indicated above at the following address: The National Highway Traffic Safety Administration, U.S. Department of Transportation, 400 Seventh Street, SW., Washington, D.C. 20590.

Issued in Washington, D.C., on November 28, 1979.

Wm. H. Marsh,

Executive Secretary.

[FR Doc. 79–37038 FIled 11–30–79; 8:45 am]

BILLING CODE 4910–59–M

INTERSTATE COMMERCE COMMISSION

[Ex Parte No. 311]

Expedited Procedures for Recovery of Fuel Costs

Decided: November 27, 1979.

In our decisions of November 14 and 20, 1979, a 10 percent surcharge was authorized on all owner-operator traffic, and on all truckload traffic whether or not owner-operators were employed. We ordered that all owner-operators were to receive compensation at this level.

Although the weekly figures set forth in the appendix for transportation performed by owner-operators and for truckload traffic is 10.2 percent, we are authorizing that the 10 percent surcharge on this traffic remain in effect. All owner-operators are to continue to receive compensation at the 10 percent level. In addition, no change will be made in the existing authorization of a 1.7 percent surcharge on less-than-truckload (LTL) traffic performed by carriers not utilizing owner-operators. The bus carriers, however, are authorized to publish a 3.8 percent surcharge.

Notice shall be given to the general public by mailing a copy of this decision to the governor of each State and the Public Utilities Commissions or Boards of each State having jurisdiction over transportation, by depositing a copy in the Office of the Secretary, Interstate Commerce Commission, Washington, D.C., for public inspection, and by delivering a copy to the Director, Office of the Federal Register, for publication therein.

It is Ordered:

This decision shall become effective Friday, 12:01 a.m., November 30, 1979.

By the Commission. Chairman O'Neal, Vice Chairman Stafford, Commissioners Gresham, Clapp, Christian, Trantum, Gaskins, and Alexis. Commissioner Trantum absent and not participating.

Agatha L. Mergenovich,

Secretary.

November 26, 1979

Appendix—Fuel Surcharge

Base Date and Price Per Gallon (Including Tax)

January 1, 1979, 63.5¢.

Date of Current Price Measurement and Price Per Gallon (Including Tax)

November 26, 1979, 101.8¢.

Average Percent: Fuel Expenses (Including Taxes) of Total Revenue

(1) From transportation performed by owner-operators (apply to all truckload rated traffic), 16.9%. Percent surcharge developed, 10.2%. Percent surcharge allowed, 10%.

(2) Other (including less-truckload traffic), 2.9%. Percent surcharge developed, 1.7%. Percent surcharge allowed, 1.7%.

(3) Bus carriers, 6.3%. Percent surcharge developed, 3.8%. Percent surcharge allowed, 3.8%.

[FR Doc. 79–37002 Filed 11–30–79; 8:45 am]

BILLING CODE 7035–01–M

[Finance Docket No. 28947 (Sub-No. 2)]

Kyle Railways, Inc. and Willis B. Kyle—Control—South Central Tennessee Railroad Co. in Dickson, Hickman and Lewis Counties, TN

Kyle Railways, Inc. (KRI) and Willis B. Kyle, Room 221, World Trade Center, San Francisco, CA 94111, represented by Mr. Fritz R. Kahn, Verner, Liipfert, Bernhard & McPherson, Suite 1000, 1660 L Street, NW., Washington, DC 20036, hereby give notice that on the 17th day of July, 1979, it filed with the Interstate Commerce Commission at Washington, DC, an application for authority under 49 U.S.C. 11343 to exercise control of South Central Tennessee Railroad Company (SCTR). SCTR is a wholly-owned subsidiary of KRI. SCTR operates a 49.61 mile line of railroad in Dickson, Hickman, and Lewis Counties, TN, pursuant to Commission Service Order No. 1331, served June 30, 1978, as amended January 15, 1979. This line had been abandoned by the Louisville and Nashville Railroad (L&N) on or about July 1, 1978. SCTR has conditioned authority to operate as a common carrier over the line by its application for a certificate of public convenience and necessity in Finance Docket No. 28937F.

In accordance with the Commission's regulations (49 CFR 1108.8) in Ex Parte No. 55 (Sub-No.4), *Implementation—Nat'l Environmental Policy Act*, 1969, 352 I.C.C. 451 (1976), any protests may include a statement indicating the presence or absence of any effect of the requested Commission action on the quality of the human environment. If any such effect is alleged to be present, the statement shall indicate with specific data the exact nature and degree of the anticipated impact. See *Implementation—Nat'l Environmental Policy Act, 1969, supra*, at p. 487.

Interested persons may participate formally in the proceeding by submitting written comments regarding the application. Such submissions shall indicate the proceeding designation Finance Docket No. 28947 (Sub-No. 2) and the original and two copies thereof shall be filed with the Secretary, Interstate Commerce Commission, Washington, DC 20423, not later than 45 days after the date notice of the filing of the application is published in the **Federal Register**. Such written comments shall include the following: the person's position, e.g., party protestant or party in support, regarding the proposed transaction; specific reasons why approval would or would not be in the public interest; and a request for oral hearing if one is desired. Additionally, interested persons who do not intend to formally participate in a proceeding but who desire to comment thereon, may file such statements and information as they may desire, subject to the filing and service requirements specified herein. Persons submitting written comments to the Commission shall at the same time, serve copies of such written comments upon the applicant, the Secretary of Transportation, and the Attorney General.

Agatha L Mergenovich,

Secretary.

[FR Doc. 79-37000 Filed 11-30-79; 8:45 am]

BILLING CODE 7035-01-M

Republications of Grants of Operating Rights; Authority Prior to Certification

The following grant of operating rights authority is republished by order of the Commission to indicate a broadened grant of authority over that previously noticed in the **Federal Register**.

An original and one copy of a petition for leave to intervene in the proceeding must be filed with the Commission within 30 days after the date of this **Federal Register** notice. Such pleading shall comply with Special Rule 247(e) of the Commission's *General Rules of Practice* (49 CFR 1100.247) addressing specifically the issue(s) indicated as the purpose for republication, and including copies of intervenor's conflicting authorities and a concise statement of intervenor's interest in the proceeding setting forth in detail the precise manner in which it has been prejudiced by lack of notice of the authority granted. A copy of the pleading shall be served concurrently upon the carrier's representative, or carrier if no representative is named.

MC 51146 (Sub-593F) (Republication) filed April 10, 1978, previously noticed in the FR issue of June 18, 1979. Applicant: SCHNEIDER TRANSPORT, INC., P.O. Box 2298, Green Bay, WI 54306. Representative: Neil A. DuJardin (same address as applicant). By the Commission, Appelate Division I, decided October 10, 1979, and served October 18, 1979, finds that the present and future public convenience and necessity require operation by applicant, as a *common carrier*, by motor vehicle, in interstate or foreign commerce, over irregular routes, transporting *such commodities* as are dealt in by distributors of games and toys (except commodities in bulk), between points in the United States (except Alaska and Hawaii). Applicant is fit, willing, and able properly to perform the granted service and to conform to the requirements of Title 49, Subtitle IV, U.S. Code, and the Commission's regulations. The purpose for this republication is to broaden the territorial description prior to certification.

By the Commission, Division 1, Acting as an Appellate Division, Commissioners Stafford, Clapp and Christian. Commissioner Christian concurred in the result.

Agatha L. Mergenovich,

Secretary.

[FR Doc. 79-37001 Filed 11-30-79; 8:45 am]

BILLING CODE 7035-01-M

[Revised I.C.C. Order No. 56-A under Service Order No. 1344]

Rerouting Traffic

To All Railroads:

Upon further consideration of Revised I.C.C. Order No. 56 and good cause appearing therefor:

It is ordered,

Revised I.C.C. Order No. 56 is vacated.

This order shall become effective 11 a.m., November 14, 1979, and shall be served upon the Association of American Railroads, Car Service Division, as agent of all railroads subscribing to the car service and car hire agreement under the terms of that agreement and upon the American Short Line Railroad Association. A copy shall be filed with the Director, Office of the Federal Register.

Issued at Washington, D.C., November 14, 1979.

Interstate Commerce Commission.

Robert S. Turkington,

Agent.

[FR Doc. 79-37004 Filed 11-30-79; 8:45 am]

BILLING CODE 7035-01-M

[I.C.C. Order No. 57 under Service Order No. 1344]

Ann Arbor Railroad System; Rerouting of Traffic

To All Railroads:

In the opinion of Joel E. Burns, Agent, the Ann Arbor Railroad System, Michigan Interstate Railway Company, Operator, is unable to transport promptly all traffic offered for movement over its lines between Manitowoc, Wisconsin, and Frankfort, Michigan, via carferry, because of one carferry being out of service.

It is ordered

(a) *Rerouting traffic.* The Ann Arbor Railroad System, Michigan Interstate Railway Company, Operator, being unable to transport promptly all traffic offered for movement over its lines between Manitowoc, Wisconsin, and Frankfort, Michigan, via carferry, because of one carferry being out of service, that line and its connections are authorized to divert or reroute such traffic via any available route to expedite the movement. Traffic necessarily diverted by authority of this order shall be rerouted so as to preserve as nearly as possible the participation and revenues of other carriers provided in the original routing. The billing covering all such cars rerouted shall carry a reference to this order as authority for the rerouting.

(b) *Acceptance of traffic in interchange.* In the event the Ann Arbor Railroad System, Michigan Interstate Railway Company, Operator, cannot accept traffic in interchange from a connecting carrier, the delivering carrier, after establishing such condition, may reroute or divert the traffic via any available route.

(c) *Concurrence of receiving roads to be obtained.* The railroad rerouting cars in accordance with this order shall receive the concurrence of other railroads to which such traffic is to be diverted or rerouted, before the rerouting or diversion is ordered.

(d) *Notification to shippers.* Each carrier rerouting cars in accordance with this order, shall notify each shipper at the time each shipment is rerouted to diverted and shall furnish to such shipper the new routing provided for under this order.

(d) Inasmuch as the diversion or rerouting of traffic is deemed to be due to carrier disability, the rates applicable to traffic diverted or rerouted by said Agent shall be the rates which were applicable at the time of shipment on the shipments as originally routed.

(f) In executing the directions of the Commission and of such Agent provided for in this order, the common carriers involved shall proceed even though no contracts, agreements or arrangements now exist between them with reference to the divisions of the rates of transportation applicable to said traffic. Divisions shall be, during the time this order remains in force, those voluntarily agreed upon by and between said carriers; or upon failure of the carriers to so agree, said divisions shall be those hereafter fixed by the Commission in accordance with pertinent authority conferred upon it by the Interstate Commerce Act.

(g) *Effective date.* This order shall become effective at 2 p.m., November 8, 1979.

(h) *Expiration date.* The order shall expire at 11:59 p.m., November 23, 1979, unless otherwise modified, changed or suspended.

This order shall be served upon the Association of American Railroads, Car Service Division, as agent of the railroads subscribing to the car service and car hire agreement under the terms of that agreement, and upon the American Short Line Railroad Association. A copy of the order shall be filed with the Director, Office of the Federal Register.

Issued at Washington, D.C., November 8, 1979.

Interstate Commerce Commission.

Joel E. Burns,

Agent.

[FR Doc. 79-37005 Filed 11-30-79; 8:45 am]

BILLING CODE 7035-01-M

[Revised I.C.C. Order No. 57 under Service Order No. 1344]

Ann Arbor Railroad System; Rerouting of Traffic

To All Railroads:

In the opinion of Joel E. Burns, Agent, the Ann Arbor Railroad System, Michigan Interstate Railway Company, Operator, is unable to transport promptly all traffic offered for movement over its line between Manitowoc, Wisconsin, and Frankfort, Michigan, and between Kewaunee, Wisconsin, and Frankfort, Michigan, via carferry, because of one carferry being out of service.

It is ordered,

(a) *Rerouting traffic.* The Ann Arbor Railroad System, Michigan Interstate Railway Company, Operator, and Green Bay and Western Railroad Company, being unable to transport promptly all traffic offered for movement over their lines because of one Ann Arbor Railroad System carferry being out of service, those lines are authorized to divert or reroute such traffic between Kewaunee, Wisconsin, and Frankfort, Michigan, and between Manitowoc, Wisconsin, and Frankfort, Michigan, via any available route to expedite the movement. Traffic necessarily diverted by authority of this order shall be rerouted so as to preserve as nearly as possible the participation and revenues of other carriers provided in the original routing. The billing covering all such cars rerouted shall carry a reference to this order as authority for the rerouting.

(b) *Concurrence of receiving roads to be obtained.* The railroad rerouting cars in accordance with this order shall receive the concurrence of other railroads to which such traffic is to be diverted or rerouted, before the rerouting or diversion is ordered.

(c) *Notification to shippers.* Each carrier rerouting cars in accordance with this order, shall notify each shipper at the time each shipment is rerouted or diverted and shall furnish to such shipper the new routing provided for under this order.

(d) Inasmuch as the diversion or rerouting of traffic is deemed to be due to carrier disability, the rates applicable to traffic diverted or rerouted by said Agent shall be the rates which were applicable at the time of shipment on the shipments as originally routed.

(e) In executing the directions of the Commission and of such Agent provided for in this order, the common carriers involved shall proceed even though no contracts, agreements or arrangements now exist between them with reference to the divisions of the rates of transportation applicalbe to said traffic. Divisions shall be, during the time this order remains in force, those voluntarily agreed upon by and between said carriers; or upon failure of the carriers to so agree, said divisions shall be those hereafter fixed by the Commission in accordance with pertinent authority conferred upon it by the Interstate Commerce Act.

(f) *Effective date.* This order shall become effective at 4 p.m., November 9, 1979.

(g) *Expiration date.* The order shall expire at 11:59 p.m., November 23, 1979, unless otherwise modified, changed or suspended.

This order shall be served upon the Association of American Railroads, Car Service Division, as agent of the railroads subscribing to the car service and car hire agreement under the terms of that agreement, and upon the American Short Line Railroad Association. A copy of the order shall be filed with the Director, Office of the Federal Register.

Issued at Washington, D.C., November 9, 1979.

Interstate Commerce Commission.

Joel E. Burns,

Agent.

[FR Doc. 79-37006 Filed 11-30-79; 8:45 am]

BILLING CODE 7035-01-M

[Revised Service Order No. 1312; Exception No. 16]

Soo Line Railroad Co.

Because of the inability of the railroad to assemble the cars, a movement of forty-seven (47) loaded covered hopper cars will be seriously delayed on Soo Line Railroad Company enroute to Albany, New York, for unloading. Seaboard Allied desires to ship a fifty-nine (59) car unit-grain-train to Albany, routed Soo Line—N&W—D&H. The consignee at Albany is badly in need of the grain, but only 47 covered hoppers have arrived at Minneapolis for loading. Section (a) of Revised Service Order No. 1312 authorizes any railroad which is unable to supply the number of covered hopper cars required by its tariffs to transport unit-grain-trains of fewer cars in accordance with the scale in Section (b).

Pursuant to the authority vested in the Director, Bureau of Operations, by Section (h) of Revised Service Order No. 1312, Soo Line Railroad Company is authorized to operate a fifty-nine (59) car unit-grain-train from Minneapolis, Minnesota, to Albany, New York, comprised of fifty-nine (59) railroad owned covered hoppers, on a one trip basis, with a minimum of 47 loaded cars operated in the first movement, and the remaining cars of the unit-train operated together in the final movement of this unit-grain-train. The total tariff minimum weight will be transported as required except if the railroad is unable to move all of the empty covered hoppers to the loading point on the final movement, the train can be reduced by the allowable

number of cars or allowable weight percentage, as set forth in Section (b) of this Service Order.

This exception applies to privately owned covered hopper cars.

The bills of lading and waybills shall bear the following endorsement: "Unit-grain-train of ( ) tons or ( ) cars. Partial movement of ( ) tons or ( ) cars forwarded authority Exception No. 16 to ICC Revised Service Order No. 1312. ( ) tons or ( ) cars to follow."

Demurrage rules will be treated as if each of the movements of the unit-train is a complete movement in itself.

Effective November 14, 1979.

Expires 11:59 p.m., November 28, 1979.

Issued at Washington, D.C., November 14, 1979.

Robert S. Turkington,

Assistant Director.

[FR Doc. 79-37003 Filed 11-30-79; 8:45 am]

BILLING CODE 7035-01-M

Fourth Section Application for Relief

Correction

In FR Doc. 79-35889, published on page 67010, on Wednesday, November 21, 1979, in the first column, in the second paragraph, in the second line, "December 21, 1979" should be corrected to read "December 6, 1979".

BILLING CODE 1505-01-M

COUNCIL ON WAGE AND PRICE STABILITY

Price Advisory Committee—Notice of Meeting

Authority of Committee: The Price Advisory Committee was established by the Council on Wage and Price Stability pursuant to Executive Order 12161 (44 FR 5663).

Time of Place and Meeting: The Price Advisory Committee will meet on December 13, 1979, at 10:00 a.m. in Room 2008 of the New Executive Office Building, 726 Jackson Place, N.W., Washington, D.C. 20503. The meeting may be recessed at 12:00 noon to be reconvened at 2:00 p.m. the same day and/or be recessed at the end of the day to be reconvened the following day. More advance notice was not possible because of the need for a meeting before the holidays; but additional notice of this meeting is being given through a Council release to the general and trade press.

Purpose of the Meeting: The purpose of the meeting will be to receive reports from Council staff and to develop an agenda for the Committee, including consideration of modifications, if any, to the price standard, interpretations of the price standard, and such other recommendations that assure fairness and equity consistent with the overall objectives of the program.

Public Participation: The meeting of the Price Advisory Committee will be open to the public. Public attendance will, however, be limited by available space; persons will be seated on a first-come, first-served basis. Persons attending the meeting will not be permitted to speak or participate in the Committee's deliberations. Interested persons will be permitted to file written statements with the Committee by mail or personal delivery to the Office of General Counsel, Council on Wage and Price Stability, 600 17th Street, N.W., Washington, D.C. 20506.

Additional Information: For additional information, please telephone the Office of Public Affairs at (202) 456-6756.

Dated: November 28, 1979.

Sally Katzen,

Advisory Committee Management Officer.

[FR Doc. 79-37155 File 11-30-79; 11:37 am]

BILLING CODE 3175-01-M

Pay Advisory Committee—Notice of Meetings

Authority of Committee: The Pay Advisory Committee was established by the Council on Wage and Price Stability pursuant to Executive Order 12161 (44 FR 56663).

Time and Place of Meetings: The Pay Advisory Committee will meet on December 18, 1979, at 3:00 p.m. in Room 2008 of the New Executive Office Building, 726 Jackson Place, N.W., Washington, D.C. 20506.

Purpose of Meetings: The purpose of these meetings is to finish unfinished business from the December 7, 1979 and earlier meetings (see 44 FR 59583).

Public Participation: The meetings of the Pay Advisory Committee will be open to the public. Public attendance may be limited by available space; persons will be seated on a first-come, first-served basis. Persons attending the meeting will not be permitted to speak or participate in the Committee's deliberations. Any interested persons will be permitted to file written statements with the Committee by mail or personal delivery to the Office of General Counsel, Council on Wage and Price Stability, 600 17th Street, N.W., Washington, D.C. 20506.

Additional information: For additional information, please telephone the Office of Public Affairs at (202) 456-6756.

Date: November 28, 1978.

Sally Katzen

Advisory Committee Management Officer.

[FR Doc. 79-37158 Filed 11-30-79; 11:37 am]

BILLING CODE 3175-1-M

Price Advisory Committee; Charter Amendment

The Council on Wage and Price Stability is revising the Charter of the Price Advisory Committee (44 FR 56918, October 2, 1979) to increase the membership from 5 to 6.

Accordingly, paragraphs (4) and (6)(a) of the Charter of the Price Advisory Committee are amended to read as follows:

(4) *Membership.* The Committee shall consist of six members of the general public to be selected by the President. The President will also designate one of the members as Chairman.

* * * * *

(6) *Procedures of the Committee.*

(a) *Quorum.* The quorum for conducting business shall be four members of the Committee. Recommendations of the Committee shall require the affirmative vote of four or more members.

* * * * *

Dated: November 28, 1979.

Sally Katzen,

Advisory Committee Management Officer.

[FR Doc. 79-37157 Filed 11-30-79; 11:37 am]

BILLING CODE 3175-01-M

Sunshine Act Meetings

Federal Register
Vol. 44, No. 233
Monday, December 3, 1979

This section of the FEDERAL REGISTER contains notices of meetings published under the "Government in the Sunshine Act" (Pub. L. 94-409) 5 U.S.C. 552b(e)(3).

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1

COMMISSION ON CIVIL RIGHTS.

DATE AND TIME: Wednesday, December 5, 1979, 9 a.m.—12 noon; 1:30 p.m.–4 p.m.

PLACE: Room 512, 1121 Vermont Avenue, N.W., Washington, D.C.

STATUS: Open to the public.

MATTERS TO BE CONSIDERED:

I. Approval of Agenda
II. Approval of Minutes of Last Meeting
III. Staff Director's Report
A. Status of Funds
B. Personnel Report
C. Office Directors' Reports
D. Correspondence
1. Letter from CRS Director Gil Pompa re KKK activities
2. Letter from DHEW Secretary Harris re Connecticut Advisory Committee's report on Battered Women
3. Letter from Labor Secretary Marshall re North Carolina Advisory Committee's report on migrant programs
IV. Report on Civil Rights Developments in the Northwest Region
V. Maine Advisory Committee Re-charter
VI. Statement re D.C. Voting Rights Amendment
VII. Recommendation re SAC Chairpersons' resolution on S. 1647

MATTERS TO BE CONSIDERED:

VIII. Memo re Review of Biases Against Minorities and Females in Textbooks
IX. Review of EEOC Draft Guidelines on Religious Discrimination
X. Recommendation on Affirmative Action Statement Update
XI. Discussion on School Desegregation Hearing
XII. Summary Design on hearing re Battered Women
XIII. Review of National Immigration Report

PERSON TO CONTACT FOR FURTHER INFORMATION: Barbara Brooks, Press and Communications Division, (202) 254–6697.

[S–2333–79 Filed 11–29–79; 11:39 am]

BILLING CODE 6335–01–M

2

FEDERAL COMMUNICATIONS COMMISSION.

TIME AND DATE: 2 p.m., Wednesday, November 28, 1979.

PLACE: Room 856, 1919 M Street NW., Washington, D.C.

STATUS: Special Open Commission Meeting.

MATTERS TO BE CONSIDERED:

Agenda, Item No., and Subject

Complaints and Compliance—1—ABC, CBS and NBC petitions for reconsideration and stay of decision in re Carter-Mondale Presidential Committee. Summary: This relates to the complaint of the Carter-Mondale Committee against the ABC, CBS and NBC Television Networks concerning the networks' refusal to sell a half-hour time segment. The Committee alleged that the networks' refusal to sell the time constitutes a violation of the "reasonable access" provision of Section 312(a)(7). All of the networks claimed that their decisions were reasonable and that the complaint should be denied. In its order adopted November 20, 1979, and released November 21, 1979 the Commission found that the networks acted unreasonably in discharging their Section 312(a)(7) obligations. The Commission ordered each network to advise the Commission by November 29, 1979 as to how the networks intend to fulfill those obligations.

The prompt and orderly conduct of Commission business requires that less than 7-days notice be given consideration of this matter.

Specifically, the urgency of the Carter-Mondale request and the indications by ABC, CBS and NBC that they intend to seek judicial review require the emergency scheduling of this meeting.

This meeting may be continued the following work day to allow the Commission to complete appropriate action.

Additional information concerning this meeting may be obtained from Maureen Peratino, FCC Public Affairs Office, telephone number (202) 632–7260.

Issued: November 27, 1979.

[S–2329–79 Filed 11–29–79; 11:39 am]

BILLING CODE 6712–01–M

3

FEDERAL COMMUNICATIONS COMMISSION.

PREVIOUSLY ANNOUNCED TIME AND DATE OF MEETING: 9:30 a.m., Thursday, November 29, 1979.

PLACE: Room 856, 1919 M Street NW., Washington, D.C.

STATUS: Special Closed Commission Meeting following the Special Open Meeting which is scheduled to commence at 9:30 a.m.

CHANGES IN THE MEETING: Addition of an item.

Agenda, Item No., and Subject

General—2—WARC Briefing.

This meeting may be continued the following work day to allow the Commission to complete appropriate action.

Additional information concerning this item may be obtained from Maureen Peratino, FCC Public Affairs Office, telephone number (202) 632–7260.

Issued: November 28, 1979.

[S–2330–79 Filed 11–29–79; 11:39 am]

BILLING CODE 6712–01–M

4

FEDERAL COMMUNICATIONS COMMISSION.

TIME AND DATE: 9:30 a.m., Tuesday, December 4, 1979.

PLACE: Room 856, 1919 M Street NW., Washington, D.C.

STATUS: Closed Commission Meeting follow the Open Meeting which is scheduled to commence at 9:30 a.m.

MATTERS TO BE CONSIDERED:

Agenda, Item No., and Subject

General—1—Senior Executive Service Performance Appraisal and Compensation System.

Hearing—1—Remand of the Virginia Beach, Virginia, FM broadcast proceeding (Docket No. 19095).

Hearing—2—Decision of the United States Court of Appeals for the District of Columbia Circuit remanding to the Commission a Commission decision denying the renewal application of Cosmopolitan Broadcasting Corporation (WHBI–FM), Newark, New Jersey (Docket No. 19657).

Hearing—3—Petition for extraordinary relief in the Newark, New Jersey FM license renewal proceeding (Docket No. 19657).

Hearing—4—Certification of question pursuant to part's exception to Administrative Law Judge's order declining to grant part's request for Presiding Officer to withdraw from the Goleta, California,

FM construction permit proceeding (BC Docket Nos. 78–134 and 78–135).

Hearing—5—Joint petition for approval of settlement agreement and exceptions to the Initial Decision, Supplementary Initial Decision, and Second Supplemental Decision in the Norfork, Va., comparative television renewal proceeding (Docket Nos. 18791 and 18792).

Hearing—6—Court remand for consideration of the pertinence of a translator station proposal to the Commission's previous refusal to authorize a change in the transmitter site specified in the television station construction permit for Channel 13 at Fajardo, Puerto Rico (Docket Nos. 18048–18049).

This meeting may be continued the following work day to allow the Commission to complete appropriate action.

Additional information concerning this meeting may be obtained from Maureen Peratineo, FCC Public Affairs Office, telephone number (202) 632–7260.

Issued: November 28, 1979.

[S–2331–79 Filed 11–29–79; 11:39 am]

BILLING CODE 6712–01–M

5

FEDERAL COMMUNICATIONS COMMISSION.

TIME AND DATE: 9:30 a.m., Tuesday, December 4, 1979.

PLACE: Room 856, 1919 M Street NW., Washington, D.C.

STATUS: Open Commission Meeting.

MATTERS TO BE CONSIDERED:

Agenda, Item No., and Subject

Hearing—1—Application for partial review of a Broadcast Bureau Designation Order accepting a party's allegedly late filed amendment in the Henderson, Nevada, comparative New FM construction permit proceeding (BC Docket Nos. 79–123—79–126).

General—1—Title: Relaxation of the requirement for certain vessels operating in Vessel Traffic Service (VTS) areas to maintain a listening watch on VHF Channel 16 (156.800 MHz). Summary: The FCC will consider whether to adopt a Report and Order (PR Docket No. 79–139, RM–2916) which revises Section 83.224(b) of the FCC rules. The FCC will decide whether to exempt ships required by other regulations to maintain listening watches on two navigational channels from the requirement to maintain a listening watch on VHF Channel 16, the national distress, safety and calling frequency. The FCC proposed this action in a Notice of Proposed Rule Making (FCC 79–335) released June 15, 1979.

General—2—Title: Memorandum Opinion and Order to dismiss Petition for Reconsideration of rule to relax the Channel 16 listening watch requirement for certain tug boats (Docket No. 20683). Associated with proposed Report and Order in PR Docket No. 79–139 (RM 2916). Summary: The FCC will consider whether to dismiss a Petition for Reconsideration filed by the American Waterway Operators, Inc. (AWO). AWO objected to a proviso in a rule which limited the relaxation of the VHF Channel 16 listening watch for certain tug boats. However, if the FCC adopts the Report and Order in an associated Agenda Item (PR Docket No. 79–139) the relief requested by AWO will, in effect, be granted. Therefore, the FCC could consider the AWO petition moot.

General—3—Title: Application for Review of a ruling by the Chief, Broadcast Bureau, denying a Freedom of Information Act request by Alaskans for Better Media for inspection of the 1974–1978 annual financial reports of five broadcast stations licensed to Northern Television, Inc. Summary: At issue is whether the annual financial reports are exempt from mandatory disclosure under the FOIA and if so whether the annual financial reports should nevertheless be released on the basis that the licensee has placed its financial condition in issue in a Commission proceeding.

Private Radio—1—Title: Report and Order which proposes to terminate the Notice of Proposed Rulemaking adopted in Docket No. 20679. Summary: The FCC will consider whether to adopt a Report and Order that terminates the Notice of Proposed Rulemaking in PR Docket No. 20679. The FCC, in that Notice proposed to amend the Amateur Radio Service Rules to require volunteer examiners to submit a photocopy of their own license when requesting permission to examine applicants.

Private Radio—2—Title: Report and Order to terminate without further action proceedings in PR Docket No. 79–142. Summary: The Commission will consider whether to terminate without further action the proposal contained in its Notice of Proposed Rule Making in PR Docket No. 79–142 to amend Part 90 of the rules to expand permissible secondary uses of base/mobile frequencies in the 450–470 MHz band to permit the operation of narrow-band, multi-channel fixed stations.

Private Radio—3—The Commission will consider a Memorandum Opinion and Order concerning two petitions which propose reorganization or merger of the Citizens Band and Amateur Radio Services: RM–2542, filed by Gerald M. Howard, proposes renaming the Amateur Radio Service the "National Radio Service" and changing its basis and purpose to provide for the communications needs of the general public. RM–2769, filed by William J. Skipper, Jr., proposes merger of the Citizens Band and Amateur Radio Services into a new "Citizens Amateur Radio Service" with expanded operator classes and privileges.

Private Radio—4—Title: Use of certain frequencies by aircraft for the control of airport lights. Summary: The FCC will consider whether to adopt a Report and Order (PR Docket No. 79–186) which amends Section 87.183 of the FCC rules. The FCC will decide whether to limit the frequencies which aircraft may use for the transmission of brief keyed RF signals (i.e., momentarily depressing the microphone push-to-talk button) to activate airport lighting systems. This limitation will require that aircraft operators use a frequency from the various categories available which is also assigned to an aeronautical radio station located at the concerned airfield. The FCC proposed this action in a Notice of Proposed Rule Making (FCC 79–458) released August 2, 1979.

Private Radio—5—Title: Rulemaking petitions RM–2490 and RM–2666 to amend Section 97.82 of the Amateur Radio Service Rules to allow an amateur radio operator use of a photocopy of an amateur license, while operating an amateur station. Summary: The FCC will consider whether to adopt or deny rulemaking petitions (RM–2490 and 2666) proposing that the FCC allow an amateur radio operator use of a photocopy of his/her operator license, while operating an amateur station.

Private Radio—6—Request to delete Section 97.103 (b)(2) requiring logging of Amateur radio third party traffic. The Commission will consider a petition filed by Louis R. Huber, requesting deletion of Section 97.103 (b)(2) of the Amateur Rules. Pursuant to that Rule, Amateur radio operators are required to log third party traffic that they handle.

Private Radio—7—Title: Order to delete permit requirement for Canadian Amateurs operating in the United States. Summary: The Commission will consider whether to amend Part 97 of its Rules to delete the requirement that Canadian Amateur licensees obtain a permit before operating in the United States. Canada is prepared to grant a similar privilege for United States Amateur licensees to operate in Canada.

Common Carrier—1—Title: Modification of depreciation rates for domestic telephone companies. Summary: The Commission has under consideration proposed changes in depreciation rates for thirteen domestic telephone companies. The proposed depreciation rates are based upon studies of service life and net salvage factors which were prepared by the companies and the staffs of the respective state commissions and the FCC. This item is a part of the Commission's continuing program to prescribe depreciation rates for subject companies, as provided for in the Communications Act of 1934, as amended.

Common Carrier—2—Title: Petition for Reconsideration of Commission Order FCC 79–291, 71 FCC 2d 1336 (1979), filed by the Department of Defense. Formal complaint File No. TS 4–76. Summary: The Department of Defense alleges that the prior order on reconsideration modifies the Commission's original decision to assume jurisdiction over certain physically interstate services which had been covered by state exchange tariffs, by specifying that Multi-Schedule Private Line rates in AT&T's Tariff F.C.C. No. 260 should apply.

Common Carrier—3—Title: Hughes Communications Services, Inc. application to construct the LEASAT communications satellite system to provide services to the Department of the Navy and other military services. Summary: The Commission will

consider the application of Hughes Communication Services, Inc. to construct 4 in-orbit satellites and two moveable earth stations to provide telemetry, tracking and command (TT&C) for the spacecraft. This system will be a replacement for the existing Fleet Satellite Communication System. While the National Telecommunications and Information Administration supports these applications urges the Commission to make clear that ultimate control of the Government frequencies used in the LEASAT system rests with NTIA.

Common Carrier—4—Title: In the Matter of Handling of Customer Complaints by Telephone Companies (RM–3139). Summary: Petition for Rulemaking filed by David Honig requesting that Commission implement rules whereby telephone companies would be required to establish an office whose sole function would be the handling of customer complaints. Petitioner set out procedure for the filing and disposition of service related complaints. Oppositions to the petition were filed by AT&T, GTE and NARUC. They argued that the proposed rules would result in unnecessary duplication of services already provided by telephone companies, state public utility commissions and F.C.C. They also argued that the petition was procedurally deficient because the proposed rules did not distinguish between the handling of complaints concerning interstate and intrastate service.

Common Carrier—5—Title: Application for review asking reinstatement of the applications for construction permits in the Multipoint Distribution Service of Jackson Signal Company (File No. 9089–CM–P–72), Knoxville Signal Corporation (File No. 1703–CM–P–73), Little Rock Signal Corp. (File No. 1978–CM–P–73), Chattanooga Signal Corp. (File No. 2438–CM–P–73), and American Microwave Services d/b/a Tallahassee Signal Co. (File No. 2623–CM–P–73). Summary: The five subject applications were dismissed by the Common Carrier Bureau for failure to respond substantially to requests for additional information to demonstrate the applicants' financial qualifications. The applicants filed an application for review asserting that they had met the filing requirements contained in the Rules and that therefore the applications could not be dismissed absent a hearing pursuant to Section 309 of the Communications Act. The item to be considered would reinstate the applications.

Common Carrier—6—Title: Petition for Reconsideration of Order FCC 79–225, Western Union Telegraph Co., 71 F.C.C. 2d 621 (1979), filed by ITT World Communications Inc. and Application for Review of Order FCC 79M–845, released July 24, 1979, filed by several International Record Carriers. Summary: ITT World Communications Inc. is seeking reconsideration of Order FCC 79–225, in which the Commission construed Section 222(e) of the Communications Act as granting it authority to prescribe a division of charges during the pendency of a proceeding initiated under Section 222. The Application for Review challenges both the authority of the Commission to prescribe an interim division of charges and the charges that have been prescribed by the Administrative Law Judge. The separated trial staff and Western Union have argued that both orders are interlocutory and should not be reviewed at this time and, that in any event both orders are correct and should be affirmed.

Common Carrier—7—Title: A Section 214 Application filed by Telenet Communications Corporation for authority to offer terminal-to-terminal data communications services (File No. W–P–C–1526). Summary: The FCC is considering Telenet's request for additional authority to offer terminal-to-terminal data communications services. The application is opposed by Tymnet, Inc.; ITT World Communications, Inc. and the Western Union Telegraph Company. Comments addressing the application were filed by Computer Corporation of America. Among the reasons given for opposing the application were: Telenet lacks sufficient financial resources to implement the store-and-forward service; the Commission has inconsistently applied Section 222 of the Act with respect to Telenet vis a viz the international record carriers; the description of the service is unclear and the proposed store-and-forward offering constitutes a data processing service.

Cable Television—1—Petition for Special Relief filed by Warner Amex Cable Communications, Inc. Request for waiver of Section 76.501 of the Commission's Rules on behalf of Warner Amex Cable Communications, Inc., a proposed company to be formed by the sale of fifty percent of the stock of Warner Cable Corporation to the American Express Company.

Assignment and Transfer—1—Title: Application (BALCT–790305LC) for voluntary assignment of license of ETV station KCPQ–TV, Channel 13, Tacoma, Washington from Clover Park School District No. 400, Tacoma, Washington, To Kelly Broadcasting Co. Summary: The Commission will consider a petition to deny the application filed by a citizens' organization entitled Save Our Station 13.

Renewal—1—Title: California Friends of Public Broadcasting's petition for reconsideration of license renewal of Community Television of Southern California for noncommercial station KCET–TV, Los Angeles. Summary: California Friends of Public Broadcasting (CFPB) has filed a petition requesting reconsideration of the Commission's *Order* of June 20, 1979, granting renewal of license to Community Television of Southern California (CTSC) for noncommercial station KCET–TV, Los Angeles. The agenda item considers the allegations made by petitioner as grounds for reconsideration and the licensee's opposition.

Broadcast—1—Application for review of Broadcast Bureau's denial of a petition to delete FM Channel 288A at Patterson, New York. FCC considers an application for review of the Broadcast Bureau's denial of a petition to delete FM Channel 288A at Patterson, New York. The petitioner argues that the Patterson assignment is short spaced to its own co-channel station, since it is 64.83 miles away, while the rules require a minimum separation of 65 miles.

Broadcast—2—Petition for rule making to reserve Channel 13, KCPQ–TV, Tacoma, Washington, for noncommercial educational use, filed by Save Our Station 13, (RM–3338). The current operator on Channel 13 is the Clover Park School District No. 400, licensee of Station KCPQ—TV. That station is presently being operated as a noncommercial facility. In a separate proceeding, the school district has applied to assign its license to a commercial assignee. Petitioner is requesting that the Television Table of Assignments be amended to reserve VHF channel 13, Tacoma, Washington, for noncommercial use and to delete the current reservation of UHF Channel *56, Tacoma, Washington.

This meeting may be continued the following work day to allow the Commission is complete appropriate action.

Additional information concerning this meeting may be obtained from Maureen Peratino, FCC Public Affairs Office, telephone number (202) 632–7260.

Issued: November 28, 1979.

[S–2332–79 Filed 11–29–79; 11:39 am]

BILLING CODE 6712–01–M

6

FEDERAL ELECTION COMMISSION.

DATE AND TIME: Thursday, December 6, 1979, at 10 a.m.

PLACE: 1325 K Street NW., Washington, D.C.

STATUS: This meeting will be open to the public.

MATTERS TO BE CONSIDERED:

Setting of dates for future meetings
Correction and approval of minutes
Certification
House and Senate bookkeeping manual
Audit Advisory Panel
Convention reporting form
Public notice to banks
Consultant's report on audit process (Part II)
1980 election and related matters
Appropriations and Budget
Pending Legislation
Classification actions
Routine administrative matters

PERSON TO CONTACT FOR INFORMATION: Mr. Fred Eiland, Public Information Officer, Telephone: 202–523–4065.

Marjorie W. Emmons,

Secretary to the Commission.

[S–2336–79 Filed 11–29–79; 3:09 pm]

BILLING CODE 6715–01–M

7

November 28, 1979.

FEDERAL ENERGY REGULATORY COMMISSION.

TIME AND DATE: December 5, 1979, 10 a.m.

PLACE: 825 North Capitol Street NE., Washington, D.C. 20426, Room 9306.

STATUS: Open.

MATTERS TO BE CONSIDERED: Agenda.

Note.—Items listed on the agenda may be deleted without further notice.

CONTACT PERSON FOR MORE INFORMATION: Kenneth F. Plumb, Secretary, Telephone (202) 357–8400.

This is a list of matters to be considered by the Commission. It does not include a listing of all papers relevant to the items on the agenda; however, all public documents may be examined in the Office of Public Information.

Power Agenda—348th Meeting, December 5, 1979, Regular meeting (10 a.m.)

CAP–1. Docket No. ER79–512, Long Island Lighting Co.
CAP–2. Docket No. ER79–279, Virginia Electric & Power Co.
CAP–3. Docket No. ES80–15, Consumers Power Co.
CAP–4. Project No. 2741, Kings River Conservation District.

Gas Agenda—348th Meeting, December 5, 1979, Regular Meeting

CAG–1. Docket No. RP79–57, Northwest Pipeline Corp.
CAG–2. Docket Nos. RP71–107 (Phase II), RP72–127 (PGA 79–1), (PGA 79–2), Northern Natural Gas Co.
CAG–3. Docket No. RP74–26 (PGA No. 80–1), Louisiana-Nevada Transit Co.
CAG–4. Docket Nos. RP73–3 (PGA 76–1), and RP74–52 (PGA 76–1), Transcontinental Gas Pipeline Corp. and Transwestern Pipeline Co.
CAG–5. Docket No. RP78–77, Mississippi River Transmission Corp.
CAG–6. Docket No. RP78–92, Southwest Gas Corp.
CAG–7. Docket No. IS79–3, Portland Pipe Line Corp.
CAG–8. FERC Gas Rate Schedule No. 2, et al., J. M. Huber Corp.
CAG–9. Docket Nos. CI65–974, George J. Despot, Agent (Operator), et al. Docket No. CI66–1169, J. W. Baton (Operator), et al., (FERC Gas Rate Schedule No. 1.)
CAG–10. Docket Nos. CI69–91, et al., Belco Petroleum Corp., et al.
CAG–11. Docket Nos. CI79–657, CI79–659, CI79–651, Conoco Inc.
CAG–12. Docket No. CP79–441, Consolidated Gas Supply Corp.
CAG–13. Docket No. CP73–219, Natural Gas Pipeline Co. of America.

Power Agenda—348th Meeting, December 5, 1979, Regular Meeting

I. Licensed Project Matters

P–1 Project No. 2338, Consolidated Edison Co. of New York.

II. Electric Rate Matters

ER–1. Docket No. ER80–37, Central Illinois Public Service Co.
ER–2. Docket No. ER79–478 and ER79–479, Public Service Co. of New Mexico.
ER–3. Docket No. ER79–575, Georgia Power Co.
ER–4. Docket Nos. EL79–26 and ER79–600, Central Power & Light Co.

Miscellaneous Agenda—348th Meeting, December 28, 1979, Regular Meeting

M–1. Reserved.
M–2. Reserved.
M–3. Docket No. RM79–21, Regulations Implementing Alternative Fuel Price Ceilings on Incremental Pricing Under the Natural Gas Policy Act of 1978.
M–4. Docket No. RM79–14, Regulations Implementing the Incremental Pricing Provisions of the Natural Gas Policy Act of 1978.
M–5. Docket No. RM80–, Final Regulations Under Section 105 and 106(B) of the Natural Gas Policy Act of 1978.
M–6. Docket No. GP79–82, State of Wyoming; NGPA Determination Section 102; Dart, Inc., O'Connor JD79–11256.
M–7. Docket No. GP79–83, United States Geological Survey at Albuquerque, New Mexico; NGPA Determination Section 103; Southland Royalty Co., Davis #2–A JD79–11860.
M–8. Docket No. GP79–79, State of West Virginia; under Section 108 NGPA Determinations Applicant: Allegheny Land & Mineral Co., JD79–10970, et al.
M–9. Docket No. GP79–80, State of Kansas Section 108 NGPA Determination George A. Angle #2 Janson 'A' Well JD79–11554.
M–10. Docket No. GP79–78, State of West Virginia Section 108 Determinations Allegheny Land & Mineral Co., FERC Nos. JD79–10995, et al.
M–11. Docket No. GP79–84, State of Utah Section 108 Determinations Gilillant & Fix JD79–12345, Legg Resources, JD79–12346.
M–12. Docket No. GP80–, Well Category Determination State of Kentucky, JD80–3874.
M–13. Proposed Federal Trade Commission Rule Declaring Oil Company Ownership of Petroleum Pipelines to be an unfair method of competition.

Gas Agenda—348th Meeting, December 5, 1979, Regular Meeting

I. Pipeline Rate Matters

RP–1. Docket No. RP78–36, Southern Natural Gas Co.
RP–2. Docket No. RP72–122 (PGA78–3), Colorado Interstate Gas Co.

II. Producer Matters

CI–1. Docket No. RI74–188 and RI75–21, Independent Oil and Gas Association of West Virginia.

III. Pipeline Certificate Matters

CP–1. Docket No. CP76–238, United Gas Pipeline Co.
CP–2. Docket No. CP77–71, Natural Gas Pipeline Co., of America. Docket No. CP77–118, Columbia Gas Transmission Corp. and Columbia Gulf Transmission Co. Docket No. CP77–125, Texas Gas Transmission Corp.
CP–3. Docket Nos. CP75–140 et al., Pacific Alaska LNG Co., et al. Docket Nos. CP74–160, et al., Pacific Indonesia LNG Co., et al. Docket No. CI78–453, Pacific Lighting Gas Development Co. Docket No. CI78–452, Pacific Simpco Partnership.

Kenneth F. Plumb,

Secretary.

[S–2328–79 Filed 11–29–79; 11:39 am]

BILLING CODE 6450–01–M

8

FEDERAL MARITIME COMMISSION.

TIME AND DATE: November 30, 1979, 2 p.m.

PLACE: Room 12126, 1100 L Street NW., Washington, D.C. 20573.

STATUS: Open.

MATTER TO BE CONSIDERED: Docket No. 78–46: Financial Exhibits and Schedules of Common Carriers in the Domestic Offshore Trades—Review of comments.

CONTACT PERSON FOR MORE INFORMATION: Francis C. Hurney, Secretary, (202) 523–5725.

[S–2326–79 Filed 11–28–79; 4:48 pm]

BILLING CODE 6730–01–M

9

FEDERAL MARITIME COMMISSION.

TIME AND DATE: December 11, 1979, 10 a.m.

PLACE: Room 12126, 1100 L Street NW., Washington, D.C. 20573.

STATUS: Open.

MATTER TO BE CONSIDERED: Docket No. 78–46: Financial Exhibits and Schedules of Common Carriers in the Domestic Offshore Trades—Review of comments.

CONTACT PERSON FOR MORE INFORMATION: Francis C. Hurney, Secretary, (202) 523–5725.

[S–2327–79 Filed 11–28–79; 4:48 pm]

BILLING CODE 6730–01–M

10

LEGAL SERVICES CORPORATION.

Notice of Agenda (Meeting Open to Public).

Legal Services Advisory Council of Iowa, 11 a.m., Wednesday, December 12, 1979 at Office of Legal Services Corporation of Iowa, Suite 22, 315 East Fifth Street, Des Moines, Iowa 50309.

Items of Business

1. Selection of Secretary pro-tem
2. Discussion of statutory responsibility and selection of Method of Discharging Responsibility
3. Action on any complaints
4. Action on annual report
5. Preparation and adoption of budget
6. Action on budget funding
7. Future meetings—determination of time, place, date

Inquiry about the meeting may be made to Howard N. Sokol, Chairman, 801 Normandy Drive, Iowa City, Iowa 52240. Phone 319–337–9851.

Hulett H. Askew,

Associate Director, Office of Field Services, Legal Services Corporation.

[S–2334–79 Filed 11–29–79; 2:32 pm]

BILLING CODE 6820–35–M

11

POSTAL SERVICE (Board of Governors).

Supplemental Notice Concerning Meeting. The Board of Governors of the United States Postal Service, consistent with the Government in the Sunshine Act (5 U.S.C. 552b) hereby gives notice that, at its meeting of December 4, 1979, the Governors are expected to consider the November 28, 1979, Recommended Decision of the Postal Rate Commission on the Third-Class Carrier Route Presort Proposal, 1978 (Commission Docket No. MC78–2). This will be in addition to the matters in the Agenda which was publicly announced on November 27, 1979, and published in the **Federal Register** on November 28, 1979, 44 FR 68064–5. Requests for information should be addressed to the Secretary of the Board, Louis A. Cox, at (202) 245–4632.

Louis A. Cox,

Secretary.

[S–2335–79 Filed 11–29–79; 2:36 pm]

BILLING CODE 7710–12–M

12

SECURITIES AND EXCHANGE COMMISSION.

"FEDERAL REGISTER" CITATION OF PREVIOUS ANNOUNCEMENT: [44 FR 67565, November 26, 1979]

STATUS: Closed meeting.

PLACE: Room 825, 500 North Capitol Street, Washington, D.C.

DATE PREVIOUSLY ANNOUNCED: Monday, November 26, 1979.

CHANGES IN THE MEETING: Additional items.

The following additional items will be considered at a closed meeting scheduled for Thursday, November 29, 1979, immediately following the 10 a.m. open meeting:

Regulatory matter bearing enforcement implications and formal order of investigation.

Settlement of administrative proceeding of an enforcement nature.

Commissioners Loomis, Pollack, and Karmel determined that Commission business required the above changes and that no earlier notice thereof was possible.

At times changes in Commission priorities require alterations in the scheduling of meeting items. For further information and to ascertain what, if any, matters have been added, deleted or postponed, please contact: Mike Rogan at (202) 272–2178.

November 29, 1979.

[S–2337–79 Filed 11–29–79; 3:14 pm]

BILLING CODE 8010–01–M

federal register

Monday
December 3, 1979

Part II

Environmental Protection Agency

Revised Motor Vehicle Exhaust Emission Standards for Carbon Monoxide (CO) for 1981 and 1982 Model Year Light-Duty Vehicles; and Applications for Waiver of Effective Date of 1981 Model Year Carbon Monoxide Emission Standard for Light-Duty Motor Vehicles—Second Consolidated Decision

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 86

[FRL 1360-4]

Revised Motor Vehicle Exhaust Emission Standards for Carbon Monoxide (CO) for 1981 and 1982 Model Year Light-Duty Vehicles

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: This regulation establishes CO emission standards for 1981 model year light-duty vehicles belonging to certain engine families for which I have granted waivers from the standard otherwise applicable under section 202(b)(5) of the Clean Air Act, 42 U.S.C. 7521(b)(5).

EFFECTIVE DATE: December 10, 1979.

ADDRESS: Information relevant to this rule is contained in Public Docket EN-79-17 at the Central Docket Section of the Environmental Protection Agency (EPA), Room 2903B, 401 M Street, SW., Washington, D.C. 20460 and are available for review between the hours of 8:00 a.m. and 4:00 p.m. As provided in 40 CFR Part 2, a reasonable fee may be charged for copying services.

FOR FURTHER INFORMATION CONTACT: Glenn Unterberger, Manufacturers Operations Division (EN-340), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460, (202) 472-9417.

SUPPLEMENTARY INFORMATION: Section 202(b)(1)(A) of the Clean Air Act ("the Act"), 42 U.S.C. 7521(b)(1)(A), requires that regulations applicable to CO emissions from light-duty vehicles or engines manufactured during or after the 1981 model year shall contain standards which require a reduction of at least 90 percent from CO emission levels allowable under the 1970 model year standards. Regulations implementing this requirement have established a CO standard, often referred to as the statutory standard for CO, of 3.4 grams per vehicle mile (gpm).

Section 202(b)(5) of the Act authorizes the Administrator, on application of any manufacturer, to waive the statutory CO standard for the 1981 and 1982 model years for any light-duty vehicle model regarding which the Administrator can make certain findings. In these cases, the Act requires that I promulgate substitute CO standards for 1981 and 1982 model year light-duty vehicles as discussed below. Applications for these waivers were submitted by Fuji Heavy Industries, Ltd., Nissan Motor Co., Ltd., Regie Nationale des Usines Renault, and Toyo Kogyo Co., Ltd. The statutory criteria, my determinations regarding the criteria with respect to the vehicle models covered by the waiver applications, and my decisions to grant or deny the waiver applications appear in the consolidated decision published above. In that decision, I granted waivers covering the following vehicle models (engine families for purposes of that decision) for the 1981 model year only:

Manufacturer	Engine family
Toyo Kogyo Co., Ltd	91 CID, 120 CID

Once I have decided to grant waiver applications for these two 1981 model year vehicle models, the Act requires that I simultaneously promulgate regulations adopting emission standards not permitting CO emissions from 1981 model year vehicles of these two Toyo Kogyo models to exceed 7.0 gpm. Moreover, that Act further requires that I promulgate regulations establishing these standards no later than 60 days after I receive the waiver application in question.[1] The public has received an opportunity to comment on the waiver applications at issue, and I have considered those comments in making the consolidated decision which requires the promulgation of this rule. For these reasons, I find that providing notice and an opportunity to comment on this rulemaking before final promulgation is impracticable and unnecessary.

Note.—The Environmental Protection Agency has determined that this document does not contain a major proposal requiring preparation of an economic impact analysis under Executive Orders 11821 and 11944 and OMB Circular A-107.

In addition, because the decision already accompanying this rulemaking contains a detailed analysis indicating that this rulemaking will have a negligible effect on air quality, the Environmental Protection Agency has not prepared an Environmental Impact Statement to accompany this rulemaking as well.

Dated: November 8, 1979.

Douglas M. Costle,

Administrator.

40 CFR Part 86 is amended as follows:

[1] In this case, both Toyo Kogyo Co., Ltd., and Nissan Motor Co., Ltd., have consented to brief extensions of the period within which I was to decide on their respective waiver applications.

Subpart A—General Provisions for Emission Regulations for 1977 and Later Model Year New Light-Duty Vehicles, 1977 and Later Model Year New Light-Duty Trucks and 1977 and Later Model Year New Heavy-Duty Engines.

40 CFR 86.081-8(a)(1), published at 44 FR 53408 (September 13, 1979), is revised to read as follows:

§ 86.081-8 Emissions standards for 1981 and later model year light-duty vehicles.

(a)(1) Exhaust emissions from 1981 and later model year light-duty vehicles shall not exceed the following levels for the following pollutants:

(i) Hydrocarbons—0.41 grams per vehicles mile;

(ii) Carbon monoxide—3.4 grams per vehicle mile, except that

(A) Carbon monoxide emissions from light-duty vehicles of the following 1981 and 1982 model year engine families shall not exceed 7.0 grams per vehicle mile:

Manufacturer	Engine Family
American Motors Corporation	258 CID
BL Cars, Ltd	TR8, XJ12
Chrysler Corporation	1.7 liter, 3.7 liter, 5.2 liter/4-V
General Motors Corporation	2.8 liter/173 CID-2V, 3.8 liter/231 CID-2V
Toyota Motor Company, Ltd	88.6 CID

(B) Carbon monoxide emissions from light-duty vehicles of the following 1981 model year engine families shall not exceed 7.0 grams per vehicle mile:

Manufacturer	Engine family
Toyo Kogyo Company, Ltd	91 CID, 120 CID

(iii) Oxides of nitrogen—1.0 grams per vehicle mile except that oxides of nitrogen emissions from 1981 and 1982 model year light-duty vehicles manufactured by American Motors Corporation shall not exceed 2.0 grams per vehicle mile.

(Secs. 202 and 301(a), Clean Air Act, as amended, (42 U.S.C. 7521 and 7601(a)))

[FR Doc. 79-36529 Filed 11-30-79; 8:45 am]

BILLING CODE 6560-01-M

ENVIRONMENTAL PROTECTION AGENCY

[FRL 1360-4]

Applications for Waiver of Effective Date of the 1981 Model Year Carbon Monoxide Emission Standard for Light-duty Motor Vehicles—Second Consolidated Decision of the Administrator

I. Introduction

This is the second consolidated decision I have issued under Section 202(b)(5) of the Clean Air Act as amended (Act), 42 U.S.C. 7521(b)(5), regarding applications from automobile manufacturers for waiver of the 3.4 grams per vehicle mile (gpm) carbon monoxide (CO) emission standard scheduled to apply to 1981 and 1982 model year light-duty motor vehicles and engines.[1]

As the introduction to the first consolidated decision explains, Section 202(b)(1)(A) of the Act establishes the standards applicable to CO emissions for 1977 and later model year light-duty motor vehicles and engines. This section, included in the 1977 amendments to the Act, requires the Administrator of the Environmental Protection Agency (EPA) to promulgate regulations providing that CO emissions for 1977 through 1979 vehicles may not exceed 15.0 gpm. For 1980 model year vehicles, this section requires a standard which does not permit CO emissions to exceed 7.0 gpm. Beginning in model year 1981, this section mandates standards which require a reduction in CO emissions of at least 90 percent from the CO standard applicable to 1970 model year vehicles.

As Administrator, I promulgated regulations which set the CO standard for 1981 and later model year vehicles at 3.4 gpm.[2]

The 1977 amendments to the Act, however, also included a provision allowing the Administrator, under certain limited conditions, to delay implementation of the 3.4 gpm CO standard. Specifically, Section 202(b)(5) of the Act provides that any light-duty motor vehicle or engine manufacturer may apply for waiver of the 3.4 gpm CO standard for any of its 1981 or 1982 model year vehicle or engine models. This section directs the Administrator to make a determination on each application within 60 days from receipt of the application. Should the Administrator decide to grant a waiver for a model, he simultaneously must promulgate standards which do not allow CO emissions over 7.0 gpm for those models covered by the granted waiver applications.

Section 202(b)(5)(C) of the Act provides in pertinent part the following:

> The Administrator may grant such waiver if he finds that protection of the public health does not require attainment of such 90 percent reduction for carbon monoxide for the model years to which such waiver applies in the case of such vehicles and engines and if he determines that—
>
> (i) such waiver is essential to the public interest or the public health and welfare of the United States;
>
> (ii) All good faith efforts have been made to meet the standards established by this subsection;
>
> (iii) The applicant has established that effective control technology, processes, operating methods, or other alternatives are not available or have not been available with respect to the model in question for a sufficient period of time to achieve compliance prior to the effective date of such standards, taking into consideration costs, driveability, and fuel economy; and
>
> (iv) Studies and investigations of the National Academy of Sciences conducted pursuant to subsection (c) and other information available to him has not indicated that technology, processes, or other alternatives are available (within the meaning of clause (iii)) to meet such standards.

Congress first set statutory emission standards for hydrocarbon (HC) and CO emissions from light-duty motor vehicles and engines in the 1970 amendments to the Act.[3] Section 202(b)(1) of that version of the Act required that HC and CO emission standards for 1975 and later model year vehicles represent at least a 90 percent reduction from HC and CO standards in effect in model year 1970. Section 202(b)(5) of that version of the Act, however, authorized the Administrator, upon application of a manufacturer, to suspend for one year the effective date of those emission standards with respect to that applicant.[4]

The criteria for granting a suspension request were essentially the same as those provided in the current section 202(b)(5)(C) waiver provision, with two exceptions. The 1970 version of the Act did not explicity require the Administrator either to assess the effect of the suspension on public health or to take into consideration costs, driveability, and fuel economy in evaluating available technology.

In early 1972, the Administrator received suspension applications from five automobile manufacturers. The Administrator initially denied all five applications in a decision issued on May 12, 1972.[5] In that decision, he determined that no applicant had demonstrated that requisite technology was not available to enable compliance with the statutory HC and CO standards. On appeal, the reviewing court ultimately decided to remand the record to the Administrator to reconsider his determination regarding available technology.[6] On remand, the Administrator reversed his decision and granted to all manufacturers a one-year suspension of the statutory HC and CO standards until the 1976 model year.[7] He based his reversal on the conclusion that the risk of an errant denial of the suspension requests (which might result in severe economic disruption) outweighed the risk of an errant grant (which might result in environmental benefits not achieved). The Administrator was particularly concerned about the economic impact of any unanticipated production problems that could occur when manufacturers first began using catalytic converters in production in order to meet the statutory HC and CO standards.

In the 1974 amendments to the Act, Congress further postponed the effective date of these statutory standards until the 1977 model year, and authorized the Administrator to suspend that effective date until the 1978 model year under the same criteria set forth in the 1970 version of the Act.[8] After receiving suspension applications from five manufacturers in early 1975, the Administrator issued a decision granting the applications.[9]

In that decision, the Administrator concluded that the requisite technology for meeting the statutory emission standards was generally available to the industry. He further determined, however, that unregulated sulfuric acid emissions resulting from use of the requisite technology presented a significant risk to public health. The Administrator concluded that this risk outweighed any environmental savings achieved by denying the applications,

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[1] The first consolidated decision is published at 44 FR 53376 (September 13, 1979).

[2] 40 CFR 86.081-8(a)(1)(ii), 44 FR 47884 (August 15, 1979) (revising 43 FR 37972 (August 24, 1978)).

[3] Clean Air Amendments of 1970, Pub. L. No. 91-604, section 6, 81 Stat. 499 (1970) (current version at 42 U.S.C. 7521(b)(1)).

[4] This contrasts with the current section 202(b)(5), which requires the Administrator to make a separate waiver determination for each model covered by an application.

[5] In re: Applications for Suspension of 1975 Motor Vehicle Exhaust Emission Standards, Decision of the Administrator (May 12, 1972).

[6] *International Harvester Co.* v. *Ruckelshaus*, 478 F.2d 655 (D.C. Cir. 1973).

[7] 38 FR 1017 (April 26, 1973).

[8] Energy Supply and Environmental Coordination Act of 1974, Pub. L. No. 93-319, 88 Stat. 246 (1974) (current version at 42 U.S.C. 7521).

[9] 40 FR 1190 (March 14, 1975).

and therefore justified suspension of the statutory standards for HC and CO until the 1978 model year. Before the beginning of that model year, Congress enacted the 1977 amendments to the Act, which set forth the current schedule for implementing (or waiving) the CO emission standards.

Congress intended that any waivers granted under the 1977 amendments be narrow in scope and not apply to the entire industry. While the Act previously directed the Administrator to consider applications for delay of the effective date of statutory emission standards on a manufacturer-by-manufacturer basis, the current section 202(b)(5) requires the Administrator to consider separate waiver applications for each vehicle model at issue.

Requiring the Administrator to make individual determinations for small portions of the total vehicle population indicates that Congress wanted any relaxation of the statutory 90 percent reduction requirement for CO to be applied, where appropriate, as narrowly and precisely as practicable. Indeed, discussion in Congress on the Act's current CO waiver provision include the explicit statement that "[t]he waiver is not a general waiver for all manufacturers, nor is it a general waiver for all models of vehicles produced by a single manufacturer." [10] Instead, the waiver provision is to be available for a particular model line of a manufacturer which cannot meet the 3.4 gpm standard across the board in the 1981 model year. [11]

On October 13, 1978, EPA published "Guidelines for Applications for Waiver of the 1981 Carbon Monoxide Emission Standard." [12] These guidelines outlined the information which EPA sought from waiver applicants and directed applicants to submit a separate application for each vehicle model for which a waiver is sought. For purposes of these proceedings, the guidelines defined "model" as synonymous with the term "engine family" as defined in 40 CR 86.077–2 and 86.078–24(a)(2) through (a)(4)(1977).

From July 9 to July 12, 1979, EPA held a public hearing to consider waiver applications the Agency had received up until that time. The waiver applications under consideration at that hearing were submitted by American Motors Corporation, BL Cars, Ltd., Chrysler Corporation, General Motors Corporation, Toyota Motor Co., Ltd., and Volkswagen AG. EPA received testimony from the waiver applicants, from other automobile manufacturers which at that time had not filed for a waiver, and from suppliers and developers of emission control systems and components. [13]

Consistent with the requirement of section 202(b)(5)(A) of the Act, I made a separate determination for each engine family for which one of the six manufacturers had requested a waiver. This set of determinations was published as a consolidated decision. [14] In that decision, I indicated that I was denying the waiver applications covering those engine families for which I had determined, for either one of two reasons, that the applicant had failed to meet the statutory criterion in section 202(b)(5)(C)(iii) of the Act. Specifically, I denied some of the waiver applications because I determined that effective control technology [15] was available to permit the engine families in question to meet the 3.4 gpm CO standard in the 1981 model year, even after considering costs, driveability, and fuel economy. I denied other waiver applications because the applicant had failed to provide sufficient information to establish that such technology was not available for the engine families in question. I granted the waiver applications covering the remaining engine families, for which I was able to determine that the requisite technology was not available, because those waiver applications also met each of the remaining statutory criteria for receiving a waiver.

EPA held another public hearing on September 12, 1979, to consider waiver applications it had reviewed since the July 9–12 hearing. At this hearing, EPA reviewed waiver applications in order of their receipt from Toyo Kogyo Co., Ltd. (hereinafter "Toyo Kogyo"), Nissan Motor Co., Ltd. (Nissan), and Fuji Heavy Industries, Ltd. (Fuji), covering all the engine families scheduled for production by each of these manufacturers, and from Regie Nationale des Usines Renault (Renault), covering one of its engine families. [16]

As with the first consolidated decision, I have made a separate determination for each engine family covered by a waiver request [17] and have consolidated these separate determinations into this decision.

II. Summary of Decision

I have decided to deny all but two of the waiver applications under consideration in this consolidated decision and to grant those two waiver requests specified below. I have reached this set of determinations by employing the same general evaluation process I used in the first consolidated decision. Much of the rationale which applied in that decision is controlling here as well. A more detailed discussion of the basis for this second consolidated decision follows this summary.

In order to grant a waiver for an engine family, I must determine that an applicant has met each criterion specied by the Act. For two Toyo Kogyo engine families covered by waiver applications, I have determined that Toyo Kogyo has met each of the statutory criteria for receiving the waiver for the 1981 model year. I also have determined, however, that those two engine families can incorporate effective control technology, considering costs, driveability, and fuel economy, to meet the 3.4 gpm CO standard by the 1982 model year. As a

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[10] 123 Cong. Rec. S 13703 (daily ed. Aug. 4, 1977) (remarks of Sen. Muskie).

[11] Id. at S 13702–13703.

[12] 43 FR 47272 (1978).

[13] Testimony received at that hearing, as well as all other information considered in deciding on that group of waiver applications, is included in EPA Public Docket EN–79–4.

[14] See note 1, supra.

[15] As was the case in the first consolidated decision, I am using the term "technology" in this decision to encompass the statutory language "technology, processes, operating methods, or other alternatives" included as part of section 202(b)(5)(c)(iii) of the Act.

[16] This decision uses the following abbreviated citations:

Fuji App.—Fuji Heavy Industries. Ltd., Waiver Request of Carbon Monoxide Standard for 1981 and 1982 Model Year Light-Duty Vehicles, dated September, 1979.

N App.—Nissan Motor Co., Ltd., Application for Waiver of the 1981 and 1982 CO Emission Standard for Light Duty Vehicles, dated August, 1979.

R App.—Regie National des Usines Renault Application for Waiver of 1981 and 1982 Carbon Monoxide Emission Standard, dated September, 1979.

TK App.—Toyo Kogyo Co., Ltd., Application for Waiver of 1981 and 1982 CO Emission Standard for Passenger Cars, dated July, 1979.

Sept. 12 Tr.—The transcript of the public hearings held on September 12, 1979, on these waiver applications.

Citations used here for waiver applications considered under the first consolidated decision are the same as those listed at 44 FR 53377, note 12 (September 13, 1979). Other submissions are cited by the name or initials of the submitting party and the date on the submission, e.g. TK 9/28/79 p.1.

[17] Strictly speaking, I have made separate determinations here for each engine displacement, rather than for each engine family, covered by a manufacturer's set of waiver requests. Because so many different engine families can be associated with a single engine displacement of a given waiver applicant, it is impracticable for me to make a separate waiver determination for each of those engine families. By avoiding a strict engine family-by-engine family approach, I can avoid placing narrow limits on the type of vehicle design a manufacturer may choose to use; instead, I am providing the manufacturer the opportunity to use whatever design it deems best suited to enable a given engine with a given displacement to meet the emission standards established for it. Thus, as was the case in the first consolidated CO waiver decision, the term "engine family" as used in this decision actually describe a broader class of vehicles than it normally would under the definition established by 40 CFR Part 86.

result, I am granting waivers which cover only 1981 model year vehicles of these two engine families.

As I did in the first consolidated decision, I have based my decision here to deny waiver requests for the other engine families at issue on either of two determinations. For some of those engine families, I have determined that those families can incorporate effective control technology, considering costs, driveability, and fuel economy, to meet the 1981 model year statutory 3.4 gpm CO standard. For the remainder of those engine families not receiving waivers, I have determined that the applicant has failed to provide sufficient information to establish that such technology is not available.

A. Waiver Applications Granted

The waiver applications which I have decided to grant cover 1981 model year vehicles of the following engine families:

Waiver Applications Granted

Manufacturer	Engine family
Toyo Kogyo Company, Ltd.	91 CID (1981 model year only).
	120 CID (1981 model year only).

As discussed more fully below, I have concluded that technology will not be available for incorporation into 1981 model year vehicles of these particular engine families to enable these families to meet a 3.4 gpm CO standard. I am prescribing interim CO emission standards of 7.0 gpm for the 1981 model year for each of the engine families receiving waivers. The statutory 3.4 gpm CO standard will apply to 1982 model year vehicles of these two engine families, however, because I have determined that technology, considering cost, driveability, and fuel economy, will be available by the 1982 model year to enable these engine families to meet the 3.4 gpm CO standard.

In making determinations for these engine families, I have not considered whether these two engine families would be capable of meeting the 3.4 gpm CO standard by replacing their catalysts during their useful life. Such replacement depends on vehicle owners taking affirmative action for which significant disincentives exist. Because many owners are unlikely to replace their vehicles' catalysts, I have determined generally that effective CO control technology within the meaning of the Act is not available for engine families otherwise unable to meet the 1981 statutory emission requirements for CO.

Protection of the public health does not require attainment of the 3.4 gpm CO standard in the 1981 model year by the engine families for which I have granted waivers. The effect on ambient air quality which would result from allowing the two Toyo Kogyo engine families receiving waivers to meet a CO standard of 7.0 gpm for the 1981 model year is insignificant. As a result, the impact these waivers would have on any state's ability to meet the National Ambient Air Quality Standards (NAAQS) for CO (in other words, the state's ability to achieve CO levels recognized as protective of public health) also would be insignificant.

I have determined the two waivers which I have granted to be essential to the public interest. By granting these waivers, I will permit Toyo Kogyo to market one or more engine families which they otherwise may not have been allowed to market, or may only have been allowed to market with the requirement of an expensive catalyst change. These waivers are essential to the public's interest in maintaining a diversified and competitive automotive industry for the United States market.

Specifically, these waivers enable Toyo Kogyo to continue selling two of its three engine families without requiring catalyst changes. Granting waivers to ensure the viability of this applicant serves the public interest by helping to preserve the level of competition that currently exists in the automotive industry.

Each of the waiver applicants contended that it has acted in good faith in trying to meet the 3.4 gpm standard. In general, information in the record supplies support for determining that the applicants have met the Act's good faith criterion. In some limited instances, though, the applicants' respective showings in this regard are at best marginal. Nevertheless, in the absence at this time of any evidence supporting a contrary conclusion (even for the marginal showings), I have determined that each of the applicants, including Toyo Kogyo, has met the good faith criterion for those engine families for which I have granted a waiver.

Review of studies and investigations of the National Academy of Sciences (NAS) and other information available to me has not indicated that the requisite technology, considering costs, driveability, and fuel economy, is available for these engine families. Available NAS studies only address the issue of whether technology is available in general without considering the issue of availability in the context of the details associated with a particular engine family. The NAS is in the process of preparing a new study on the availability of effective CO control technology.

Other information has been obtained from non-applicant manufacturers or part suppliers and developers by subpoena, or from sources not directly associated with proceedings on these waiver applications and has been included in the record for the determinations on these applications. This information does not indicate that the requisite technology, considering costs, driveability, and fuel economy, will be available for the engine families receiving a waiver for the 1981 model year.

Therefore, concurrently with this consolidated decision I am promulgating regulations establishing a 7.0 gpm CO emission standard for 1981 model year vehicles of the two engine families I have listed.

B. Waiver Applications Denied

As stated earlier, I am denying those waiver applications which apply to the remaining engine families as follows:

Waiver Applications Denied

Manufacturer	Engine family
Fuji	97 CID.
	109 CID.
Nissan	75 CID.
	85/91 CID.[18]
	119 CID.
	146/168 CID.[19]
	EF-A.[20]
	EF-B.
Renault	85 CID.
Toyo Kogyo	70 CID (Rotary).
	91 CID (1982 model year only).
	120 CID (1982 model year only).

[18] In its certification program, EPA historically has treated the Nissan engines of these two sizes as part of the same engine family in certification.

[19] Id.

[20] Nissan has requested confidentiality for descriptions of two of its engine families; thus, I am using the fictitious designations "EF-A" and "EF-B" to represent these families.

I cannot conclude that effective control technology, considering costs, driveability, and fuel economy, is not available to enable those engine families to meet the statutory CO standard in the 1981 model year.

Nissan submitted emission test data which indicated that its 119 CID engine family can meet the 3.4 gpm CO standard by using a design Nissan has considered for that engine family. Nissan's 75, 85/91, and 146/168 CID engine families will be capable of attaining the 3.4 gpm CO standard in the 1981 model year by adding one or more available features to the design of the engine family. Toyo Kogyo's 91 and 120 CID engine families also will be capable of attaining the 3.4 gpm CO standard in the 1982 model year by adding available features which will become available by that time.

For the remaining engine families covered by waiver applications which I

have denied, the applicants have failed to establish that effective CO control technology will not be available to them. The waiver applications for Fugi's 97 and 109 CID engine families and for Renault's 85 CID engine family, respectively, have failed to establish that size limitations prevent the incorporation of effective emission control equipment into vehicles of these engine families. Toyo Kogyo's 70 CID engine family using a thermal reactor and no catalyst is not susceptible to this decision's normal, rigorous analysis of emissions performance capabilities; however, the only emission test data available on that family indicate that the family can meet the 3.4 gpm CO standard. Nissan failed to submit emission test results which provide an adequate basis for me to determine that its engine families "A" and "B" are not capable of attaining the 3.4 gpm CO standard.

Considerations of costs, driveability, or fuel economy, whether viewed separately or cumulatively, do not give me a basis for altering my determinations regarding the availability of technology for these engine families which have been denied waivers. The extra costs associated with implementing technology capable of meeting the 3.4 gpm standard for those engine families, while not necessarily insignificant, are not substantial enough compared to the costs of meeting a standard no higher than 7.0 gpm to justify a conclusion that use of that technology is not feasible. The higher prices which manufacturers will need to charge to cover these extra costs will not be so large as to threaten the capabilities of these engine families to achieve or maintain a competitive position in the marketplace by making vehicles of the engine families in question unacceptable to consumers. I have determined, therefore, that these costs do not prevent the requisite control technology from being reasonably available to enable these engine families to achieve the 90% reduction in CO emissions which the Act establishes as an ultimate target for light-duty motor vehicles.

Furthermore, no waiver applicant has presented information which indicates that implementing technology capable of achieving the 3.4 gpm standard would have a sufficient adverse effect on driveability, relative to the driveability levels which an applicant reasonably could attain in conjunction with a standard not exceeding 7.0 gpm, to make the vehicles in question unacceptable to consumers. Nor has any waiver applicant demonstrated that implementation of that technology either will prevent the engine families in question from meeting Federal fuel economy requirements or will cause an unreasonable fuel economy penalty relative to fuel economy levels achievable in conjunction with a standard not exceeding 7.0 gpm.

Thus, while these remaining engine families may meet some, or all, of the remaining statutory criteria for receiving waivers, my determinations regarding available technology, considering costs, driveability, and fuel economy, preclude me from granting waivers covering these engine families.

III. Discussion

A. Methodology for Assessing Available Technology

As was the case under the first consolidated CO waiver decision, a key question I must face in reviewing this set of waiver applications is whether technology is available to enable an engine family covered by a waiver application to meet the 3.4 gpm CO standard in the 1981 model year. Sections 202(b)(5)(C) (iii) and (iv) of the Act indicate that Congress intended all vehicles to comply with the Act's 90 percent CO emission reduction requirement where practicable. Section 202(b)(5)(C)(iii) of the Act expressly assigns an applicant the task of establishing that effective CO control technology is not available, taking into consideration costs, driveability, and fuel economy. Even if the Administrator determines that an applicant has met this burden, section 202(b)(5)(C)(iv) requires the Administrator to make sure before he may grant a waiver request that other available information does not contradict the applicant's position on available technology.

1. *Applicants' Positions Summarized.* Each automobile manufacturer has reached a state in its development of CO emission controls at which it has narrowed the range of strategies it contemplates employing to meet the 3.4 gpm standard to, at most, a few alternative systems. To support contentions that effective control technology is not available within the meaning of the Act, the waiver applicants have provided both descriptions of the systems they have been considering in trying to attain the 3.4 gpm CO emission standard and emission test results they have measured from vehicles incorporating those systems. Each application proposed that I grant the requested waivers to cover engine families produced in both the 1981 and 1982 model years and that a 7.0 gpm CO standard apply to those families.

a. *Fuji Heavy Industries, Ltd.* Fuji asserted that it has not yet been able to develop technology capable of complying with all aspects of a 3.4 gpm CO standard by the 1981 model year without employing a catalyst change during the first 50,000 miles of vehicle operation.[21] Fuji pointed out that its 1% U.S. market share was small enough that granting waivers for those vehicles would have little significant effect on ambient air quality and public health.[22] Fuji also stated that the requested waivers would serve a significant role in promoting diversity and competition within the industry, since four-wheel drive, multipurpose vehicles constitute one-half of its U.S. sales.[23]

b. *Nissan Motor Co., Ltd.* Nissan stated that although its efforts in CO emission control have produced promising results, it has not yet been able to demonstrate that it can comply with all the requirements associated with a 3.4 gpm CO standard in the 1981 model year.[24] Moreover, Nissan claimed that it had insufficient lead time to conduct necessary durability and reliability testing on its systems before its 1981 model year decision deadlines.[25] Nissan asserted that granting waivers would permit a $60–$110 reduction in the cost of its vehicles and have a negligible effect on public health.[26]

c. *Regie Nationale des Usines Renault.* Renault applied for a waiver for only one of its two engine families. Renault asserted that the structure of its 85 CID Le Car model (designed in 1966–1970) does not permit the adaptation of an emission control system to meet 3.4 gpm CO and 1.0 gpm oxides of nitrogen (NO_x) standards within the remaining lead time available for the 1981 model year.[27] Renault pointed out that sales of Le Car constitute only 0.1% of the U.S. market and therefore would not contribute to deterioration in air quality or adversely affect public health if produced to meet a less stringent CO standard.[28] Moreover, Renault maintained that granting a waiver for Le Car vehicles would permit it to market a

[21] F. App., p. 1–3.
[22] Id.; Sept. 12 Tr. at 103–104.
[23] Sept. 12 Tr. at 104.
[24] Sept. 12 Tr., p. 53. N. App., p. 102.
[25] N. App., p. 5.5.1.
[26] N. App., p. 3.1.
[27] Sept. 12 Tr., p. 161; R. App., p. I/1. Renault stated that its own development efforts to meet those two emission standards were unsuccessful in meeting established design targets. Sept. 12 Tr., pp. 163, 164. Moreover, Renault indicated that introducing purchased technology into production for this engine family would require a two-year lead time. Sept. 12 Tr., p. 165.
[28] R. App., p. I/1.

standard "50-state" vehicle that would comply nationwide with the more stringent NO_x emission and allowable maintenance requirements effective in California.[29]

d. *Toyo Kogyo Co., Ltd.* Toyo Kogyo filed waiver applications for two engine families using conventional piston engines and one engine family using a rotary engine. Toyo Kogyo stated that the system it planned to use for the rotary engine family would involve a $40 cost penalty and a 5% fuel economy penalty at a 3.4 gpm CO standard relative to the system it would use to meet a 7.0 gpm CO standard.[30] The alternative systems Toyo Kogyo is thinking of using for its conventional engine families assertedly either involve cost or fuel economy penalties ($50 and 5%) or have not adequately demonstrated an ability to meet the 3.4 gpm standard.[31] Toyo Kogyo claimed that some refinements in both the rotary and conventional systems would be necessary before those systems could be put to practical use in meeting a 3.4 gpm CO standard.[32]

2. *Decision Methodology.* Appendix A to this consolidated decision contains an assessment of technology available to meet the 3.4 gpm CO standard for each engine family in question. These assessments result from a review of the information contained in the waiver applications on these systems and of other information contained in the public record for this consolidated decision.

Appendix A evaluates the availability of effective control technology in the same way that Appendix A of the first consolidated CO waiver decision did.[33] Specifically, Appendix A to this decision assesses the emissions performance of each engine family as described in the waiver application and also of each described engine family after hypothetically factoring in one or more system improvements through the use of "adjustment factors". The adjustment factors account for only those emission control features (such as an additional catalyst, air injection, or increased catalyst noble metal loadings) which 1) are reasonably available to a manufacturer for incorporation into a 1981 or 1982 model year engine family's design in order to achieve greater reduction of CO emissions and 2) have their respective effects on emissions reflected in data which are available to me.[34]

Appendix A employs methodology which applies these few carefully selected adjustment factors to emission test results supplied by a waiver applicant. This allows me to ascertain not only what CO emission levels the systems as described in the waiver applications can attain but also what these systems could attain had the systems incorporated "state-of-the-art" technology in which a high level of confidence can be placed.[35] EPA's Administrator also has used this approach in assessing technology in conjunction with past decisions on applications for suspension of statutory motor vehicle exhaust emission standards.[36]

Appendix A then addresses whether the engine family under each scenario is capable of "certifying" (passing EPA's certification testing requirements)[37] with 0.41 gpm HC, 3.4 gpm CO, and 1.0 gpm NO_x standards in effect.[38] Consistent with the methodology used in the previous suspension decisions and outlined in the waiver application guidelines,[39] Appendix A contains this evaluation for each engine family for which sufficient emission test data were available by using a "Monte Carlo" statistical simulation technique. The Monte Carlo technique employs emission test data provided for a vehicle of a given engine family to generate the emission level distributions that would be expected to occur for a large fleet of durability vehicles of that engine family as measured by certification testing.[40] Appendix A assigns a "pass" or "fail" determination to each engine family scenario according to whether the applicable Monte Carlo simulation indicated that more or less than 80% of the vehicles of the engine family in question could meet certification testing requirements for each regulated pollutant if each were tested once.[41] In this manner the methodology takes into

[29] R. App., p. I/2.

[30] TK App., p. 1.2.

[31] Id. at pp. 1.2–1.3.

[32] Sept. 12 Tr., p. 11–14.

[33] See In re: Applications for Waiver of Effective Date of the 1981 Model Year Carbon Monoxide Emission Standard for Light-Duty Vehicles, Consolidated Decision of the Administrator, 44 FR 53376, 53389–53402 (September 13, 1979). Appendix A of the first consolidated decision included an examination of the potential emissions performance of engine families covered by a waiver application if they used a catalyst replacement during the vehicles' useful life. My determinations were not influenced by the results of that examination, however, because I concluded that a required catalyst change does not constitute effective control technology for controlling CO emissions below the established standard. (See the discussion in Section III(B)(1)(a) of this decision).

I am applying the same conclusion regarding catalyst replacement in this consolidated decision as well. As a result, Appendix A to this decision does not project the emission capabilities of the engine families in question were they to employ such technology.

[34] Other factors (specifically, deletion of power enrichment and use of insulated or dual-walled exhaust pipes) representing CO emission control technology were considered available, but sufficient data to qualify these factors was not generally available therefore precluding their general use and thereby adding to the conservative nature of the analysis.

[35] The factors which the methodology employs to account for the effects of the respective improvements to emission control systems often is purposely low compared to measured effects of those factors on emissions.

[36] See, e.g., 40 FR 11900, 11908 (March 14, 1975), 38 FR 10317, 10323 (April 26, 1973). This is not the same methodology which the Administrator used in his initial decision, ultimately remanded by the Federal appellate court in *International Harvester Co. v. Ruckelshaus*, on applications for suspension of the 1975 model year HC and CO statutory standards.

[37] Certification testing is conducted under section 206(a)(1) of the Act on vehicle prototypes to determine whether those prototypes (incorporating the same designs as those intended for use in mass-produced vehicles) are capable of meeting Federal emission requirements. One part of the certification testing procedure involves conducting periodic emission tests on a representative "durability vehicle" while that vehicle accumulates 50,000 miles to see whether the vehicle exceeds Federal emission standards during that span. If an engine family passes certification testing, EPA issues a certificate of conformity permitting a manufacturer to introduce that family into commerce without violating section 203(a)(1) of the Act.

[38] These are the statutory standards which the Act has scheduled to take effect (absent a statutory waiver) in the 1981 model year. For the sake of simplicity, in discussing an engine family's projected ability to certify, I will refer to this set of standards by merely citing the 3.4 gpm CO standard.

[39] 43 FR 47272, 47276 (October 13, 1978). No applicants commented on the use of this methodology during the waiver proceedings. This methodology was the subject of considerable public comment before the Administrator first employed it to assess available technology as part of the remanded proceedings for suspension of the 1975 model year HC and CO standards. 38 FR 10317, 10323 (April 26, 1973).

[40] The Monte Carlo technique simulates 100 durability tests on a vehicle with available test data by statistically selecting for each simulated test a set of values for car-to-car, test-to-test, and deterioration rate variabilities over the range of values that could be expected to occur in conjunction with vehicles of the design in question. General Motors used this technique in analyzing emission test data as part of its submission for the proceedings for suspension of the 1975 model year HC and CO standards. See 38 FR 10317, 10323 (April 26, 1973).

[41] As explained in the first CO waiver consolidated decision, the Administrator also applied this 80% confidence level in the methodology he used in making his final decision on applications to suspend the 1975 model year HC and CO standards. In re: Applications for Waiver of Effective Date of the 1981 Model Year Carbon Monoxide Emission Standard for Light-Duty Vehicles, Consolidated Decision of the Administrator, 44 FR 53376, 53380, n. 47 (September 13, 1979). As Appendix B of the decision on the 1975 HC and CO standards explains, EPA has certified many engine families which had not passed certification testing requirements until the second attempt. Because the certification regulations permit an engine family more than one attempt at certifying, the statistical chances of that engine family passing certification testing (by passing on one of the two attempts) for a given pollutant actually are higher than 80%. In re: Applications for Suspension of 1975 Motor Vehicle Exhaust Emission Standards, Decision of the Administrator (April, 1973) (Appendix B).

account the test-to-test, car-to-car, and deterioration factor variabilities which cause uncertainty in projecting from the few test results provided by an applicant whether an engine family is likely to meet certification requirements when tested. This methodology therefore increases the reliability of projecting from available test results that an engine family will be able to meet certification requirements.

This results from this analysis indicate with high statistical confidence that most of the engine families which were covered by a waiver application and for which adequate emission test data were available can certify to the 3.4 gpm CO standard for the 1981 and 1982 model years. Appendix A provides an assessment for each engine family scenario and describes the adjustment factors employed in projecting each family's ability to certify.

B. Waiver Applications Granted

1. *Availability of Technology, Considering Costs, Driveability, and Fuel Economy.* a. *Unavailable Technology.*—I have determined that effective CO control technology, independent of considerations of costs, driveability, or fuel economy, is not available for 1981 model year vehicles of the Toyo Kogyo 91 and 120 CID engine families. These are the engine families which the Appendix A analysis projects as being unable to certify to the 3.4 gpm CO standard in 1981, even after incorporating any reasonably available adjustment factors based on available data (short of catalyst replacement) into the possible system designs as described by the waiver applicants.

I have determined generally that *effective* control technology is not available for engine families for the 1981 model year if those families could meet the 3.4 gpm CO standard only by employing a catalyst replacement during their useful life. Any technology requiring catalyst replacement is unlikely to be effective in controlling emissions to meet the 3.4 gpm CO standard because it requires consumers to assume a substantial extra burden in ensuring that engine families employing that technology continue to meet the CO standard. Specifically, this technology could require the consumer to assume additional costs (viz., the cost of the replacement) and/or additional inconvenience (leaving a car for repairs) which there is a natural inclination to avoid.

These disincentives would discourage consumers from obtaining the catalyst replacement while the vehicles are in use.[42] This effect would make it much less likely that, after the time scheduled for the catalyst replacement, these in-use vehicles of the engine families in question would continue to conform to emission standards. It is the Agency's continuing policy to encourage manufacturers to produce vehicles which will meet emission requirements effectively during their useful life. Denying a waiver application on the ground that a catalyst change can be part of an effective emission control system (without assurance that consumers will replace the catalyst in use) would encourage waiver applicants and other manufacturers to view catalyst replacement as an option in planning to produce automobiles to meet Federal emissions standards. Thus, I have not even considered catalyst replacement as a technological alternative in determing that effective control technology is not available for the two Toyo Kogyo families to meet the 3.4 gpm CO standard in the 1981 model year.

At the public hearing on its waiver applications, however, Toyo Kogyo indicated that additional emission control technology would be available for incorporation into 1982 model year vehicles of these two engine families. The Appendix A analysis projects that the two Toyo Kogyo engine families will be able to certify using that additional technology when it becomes available. As a result, the waivers which I have granted do not apply to 1982 model year vehicles of Toyo Kogyo's 90 and 120 CID engine families.[43]

b. *Costs, Driveability, and Fuel Economy.*—The Clean Air Amendments of 1977 added to the section 202(b)(5)(C)(iii) criterion the requirement to consider costs, driveability and fuel economy in assessing the availability of technology to meet the 3.4 gpm CO standard. Thus, an applicant can demonstrate that technology is not available by establishing that the costs (or driveability or fuel economy penalties) necessarily associated with progressing from the 7.0 gpm standard effective in model year 1980 to the 3.4 gpm goal set for 1981 are significant enough to make an engine family unable to remain reasonably competitive in the marketplace because that family would be unacceptable as an alternative for motor vehicle purchasers. For the two engine families receiving a waiver, it is unnecessary to consider costs, driveability, or fuel economy in determining the availability of technology for model year 1981, since I have already determined that effective control technology is not available for those families in the 1981 model year independent of those additional concerns.

c. *National Academy of Sciences Studies and Investigations and Other Information.*—As part of my assessment of technology, section 202(b)(5)(C)(iv) of the Act requires that I consider the results of NAS studies and investigations conducted under section 202(c) of the Act regarding available technology, processes, or other alternatives. In 1974, NAS published its most recent study under section 202(c) on technology available to meet the 3.4 gpm CO standard.[44] The 1974 study concluded that the technology was generally available to manufacturers to meet the 3.4 gpm standard, but only at the expense of a fuel economy penalty that would set the industry back to those levels the industry had been attaining in 1970.

Changes in the industry since 1974 limit the current value of this NAS study. Specifically, it is highly questionable whether the fuel economy concerns raised in 1974 still apply to the current state of technology. Since the 1974 report, Congress has passed the Energy Policy and Conservation Act (EPCA)[45] to ensure that the industry achieves specified levels of fuel economy performance. None of the current set of waiver applicants even claimed that it would face problems in meeting the Corporate Average Fuel Economy (CAFE) requirements.[46] Moreover, none of the applicants established that an unacceptable fuel economy penalty will result for an engine family in question if a waiver covering that engine family is not granted.[47] In light of these considerations, requiring attainment of the 3.4 gpm CO standard generally is unlikely to have a significant adverse effect on the fuel economy levels actually attained by waiver applicants in the 1981 model year.

The NAS has not produced any relevant studies or investigations since 1974. EPA has contracted for NAS to

[42] Consumer response rates to emission related recalls indicate that even where replacement is free of charge, a substantial number of vehicles do not receive repairs.

[43] See the discussion of these two Toyo Kogyo engine families in Section III(C)(1)(a) of this consolidated decision.

[44] Report by the Committee on Motor Vehicle Emissions of the National Academy of Sciences, dated November, 1974.

[45] Pub. L. No. 94-163, 89 Stat. 871 (1975).

[46] See section VIII of Appendix A and the discussion in section III (C)(1)(b)(iii) of this decision. The so-called CAFE requirements are the manufacturers' sales-weighted fuel economy standards set under § 502 of EPCA.

[47] *Id.*

provide in the near future an updated version of its 1974 study on the feasibility of complying with a 3.4 gpm CO standard.

The available studies and investigations from NAS drew general conclusions about the availability of effective control technology to the light-duty vehicle industry on the whole rather than for specific engine families. The 1977 amendments to the Act, however, require that I assess the availability of technology for specific vehicle or engine models covered by a waiver application. Thus, the findings of the available NAS studies do not directly contradict my assessment regarding the unavailability of technology for the two Toyo Kogyo engine families for which I have decided to grant a waiver for the 1981 model year.

In addition, my review of available technology has encompassed other information incorporated into the record from nonapplicant manufacturers and from part suppliers and developers in response to subpoenas issued under section 307(a)(1) of the Clean Air Act. [48] Some non-applicant manufacturers have expressed concerns over their respective technological abilities to achieve the 3.4 gpm CO standard by the 1981 model year. [49] Many of the concerns they raised, however, only addressed the potential extra costs of the technology which those manufacturers projected to be necessary to achieve a 3.4 gpm standard and did not contest the availability of technology to meet that standard. [50]

In assessing the availability of technology, I also have reviewed data from emission tests performed on vehicles for the purpose of receiving certification for the 1980 model year. In making my determinations, I only considered test data obtained from vehicles whose emissions characteristics could be considered reasonably representative of the emissions performance of an engine family covered by a waiver application.

This additional information, as well as other information available to me and included in the record, does not provide an adequate basis for me to alter any conclusions I have reached so far in this decision regarding the unavailbility of technology for the Toyo Kogyo 91 and 120 CID engine families.

2. *Protection of the Public Health.*— Section 202(b)(5)(C) of the Act requires that before I grant a waiver covering a given engine family, I must find that protection of the public health does not require attainment of a 3.4 gpm CO standard by the vehicles of the engine family receiving the waiver for the model year to which the waiver applies. Thus, I have examined this issue with respect to the two Toyo Kogyo engine families for which I have determined that effective control technology, considering costs, is not available in model year 1981. I have found as a result of this examination that any health effects resulting from waiving the 3.4 standard for the 1981 model year for either or both of these two engine families would be insignificant. The same statement is true regarding the combined health effects resulting from waiving the 3.4 standard for the 1981 model year for these two Toyo Kogyo engine families and for all the 1981 and 1982 model year engine families receiving waivers under the first consolidated CO waiver decision. As a result, protection of the public health does not require the two Toyo Kogyo engine families, for which I have determined that effective CO control technology is not available, to attain a 3.4 gpm CO standard for the 1981 model year.

The appropriate starting point for determining whether ambient CO levels protect public health is the National Ambient Air Quality Standards (NAAQS) for CO, which have been established under section 109(a) of the Act by regulations of the Administrator. [51] The "primary" (i.e., health-protective) NAAQS for CO are 9.0 parts per million (ppm) ppm as measured over an eight-hour period and 35 parts per million (ppm) as measured over a one-hour period. [52]

Studies have demonstrated that most (and in some areas, almost all) ambient CO originates from motor vehicles. [53] In setting a statutory CO emission standard for light-duty motor vehicles as part of the 1970 amendments to the Act, Congress determined that a 90% reduction from emission levels permitted by the CO standard in effect in 1970 was necessary to permit nationwide attainment of the NAAQS for CO.

The record for the proceedings at hand does not contain any information precisely assessing on an engine family-by-engine family basis the effects on ambient CO levels of granting a two-year waiver of the effective date of the 3.4 gpm CO standard. Appendix B to this decision, however, reviews the informaton contained in the record and provides an evaluation of the effects of an industry-wide CO waiver. [54]

Appendix B uses EPA's rollback modeling technique [55] to project the effect which an industry-wide CO standards, waived to 7.0 gpm and in effect for 1981 and 1982 model year vehicles, would have during 1981–1985 on the following matters: the reductions in ambient CO concentrations [56] the number of areas from among the nation's 19 worst low-altitude, non-California air quality control regions (AQCRs) for CO that would exceed the health-based NAAQS for CO, and the number of violations occurring within

[48] Much of this information was gathered for an included in the record for the first consolidated CO waiver decision. See EPA Public Docket EN–79–4. That record has been incorporated by reference into the record for this second consolidated decision. See EPA Public Docket EN–79–17. The latter record also contains information which was not received in time for consideration in the first consolidated decision.

[49] Ford Motor Company stated it still was uncertain whether its engine families would be able to certify to the 3.4 CO standard in 1981 (July 10 Tr., p. 204). See also, e.g., the testimony of Saab-Scania of America, Inc. (July 11 Tr., p. 5).

[50] See, e.g., the testimony of Ford (July 10 Tr., p. 209) or AB Volvo (July 11 Tr., p. 92). AB Volvo explicitly stated its belief that technology is available to enable its engine families to meet the statutory 1981 standards at additional costs (July 12 Tr., p. 94).

[51] 40 CFR 50.8 (1978).

[52] These standards were established by correlating ambient CO levels with observed negative health effects and factoring in a margin of safety. I am not undertaking a review of these standards as part of thee proceedings.

[53] See, e.g., Joint Comments from Environment Defense Fund and National Resources Defense Council, p. 9 (July 30, 1979); T. App., p. 2–15.

[54] Appendix B addresses the significant comments which waiver applicants in either the first or second set of waiver proceedings have submitted to the record regarding the projected effects of CO waivers on ambient air quality and the public health. The waiver applications under consideration in this consolidated decision for the most part state merely that the respective applicant's projected share of total 1981 and 1982 model year vehicles sales will be so small as to render the contributions of the applicants' vehicles to ambient CO levels insignificant.

Nissan was the only applicant to raise additional matters in this area. N. App. 2.1–2.3. The substance of each of these comments already had been entered into the record by other parties submitting information for consideration in the first consolidated decision, and those comments were addressed in Appendix B to that decision. As a result, Appendix B to this decision is virtually the same as Appendix B of the first consolidated decision.

[55] The rollback model basically assumes a proportional relationship in calculating CO concentration in the atmosphere on the basis of the rate of CO emissions. A mathematical description of the rollback model is presented in an EPA memorandum from Edward J. Lillis to Charles L. Gray, dated May 14, 1979, and included in the record for these proceedings.

[56] As described by the highest second highest CO reading from any of the 19 air quality control regions examined. The analysis examines the second highest CO reading in a region to represent the maximum ambient CO level reached during a given year so as to negate any biasing effect which an extraordinarily high measurement due to highly unusual meteorological conditions might cause.

these 19 areas under each of several possible sets of variable conditions (such as the rate of in-use deterioration or the type of emission control system incorporated into vehicles in use).

The extent to which each of these developments occurs naturally depends upon the set of conditions assumed by the projections to be in effect and therefore differs to some extent from several of the projections included in the record. In a "maximum difference" or "worst case" scenario, Appendix B projects that in 1985, for example, an industry-wide waiver could cause a 4% decrease in the reduction of ambient CO concentrations. Under those circumstances, the industry-wide waiver would cause a 33% increase in the number of CO NAAQS violations which could occur in these AQCRs and an increase from 11 to 12 in the number of "non-attainment" regions [57] in this group.

In Appendix B's projections under a scenario employing a set of "nominal" or "reasonable" conditions judged more likely to occur, however, the effects of an industry-wide waiver would be less pronounced. Under these circumstances, Appendix B projects no measureable change in 1985 ambient CO concentrations, no change in the number of nonattainment regions, and only a 5% increase in the total number of CO NAAQS violations.

In light of these projections for a two-year, industry-wide waiver, the incremental contribution to ambient CO levels from an individual engine family receiving a waiver would constitute such a small portion of these effects on ambient CO levels that I find it reasonable to characterize that contribution as insignificant. The information supplied to the record by waiver applicants in these proceedings and in the proceedings associated with the first consolidated CO waiver decision supports this conclusion regarding the incremental contributions of individual engine families.

I also have found that the sum of the incremental contributions to ambient CO levels from the two Toyo Kogyo engine families for which I have determined under this decision that effective control technology, considering costs, driveability, and fuel economy is not available for the 1981 model year still is so small even when combined with the incremental contributions from those engine families receiving waivers under the first consolidated CO waiver decision, as to be insignificant in its effect on public health.[58] This combined projected effect should still be small enough to avoid the need for any modification of any State Implementation Plan (SIP) adopted according to the requirements of section 110 of the Act for the purpose of attaining the NAAQS for CO.

3. *Essential to the Public Interest or to the Public Health and Welfare.*—Before I may grant a waiver request, section 202(b)(5)(C)(i) of the Act requires that I determine that granting the waiver is essential to the public interest or the public health and welfare. I have determined that it is essential to the public interest to grant the waiver requests covering the two Toyo Koygo engine families for which I have determined that effective CO control technology is not available.

I have based this determination on the need to protect the public's interest in preserving diversity and competition in the automobile industry. Denying a waiver for either of the 1981 model year Toyo Kogyo engine families which lacks the technology to continue in production under the 3.4 gpm CO standard would reduce the diversity of choices available to consumers to that extent.[59] Denying these waivers also could create a threat to Toyo Kogyo's overall ability to continue as a competitive force in the marketplace and therefore to the viability of that applicant as a manufacturer of automobiles. If Toyo Kogyo could not remain viable as a manufacturer, Toyo Kogyo would no longer market other engine families which would be capable of meeting applicable emission requirements; thus, diversity and competition in the automobile industry would be undermined even further.

This problem assumes added import in an instance in which a relatively small-volume manufacturer such as Toyo Kogyo is concerned. Thus, if I denied the waiver applications covering the two Toyo Kogyo engine families for which I have determined effective CO control technology is not available, I would be creating a high degree of risk that the range of choices available to meet the automotive needs of consumers may decrease. This result could only interfere with the effectiveness with which the automobile industry is able to meet market demand for automobiles and therefore is potentially detrimental to the public interest.[60]

In this case, in which I already have determined that granting waivers for Toyo Kogyo's two 1981 model year engine families for which effective control technology is not available would not measurably impair public health, I have concluded that it also is essential to the public interest to allow Toyo Kogyo to produce these engine families by granting the waiver applications covering these 1981 model year engine families.

4. *Good Faith.*—In order for me to grant a waiver to any applicant, section 202(b)(5)(C)(ii) of the Act requires that I determine that the applicant in question has made all good faith efforts to meet the emission standards established by this subsection. In the context of this consolidated decision, therefore, I have examined information regarding each applicant's previous and projected efforts toward meeting a 3.4 gpm CO emission standard for the engine families in question.

In response to the waiver application guidelines and Agency subpoenas, each applicant has submitted detailed, specific descriptions of its past, present, and future programs for development of CO emission controls. As a basis for comparisons, the record contains similar submissions from earlier waiver applicants and other automobile manufacturers which have not filed waiver applications.

To the extent that information contained in the record relates to the good faith criterion, it tends to support a finding confirming the good faith efforts of each applicant at developing CO emission controls. In some instances, however, the applicant's showing in this regard is at best marginal.[61] The

[57] An AQCR is a "non-attainment" region if measurements in that region produce results which exceed either one of the NAAQS for CO more than one per year.

[58] The engine families receiving waivers under both the first and second consolidated CO waiver decisions only constitute approximately 12% of total projected 1981 model year light-duty vehicle sales in the United States.

[59] This problem was raised by waiver applicants during the proceedings associated with the first consolidated CO waiver decision. See AMC App., p. 3; C. App. Vol. I, p. III–2.

[60] For example, Ford, a non-applicant, indicated in its testimony during the public hearing for the first consolidated CO waiver decision that as a competitor it would have problems meeting the extra market demand created when an applicant would be unable to market an engine family which could not meet a 3.4 gpm CO standard. Specifically, Ford explained that, because it would receive notice of that extra market demand only shortly before the 1981 model year, it would not have sufficient lead time to meet any more of that demand than already-existing idle capacity would permit. July 10 Tr., p. 203.

[61] An area that especially concerns me is the paucity of data from the applicants (including Toyo Kogyo) on systems that would appear to represent best effort technology. Another area of equal concern to me centers on the Nissan engine families for which I could not make a pass/fail determination due to the lack of sufficient data submitted by the applicant on any systems. Therefore, I have to deny the waiver applications covering these vehicles. This "no data" category encompasses two "no data" families out of a total of six (or 33%) planned by Nissan for the 1981 and

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applicant's financial information is general and therefore difficult to evaluate in the context of this decision. Nevertheless, I have no basis for concluding that any significant discrepancy exists among themselves or among manufacturers generally with respect to the amounts of resources, relative to company size, which each applicant has committed to the development of CO emission controls.

Of course, each applicant has a natural motivation to present its good faith arguments in the best light possible. The record contains little, if any, evidence from disinterested sources which directly corroborates the information supplied by the applicant.

In *International Harvester Co. v. Ruckelshaus,*[62] the court discussed the relative burdens and standards of proof present in proceedings such as these. The court stated that once an applicant produces ostensibly reliable and specific information in support of its position, the Administrator bears the burden of showing the reliability of any methodology employed in reaching a decision adverse to the evidence presented by the applicant. In this case, I have concluded that I could not reasonably reach a determination that any of the applicants in these proceedings has not taken all good faith efforts to meet the 3.4 gpm CO emission standard. Information submitted by an applicant might tend to ignore or gloss over information pertaining to an existing or potential CO control technology which the applicant failed to pursue in good faith. Nevertheless, the record contains no information indicating that a given applicant acted in bad faith, and therefore provides no basis for refuting the information supplied by the applicants.

Thus, I have determined that each applicant (including Toyo Kogyo) has demonstrated compliance with the good faith criterion set forth in section 202(b)(5)(c)(iii) of the Act.

5. *Conclusion.*—Both of the Toyo Kogyo engine families for which I have determined that effective CO control technology is not available for the 1981 model year are covered by waiver applications which meet each of the remaining criteria under section 202(b)(5)(C) of the Act. As a result, I am granting a waiver of the effective date of the 1981 statutory CO emission standard for both of these engine families for the 1981 model year.[63]

C. *Waiver Applications Denied*

1. *Availability of Technology, Considering Costs, Driveability and Fuel Economy.* a. *Available Technology.*—Appendix A projects the following engine family to be capable of passing certification testing requirements if that family uses one of the applicant's specified emission control system designs which the applicant is considering for possible use to meet the 3.4 gpm CO standard:

Manufacturer	Engine family
Nissan	119 CID

Nissan provided emission test data from a vehicle (VIN YD021) using its 119 CID engine with a fast burn/fuel injection/exhaust gas recirculation/three-way catalyst system. Appendix A's Monte Carlo analysis indicated with a high degree of confidence that this engine family could pass certification testing.

In addition, Appendix A projects that the following remaining engine families including Nissan's 119 CID engine family are capable of passing certification testing:

Manufacturer	Engine family	Adjustment factors [64]
Nissan	85/91 CID [65]	Ignition timing recalibration during cold start.
	119 CID [66]	Improved oxidation catalyst and dual-walled exhaust pipe.
	146/168 CID	Warm-up air injection.
Toyo Kogyo	91 CID (1982 model year only).	Clean-up oxidation catalyst with switched-air system.
	120 CID (1982 model year only).	Clean-up oxidation catalyst with switched-air system.

[64] Section IV of Appendix A explains how these factors were developed and applied.

[65] Indeed, a durability vehicle which did not employ any improvements from this engine family already has produced emission test results during 1980 California certification testing which meet the 1981 Federal emission standards. These data tend to confirm the projection of the Monte Carlo Analysis regarding this engine family's ability to meet the 3.4 gpm CO standard.

[66] As noted earlier in this section, Appendix A's analysis indicated that one of the emission control systems which Nissan had tested for this engine family is capable of meeting the 3.4 gpm CO standard in 1981. The analysis also demonstrated that another emission control system (fast burn/pulse-air injection/exhaust gas recirculation/oxidation catalyst) which Nissan tested for this engine family could meet the 3.4 gpm CO standard by using the adjustment factors as specified. The dual-walled exhaust pipe factor was derived from data supplied by Nissan (see discussion in Appendix A) and was applied for the 119 CID family because Nissan indicated that feature would be available by the 1981 model year.

Based on evidence submitted by Toyo Kogyo, I have determined that effective CO control technology (specifically, a system Toyo Kogyo has been developing which uses a feedback carburetor and oxygen sensor) which is not available for Toyo Kogyo's 1981 model year vehicles will be available for the 1982 model year.[67] Otherwise, I have determined on the basis of the projections in Appendix A that effective CO control is available as of the 1981 model year to the engine families in the two preceding lists.

I also have decided that, for the following engine families, the respective applicants have failed to establish that effective control technology is not available to enable these engine families to meet the 3.4 gpm CO standard:

Manufacturer	Engine family	Adjustment factor
Fuji	97 CID	Either: (a) improved three-way catalyst and a clean-up oxidation catalyst with an aspirator between the catalysts or (b) improved three-way catalyst and a clean-up oxidation catalyst with a switched-air system.
	109 CID	Either: (a) Clean-up oxidation catalyst with aspirator between catalysts or (b) clean-up oxidation catalyst with switched-air system.
Renault	85 CID	Clean-up oxidation catalyst with switched-air system.
Nissan	75 CID	None used.
Toyo Kogyo	70 CID (Rotary)	None used.

[67] See Section III of Toyo Kogyo's letter (undated) to Marvin B. Durning, EPA's Assistant Administrator for Enforcement, responding to questions raised at the public hearing on September 12, 1979. See also Sept. 12 Tr., pp. 42–44.

[63] Given the conservative nature of the analysis used to project that effective control technology is not available for these engine families, it remains possible that some of these families still might be able to meet the 3.4 gpm CO standard. Even with my decision to grant waivers for these families, I still expect the applicants to make reasonable attempts to have these families meet the 3.4 gpm CO standard.

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1982 model years. This lack of demonstrated effort with respect to these engine families touches on the good faith issue directly. I have denied these "no data" applications, but the 1981 model year certification process is already underway. It would appear that the 1981 certification process will be the first time Nissan conducts sufficient durability testing on these "no data" engine families to determine if they can certify at the 0.41 HC, 3.4 CO, 1.0 NOx standards.

Although I cannot refuse an application for certification on the basis of the absence of what I consider to be best effort technology, I am again putting the industry on notice that applications for waiver of the 3.4 CO standard, based on 1981 certification data generated by less than best effort technology, will be evaluated very carefully in light of the "all good faith efforts" criterion of the statute. I already have referred to this problem with respect to applications considered for the first consolidated CO waiver decision. See 44 FR 53383, n. 87 (September 13, 1979).

[62] 478 F.2d 615 (D.C. Cir. 1973).

Both Fuji and Renault claimed that space limitations prevented them from incorporating needed emission control components into vehicles of their 97, 109, and 85 CID engine families to enable those engine families to meet the 3.4 gpm CO standard. Fuji stated that it could not fit either a heat shield for an oxidation catalyst or an air pump for a switched-air injection system into its vehicle designs.[68] Renault asserted that because of space constraints it could not locate a clean-up oxidation catalyst close enough to the engine to improve efficiency.[69] Appendix A projects that these engine families could not meet the 3.4 gpm CO standard unless they incorporate these specified design features.

The illustrations and photographs which these two applicants have submitted to the record to substantiate their respective space constraint claims have not been sufficient to establish the physical impracticability of including the necessary additional equipment or design modifications. As a result, I have determined that Fuji and Renault have failed to establish that effective control technology is not available to enable these engine families to meet the 3.4 gpm CO standard. If these two applicants fail in their attempts to incorporate physically the technology capable of meeting the 3.4 gpm CO standard, they can reapply for waivers covering these engine families on the basis of more conclusive information regarding their respective inabilities to incorporate the necessary improvements into their vehicle designs.

The Monte Carlo analysis projected with a high degree of confidence that Nissan's 75 CID engine family without adjustment factors [70] would be able to certify to the 1981 statutory emission standards for HC and CO. The level of confidence with which the Monte Carlo analysis predicted this engine family could certify to the 1981 NO_x standard fell slightly below the level required for me to conclude under this decision's conservative approach that effective control technology is available to achieve compliance with that standard.[71]

However, Nissan submitted emission data from 1980 California certification testing on a durability vehicle of this engine family which met all three 1981 Federal emission standards for 50,000 miles.

The Monte Carlo analysis only predicts how an engine family is likely to perform in certification testing, whereas the California results constitute actual certification performance.[72] This decision normally employs a highly conservative approach in order to minimize the risk of incorrectly projecting that the necessary technology is available to an applicant. In this case, the California certification data provide me with an independent basis for concluding that the risk of incorrectly determining that the applicant has failed to establish the unavailability of technology is properly minimized for the Nissan engine family as well.[73] Nissan actually is producing 1980 model year California vehicles of the 75 CID engine family subject to emission standards for NO_x and HC equal to the 1981 Federal standards for those pollutants. In this case, it so happens that at 50,000 miles Nissan's certification vehicle also met Nissan's emission design target for a 3.4 gpm CO standard. Thus, even according to Nissan's own criteria it appears highly probable that this engine family is capable of meeting 1981 Federal emission standards. Based on this information, I cannot conclude that Nissan has established, as section 202(b)(5)(C)(iii) of the Act requires, that technology is not available to enable this engine family to meet 1981 Federal emission standards.

Appendix A's analysis of the engine families covered by Toyo Kogyo's waiver application indicated that Toyo Kogyo's 70 CID (rotary) engine with open-loop carburetor/multi-catalyst systems would not be capable of meeting the 3.4 gpm CO standard in the 1981 model year. However, Toyo Kogyo also submitted emission results from 1980 California certification testing on a vehicle using this engine with an exhaust gas recirculation/air injection/thermal reactor emission control system without a catalyst. The results from this durability testing were below 1981 Federal emission standards for all regulated pollutants.

Appendix A could not include a Monte Carlo analysis of Toyo Kogyo's thermal reactor system on the 70 CID engine. This is the case because the test-to-test, car-to-car, and deterioration variability factors which the Monte Carlo simulation applies are based on data generated by vehicles employing catalyst technology; hence, these factors most likely are not representative of the variabilities likely to occur for engine families not employing catalysts. Sufficient information is not otherwise available to me to develop these variability factors for this system.

Because the Monte Carlo analysis cannot be applied to Toyo Kogyo's 70 CID engine using the thermal reactor system, the California certification data is the only information in the record which is directly indicative of the emissions performance capabilities of this engine family. Because these California certification test results meet the 1981 Federal emission standards, I cannot conclude that Toyo Kogyo has established that effective control technology is not available to enable this engine family to meet the 3.4 gpm CO standard in the 1981 model year. As was the case with the Nissan 75 CID engine family, I have concluded on the basis of available California certification data that the risk of incorrectly determining that Toyo Kogyo has failed to establish the unavailability of technology for its 70 CID engine family also is properly minimized.[74]

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[68] Sept. 12 Tr., pp. 117–121, 128.

[69] R. App., p. V/4.

[70] No data were available to permit adjustment factors to be properly applied to this family for the Monte Carlo analysis.

[71] The Monte Carlo simulation resulted in a 77% probability that this engine family could meet the NO_x standard. This decision has used an 80% confidence level as the cutoff point for concluding that effective control technology is available.

[72] The durability test results obtained for this engine family in 1980 California certification can be used to satisfy the durability test requirements for 1981 Federal certification.

[73] Data from 1980 California certification which indicate the capability of a vehicle to meet the 1981 Federal emission standards may be useful in evaluating the technological capabilities to meet the 1981 federal standards. However, this is not to suggest that in every instance where an engine family has certified to California's 1980 standards at levels that indicate it could also meet 1981 federal standards, that I must conclude the manufacturer has failed to establish that the technology is not available to meet those federal standards. A manufacturer may be able to establish that California certification data for one reason or another are not representative of the engine family's true capability to meet the 1981 federal standard. (See e.g. Chryslers 3.7L family at 44 FR 53394). In such situations, the California certification data alone are not determinative as to the availability of technology.

[74] Toyo Kogyo can use the 1980 California durability certification results to meet the 1981 Federal durability certification requirements associated with a 3.4 gpm CO standard. While this may not represent Toyo Kogyo's sole criterion for determining whether to produce this engine family, these certification results essentially provide Toyo Kogyo with a license to produce this family (presuming that this family will be able to pass the remaining 1981 Federal certification testing requirements apart from the durability testing requirements). Reducing the risk that families which don't meet emission requirements will go into production is a principle objective of the certification program. However, a manufacturer may elect not to accept the certification results and not to produce such a "certified" family based on its independent assessment of the risk of noncompliance with emission standards in actual use. Toyo Kogyo has stated that it has not and would not produce an engine family that did not meet its design targets, presumably as a statement of how it addresses this risk; nevertheless Toyo Kogyo has certified and produced this family for California under HC and NO_x standards that are identical to 1981 federal standards, even though that

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Each of the applicants has argued that inquiry into whether a waiver applicant has met the technology-related criteria established by the Act for receiving a waiver does not end with the evaluation of whether an engine family is capable of certifying to the 3.4 gpm standard. The applicants assert that proper consideration of this area also should take into account the prospects for an engine family's complying with the other emission-related statutory requirements should be the 3.4 gpm CO standard go into effect.

More specifically, the applicants contend that factors such as prototype-to-production slippage, production variation, and in-use deterioration create a significant risk that production vehicles will not meet the applicable CO emission standard either coming off the assembly line or in use.[75] Under those circumstances, the manufacturer could be subject to liability under EPA's assemblyline testing, recall, and warranty programs. For this reason, the applicants have developed their own emission design targets below the actual CO standard. The applicants contend that only after they meet these targets have they assured themselves that they have minimized to an acceptable level the risk of mass producing vehicles exceeding the CO standard.

I have determined that none of the waiver applicants has established that technology will not be available to enable the engine families which I cannot conclude are incapable of passing certification requirements also to be capable of meeting the 3.4 gpm CO standard during their useful life after those families go into mass production.

Section 202(b)(5)(C)(iii) of the Act clearly places the burden of making the necessary showing regarding the available technology criterion with the applicant. EPA specifically indicated the significance of this explanation by requesting information on this point in its "Guidelines for Applications for Waiver of the 1981 Carbon Monoxide Emission Standard" (43 FR 47272, 47276 (October 13, 1978)), in the subpoenas it issued to the waiver applicants, and in the questions propounded to the applicants during the public hearing.

The applicants here for the most part have provided EPA with their design targets and with an explanation of the factors considered in deriving the design targets for the respective engine families.[76] However, no applicant has had any production experience under a 3.4 gpm CO standard through which it could establish relevant prototype-to-production slippage rates or ranges of variations among production vehicles. The availability of this information would have improved the accuracy of any projections as to whether an engine family capable of passing certification testing also could meet Federal emission requirements in mass production.

As explained in the discussion on decision methodology in section III(A)(2) of this decision, the projections of available technology in Appendix A are intentionally conservative in an effort to factor in considerations pertaining to any possible risks that engine families will not meet standards when they are mass produced. Appendix A's Monte Carlo simulation methodology accounts for the variation in deterioration rate that may occur between vehicles in projecting the ability of those tested vehicles in question to meet the 3.4 gpm CO standard for 50,000 miles (the vehicles' statutory useful life according to section 202(d)(1) of the Act). The methodology also statistically applies test-to-test and vehicle-to-vehicle variation factors, and thereby accounts for much of the effects of those variations in production. Thus, I am unable to conclude that any applicant has established that possible differences in an engine family's emission control capabilities between certification and production create an unacceptable risk that available technology capable of meeting a 3.4 gpm CO standard during certification testing will not meet the 3.4 gpm CO standard once that technology is introduced into mass production.[77]

The record did not include sufficient information to make any conclusive determination regarding available technology for the following engine families:

Manufacturer	Engine family
Nissan	EF-A
	EF-B

The waiver applications covering these engine families included no emission test results which the decision's prescribed methodology could use as a basis for evaluating their respective CO emission control capabilities, even though the waiver application guidelines expressly specified the form for the test data.[78] Moreover, no engine families for which Nissan did submit sufficient test data were similar enough to these "no data" engine families to provide a basis for assessing the capabilities of those engine families.

As I have mentioned earlier in this section, the Act places with the applicant the burden of establishing the lack of available technology. By failing to supply sufficient data from any engine family through which I can assess adequately the CO emission control capabilities of that particular engine family, the applications I have received covering Nissan these engine families have failed to meet the burden which the Act imposes on them. Thus, I cannot determine that, independent of considerations of costs, driveability, and fuel economy, effective control technology is not available to these two Nissam engine families.

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family did not meet its stated design targets in certification for these pollutants. Toyo Kogyo has provided no additional data to further my ability to assess the risks associated with production of this family. Therefore, I have no reason to believe that Toyo Kogyo faces an unreasonable risk in marketing this family on a national basis as well. This is contrasted with the situation involving Chrysler's 3.7L engine family (44 FR 53394).

[75] See, e.g., Fuji App., pp. 1–3; N. App., 1.7.

[76] Fuji App., pp. A–2–1 to A–2–3; Fuji, 9/18/79, pp. S–8–1 to S–8–2. N. App., pp. 5.4.1 to 5.4.2 and Attachment V. R. 9/24/79, pp. 4.1 to 4.4. Section V of Toyo Kogyo's letter (undated) to Marvin B. Durning, EPA's Assistant Administrator for Enforcement, responding to questions raised at the public hearing on September 12, 1979.

[77] The Nissan 75 CID and Toyo Kogyo 70 CID engine families have not passed the conservative Monte Carlo analysis (the latter because data were not available to permit proper application of the Monte Carlo simulation to that family). Nevertheless, I cannot conclude that these applicants have established that effective control technology is not available to these families. An applicant for waiver of emission standards has a natural incentive to provide conservative design targets to project the emission performance of its vehicles in production. Since neither Nissan nor Toyo Kogyo established how failure to meet their respective design targets would cause them to be incapable of meeting emission requirements for production and in-use vehicles, it is inappropriate for me to view not meeting such targets as requiring determination that technology is unavailable. Further, these manufacturers failed to relate the design targets to their actual behavior in the market place, since both have marketed vehicles in California under emission standards for those pollutants where those vehicles failed in certification testing to meet their respective targets associated with those standards.

[78] See "Guidelines for Application for Waiver of the 1981 Carbon Monoxide Emission Standard," 43 FR 47272, 47276 (October 13, 1978). In order to be adequate for use in the analysis, the emission test data must come from a vehicle which has accumulated at least 20,000 miles with no major emission control component or calibration changes and has been subject to at least four valid tests according to the 1975 Federal Test Procedure. Generally speaking, the data which Nissan submitted for the engine families in question here did not come from vehicles which had accumulated the mileage necessary to give some indication of the vehicles' durability characteristics.

In contrast, I am able to reasonably base a decision regarding the availability of technology on the emission test results for Toyo Kogyo's 70 CID engine family using a thermal reactor, even though they were not capable of analysis by the Monte Carlo simulation. Those data at least gave some indication of the engine family's durability because its emissions were measured periodically over the course of the test vehicle accumulating 50,000 miles.

Section V of Appendix A contains a more complete discussion of how the methodology applied the emission information which manufacturers submitted.

Nissan may reapply for waivers for these "no data" engine families. At that time, I will re-examine the availability of effective control technology for those engine families in light of any new, sufficient emission test data which Nissan may provide.

b. *Costs, Driveability, and Fuel Economy.*—I also cannot determine for each of the engine families not granted a waiver that, even after considering costs, driveability, and fuel economy, effective control technology is not available to enable these engine families to meet a 3.4 gpm CO standard in the 1981 model year. Specifically, neither the separate nor the combined effects of the costs, driveability, and fuel economy considerations associated with meeting a 3.4 gpm rather than a 7.0 gpm CO standard are significant enough to make any of these engine families unable to remain reasonably competitive in the marketplace.

i. *Cost.*—Appendix A analyzes the costs on a manufacturer-by-manufacturer basis of meeting the statutory CO standard based on 1979 dollars. Table VI–2 in Appendix A provides the following list detailing the extra costs per vehicle (for those families not receiving a waiver) which EPA projects that a manufacturer would have to incur in marketing each engine family covered by a waiver application with systems targeted at a 3.4 rather than a 7.0 gpm CO standard:

Manufacturer	CID	Extra cost (1979 dollars)	
		1981	1982
Fuji	97	$91–$128	$91–$128
		$95–$137	$95–$137
Nissan	75	$35	$35
	85/91	$0	$0
	119	$12	$12
Renault	146/168	$48	$48
		no data	no data
		no data	no data
Toyo Kogyo [79]	70	−$105	−$105
	91	$0 (fail)	$10
	120	$0 (fail)	$10

[79] Toyo Kogyo's projected cost difference for its 91 and 120 CID engine families between its designated first-choice emission control system and a system projected in Appendix A to be best capable of meeting the 3.4 gpm CO system differs between the 1981 and 1982 model years because of additional emission control equipment which will not be available for implementation into production until the 1982 model year. For its 70 CID family, Toyo Kogyo apparently prefers its first-choice system, even though it is more expensive than the system Appendix A finds most capable of meeting the 3.4 gpm CO standard as quickly as possible because its first-choice system achieves greater fuel economy gains.

The manufacturers' own estimates of their respective cost differences in attempting to meet the 3.4 versus the 7.0 gpm CO standard are listed in Appendix A's Table VI–3 as follows:

Manufacturer	Extra cost (1979 dollars) (Sales-weighted averages)
Fuji	$80–$100
Nissan	$57–$104
Renault	Confidential
Toyo Kogyo	$50

These added costs are not large enough to affect significantly the competitive position of any of the engine families not receiving waivers.[80]

ii. *Driveability.*—I also have determined that the sacrifices in vehicle driveability associated with implementing the technology necessary to meet the 3.4 gpm CO standard would not make any of the engine families in question an unacceptable alternative to consumers. For the most part, the applicants included only general allusions to driveability concerns in stating their respective cases for waivers.[81] Thus, I have no adequate basis for concluding that driveability concerns prevent effective control technology from being implemented on any engine family covered by a waiver application.

iii. *Fuel Economy.*—I also have determined that any fuel economy penalties associated with effective CO control technology would not seriously impact the acceptability to consumers of the engine families in question. Indeed, at least some applicants confirmed that technology designed to meet the 3.4 gpm standard in model year 1981 incorporated features which actually improve fuel economy relative to meet the current less stringent CO standard for 1979 model year vehicles.[82]

No applicant contended that the failure to receive a waiver would preclude the applicant from achieving the Corporate Average Fuel Economy (CAFE) requirements imposed by the Energy Policy and Conservation Act. Toyo Kogyo was the only applicant which projected a specific fuel economy penalty (estimated at 5% for its "first-choice" systems for both its rotary and conventional engines) associated with meeting a 3.4 gpm CO standard relative to levels it would be capable of attaining in conjunction with its suggested 7.0 gpm interim standard for 1981 model year vehicles.[83] Nissan was the only other applicant to suggest a specific figure for the fuel economy penalty it expected to incur (projecting a net loss of from one to two percent).[84] This information does not establish that the fuel economy penalties are significant enough to prevent associated technology from being incorporated into 1981 model year vehicles which would be acceptable to consumers and therefore still could be marketed competitively.

Thus, I have determined that considerations of costs, driveability, and fuel economy, whether evaluated separately or in combination, do not give me a basis for concluding that effective control technology is not available for the engine families which Appendix A either projects to be capable of attaining the 3.4 gpm standard or, for one of several reasons, cannot project to be incapable of attaining that standard. For that reason, I am denying the waiver applications under consideration insofar as they apply to these engine families.

c. *National Academy of Sciences Studies and Investigations and Other Information.*—As explained in section III(B)(1)(c) of this decision, the most recent study by the NAS (published in 1974) on the availability of technology to meet a 3.4 gpm CO standard concluded that the requisite technology (at the expense of a fuel economy penalty) was available to the industry as a whole, but reached no conclusions regarding the availability of technology on an engine family-by-engine family basis. As this earlier discussion also explained, the fuel economy penalty projected for technology available in 1974 is not a significant concern now.

Thus, I have determined that the results of the available NAS studies and

[80] Of course, to the extent that each manufacturer incurs some extra costs in meeting the 3.4 gpm CO standard, the effect of the extra costs on the competitive positions of the engine families of each waiver applicant will be mitigated. The same is true regarding any extra driveability or fuel economy problems that an applicant may experience. See also the discussion of costs in section III(C)(3) in the public interest criterion.

[81] Nissan provided some specific driveability data in an effort to substantiate its driveability concerns, but the data provided were nevertheless insufficient to establish Nissan's contention that effective control technology is not available for its engine families. See the individual discussions of the driveability concerns of each applicant in Section VII of Appendix A.

[82] See, e.g. Sept. 12 TR., pp. 91–92 (testimony of Nissan).

[83] A comparison of fuel economy data between Toyo Kogyo vehicles designed to meet a 7.0 gpm CO standard and Toyo Kogyo vehicles attempting to meet a 3.4 gpm CO standard indicate that this penalty is somewhat smaller for manual transmission vehicles and changes to a significant fuel economy gain for automatic transmission vehicles. See Section VIII of Appendix A to this Toyo Kogyo also asserted that it could increase by 10 to 15 percent the fuel economy of its 1980 rotary engine certified in California below the 1981 Federal standards by replacing the thermal reactor system with an open loop three-way plus oxidation catalyst with air injection system. Toyo Kogyo cannot meet the 3.4 gpm CO standard, however, by using the open loop system. Because Toyo Kogyo already is marketing the thermal reactor system, I can only conclude that the fuel economy features of that system would not preclude Toyo Kogyo from marketing that system in a competitive manner in model year 1981.

[84] Sept. 12 Tr., p. 92.

investigations do not indicate that effective control technology, considering costs, driveability, and fuel economy, is not available for the engine families not receiving waivers. I also have made the same determination regarding the indications provided by other information available to me and included in the record. (See the discussion of "other information" in section III(B)(1)(c) of this decision).

2. *Protection of the Public Health.*—According to the requirements of section 202(b)(5)(C) of the Act, the Administrator must find that a waiver application has met each of the specified criteria with respect to a particular engine family before the Administrator may grant a waiver request. Thus, according to the express terms of the statute, there is no need for me to determine whether waiver applications covering engine families for which I am unable to determine that effective control technology, considering costs, driveability, and fuel economy, is not available to meet any of the remaining statutory criteria in order for me to deny these applications. Nevertheless, I am addressing these issues in this decision for the purpose of leaving as few matters as possible unresolved.

By the same reasoning I used in section III(B)(2) of this decision, I could conclude that the incremental ambient CO contributions from any engine family for which I have not determined effective control technology considering costs, driveability, and fuel economy, to be unavailable also is insignificant. In that case, waiving the 1981 and 1982 statutory CO standard for any one of those engine families arguably still would be protective of the public health.

As I already have noted, however, Appendix B projects that noticeable increases in CO levels could result from an industry-wide waiver under section 202(b)(5) of the Act. This result could hardly be protective of public health when the record indicates that as many as 189 urban areas measured violations of the CO NAAQS in 1978 [85] and that studies project at least some 180 violations still to occur annually through 1985 in the 19 worst non-California, low-altitude AQCRs, even with a 3.4 gpm CO standard applied industry-wide beginning in the 1981 and 1982 model years.[86] By thus aggravating the detrimental health effects caused by violations of the CO NAAQS which studies already project will exist when 1981 and 1982 model year vehicles are in use, an industry-wide waiver of the 3.4 gpm CO emission standard would not be protective of public health.

Where granting waivers covering vehicles constituting only a small portion of the industry, however, would not create a significant effect on CO levels in non-attainment regions, or would not bring attainment regions into non-attainment, imposing the 3.4 gpm CO emission standard on these vehicles is not required to protect public health. Thus it is reasonable within the intent of section 202(b)(5)(C) to provide waivers on a limited basis by granting waivers covering only that portion of the industry consisting of engine families for which I have determined that effective control technology, considering costs, driveability, and fuel economy is not available (presuming these families also meet the remaining statutory criteria).

Nissan, as well as several applicants involved in the first set of CO waiver proceedings,[87] contended that recent measurements have shown a significant downturn in ambient CO levels which will lead to nationwide achievement of the CO NAAQS within an assertedly comparable time frame whether or not CO waivers are granted. Appendix B nevertheless indicates that an industry-wide waiver could measurably slow the progress towards the health-based CO NAAS in non-attainment areas. The longer an area is in non-attainment, the longer the public health lacks adequate protection.

Appendix B addresses the comments in the record challenging EPA's methodology in measuring and projecting ambient CO levels [88] and explains the reasoned basis for the EPA methodology employed to assess both ambient CO levels and the effects which granting these waiver requests may have.

Moreover, insofar as any comments submitted to the record have questioned the need for attainment of the 90 percent CO emission reduction requirement by the 1981 model year, the parties offering these comments have misconstrued Congress' intent in providing a CO waiver mechanism in the Act. Congress did not intend that I reassess the need for attaining the 90 percent reduction requirement by the 1981 model year to decide whether I should grant these waivers; rather, Congress included the public health consideration in section 202(b)(5)(C) of the Act to ensure that any waivers I granted, for a presumably limited number of engine families, would present no significant risk to the public health. In enacting section 202(b)(1) of the amended Act, Congress already had determined that considerations of public health adequately supported requiring the 90% reduction in CO emissions by the 1981 model year.

3. *Essential to the Public Interest or the Public Health and Welfare.*—I have determined that waivers for the engine families for which I have determined that effective control technology, considering costs, driveability, and fuel economy, is available are not essential to the public interest or to the public health and welfare.

On the basis of the information contained in the record, I conclude that in no case is granting a waiver essential to the public health and welfare. No applicant has made a claim that a waiver would enhance the public health and welfare, nor has any information supporting such a finding come to my attention. I have no basis for determining, for example, that manufacturers can achieve the statutory CO standard only at the risk of increasing emissions of other regulated or unregulated pollutants.[89] Thus, based on the information elicited for the record of the proceedings at hand, the scope of my examination of this issue narrows to whether a waiver is essential to the public interest.

Several applicants have stated that though their engine families may have some potential for meeting the 3.4 gpm CO emission standard, the engine families can achieve that emission level only by incurring extra costs (or fuel economy or driveability penalties) which the applicants could avoid under a less stringent CO standard.[90] These applicants contend that I should grant waivers covering these engine families because it is essential to the public interest to avoid any extra costs (or fuel economy or driveability penalties) relating to assertedly marginal improvements in ambient CO levels achieved by attainment of the 3.4 gpm CO standard.

This argument overlooks the purpose for which Congress included the CO waiver provision in the 1977 amendment to the Act. Congress obviously realized

[85] Joint Comments from Environmental Defense Fund and National Resources Defense Council, p. 9 (July 30, 1979).

[86] EPA's Revised Air Quality Analysis of Waiving the 3.4 Grams/Mile CO Standard for Light-Duty Vehicles, dated August, 1979.

[87] See, e.g. C. App., I, p. C–3; GM App., p. 6.

[88] GM App., pp. 33–39. N. App., pp. 2.1–2.3. Ford also supplied specific comments on EPA's methodology. Ford, July 9, 1979, Attachment V. The applicants involved in this second set of CO Waiver proceedings have raised no new arguments in this area. See note 50, supra.

[89] EPA's Administrator made such a determination as part of the suspension proceedings for the 1977 model year motor vehicle exhaust emission standards because of his concerns regarding the uncertain health effects of possible increased sulfuric acid emissions. 40 FR 1190 (March 14, 1975).

[90] See, e.g., N. App., p. 1–5; TK App., p. 2.

that any 1981 model year vehicle model could attain the 90 percent reduction requirement for CO emissions, which it deemed ultimately necessary to achieve ambient CO levels protective of public health, only by incurring some extra cost, or perhaps some extra penalty to fuel economy or driveability. As noted earlier, however, Congress intended that waivers be granted on a limited basis only. Thus, it is highly unlikely that Congress envisioned the involvement of extra costs (or fuel economy or driveability penalties) alone as justification for granting a waiver request.

The public interest consideration at issue in these proceedings is whether adverse effects from any of these factors are substantial enough to present a significant risk that the applicant will not be able to produce and market competitively the engine family in question and perhaps other engine families as well. Section III(C)(1)(b) of this decision already has examined this aspect of the public interest consideration in discussing the effects of costs, driveability, and fuel economy on the availability of effective control technology.

My conclusion here parallels the one I reached there. Specifically, I have determined that it is not essential to the public interest to grant waivers to engine families which incur costs (or driveability or fuel economy penalties) in meeting the 3.4 gpm CO standard where the costs (or penalties) involved are not so substantial as to present a significant risk to the waiver applicant's ability to produce and market competitively vehicles of that engine family, or vehicles generally.

Fuji has claimed that it is further essential to the public interest that I grant its requested waivers to allow them to continue producing its four-wheel drive vehicles (constituting about half of its U.S. sales total).[91] Fuji explains that those vehicles offer added convenience and safety not available from most passenger vehicles when operated under poor driving conditions. I recognize that ensuring the availability of such special-purpose vehicles may benefit the public interest; however, I cannot determine that granting Fuji's requested waivers would actually help preserve the availability of these vehicles and thereby would be essential to the public interest. Because Fuji has not been able to establish that its engine families are not capable of meeting a 3.4 gpm CO standard, I cannot conclude that Fuji indeed will stop producing and marketing these special-purpose vehicles if it does not receive a waiver.

Renault stated that a waiver for its 85 CID engine family would serve the additional public interest of allowing it to market on a nationwide basis vehicles which meet California's stricter 1981 model year NO_x emission standard (0.7 gpm) and scheduled maintenance requirements.[92] In this case, however, Renault indicates that it can achieve improved NO_x emission levels only by sacrificing its ability to meet the CO emissions standards established by Federal law. By establishing the Act's schedule for required emissions reduction, Congress clearly indicated that it determined achievement of the 3.4 gpm CO standard more important to the national public interest than achievement of the emissions improvements in NO_x promised by Renault and required by California due to the state's unique pollution problems. Thus, I have determined that a waiver for Renault's 85 CID engine family would not be essential to the public interest for the reasons which Renault suggests.

4. *Good Faith.*—I already have addressed the good faith criterion in section III(B)(4) of this decision. My conclusion here for the engine families for which I have not determined that effective control technology, considering costs, driveability, and fuel economy, is unavailable is the same as my conclusion there. Specifically, I have determined that because the applicants for wiavers for these engine families have provided evidence supporting their good faith efforts to meet the 3.4 gpm CO standard and because the record contains no information providing any specific evidence to the contrary, I am unable to determine other than that these applicants have met the good faith criterion included in section 202(b)(5)(C)(ii) of the Act.

5. *Risks in Determining Available Technology*

In International Harvester Co. v. Ruskelshaus,[93].—the Federal appellate court reviewed the decision of EPA's Administrator to deny a set of applications for one-year suspension of the statutory 1975 model year light-duty motor vehicle emission standards, which included the 3.4 gpm CO standard. The criteria provided in the Act for the Administrator to make his decision were substantially similar to the criteria now provided in section 202(b)(5)(C) of the amended Act.[94]

Among other things, the court stated that the Administrator should have balanced the risk associated with erroneously denying the suspension requests versus the risk of erroneously granting them. In that proceeding, the court indicated that the balance should consider the economic costs (in terms of jobs and misallocated resources) possibly associated with an erroneous denial versus the possible environmental benefits lost through an erroneous grant.

On remand the Administrator reversed his previous decision and granted the suspension applications.[95] The Administrator cited as the most influenced factor in his decision the risk that introducing catalyst technology into mass production without a scale-up period of limited mass production could lead to severe economic disruption because of unanticipated difficulties (such as a manufacturer's inability to acquire a supply of acceptable catalysts). The Administrator stated that the one-year suspension of the statutory emission standards would give the industry an opportunity to gain experience in the limited mass production of catalyst-equipped cars under conditions of careful quality control while maintaining the accelerating momentum of progress in catalyst development that had occurred during the previous two years.

As part of the waiver proceedings at hand, applicants again have raised concerns over the risks they might face in being unable to implement effective control technology in mass production.[96] Today's circumstances, however, are substantially different from those that existed during the 1973 suspension proceedings.

At that time, the industry had no experience in producing vehicles incorporating catalyst technology; hence, the Administrator determined that the risks associated with implementing a new type of emission control system into production might indeed be significant. Since that time, however, the industry has gained a substantial amount of experience in the mass production techniques and quality control measures associated with catalyst-based emission control technology. The move from today's state of technology to the technology required to achieve the 3.4 gpm CO standard

[91] Sept. 12 Tr., p. 104.

[92] R. App. P. III/1. Renault stated that if it received a waiver it would market a "50-state" 85 CID engine family which would meet all Federal and California emission requirements.

[93] 478 F.2d 615 (D.C. Cir. 1973).

[94] See the discussion of the 1970 version of the Act in Section I of this decision.

[95] 38 FR 1017 (April 26, 1973).

[96] See the discussion regarding applicants' risks and the establishing of design targets in section III(C)(1)(a) of this decision.

does not require any substantial shift to untried emission control methods. As a result, the uncertainties associated with that move now are much less than those associated with the initial move to catalyst technology.

Moreover, in the proceedings at hand I have made a separate determination regarding the availability of effective control technology, considering costs, driveability, and fuel economy, for each engine family covered by a wiaver application. The risks associated with requiring implementation of effective control technology for any one of these engine families are substantially smaller in scope than the risks associated with a determination that effective control technology is generally available for all vehicles of all manufacturers. An incorrect determination here regarding one (or even more than one) engine family will not necessarily prevent that manufacturer, or the industry as a whole, from being able to market other engine families for which effective control technology, considering costs, driveability, and fuel economy, is available to meet the applicable emission standards.[97] Also, a manufacturer may reapply for a waiver by submitting new information which was not available for consideration as part of these proceedings and which would further substantiate the applicant's claims.

In the proceedings at hand, therefore, I have determined for those engine families not receiving waivers that the risks of an erroneous denial of a waiver are justified when compared to the risks attendant to an erroneous grant. I have taken steps to minimize the risk of an erroneous denial by making sure that I base my findings that technology is available to meet certification testing requirements on conservative projections which themselves must demonstrate with no less than an 80% confidence level that vehicles of an engine family in question can pass a single certification test. I have found no information in the record which effectively corroborates the technology concerns raised by the applicants or other manufacturers, which have an obvious interest in a cautious assessment of their respective abilities to meet the 3.4 gpm CO standard.

Section III(B)(2) of this decision discusses the environmental health risks that would be associated with one or more erroneous grants. Even though the health risks associated with erroneous grants may not be great, the risks associated with erroneous denials (which do not involve health considerations) also are limited significantly. In addition, an erroneous grant would serve to discourage manufacturers from implementing available effective emission technology as quickly as possible. In light of these counterbalancing risks, and in light of Congress' expressed intent to afford a statutory waiver only in exceptional circumstances rather than on an across-the-board basis,[98] I have concluded that it is appropriate to deny waiver applications insofar as they cover engine families for which I have determined that effective control technology, considering costs, driveability, and fuel economy, is available.

6. *Conclusions.*—For the engine families referred to in section III(C) of this decision, I have determined either that effective control technology indeed is available for these 1981 model year engine families, even after considering costs, driveability and fuel economy, or that the waiver applicants have failed to provide adequate information to enable me to make a determination that technology is not available. Thus, even though the waiver applicants may meet one or more of the remaining statutory criteria for granting waivers, I nevertheless must deny the waiver applications covering these engine families.

iv. *Interim CO Exhaust Emission Standards*

As required by section 202(b)(5)(A) of the Act, I am simultaneously promulgating regulations prescribing interim CO emission standards for the 1981 model year vehicles of the two families, I am prescribing an interim CO emission standard of 7.0 gpm for both of these engine families. For these two engine families, this action continues in effect for one additional model year the CO emission standard applicable to all 1980 model year vehicles.

Dated: November 8, 1979.

Douglas M. Costle,
Administrator.

Appendix A.—Summary of Technological Capability

Contents

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I. Introduction

The exhaust emission standards for 1981 and later model year light-duty vehicles are currently 0.41 gram per mile HC, 3.4 grams per mile CO, and 1.0 gram per mile NOx. Section 202(b)(5)(A) of the Clean Air Act, as amended, 42 U.S.C. 7521 (b)(5)(A) provides the opportunity for manufacturers to request a waiver of the 3.4 grams per mile CO standard to 7.0 grams per mile during model years 1981 and 1982.

The applicants being considered in this document are Fuji, Nissan, Renault, and Toyo Kogyo. This is the second group of CO waiver applications that have been considered by EPA.

This appendix deals with the technological capability of those manufacturers to meet the 1981 and 1982 CO standard of 3.4 grams per mile. This appendix relies on three previous technical appendixes, particularly for discussion of the Monte Carlo simulation utilized in this analysis. These appendixes are:

1. Appendix B, Technical Appendix, to the Decision of the Administrator on Remand for the United States Court of Appeals for the District of Columbia Circuit, April 11, 1973.
2. Appendix A, Technical Appendix, to the Decision of the Administrator In re: Applications for Suspension of 1976 Motor Vehicle Exhaust Emission Standards, July 30, 1973.
3. Appendix A, Technical Appendix, to the Decision of the Administrator In re: Applications for Suspension of 1977 Motor Vehicle Exhaust Emission Standards, March 5, 1975.

As indicated in Section 202(b) (5) (iii), the technological feasibility determination is based on the consideration of technological capability, cost, driveability, and fuel economy. This appendix contains discussion of each of the above topics.

II. Summary of Technological Capability

Tables II–1 to II–4 summarize the capability of the four applicant

[97] The risk that denial of a waiver request will cause significant harm to an applicant's ability to market vehicles in a competitive manner is substantially less with respect to these engine families, for which the record does not establish that effective control technology is not available, than is the risk with respect to the engine families for which the record demonstrates that technology is available. See the discussion of the public interest criterion in section III(B)(3) of this decision.

[98] While the previous statutory suspension provision directed the Administrator to reach a decision with respect to a manufacuturer in general, the current section 202(b)(5) directs the Administrator to examine separately the circumstances pertaining to each model (i.e. engine family). See also 123 Cong. Rec. S13702–13703 (Aug. 4, 1977) (remarks of Sen. Muskie).

manufacturers to meet the 1981 and 1982 emission standards. The standards considered in these tables are 0.41 HC, 3.4 CO, 1.0 NOx.

A guide to the summary tables is as follows. The first column lists engine displacement. The second column, which lists per cent of model year 1981 sales, is deleted because the values were derived in most cases from manufacturers' confidential sales estimates. The "as received" column refers to the emission data submitted by the manufacturer. "Improvements" refer to the projected technological improvements (factors) applied to the data submitted by the manufacturer.

The "no data" category is an abbreviated notation for the lack of acceptable data to perform EPA's technological analysis. The applicants have known for about six years what sort of data is necessary for EPA to make a determination whether or not a given vehicle would be projected to pass or fail a set of standards. Unfortunately, in many cases there was a lack of acceptable data for vehicles using specific engines. This effectively precluded EPA from making a pass/fail determination for those vehicles. In these cases the vehicles using these engines are called "no data" and no pass/fail determination was made.

Table II-1.—*Applicant: Fuji*

Engine	% estimated 1981 sales	Pass as received?	Pass with improvement?
97		No	Yes
109		No	Yes

Table II-2.—*Applicant: Nissan*

Engine	% estimated 1981 sales	Pass as received?	Pass with improvement?
75		Yes	N/A*
85/91		Yes	Yes
119		Yes	Yes
146/168		No	Yes
A		No Data	No data
B		No Data	No data

*N/A means not applicable or that improvements were not needed.

Table II-3.—*Applicant: Renault*

Engine	% estimated 1981 sales	Pass as received?	Pass with improvement?
85		No	Yes

Table II-4.—*Applicant: Toyo Kogyo*

Engine (CID)	% estimated 1981 sales	Pass as received?	Pass with improvement?
70 (Rotary)		Yes	N/A*
91		No	No in 1981 Yes in 1982
120		No	No in 1981 Yes in 1982

*N/A means not applicable or that improvements were not needed.

III. Statistical Treatment of the Data

No changes have been made in the basic Monte Carlo methodology since its last use in a technical appendix. This methodology has been discussed in three previous technical appendixes:

1. Appendix B, Technical Appendix, to the Decision of the Administrator on Remand for the United States Court of Appeals for the District of Columbia Circuit, April 11, 1973.
2. Appendix A, Technical Appendix, to the Decision of the Administrator In re: Applications for Suspension of 1976 Motor Vehicle Exhaust Emission Standards, July 30, 1973.
3. Appendix A, Technical Appendix, to the Decision of the Administrator In re: Applications for Suspension of 1977 Motor Vehicle Exhaust Emission Standards, March 5, 1979.

IV. Factors

With respect to the vehicle emission data submitted by the manufacturers for EPA analysis, vehicles are often run and tested over durability mileage accumulation schedules without using the best technology that is available to the manufacturer for certification in the 1981 model year. There are many reasons why this occurs. First, such technology may have simply not been available in quantity when fleets of vehicles began mileage accumulation. Second, all vehicles submitted for EPA staff analysis may not have been specifically designed for the 1981 and 1982 Federal emission standards. Also the manufacturer may wish to maintain some technologies (with known durability) in reserve if their low mileage testing indicates that such technology may not be needed for compliance with the target emission standards. In addition, technology may not appear on durability vehicles because the manufacturer has made a decision that the technology would be too costly for production vehicles.

To account for the fact that the applicants did not in all cases conduct durability testing with the most effective emission control hardware, factors, have been applied to some of the emission data submitted by the manufacturers, to simulate the addition of more effective systems. Due to substantial lead time problems for implementation of new or additional technology by the 1981 model year, these factors have been applied only for currently known hardware that can be implemented in 1981 certification and production. These improvements have been basically limited to additional catalyst (i.e., the addition of oxidation catalyst in some cases), the addition of air injection, and additional catalyst noble metal loadings. Other improvements in hardware were considered if the manufacturer indicated that they were available for 1981 and 1982.

The factors that have been applied to the data are dimensionless numbers that represent the improvement in emission performance that is predicted for the more effective simulated emission control technology. The factors are derived from data that reflect the emission performance of a vehicle with and without the more effective technology. For example, a factor for CO of 0.90 indicates that a 10 percent reduction in CO is projected for the use of the more effective technology. In addition, when there are several different sources for the same improvement, EPA uses a conservative estimate of that projected factor, i.e., a factor greater in absolute value than that indicated by most of the data.

Other factors which were developed, but generally not used in the following analysis include factors for:

- Deletion of power enrichment
- Use of insulated or dual-walled exhaust pipes
- Use of exhaust port liners
- Use of throttle body fuel injection
- Use of multiple point fuel injection
- High energy ignition

Although the deletion of power enrichment and the use of insulated or dual-walled exhaust pipes were considered feasible for 1981, they were generally not used (dual-walled exhaust pipes were utilized for one engine family in Nissan). Therefore, through these additional techniques, the manufacturers may have some additional cushion for certification over and above the factors used in EPA's analysis. Use of the other items was not considered possible for most manufacturers for most engine families before the 1982 model year.

Duel-Walled Exhaust Pipe Factor (Nissan)

This factor was applied to Nissan vehicles using 119 CID engines and FB/PAIR/EGR/OC emission control systems.

The data used to develop this factor were presented by Nissan [19 at 15 to

17] * and repeated here in Table IV–1. Other data were available from GM and Chrysler. However, the data used are for the specific engine in question.

The derived factors are supported by the GM and Chrysler data [20 at, Volume IIIB, vehicle 305, tests 30 & 31] [21 at 7–139] [22] which if averaged for the three sets of data would yield factors of 0.85 for HC, 0.74 for CO, and 1.01 for NOx.

Nissan has stated that this technology will be avilable for this particular engine (and additional engines) in 1981 if needed [13 at section IV, p. 13].

No fuel economy impact was noted as seen in the table.

* [19 at 15 to 17] is a compact notation used to mean that the reference being cited is reference 19 (from the reference list at the end of this appendix) at pages 15 to 17.

Table IV–1.—*Development of the Nissan Factors for Dual-Walled Exhaust Pipes*

VIN	IW	Eng	Trans	Axle	Emission control system	75 FTP				Comments
						HC	CO	NOx	MPG_u	
BK579	2875	119	M5	3.700	EFI/EGR/PAIR/OC	.284	1.58	1.62	27.6	Base.
						.256	1.30	1.75	27.5	With dual-walled exhaust pipe.
					Factor	0.90	0.82	1.08	1.00	

Improved Oxidation Catalyst (Nissan)

These factors were used in the computer simulation of the Nissan vehicles using 119 CID engines and FB/PAIR/EGR/OC emission control systems (vehicles BK649, B1968, 8D–991, and 8D–992).

The data from which these factors were developed were taken from Nissan vehicle BK576 [13 at 5 to 6]. This vehicle was almost identical to the vehicles to which the factors were applied except that it used EFI as opposed to carburetion. These data are reproduced here in table IV–2. Both catalysts were aged 50,000 miles.

Nissan stated that the improved catalyst will be available for the 1981 model year [5 at 55–56], and as expected, no adverse impact on fuel economy was found.

Table IV–2.—*Nissan Factors for Improving Oxidation Catalyst for Vehicles Having 119 CID Engines*

VIN	IW	Eng	Trans	Axle	Emission control system	75 FPT				Comments
						HC	CO	NO_x	MPG_u	
BK576	2875	110	M5	3.700	FB/EFI/EGR/PAIR/OC	.361	2.58	0.77	27.5	Base case.
						.331	2.32	0.78	27.4	With improved catalyst.
					Factor	0. 92	0.90	1.01	1.00	

Recalibration of Ignition Timing During Cold Start (Nissan)

This factor was utilized in the Monte Carlo analysis of Nissan vehicles using 85 and 91 CID engines with AIR/EGR/OC emission control systems.

Data for this recalibration on vehicle K110 using the 91 CID engine were presented by Nissan [13 at V to 18]. The data are presented here in table IV–3. All tests in this table were conducted with the same vehicle with a catalyst aged to 50,000 miles.

As this is only a recalibration, it does not present a lead time problem for model year 1981. Fuel economy was essentially unaffected by this recalibration.

Table IV–3.—*Recalibration of Ignition Timing During Cold Start*

VIN	IW	Eng	Trans	Axle	Emission control system	75 FPT				Comments
						HC	CO	NOx	MPG_u	
K110	2375	90.8	M4	3.700	AIR/EGR/OC	.300	4.03	0.70	30.1	Base.
						.259	3.48	0.68	30.2	Base.
						.280	3.76	0.69	30.2	Average base.
						.252	2.21	0.69	30.1	With timing recalibration for quick catalyst light-off.
						.244	3.04	0.68	29.9	Repeat.
						.248	2.62	0.68	30.0	Average with recalibrated timing.
					Factor	0.89	0.70	0.99	1.00	

Factors for a Clean Up Oxidation Catalyst With a Switched AIR System

The EPA technical staff considers the FBC/3W/OC/EGR/Switched AIR emission control system to be the most promising means to achieve the 1981–1982 emission standards.

Several manufacturers have selected emission control systems using only FBC/3W/EGR as their first choice control system for compliance with the 1981–1982 emission standards. Because several of these manufacturers have run durability vehicles using only the FBC/3W/EGR system, the EPA technical staff has developed a hardware improvement factor for the addition of a clean up oxidation catalyst with a switched AIR system.

The factors used in Monte Carlo to stimulate a clean up oxidation catalyst and switched AIR system were 0.60, 0.40 and 1.40 for HC, CO and NOx respectively. These factors were developed from data supplied by British Leyland [35 at 26] and Matthey Bishop [42 at Tables III & IV and 28 at Table V], and are shown in Table IV–4. The significant emission control improvement afforded through the use of this hardware is expected to aid the manufacturers in optimizing calibrations for fuel economy and driveability.

The British Leyland data are in gms/mile, whereas the Matthey Bishop data are for catalyst conversion efficiencies. The formulas used to calculate the British (BL) and Matthey Bishop (MB) factors are as follows:

$$\text{BL Factor} = \frac{\text{gms/mile}_{(3w+oc)}}{\text{gms/mile}_{(3w)}}$$

$$\text{MB Factor} = \frac{1-\eta_{(3w+oc)}}{1-\eta_{(3w+oc)}}$$

where η is catalyst efficiency expressed as a decimal

Table IV–4.—*Data Used to Derive Factors for the Addition of Air Injection and an Oxidation Catalyst*

	HC	CO	NO_x
	gms/mile*		
British Leyland—3W	0.16	2.69	0.14
BL—3W+OC	0.31	0.73	0.4
BL Factor for OC & Switched AIR	0.81	0.27	2.86
	Conversion Efficiency (percent)		
	HC	CO	NO_x
Matthey Bishop Data—VIN, Catalyst and Simulated Miles:			
8B438, 3W(A)**, 4K miles	78	66	67
61E37, 3W(A)+OC, 4K miles	92	92	70
MB Factors for 3W(A)+OC at 4K miles	0.36	0.24	0.91
8B438, 3W(A), 50K miles	80	59	64
61E37, 3W(A), 50K miles	91	93	66
MB Factors for 3W(A)+OC at 50K miles	0.45	0.17	0.91
8B438, 3W(B)**, 4K miles	82	75	74
61E37, 3W(B)+OC, 4K miles	92	95	75
MB Factors for 3W(B)+OC at 4K miles	0.44	0.20	0.96
8B(B), 3W(B), 50K miles	79	65	65
61E37, 3W(B)+OC, 50K miles	89	91	63
MB Factors for 3W(B)+OC at 50K miles	0.52	0.26	1.06
Average of Factors for adding a Clean Up Oxidation Catalyst and Switched AIR System	0.52	0.23	1.16
Factors Used in Monte Carlo	0.60	0.40	1.40

*Factors are dimensionless

**Matthey Bishop included data on two three-way catalysts which are identified as 3W(A) and 3W(B).

In order to equally weight each test point, the following formula was used to calculate the average factor:

Average Factor = [BL Factor + MB 4K(A Factor) + MB 50K(B Factor) + MB 4K(B Factor) + MB 50K(B Factor)] ÷ 5

The vehicle descriptions [36 at 1] for the two vehicles used to generate the Matthey Bishop data are as follows:

Vehicle 61E37—Pinto 2.3L, 2750# I.W., PAU 9.9
Catalyst—3W+OC
Carburetor—2V FBC with closed loop control at idle
EGR—vacuum/back pressure with electrical closure at idle and WOT
Air Pump—air upsteam at cold start, switched to mid-bed at 128°F water temperature
Spark Advance—mechanical
Oxygen Sensor for FBC
Electronics—FBC trim control only

Vehicle 8B438—Fairmont 2.3L, 3000# I.W., PAU 11.3
Catalyst—3W only
Fuel System—Bosch L Jetronic with closed loop WOT
EGR—vacuum/electric control
No air pump
Spark Advance—mechanical
Oxygen Sensor for FBC
Electronics—full fuel control

The British Layland vehicle description is as follows:

2750 lb. test weight
120 cubic inch engine
feedback fuel injection
EGR

No further details were provided by British Layland.

The data in Table IV–5 were used to help determine the validity of the factors used in the Monte Carlo. This is a table of factors calculated from data supplied by Chrysler [32 at Volume IIIA]. The Chrysler data were not used to determine the Monte Carlo factors because the Chrysler factors are calculated from tailpipe and three-way catalyst-out emissions on vehicles with a switched AIR system. Obviously, such data can not be used for the development of this factor, but it did indicate that the general trend of the data does agree with the factors used in the Monte Carlo analysis.

This factor was used on some vehicles from all the current applicants except Nissan.

Table IV–5.—*Chrysler Factors*

Car ID No.	HC	CO	NO_x	Test points [1]
485	.43	.40	1.21	8–20
131H	.42	.38	1.00	12–29
162H	.47	.44	.87	9–17, 22–30
166	.44	.39	1.40	Unnumbered
311	.50	.55	1.03	8–20
537	.39	.23	1.50	38–41, 43–48
Average factors	.44	.40	1.17	
Factors used in Monte Carlo.	.60	.40	1.40	

[1] Durability test points only.

Clean Up Oxidation Catalyst With Aspirator Factor

As discussed in the prior section, a clean up oxidation catalyst with a switched AIR system is very effective in controlling HC and CO. Most of the manufacturers using a three-way catalyst followed by an oxidation catalyst employ a switched AIR system to supply additional oxygen to the inlet of the oxidation catalyst. Volkswagen has taken a new approach by using an aspirator to supply air to the inlet of the oxidation catalyst [32 at 4.21].

Unlike a switched AIR system, Volkswagen's "between catalyst aspirator" does not supply air to the exhaust ports during warm up, and

therefore would theoretically be less effective for HC and CO control. The data submitted to EPA [32 at 5.14, 5.17, and 5.19] indicates that the HC reduction for Volkswagen's clean up oxidation catalyst with an aspirator exceeds the HC reduction shown in the Matthey Bishop data [44 at Tables III & IV and 45 at Table V] and British Leyland data [35 at 26] for a clean up oxidation catalyst with a switched AIR system. The factors used in the Monte Carlo, 0.70, 0.55 and 1.50 for HC, CO and NOx respectivey, reflect the EPA technical staff's judgment that a switched AIR system would, in most cases, be more effective in oxidizing HC and CO than an aspirator system, and therefore the HC factor was adjusted accordingly.

Volkswagen presented durability data on two vehicles with dual-bed catalysts and aspirators, and four vehicles with single-bed three-way catalysts. One vehicle with the dual-bed, and two vehicles with the single-bed catalyst were not used in determining the factors because they had deterioration factors for CO of less than one, which is not typical and is an indicator that the air/fuel ratio may have been getting leaner with mileage accumulation. The factors, and data used in developing the factors are presented in Table IV–6.

This factor was applied only to vehicles submitted by Fuji, who has claimed that due to space restrictions, heat shielding for a clean up oxidation catalyst could not be added [3 at 117 to 121]. After reviewing the photographs provided in an effort to substantiate their claims, the EPA technical staff can not agree with Fuji's assessment of the situation and is of the judgment that a clean up oxidation catalyst with an aspirator between the catalysts is a viable alternative for Fuji.

Table IV–6.—*Aspirator Plus Oxidation Catalyst Factors*

VIN and catalyst	Average of extrapolated 4K and 5K values (gm/mile *)		
	HC	CO	NOx
439–517—3W only	0.75	10.68	0.53
439–611—3W only	0.41	11.45	1.15
Average Emissions for 3W Catalyst Vehicles	0.58	11.07	0.84
449–528—3W + OC with Aspirator between catalysts	0.24	5.35	1.22
Factors as calculated for Clean Up OC with Aspirator instead of 3W only	0.41	0.48	1.45
Factors as Used in Monte Carlo for Clean Up CO with Aspirator between catalysts	0.70	0.55	1.50
Factors as Used in Monte Carlo for Clean Up OC with Switched AIR**	0.60	0.40	1.40

* Factors are dimensionless.
** See discussion of Factors for Clean Up OC with Switched AIR.

Fuji Catalyst Improvement Factors

Fuji presented catalyst efficiency data and catalyst specifications which the EPA technical staff used to develop a catalyst improvement factor. Because the catalyst specifications are confidential, the following discussion is absent such information.

Fuji vehicle A22–347985 and A33–061901 use catalysts A1 and A2 respectively. Catalysts A6 and A7 are improved catalysts which Fuji has recently included on new durability vehicles. Also, catalyst A1 should have been more active than catalyst A2. The catalyst efficiency data shown in Table IV–7 indicated minor discrepancies, that, in the judgement of the EPA technical staff, arise from the fact that engine-out emissions and tailpipe emissions were not read simultaneously. For instance, at 500 hours, catalyst A7 showed a lower CO conversion efficiency than catalyst A1, and at 300 hours, catalyst A2 showed a higher HC efficiency than catalyst A1.

Because these discrepancies may have been due to the variability caused by the approach discussed above, the technical staff judged that the data would be more meaningful if an average of the conversion efficiencies of A1 and A2 were compared to an average of the A6 and A7 conversion efficiencies. This would result in a more valid indication of the improvement which can be expected through the use of improved catalysts.

The formula used to calculate the catalyst improvement factor for each pollutant is as follows.

$$\text{Factor} = 1 - \frac{\eta_{A6} + \eta_{A7}}{2} \div 1 - \frac{\eta_{A1} + \eta_{A2}}{2}$$

where η is catalyst efficiency expressed as a decimal.

As shown in Table IV–7, the catalyst improvement factors used in the Monte Carlo analysis were 0.80, 1.00 and 0.60 for HC, CO, and NOx respectively. Because 500 hour data were not submitted for catalysts A2 and A6, 500 hour data were not used in the factor calculation. Zero hour data were also not included because they are not included in deterioration factor calculations and are generally not useful in analyzing data.

Table IV–7.—*Fuji Catalyst Improvement Factors*

Catalyst	Conversion Efficiency 300 hrs of Aging (percent*)			Catalyst Efficiency 500 hrs of Aging (percent*)		
	HC	CO	NOx	HC	CO	NOx
A1	87.5	69.4	66.8	85.2	67.4	64.3
A2	88.6	66.7	72.4	.....	.....	.....
Average Efficiency for A1 & A2	88.05	68.05	69.6	.....	.....	.....
A6	91.2	70.6	82.6	.....	.....	.....
A7	91.3	70.3	84.3	90.0	62.7	77.4
Average Efficiency for A6 & A7	91.25	70.45	83.45	.....	.....	.....
Factors as calculated for A6 & A7 instead of A1 & A2	0.73	0.92	0.54	.....	.....	.....
Factors as Used In Monte Carlo for Catalyst Improvement	0.80	1.0	0.60	.....	.....	.....

*Factors are dimensionless.

AIR System Factors With 3-Way Catalysts

The factors for the addition of warm-up air injection (AIR) used in the Monte Carlo were 0.8, 0.8 and 0.95 for HC, CO, and NOx respectively.

The factors used for warm-up AIR as a replacement for warm-up pulse or reed valve air injection (PAIR) were 1.00, 0.90 and 1.00.

"To date the most successful exhaust treatment technique used commercially has been air injection into the exhaust system" [18 at 210]. Although this claim is now outdated, it does indicate that significant emission reductions are possible with the addition of an AIR System.

Data from Volvo [24 at 4–39] and Saab [25 at Enclosures 2 and 5] were used in calculating the factor for the addition of warm-up AIR.

The data from Saab Enclosure 5 shows the influence of AIR vs. no AIR on Bag 1 CO results only. In order to translate this data into FTP results, the following formula [26 at 32988] was used:

$$Ywm = (0.43\ Yct + 0.57\ Yht + Ys)/7.5$$

Where:

Ywm = Weighted mass emissions of each pollutant, i.e. HC, CO, or NOx, in grams per vehicle mile.
Yct = Bag 1 = Mass emissions as calculated from the "transient" phase of the cold start test, in grams per test phase.
Yht = Bag 3 = Mass emissions as calculated from the "transient" phase of the hot start test, in grams per test phase.
Ys = Bag 2 = Mass emissions as calculated from the "stabilized" phase of the cold start test, in grams per test phase.

Enclosure 2 of the Saab subpoena submittal is a table of "Selected Bag Results From Various MY80 Certification Tests" which includes data from a turbocharged engine. The averages of twelve tests are as follows:

Yct = Bag 1 = 43.09 grams CO
Ys = Bag 2 = 5.68 grams CO
Yht = Bag 3 = 8.23 grams CO
Ywm = [0.43 (43.09) + 0.57 (8.23) + 5.68]/7.5
Ywm = 3.85 grams/mile CO

Saab enclosure 5 shows the influence of air injection on CO in Bag 1 at 4,000 miles and at 50,000 miles for a turbocharged engine.

At 4,000 miles, Bag 1 CO was reduced by 11 grams, which when subtracted from Yct, gives 32.09 grams CO in Bag 1 for an AIR equipped engine.

Ywm equals 3.22 grams/mile for the AIR equipped vehicle at 4,000 miles.

At 50,000 miles the bag 1 results were reduced by 18 grams, giving 25.09 grams CO in Bag 1.

Ywm at 50,000 miles* equals 2.82 grams/mile CO.

The average of the 4,000 mile and 50,000 mile emissions is as follows:

Ywm w/AIR
= (Ywm 4K) + (Ywm 50K)/2
= (3.22 + 2.82)/2
= 3.02 grams/mile CO with AIR
Ywm no/AIR = 3.85 grams/mile CO as calculated previously

The AIR System Factor is:

$$\text{AIR System Factor for CO} = \frac{\text{Ywm w/AIR}}{\text{Ywm no/AIR}} = \frac{3.02}{3.85}$$

AIR System Factor for CO = 0.78

The Volvo-Saab data are combined in Table IV–8.

* This is not to say that 50,000 mile emissions for an AIR System would be lower than 4,000 mile emissions. It does, however, indicate the emissions reduction from a given baseline with an AIR System.

Table IV–8

Vehicle	Gms/mi*		
	HC	CO	NOx
Volvo, no/AIR	0.19	2.85	0.14
KMU 748 Auto, w/AIR	0.15	2.36	0.13
Factor-AIR	0.79	0.83	0.93
Volvo, no/AIR	0.21	2.79	0.11
KFL 989-Manual, w/AIR	0.15	2.16	0.10
KFL 989-Manual, w/PAIR	0.15	2.43	.....
Factor-AIR (as calculated)	0.71	0.77	0.91
Factor-PAIR vs no/AIR (as calculated)	0.71	0.87	.....
Factor-AIR vs PAIR (as calculated)	1.00	0.89	.....
Saab Turbo, no/AIR	.....	3.85	.....
Saab Turbo, w/AIR	.....	3.02	.....
Factor-AIR (as calculated)	.....	0.78	.....
Factor-AIR (avg-Volvo + Saab) (as calculated)	0.75	0.79	0.92
Factor as Used in Monte Carlo AIR vs no AIR	0.80	0.80	0.95
Factor as Used in Monte Carlo-AIR vs PAIR	1.00	0.90	1.00

*Note: Factors are dimensionless.

V. Discussion of Individual Manufacturer's Technical Capability

This section will discuss all vehicles which (1) were submitted by each of the four applicants and (2) also are acceptable for input into the Monte Carlo simulation. Acceptable for input means (1) that the vehicle is a durability vehicle which has accumulated a minimum of 20,000 miles with the same major emission control components and (2) that a minimum of four valid 1975 FTP tests have been conducted on the vehicle.

Details of the pass/fail determinations in Section II are also presented here. To pass the 1981 and 1982 emission standard (of 0.41 HC, 3.4 CO, 1.0 NOx), the probabilities of passing each individual pollutant must be greater than or equal to 80%. If the probability of passing only HC for example, is less than or equal to 79%, the vehicle fails—even if the probabilities for CO and NOx greatly exceed the 80% cutpoint.

Due to time constraints for this analysis, pass/fail analysis is provided only for emission standards of 0.41 HC, 3.4 CO and 1.0 NOx. Analysis of the capability of the vehicles to meet the standard of 0.41 HC, 7.0 CO, 1.0 NOx were not conducted. Consequently, vehicles designed for a 7.0 CO standard are included in the following discussions of vehicles which were acceptable for entry into the computer analysis, but are not discussed with respect to compliance at 7.0 CO.

In order that the Monte Carlo analysis not be cluttered with hundreds of failing vehicles utilizing inappropriate technology, prior certification vehicles are not considered in this analysis except in special cases where a manufacturer's ability to comply with the 1981 and 1982 emission standards is directly affected. It is not surprising that the durability vehicles from past certification would fail to achieve the 3.4 CO standard for two reasons. First, this standard represents a substantial reduction in CO from prior model year standards. And second, major changes in technology are being planned for introduction in 1981 by most vehicle manufacturers to achieve the more stringent standards.

If a manufacturer's prime (prime means the system most capable of achieving the 1981 standards) 1981 emission control system has been tested in prior certification (generally 1980), these data are included in the analysis.

Fuji

Fuji has requested a waiver for vehicles using the 97 CID and the 109 CID engines. Fuji's first choice emission control system for vehicles using both engines includes feedback carburetion, a three-way catalyst and exhaust gas recirculation (FBC/3W/EGR). Table V–1 lists the durability vehicles that Fuji included in their waiver application.

In addition to vehicles with their first choice system, Fuji has also included vehicles with their SEEC–T control system, which consists of pulse-air injection, insulated exhaust manifolds and exhaust gas recirculation (PAIR/IEM/EGR), and vehicles with their oxidation catalyst system which consists of pulse-air injection, an oxidation catalyst and exhaust gas recirculation (PAIR/OC/EGR). Because Fuji's three-way catalyst control system is the only one designed to meet the 1981–1982 standards, only those vehicles so equipped were considered in the pass/fail analysis for each engine.

The EPA technical staff has added numerical suffixes to Fuji's VIN's to aid in identifying vehicles with and without factors. Vehicles will be discussed by Fuji's VIN, but Table V–2 and the Monte Carlo printouts include the suffixes added by EPA. EPA has also added alphabetic suffixes to distinguish between different vehicles which Fuji has submitted with identical VIN's. The alphabetic suffixes added by EPA are included throughout appendix A.

Table V–1

Engine	VIN*	Emission control system**	Entered in Monte Carlo	If not entered in Monte Carlo, why?	References***
109	80CD–C	PAIR/IEM/EGR	Yes		FWA p. A–6–1
97	80CD–D	PAIR/IEM/EGR	Yes		FWA p. A–6–2
97	80FD–B	PAIR/OC/EGR	Yes		FWA p. A–7–1
109	A66L–617992–A	PAIR/OC/EGR	Yes		FWA p. A–7–2
97	A22–347985	FBC/3W(A1)/EGR	Yes		FWA p. A–8–1
109	71A–1446–A	FBC/3W(A1)/EGR	Yes		FWA p. S–8–2
97	A26L–671177	FBC/3W(A1)/EGR	No	Insufficient Data	FAI p. S–5–1
97	A67L–503419	FBC/3W(A1)/EGR	No	Insufficient Data	FAI p. S–5–2
97	A33–061901	FBC/3W(A2)/EGR	Yes		FAI p. S–5–3
109	A66L–617992–B	FBC/3W(A5)/EGR	Yes		FAI p. S–5–4
109	71A–1146–B	FBC/3W(A5)/EGR	No	Insufficient Data	FAI p. S–5–5
97	A26L–67497	FBC/3W(A6)/EGR	No	Insufficient Data	FAI p. S–5–6
109	76T–2128	FBC/3W(A6)/EGR	No	Insufficient Data	FAI p. S–5–7
109	76T–2128	FBC/3W(A7)/EGR	No	Insufficient Data	FAI p. S–5–8
109	A33–037049	FBC/3W(A7)/EGR	No	Insufficient Data	FAI p. S–5–9

* Vehicles with duplicate VIN's have a suffix added by EPA.
** Three way catalysts include identification designation (e.g. 3W(A1)).
*** FWA is used here as an abbreviation for reference 3.
FAI is used here as an abbreviation for reference 16.

Table V–2.—*Monte Carlo Results of Fuji Vehicles With FBC/3W/EGR*

VIN	Engine	Catalyst*	Probability of Pass			Comments
			HC	CO	NO_x	
A22–347985	97	A1	69	6	100	No Factors
A22–347985–2	97	A1	100	86	100	Factors for Catalyst Improvement and OC + Aspirator
A22–347985–3	97	A1	100	96	100	Factors for Catalyst Improvement and OC + Switched AIR
A33–061901	97	A2	46	1	97	No Factors
A33–061101–2	97	A2	98	77	99	Factors for Catalyst Improvement and OC + Aspirator
A33–061901–3	97	A2	99	96	100	Factors for Catalyst Improvement and OC + Switched AIR
A22+A33	97	(A1–A2)	49	18	99	2-Car Analysis—No Factors
A22+A33–2	97	(A1–A2)	100	85	100	2-Car Analysis—Factors for Catalyst
			99	87	100	Improvement & OC + Aspirator
A22+A33–3	97	(A1–A–2)	100	96		2-Car Analysis—Factors for Catalyst Improvement & OC + Switched AIR
71A–1446–A	109	A1	87	2	87	No Factors
A66L–617992—B	109	A5	100	25	100	No Factors
A66L–617992–B–2	109	A5	100	94	83	Factors for OC + Aspirator
A66L–617992–B–3	109	A5	100	99	94	Factors for OC + Switched AIR

* See Pass/Fail Analysis for the Fuji 97 CID Engine Family for explanation of (A1–A2).

Pass/Fail Anaylsis for the Fuji 97 CID Engine Family

Vehicles using the 97 CID engine are predicted to pass with either one of the two following combinations of hardware improvement factors:

(a) An improved three-way catalyst and a clean up oxidation catalyst with an aspirator between the catalysts, and

(b) An imrproved three-way catalyst and a clean up oxidation catalyst with a swtiched AIR system.

Vehicles with this engine are projected to fail without hardware improvement factors. Table V–2 lists the Monte Carlo results of Fuji vehicles equipped with the FBC/3W/EGR system, which is Fuji's only emission control system currently designed to meet the 1981–1982 standards. Vehicles with their SEEC–T and PAIR/OC/EGR systems were therefore not included in this analysis.

Vehicles A22–347985 and A33–061901 were run with and without factors, and both a one-car analysis and a two-car analysis were done. A one-car analysis is the standard analysis used in the CO Waiver Decision of September 5, 1979 and will not be further explained. Vehicle A22–347985 passed the one-car analysis with factors and failed without factors. Vehicle A33–061901 failed the one-car analysis with and without factors.

A two-car analysis includes the results of two identical durability vehicles as is sometimes done for certification. In the two car analysis, both vehicles passed with factors. These vehicles are not considered identical without factors because A22–347985 was equipped with catalyst A1 and vehicle A33–061901 was equipped with catalyst A2. With factors for hardware improvements, they are considered to be identical.

As explained in the discussion of the Fuji catalyst improvement factor, catalysts A1 and A2 were averaged because, although A1 should have been a more active catalyst, in some cases its conversion efficiencies were lower than those of A2. The unexpected results may be attributable to Fuji's test procedure rather than catalyst capability or potential. Engine-out emissions and tailpipe emissions were not measured simultaneously. Test variability associated with separate tests could have caused the inconsistencies, especially if the results were based on one test in each configuration rather

than an average of several tests. Fuji did not indicate the number of tests performed.

The vehicle identification numbers for the two vehicles in the two-car analyses are A22+A33-2 and A22+A33-3 for the hardware improvement factor cases, and A22-A33 for the without factors case. As combined vehicles in the two-car analyses, A22-347985 and A33-061901 failed without factors and passed with hardware improvement factors. The specific improvements are enumerated in Table V-2. Based on the results of these two-car analyses, this family is projected to pass with either one of the improved emission control systems.

Pass/Fail Analysis for the Fuji 109 CID Engine Family

The 109 CID engine family is predicted to pass with either one of the two following hardware improvement factors; (a) a clean up oxidation catalyst with an aspirator between the catalysts, or with (b) a clean up oxidation catalyst with a switched AIR system. This family is projected to fail without improvements.

The Monte Carlo results are listed in Table V-2 for vehicles with the FBC/3W/EGR control systems. As explained in the Pass/Fail analysis for the 97 CID engine family, vehicles with control systems not currently designed to meet the 1981-1982 standards were not included in this analysis.

The projections for this family are based on the results of vehicle A66L-617992-B. This vehicle was unique in that it was the only durability vehicle with Fuji's catalyst warm up system. It was also the only Fuji durability vehicle using the A5 catalyst which met the minimum criteria for inclusion in the Monte Carlo analysis. Although all of the other durability vehicles with 109 CID engines and sufficient data for inclusion in the Monte Carlo failed the simulation, they were equipped with the FBC/3W(A1)/EGR system or other less advanced emission control systems. Therefore, A66L-617992-B, with either one of the two hardware improvements discussed above, is considered by the EPA technical staff to be representative of Fuji's capability to comply with the 1981-1982 emission standards.

Nissan

Nissan has requested a waiver for several engine families in model year 1981. Two distinct groups of technology have been identified by Nissan. One group will be used if a waiver to 7.0 CO is granted and the second group of technology will be used if compliance with 3.4 CO is required.

There have been no real durability vehicle fleets run by Nissan to aid in analysis of their ability to certify in 1981. In fact, only two of the durability vehicles that were eligible for Monte Carlo analysis were designated as being targeted for 1981 Federal emission standards. Those were vehicles A612 with a 91 CID engine and F671 with a 168 CID engine. The remainder of the vehicles presented by Nissan are typically 1980 California certification or development vehicles (designed for .41 HC, 9.0 CO, 1.0 NOx) or vehicles from their low NOx research program (designed for 0.41 HC, 3.4 CO, 0.41NOx).

Emission data from a large number of vehicles were presented in the Nissan waiver application documents as shown in table V-3. Unfortunately, most of the vehicles were development vehicles and did not accumulate a sufficient number of test points or sufficient mileage for entry into the EPA Monte Carlo analysis.

Table V-3.—*Vehicles in Nissan Waiver Application*

Engine	VIN	Emission control system	Entered in Monte Carlo?	If not entered in Monte Carlo—Why?	Comment	Reference [1]
119	YD021	EFI/FB/light EGR/3W.	Yes		Available for 1981.	NWA, p. 4.3.3.
119	YD020	FBC/FB/light EGR/3W.	Yes		Not available for 1981.	NWA, p. 4.3.3.
108	B2007	PAIR/EGR/OC (+OSC in some tests).	No	Waiver not requested		NWA, p. 4.6.7.
108	B1967	PAIR/EGR/OC (+OSC in some tests).	No	Waiver not requested		NWA, p. 4.6.8.
168	F671	EFI/EGR/3W (+3WSC in some tests).	Yes, with start catalyst.	Insufficient number of test points without start catalyst.		NWA, p. 4.6.9.
168	8D-645C	EFI/3W (1.7l cat).	Yes	Called 8D-645CB		NWA, p. 4.6.13 +, NSSS, p. 7.
168	8D-645C	EFI/3W (2.5l cat).	Yes	Called 8D-645CA		NWA, p. 4.6.13, NSSS, p. 7.
119	B2136	FB/PAIR/EGR/OC.	No	Insufficient number of data points		NWA, p. A.IV.1-2.
119	#265	FB/PAIR/EGR/OC.	No	Insufficient number of data points		NWA, p. A.IV.1-2.
119	B2075	FB/PAIR/EGR/OC.	No	Insufficient number of data points		NWA, p. A.IV.1-2.
119	BK577	FB/PAIR/EGR/OC.	No	Insufficient number of data points		NWA, p. A.IV.5, NSS, p. 17-18.
119	AK687	FB/PAIR/EGR/OC.	No	Insufficient number of data points		NWA, p. A.IV.5.
119	BK585	FB/PAIR/EGR/OC.	No	Insufficient number of data points		NWA, p. A.IV.5.
119	AK860	FB/PAIR/EGR/OC.	No	Insufficient number of data points		NWA, p. A.IV.5.
90.8	AK714	AIR/EGR/OC	No	Recalibration between tests		NWA, p. A.IV.10-10a, NSA, p. 9.
90.8	AK618	AIR/EGR/OC	No	Recalibration between tests		NWA, p. A.IV.12-12a.
168	F780	EFI/3W	No	Recalibration between tests		NWA, p. A.IV.14-14a, NSA, p. 25.
119	BK649	FB/PAIR/EGR/OC.	Yes		1980 calibration certificate.	NWA, p. A.IV.16, NSA, Response #3.

Table V-3.—*Vehicles in Nissan Waiver Application*—Continued

Engine	VIN	Emission control system	Entered in Monte Carlo?	If not entered in Monte Carlo—Why?	Comment	Reference [1]
119	8D-992	FB/PAIR/EGR/OC.	Yes		1980 calibration development.	NWA, p. A.IV.18, NSA, Response #3.
119	8D-991	FB/PAIR/EGR/OC.	Yes		1980 calibration development.	NWA, p. A.IV.20.
119	B1968	FB/PAIR/EGR/OC.	Yes		1980 calibration development.	NWA, p. A.IV.22.
119	AK690	FB/EFI/PAIR/EGR/OC.	Yes		1980 calibration certificate.	NWA, p. A.IV.24.
119	BK584	FB/EFI/PAIR/EGR/OC.	Yes, using data up to recalibration.		1980 calibration development.	NWA, p. A.IV.26.
119	BK578	FB/EFI/PAIR/EGR/OC.	Yes		1980 calibration development.	NWA, P. A.IV.28.
85.2	AK749	AIR/EGR/OC	Yes		1980 calibration certificate.	NWA, p. A.IV.30.
75.4	A883	AIR/EGR/OC	Yes		1980 certificate.	NWA, p. A.IV.32.
90.8	A555	AIR/EGR/OC	Yes		1980 development.	NWA, p. A.IV.34.
85.2	A609	AIR/EGR/OC	Yes		1979 development.	NWA, p. A.IV.36.
168	F836	EFI/3W	Yes		1980 calibration certificate.	NWA, p. A.IV.38.
168	F675	EFI/EGR/3W	Yes		1980 calibration development.	NWA, p. A.IV.40.
168	F614	EFI/EGR/3W	Yes		1980 calibration development.	NWA, p. A.IV.42.
119	CB516	FB/PAIR/EGR/OC.	No	Changes in hardware and calibration changes between tests.	1981 development.	NSA, [2] p. 1.
119	CB514	FB/PAIR/EGR/OC.	No	Changes in hardware and calibration changes between tests.	1981 development.	NSA, p. 3.
119	BK576	FB/EFI/PAIR/EGR/OC.	No	Changes in hardware between tests and insufficient number of data points.	1981 development.	NSA, p. 5.
119	HB194	FB/EFI/PAIR/EGR/OC.	No	Changes in calibration between tests	1981 development.	NSA, p. 7.
90.8	AK714	AIR/EGR/OC	No	Calibrations changed between tests	1981 development.	NSA, P. 9.
90.8	AK618	AIR/EGR/OC	No	Calibration changes between tests	1981 development.	NSA, P. 11.
90.8	AK715	AIR/EGR/OC	No	Not a durability car	1981 development.	NSA, 13-14.
90.8	K110	AIR/EGR/OC	No	Not a durability car	1981 development.	NSA, p. 16-17.
90.8	AW34	AIR/EGR/OC	No	Not a durability car	1981 development.	NSA, p. 19. NSS [3], p. 36-37.
90.8	A454	AIR/EGR/OC	No	Not a durability car	1981 development.	NSA, p. 21.
90.8	AK577	AIR/EGR/OC	No	Not a durability car	1981 development.	NSA, p. 23.
146	BW235	EFI/EGR/3W	No	Not a durability car	1981 development.	NSA, p. 27.
146	B1804	EFI/EGR/3W	No	Not a durability car	1981 development.	NSA, p. 29.
119	B2085	FB/PAIR/EGR/OC.	No	Insufficient mileage accumulation	1981 development.	NSA, p. 31.
90.8	AK579	AIR/EGR/OC	No	Insufficient number of data points	1981 development.	NSA, p. 33.
90.8	A612	AIR/EGR/OC	Yes		1981 development.	NSA, p. 35. NSS, p. 55.
119	BK598	FB/PAIR/EGR/OC.	No	Insufficient number of data points	1980 development.	NSA, pp. 15-16.
168	F763	EFI/3W	No	Insufficient number of data points	1981 development.	NSA, pp. 19-20.
119	AK861	FB/EFI/PAIR/EGR/OC.	No	Insufficient number of data points	1981 development.	NSA, pp. 23-24.
90.8	AW25	AIR/EGR/OC	No	Insufficient number of data points	1980 development.	NSA, pp. 26-27
85.2	A458	AIR/EGR/OC	No	Insufficient number of data points	1978 development.	NSA, pp. 29-30.
119	AK363	EFE/PAIR/EGR/OC.	No	Changes in hardware between tests	1978 development.	NSS, pp. 31-32.
168	F503	EVE/PAIR/EGR/OC.	No	Changes in hardware between tests	1978 development.	NSS, p. 33-34.
168	BW220	ECCS/3W	No	Changes in hardware between tests	ECCS development.	NSS, p. 39-40.
119	BK579	FB/EFI/EGR/PAIR/OC.	No	Changes in hardware between tests	1980 development.	NSSS [4], pp. 16-17.

[1] NWA is used here as an abbreviation for reference 2.
[2] NSA is used here as an abbreviation for reference 15.
[3] NSS is used here as an abbreviation for reference 13.
[4] NSSS is used here as an abbreviation for reference 19.

Pass/Fail Analysis of Vehicles Using the 75 CID Engines

Nissan provided durability data that were acceptable for computer analysis on one vehicle. This was vehicle number A–883, and this was a 1980 model year California certification vehicle representing the Nissan family A12C. Car A–883 was equipped with an AIR/EGR/OC system which is Nissan's first choice system for vehicles using the 75 CID engine in model year 1981 [5 at 56]. The only emission hardware changes planned by Nissan for 1981 are the addition of an improved oxidation catalyst [5 at 56] and dual-walled exhaust pipes if needed [13 at section IV, p. 13]. Calibration modifications could also be incorporated for the choke, ignition timing, and AIR system [5 at 56]. Since Nissan claimed their catalyst descriptions to be confidential, the precise improvements incorporated into the oxidation catalyst cannot be discussed.

An emission control system consisting of FI or FBC/EGR/AIR/3W/OC is considered to be the prime emission control system for meeting 0.41 HC, 3.4 CO, 1.0 NOx by the EPA technical staff (the prime system being the one most capable of achieving 0.41 HC, 3.4 CO, 1.0 NOx). A system such as this was not tested by Nissan with vehicles using the 75 CID or any other engine. The technical staff believes that the cost of the prime system versus Nissan's first choice system (particularly for the vehicles with 75, 85 and 91 CID engines) was the reason that Nissan did not pursue the prime system [5 at 72–73].

The complete emission results of car A–883 are shown in table V–4.

Table V–4.—*Nissan California Durability Vehicle for the 1980 Model Year*

[Engine family A12C; vehicle A–883]

Miles	75 FTP results		
	HC	CO	NOx
4810	0.249	2.88	0.95
9861	0.169	2.13	0.88
15161	0.189	2.49	0.84
15182	0.237	2.92	0.80
19839	0.191	2.36	0.85
24794	0.225	1.45	0.84
30099	0.233	2.01	0.87
30117	0.213	1.45	0.81
34799	0.231	1.69	0.85
40170	0.214	1.36	1.01
44860	0.251	1.55	0.85
44879	0.218	1.74	0.82
50016	0.235	1.69	0.85

Table V–4.—*Nissan California Durability Vehicle for the 1980 Model Year*—Continued

[Engine family A12C; vehicle A–883]

Miles	75 FTP results		
	HC	CO	NOx
4000 (CALC)	0.20548	2.66137	0.86946
50000 (CALC)	0.23252	1.35492	0.85725
Deterioration factor	1.132	0.509	0.986

On the basis of vehicle A–883, Nissan can certify vehicles using 75 CID engines family A12C as used in 1980 certification.

A predictive methodology is not necessary in this case as a vehicle has actually been run in certification using technology similar to that planned for use by Nissan in 1981. But as an illustrative example of the conservatism employed in the Monte Carlo, car A–883 (and a few others in similar situations) was entered into Monte Carlo. The vehicle was entered and run with no factors. The predicted probabilities of passing HC, CO, and NOx were 100, 100 and 77. The vehicle would have failed NOx by a small margin as a minimum value of 80% is required for each pollutant.

Pass/Fail Analysis of Vehicles Using the 85 and 91 Engines

The data from vehicles using the 85 and 91 CID engines were analyzed together as they have historically been in the same engine family in EPA certification.

Data from a total of six vehicles were entered into the Monte Carlo analysis. No cars presented by Nissan were rejected for any reason other than that they did not meet the minimum criteria for number of points or mileage accumulation.

Three of the six vehicles (AK749, AK0522, and YBU21) are actual certification vehicles. Vehicle A612 was a 1981 model year prototype (only one of two 1981 prototypes presented by Nissan which had 20,000 miles for more of durability). Vehicles A609 was a 1979 development vehicle and vehicle A555 was a 1980 development vehicle.

Actual certification results of the three certification durability vehicles are presented in table V–5.

The first choice Nissan system for achieving the 1981 emission standards of 0.41 HC, 3.4 CO, 1.0 NOx with vehicles using these engines is an AIR/EGR/OC system. Improved components in this emission control system for 1981 compared to the 1980 models using the same basic system are an improved oxidation catalyst and dual-walled exhaust pipes. The dual-walled pipes

will only be used if needed. [5 at 56 and 13 at section IV, p. 13]. Calibration changes could include revisions to the choke calibration, spark timing, and AIR system calibration [5 at 56].

The Monte Carlo simulation predicted the probabilities of passing for these vehicles as shown in table V–6.

Table V–5.—*Results of Nissan Certification Vehicles*

	Vehicle AK 749 (80 certification family A14/15C)			Vehicle AK0522 (78 certification family A140C)				Vehicle YBU21 (80 certification family A14/15C)			
	Miles	HC	CO	NO_x	Miles	HC	CO	NO_x	Miles	HC	CO	NO_x
	4840.	0.196	2.05	0.99	5181.	0.270	2.00	1.04	5152.	0.289	3.95	0.89.
	9777.	0.282	3.52	0.93	9776.	0.320	2.50	1.02	9848.	0.265	4.27	0.83.
	15137.	0.257	3.26	0.88	15182.	0.250	2.30	1.20	15088.	0.265	3.84	0.80.
	15157.	0.261	2.96	0.80	15201.	0.240	2.30	0.95	15108.	0.279	3.17	0.78.
	19798.	0.288	3.88	0.89	19819.	0.260	2.10	1.10	19851.	0.293	3.38	0.82.
	25063.	0.219	2.26	1.00	25101.	0.220	2.10	1.03	25155.	0.286	3.19	0.83.
	29828.	0.220	3.16	0.89	30192.	0.230	2.80	1.12	29926.	0.312	4.07	0.91.
	29846.	0.220	1.97	0.94	30213.	0.230	2.10	1.05	29945.	0.310	4.00	0.80.
	35156.	0.295	2.94	0.89	35188.	0.210	2.60	1.10	35157.	0.277	3.56	0.90.
	39799.	0.265	2.72	0.90	40002.	0.250	3.60	1.29	40158.	0.339	4.50	0.75.
	44768.	0.305	3.65	0.99	45184.	0.220	3.10	1.03	45121.	0.307	2.96	0.90.
	44787.	0.248	2.55	0.85	45203.	0.250	2.60	1.09	45140.	0.279	3.09	0.82.
	50008.	0.271	3.21	0.92	50011.	0.260	2.50	0.85	50025.	0.302	2.90	0.89.
4000.(CALC)=		0.23730	2.86379	0.91505		0.26849	2.06299	1.08082		0.27471	3.96317	0.82385.
50000.(CALC)=		0.27300	2.99660	0.91127		0.22745	2.90922	1.04559		0.30870	3.28254	0.85464.
Deterioration factor=		1.150	1.046	0.996		0.847	1.410	0.967		1.124	0.828	1.037

Table V–6.—*Monte Carlo Results of Nissan Vehicles Using 85 and 91 CID Engines*

[Probability of pass]

VIN	Eng	Catalyst	HC	CO	NO_x	Comment
AK749	85	D	97	69	78	1980 Calif. cert vehicle.
AK0522	85	V	99	78	29	1978 Calif. cert vehicle.
YBU21	85	H	92	7	82	1980 Calif. cert vehicle.
A612	91	F	94	36	97	1981 developmental vehicle has improved catalyst.
A609	85	H	100	14	8	1979 developmental vehicle.
A555	91	D	100	0	54	1980 developmental vehicle
With factors for ignition time recalibration during cold start.						
AK749			100	98	79	
AK0522			100	99	32	
YBU21			98	89	82	
A612			97	81	97	
A609			100	61	9	
A555			100	51	56	

Since there is already a Nissan engine family certified to the 1981 emission standards (as shown by vehicle AK749), the Monte Carlo simulation was not necessary in this case. However, with the factor for revised ignition timing during cold start the Monte Carlo confirms Nissan's ability to certify in 1981 (on the basis of vehicle A612 using the improved catalyst). Vehicle A612 is the only vehicle of the six designed specifically for 1981 Federal emission standards. None of the other five vehicles used the improved catalyst.

Pass/Fail Analysis of Vehicles Using the 119 CID Engines

Four different emission control systems have been developed by Nissan for vehicles using the 119 CID engines. These emission control systems and individual vehicles utilizing these emission control systems are shown in table V–7. Again, no vehicles submitted by Nissan were rejected from the analysis.

Table V–7.—*Nissan Durability Vehicles Using 119 CID Engines*

VIN	Emission control system	Catalyst**	Comments
BK649	FB*/PAIR/EGR/OC	P	80 Calif. cert vehicle.
B1968	FB/PAIR/EGR/OC	Q	80 Calif. development vehicle.
8D-991	FB/PAIR/EGR/OC	A	80 Calif. development vehicle.
8D-992	FB/PAIR/EGR/OC	A	80 Calif. development vehicle.
AK690	FB/EFI/PAIR/EGR/OC	A	80 Calif. cert vehicle.
BK584	FB/EFI/PAIR/EGR/OC	A	80 Calif. development vehicle.
YD021	FB/EFI/EGR/3W	S	Targeted for 0.41 HC, 3.4 CO, 0.4 NO_x.
YD020	FB/FBC/EGR/3W	K	Targeted for 0.41 HC, 3.4 CO, 0.4 NO_x.

*FB means fast burn.

**Different catalysts generally indicate that the vehicles would be in different engine families in certification..

Of the four emission control systems in table V–7, the systems of FB/PAIR/EGR/OC (carbureted) and FB/EFI/PAIR/EGR/OC are planned for use by Nissan in 1981 to meet 0.41 HC, 3.4 CO. 1.0 NO_x. For the carbureted system, Nissan has the additional options of using an improved oxidation catalyst, dual-walled exhaust pipes, and a new, proprietary device in 1981 [5 at 55 to 56 and 13 at section IV, p. 13]. Calibration modifications could include a leaner choke and a leaner "engine air/fuel" ratio [5 at 55 to 56]

According to Nissan, the emission control system on vehicle YD020 cannot be used in model year 1981 due to the high CO emissions from the system [5 at 70 to 71]; however, all hardware will be available to build vehicles like car YD021 in 1981 [5 at 70]. Nissan expressed concern about the durability of the system used on car YD021, particularly for model year 1981 use. This concern is not shared by the EPA technical staff as Nissan is gaining production experience with the fuel injection system (open loop version) in 1980 with family Z20FC (119 CID) and production experience with oxygen sensors, closed loop electronics and 3-way catalysts in 1980 with family L24/28C (168 CID).

No emission control systems incorporating prime technology (3W+OC) have been developed for vehicles using the 119 CID engines.

The complete emission results of the two 1980 California certification vehicles are shown in table V–8. Vehicle AK690 achieved the 1981 Federal emission standards of 0.41 HC, 3.4 CO, 1.0 NOx. Vehicle YD–021 also achieved emission levels well below the 0.41 HC, 3.4 CO, 1.0 NOx standards. The complete emission results from this vehicle are shown in table V–8.

Table V-8.—*1980 California Certification Vehicles Using 119 CID Engines*

	Family Z20EC VIN AK690			Family Z20SC VIN BK649		
Miles	HC	CO	NO_x	Miles	HC	CO	NO_x
4841.	0.261	1.88	0.96	4811.	0.278	6.53	.052
9839.	0.261	1.58	0.81	10079.	0.328	8.03	0.56
15184.	0.314	1.86	1.00	15160.	0.224	6.48	0.50
15203.	0.325	1.81	0.99	15178.	0.260	6.16	0.57
20151.	0.339	1.74	1.02	20147.	0.298	4.01	0.62
24823.	0.297	1.84	0.92	24934.	0.283	6.39	0.64
30155.	0.297	1.71	0.93	29875.	0.267	6.34	0.75
30172.	0.305	1.87	0.82	29893.	0.301	5.53	0.60
34941.	0.291	1.78	0.81	34770.	0.313	6.71	0.56
40149.	0.292	1.75	0.83	40158.	0.312	5.98	0.60
44836.	0.321	1.75	0.85	44767.	0.272	6.43	0.51
44855.	0.297	1.69	0.89	44785.	0.340	6.93	0.60
50013.	0.342	1.86	0.85	50018.	0.329	6.08	0.50
4000. (CALC)=	0.28524	1.78370	0.96422		0.26792	6.40847	
			0.56594				
5000. (CALC)=	0.31959	1.77370	0.83865		0.31531	6.15680	
			0.57665				
Deterioration factor=	1.120	0.994	0.870		1.177	0.961	
			1.019				

Table V-9.—*Emission Results of Car YD-021 Using the 119 CID Engine With EFI/EGR/3W*

[Datsun 510 at 2750 IW]

1975 FTP					
Miles	HC	CO	NO_x	MPGu	Maintenance
0	0.13	1.26	0.13	25.9	
5,000	0.16	1.82	0.15	25.5	
10,000	0.16	2.08	0.21	25.4	
15,000	0.24	1.79	0.29	25.7	Replaced engine oil and oil filter.
20,000	0.17	1.74	0.34	26.2	
25,000	0.19	2.18	0.31	26.1	
30,000	0.17	1.72	0.37	26.4	Replaced engine oil, oil filter and spark plug.
30,000	0.24	2.54	0.33	25.8	After maintenance
35,000	0.20	2.10	0.39	26.3	
40,000	0.24	2.72	0.47	26.2	
45,000	0.21	2.39	0.48	26.5	Replaced engine oil and oil filter.
50,000	0.23	2.43	0.46	26.7	
4,000 (CALC)	0.17	1.75	0.18		
50,000 (CALC)	0.23	2.50	0.50		
Deterioration factor=	1.3569	1.4225	2.7855		

All eight vehicles were run through the Monte Carlo simulation. The results are presented in table V-10.

Table V-10.—*Results of the Monte Carlo Analysis for Vehicles Using 119 CID Engines*

VIN	Emission control system	Probability of pass		
		HC	CO	NO_x
Without Factors				
BK 649	FB/PAIR/EGR/OC	92	0	99
B1968	FB/PAIR/EGR/OC	88	92	14
8D-991	FB/PAIR/EGR/OC	61	51	96
8D-992	FB/PAIR/EGR/OC	94	59	96
AK 690	FB/EFI/PAIR/EGR/OC	90	100	63
BK 584	FB/EFI/PAIR/EGR/OC	90	0	31
YD021	FB/EFI/EGR/3W	100	92	100
YD020	FB/FBC/EGR/3W	100	1	100
With Factors for Improved Oxidation Catalyst and Dual-Walled Exhaust Pipe				
BK649		97	0	98
B1968		97	100	10
8D-991		90	87	96
8D-992		99	98	95

Based on completed certification testing, Nissan can sell vehicles using the 119 CID engine and the FB/EFI/PAIR/EGR/OC emission control system in 1981.

Based on Monte Carlo anaylsis, Nissan could also certify vehicles using the 119 CID engine and either the FB/EFI/EGR/3W emission control system or FB/PAIR/EGR/OC system as represented by vehicles 8D–991 or 8D–992 (using catalyst A and a dual-walled exhaust pipe).

Pass/Fail Analysis of Vehicles Using the 146 and 168 CID Engines

Vehicles using these two engines were analyzed together as they also have historically been certified as a single engine family in EPA certification. All of the vehicles discussed in this section actually used the 168 CID engine.

No vehicles submitted by Nissan were rejected from this analysis for any reason except that they did not either accumulate sufficient mileage (20,000 miles minimum without a substantial change in calibration or hardware) or have a sufficient number of data points to be included in the deterioration factor calculation (4 points as a minimum).

Two basic emission control systems could be utilized by Nissan in 1981 for vehicles using these engines. Those systems are EFI/3W and EFI/EGR/3W [5 at 57 and 5 at 81]. No systems using a 3W + OC system were tested on durability vehicles. Also, no start-up AIR systems were tested on any vehicles. One vehicle (F671) was run with EFI/EGR/3W/3WSC, but results were not encouraging with the addition of the start catalyst and Nissan has no plans to market such a vehicle.

Additional hardware which could be utilized by Nissan for vehicles using these engines in 1981 includes an improved 3-way catalyst [5 at 81].

The vehicles entered into the Monte Carlo simulation are shown in table V–11. Again different catalyst codes would indicate that the vehicles would be in different certification engine families. Only one vehicle (car F671) appeared to be designed for the 1981 emission standards. The results of the Monte Carlo analysis are shown in table V–12.

Table V–11.—*Nissan Vehicles Using 168 CID Engines That Were Entered Into Monte Carlo Analysis*

VIN	Engine	Emission control system	Catalyst Code	Comments
F614	168	EFI/EGR/3W	K	80 Calif. development vehicle.
F675	168	EFI/EGR/3W	K	80 Calif. development vehicle.
F836	168	EFI/3W	K	80 Calif. cert. vehicle.
8D-645CA*	168	EFI/3W	W	Targeted for 0.41 HC, 3.4 CO, 0.4 NO_x.
8D-645CB*	168	EFI/3W	L	Targeted for 0.41 HC, 3.4 CO, 0.4 NO_x.
8D-645CC*	168	EFI/3W	W	Targeted for 0.41 HC, 3.4 CO, 0.4 NO_x.
F615	168	EFI/3W	K	Targeted for 0.41 HC, 3.4 CO, 0.4 NO_x.
F671	168	EFI/EGR/3W/3WSC.	$\theta+X$	Experimental vehicle for 1981.

*These are actually all vehicle 8D-645C. The A and C cases use catalyst W, but are different durability runs (C was actually run first). Case B was run simultaneously with case A using a catalyst designated at catalyst L.

Table V–12.—*Monte Carlo Analysis of Nissan Vehicles Using 168 CID Engines*

VIN	Emission control system	Catalyst	Probability of pass		
			HC	CO	NO_x
No Factors					
F614	EFI/EGR/3W	K	87	43	99
F675	EFI/EGR/3W	K	85	94	100
F836	EFI/3W	K	84	0	100
8D-645CA	EFI/3W	W	80	48	100
8D-645CB	EFI/3W	L	88	29	100
8D-645CC	EFI/3W	W	80	50	100
F615	EFI/3W	K	94	82	100
F671	EFI/EGR/3W/3WSC	$\theta+X$	11	17	100
With Factors for Start-up Air Injection					
F614			97	78	100
F675			97	100	100
F836			97	13	100
8D-645CA			96	81	100
8D-645CB			100	75	100
8D-645CC			96	82	100
F615			99	99	100

For those vehicles using EFI/EGR/3W (catalyst K) emission control systems, one passes and one fails. Since both use identical emission control systems a two car analysis was run to determine if this system could certify. The results of the two car analysis are as follows:

	Probability of pass
HC	80
CO	66
NO_x	99

A similar two car analysis could have been run using other pairs of identical vehicles, such as F836 and F615, but the low CO probability of pass for F836 indicates that the pair would fail also.

On the basis of the two car analysis of vehicles F614 and F675, this family is projected to fail without factors.

With the use of factors for the addition of warm-up air injection, the ability of Nissan to certify was enhanced. A two car analysis of cars F614 and F675 indicate that the emission control system of EFI/EGR/3W (catalyst K) with warm-up air injection can certify. The respective probabilities of pass are 97 for HC, 90 for CO, and 100 for NOx. A two car analysis with the emission control system of EFI/3W (catalyst W) and warm-up air injection was not needed as vehicles 8D/645CA and 8D–645CC both pass in the single car analysis.

On the basis of the success discussed above, the vehicles using 168 CID engines are considered to pass with the factors for the addition of warm-up air injection.

Pass/Fail Analysis of Vehicles Using Engines in Families A and B

No data were presented by Nissan that were acceptable for entry into the EPA model. Thus, these families are considered as "no data" families. It is clear, based on Nissan's projected sales, that the basic market demand for Nissan vehicles could be met without the use of these two engine families.

Renault

Renault applied for a waiver of the 3.4 gm/mile CO standard only for their 85 cubic inch displacement LeCar engine. Table V–13 lists the vehicles for which Renault submitted data in support of their waiver request. The list only includes durability data vehicles with engines for which a waiver was requested.

Table V–13.—*Renault Durability Vehicles*

	VIN	Catalyst	Entered in Monte Carlo?	If not entered, why?	References
Engine (CID):					
85	TP–28	PTX 5302.	Yes		4 at V/l.
85	TP–29	TWC–16.	Yes		4 at V/l.
85	573	TWC–16.	Yes		17 at V/A p. 2; 45 at 2.
85	540	3W+OC.	No	Insufficient number of data points.	18 at 2.2; 43 at 4.

Pass/Fail Analysis for the Renault 85 CID Engine

The 85 CID engine family is projected to pass with hardware improvement factors for a clean up oxidation catalyst with a switched AIR system. This family is projected to fail without hardware improvement factors. This analysis is based on the results of vehicles TP–29 and 573 both of which pass with the aforementioned improvements and fail without improvements.

Renault submitted durability data on four vehicles. Vehicles TP–79 and 573 only had a single three-way catalyst system, whereas vehicle 540 had the 3-way plus oxidation catalyst system (with switched air injection and EGR) which Renault has selected as their first choice emission control system to meet the 1981–1982 standards.

The EPA technical staff decided to apply factors to the three-way only vehicles, rather than the three-way plus oxidation catalyst vehicle (540) for several reasons. First, vehicle 540 had insufficient data for the Monte Carlo analysis. Also, it was apparent from the data which was submitted that vehicle 540 had higher emissions than vehicles TP–29 and 573 had with the improvement factors for a clean up oxidation catalyst with a switched AIR system.

If a manufacturer does not submit durability data for a prime* emission control system, the technical staff attempts to simulate a prime system with hardware improvement factors. Where data are submitted for a prime system, there is no need to simulate, and factors need not be applied. Although Renault identified a vehicle (540) which includes the components of a prime emission control system, in the EPA technical staff's judgment, its configuration is not optimized in that the oxidation catalyst is further downstream than would be optimum for HC & CO control. In order to simulate a prime system, the technical staff would have to apply a factor for catalyst location. Since such a factor has not been developed and the vehicle could not be entered into the analysis, EPA applied the factors for a clean up oxidation catalyst with a switched AIR system to vehicles TI–29 and 573. This allowed EPA to simulate a prime emission control system.

Renault stated that the conversion efficiency of the oxidation catalyst in their first choice system was poor because it had to be located too far from the engine due to space constraints [4 at V/4]. In a response to an EPA request for substantiation of their space constraints, Renault sent a drawing [43 at 3] showing their present oxidation catalyst location, but not showing the area in the vicinity of the three-way catalyst. Reviewing a prior drawing [44 at 5.3] submitted to support their contention that three-way catalyst could not be increased in volume, it appears possible that an oxidation catalyst could be mounted vertically in the engine compartment. Although the drawing showed catalyst interference with the tire for a vertically mounted catalyst, it showed no constraints in moving the catalyst such that it would not interfere with the tire or consideration for the use of an oval shaped catalyst. Because the information submitted by Renault did not substantiate that the oxidation catalyst couldn't be moved into a position where it could operate more efficiently, the technical staff judged that it would be valid to apply improvement factors to vehicles TP–29 and 573. Based on the results of these vehicles, the 85 CID engine family is projected to pass with hardware improvement factors for a clean up oxidation catalyst with a switched AIR system.

Table V–14 lists the Monte Carlo results for the durability vehicles submitted by Renault.

*A prime system is considered by EPA to be FBC/EGR/3W/OC switched AIR used in an optimized configuration.

Table V-14.—*Monte Carlo Results of Renault Durability Results*

VIN	Emission control system	Probability of pass			Comments
		HC	CO	NO_x	
TP-28	AIR/OC/EGR	97	100	4	No factors.
TP-29	FBC/3W/EGR	98	0	100	No factors.
TP-29-2	FBC/3W/EGR	100	96	100	Factors for a clean up oxidation catalyst with a switched AIR system.
573	FBC/3W/EGR	88	0	100	No factors.
573-2	FBC/3W/EGR	100	98	99	Factors for a clean up oxidation catalyst with a switched AIR system.

Toyo Kogyo

Toyo Kogyo has requested a waiver for vehicles powered by three engines. These are the 70 CID rotary engine, the 91 CID conventional engine and the 120 CID conventional engine. TK has two distinct sets of technology planned for possible use in 1981. One set would be used for attempting to meet a 3.4 CO standard and the other would be used at 7.0 CO. Both sets of technology used open loop carburetion, air injection, 3-way catalysts and oxidation catalysts. The primary differences between these two sets of technology are in the details of the system operation and system calibration. Details of the differences were claimed to be confidential by TK.

The vehicles presented by TK in their waiver application are summarized in table V-15. A large number of development vehicles were run; however, a much smaller number of durability vehicles were run.

TK did indicate that there were currently problems with their open loop emission control systems with high catalyst bed temperatures (see system C-1 in reference 30 on pages II-3, II-4 and II-5). Also, these particular systems are the first choice systems of TK for meeting either a 0.41 HC, 3.4 CO, 1.0 NOx standard or a 0.41 HC, 7.0 CO, 1.0 NOx standard in 1981 with their vehicles using 91 and 120 CID engines (see reference 40 at pages 3 to 5). It is assumed by the EPA technical staff that these systems will not be marketed by TK without resolution of this problem due to potential problems of consumer safety.

Technological solutions (temperature or speed/load controlled AIR systems) for the catalyst overtemperature problem have existed for a number of years and there would be no excuse for marketing vehicles with this problem. The move to close loop emission control systems in place of the open loop systems is expected to improve the situation for TK. At the same time their catalyst deterioration and CO control problems are expected to improve.

Table V-15.—*Vehicles in Toyo Kogyo Wavier Application*

Engine	VIN	Emission control system [2]	Entered in Monte Carlo	If not entered in Monte Carlo—Why?	Comment	Reference
86.4	(UC) No VINs given		No	No waiver requested for this engine	1979 GLC	TWA,[1] sec. IV, p 44.
120.2	(MA) No VINs given		No	Insufficient number of data points	1980 626	TWA, sec. IV, p 45.
	1		No	Insufficient number of data points	1978 GLC	TWA, sec. IV, p 98.
	2		No	Insufficient number of data points	1978 RX-3 sp	TWA, sec. IV, p 98.
	3		No	Insufficient number of data points	1979 626	TWA, sec. IV, p 98.
	4		No	Insufficient number of data points	1979 GLC	TWA, sec. IV, p 98.
35X2	RE-F-1	AIR/EGR/OC	No	Insufficient number of data points		TWA, sec. V, p 120.
35X2	RE-F-2	AIR/EGR/OC	No	Insufficient number of data points		TWA, sec. V, p 120.
35X2	RE-F-3	AIR/EGR/OC	No	Insufficient number of data points		TWA, sec. V, p 120.
35X2	RE-F-4	AIR/EGR/OC	No	Insufficient number of data points		TWA, sec. V, p 120.
35X2	RE-F-5	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec. V, p 120.
35X2	RE-F-6	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec. V, p 120.
35X2	RE-F-7	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec. V, p 120.
35X2	RE-F-8	AIR/EGR/TR	No	Insufficient number of data points		TWA, sec. V, p 120.
35X2	RE-F-9	AIR/EGR/TR	No	Insufficient number of data points		TWA, sec. V, p 120.
35X2	RE-F-10	AIR/EGR/TR	No	Insufficient number of data points		TWA, sec. V, p 120.
35X2	RE-F-11	AIR/EGR/TR	No	Insufficient number of data points		TWA, sec V, p 120.
35X2	RE-F-12	AIR/3W/OC	No	Insufficient number of data points		TWA, sec V, p 120.
35X2	RE-F-13	AIR/3W/OC	No	Insufficient number of data points		TWA, sec V, p 120.
35X2	RE-F-14	AIR/3W/OC	No	Insufficient number of data points		TWA, sec V, p 120.
35X2	RE-F-15	AIR/3W/OC	No	Insufficient number of data points		TWA, sec V, p 120.

Table V-15.—*Vehicles in Toyo Kogyo Wavier Application*—Continued

Engine	VIN	Emission control system [2]	Entered in Monte Carlo	If not entered in Monte Carlo—Why?	Comment	Reference
35X2	RE-F-16	AIR/3W/OC	Yes			TWA, sec V, p 121.
35X2	RE-F-17	AIR/3W/OC	Yes			TWA, sec V, p 121.
35X2	RE-F-18	AIR/3W/OC	Yes			TWA, sec V, p 121–122, TSS, p 122.
35X2	RE-F-19	AIR/3W/OC	Yes			TWA, sec V, p 122, TSS, p 122.
35X2	RE-F-20	AIR/3W/OC	No	Insufficient number of data points		TWA, sec V, p 122, TSS, p 122.
35X2	RE-F-21	AIR/3W/OC	No	Insufficient number of data points		TWA, sec V, p 122, TSS, p 122.
35X2	RE-F-22	AIR/3W/OC	Yes			TWA, sec V, p 123, TSS, p 123.
35X2	RE-F-23	FBC/AIR/3W/OC.	No	Insufficient number of data points		TWA, sec V, p 123, TSS, p 123.
35X2	RE-F-24	FBC/AIR/3W/OC.	No	Insufficient number of data points		TWA, sec V, p 123, TSS, p 123.
35X2	RE-F-25	FBC/AIR/3W/OC.	No	Insufficient number of data points		TWA, sec V, p 123, TSS, p 123.
35X2	RE-F-26	EFI/AIR/3W/OC.	No	Insufficient number of data points		TWA, sec V, p 123, TSS, p 123.
35X2	RE-F-27	EFI/AIR/3W/OC.	No	Insufficient number of data points		TWA, sec V, p 123, TSS, p 123.
86.4	CE-F-1	AIR/EGR/3W	No	No waiver requested for this engine		TWA, sec V, p 124.
86.4	CE-F-2	AIR/EGR/3W	No	No waiver requested for this engine		TWA, sec V, p 124.
86.4	CE-F-3	AIR/EGR/3W	No	No waiver requested for this engine		TWA, sec V, p 124.
86.4	CE-F-4	AIR/EGR/3W	No	No waiver requested for this engine		TWA, sec V, p 124.
86.4	CE-F-5	AIR/EGR/3W	No	No waiver requested for this engine		TWA, sec V, p 124.
86.4	CE-F-6	AIR/EGR/3W	No	No waiver requested for this engine		TWA, sec V, p 124.
86.4	CE-F-7	AIR/EGR/3W	No	No waiver requested for this engine		TWA, sec V, p 124.
86.4	CE-F-8	AIR/EGR/3W	No	No waiver requested for this engine		TWA, sec V, p 124.
120.2	CE-F-9	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 124.
120.2	CE-F-10	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 124.
120.2	CE-F-11	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 124.
120.2	CE-F-12	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 124.
120.2	CE-F-13	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 124.
120.2	CE-F-14	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 124.
90.9	CE-F-15	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 125.
90.9	CE-F-16	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 125.
90.9	CE-F-17	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 125.
90.9	CE-F-18	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 125.
90.9	CE-F-19	AIR/EGR/3W	Yes			TWA, sec V, p 125.
90.9	CE-F-20	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 125.
90.9	CE-F-21	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 125.
120.2	CE-F-22	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 125.
120.2	CE-F-23	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 125.
120.2	CE-F-24	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 125.
120.2	CE-F-25	AIR/EGR/3W	Yes			TWA, sec V, p 125.
120.2	CE-F-26	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 126.
120.2	CE-F-27	AIR/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 126.
90.9	CE-F-28	AIR/EGR/3W/OC.	No	Insufficient number of data points		TWA, sec V, p 126.
90.9	CE-F-29	AIR/EGR/3W/OC.	No	Insufficient number of data points		TWA, sec V, p 126.

Table V-15.—*Vehicles in Toyo Kogyo Wavier Application*—Continued

Engine	VIN	Emission control system [2]	Entered in Monte Carlo	If not entered in Monte Carlo—Why?	Comment	Reference
90.9	CE-F-30	AIR/EGR/3W/OC.	No	Insufficient number of data points		TWA, sec V, p 126.
90.9	CE-F-31	AIR/EGR/3W/OC.	No	Insufficient number of data points		TWA, sec V, p 126.
90.9	CE-F-32	AIR/EGR/3W/OC.	Yes			TWA, sec V, p 127, TSS, p 130a.
90.9	CE-F-33	AIR/EGR/3W/OC.	No	Insufficient number of data points		TWA, sec V, p 127.
90.9	CE-F-34	AIR/EGR/3W/OC.	No	Insufficient number of data points		TWA, sec V, p 127.
90.9	CE-F-35	AIR/EGR/3W/OC.	No	Insufficient number of data points		TWA, sec V, p 127.
90.9	CE-F-36	AIR/EGR/3W/OC.	Yes			TWA, sec V, p 127–128, TSS, p 130a.
120.2	CE-F-37	AIR/EGR/3W/OC.	No	Insufficient number of data points		TWA, sec V, p 128, TSS, p 130.
120.2	CE-F-38	AIR/EGR/3W/OC.	No	Insufficient number of data points		TWA, sec V, p 128, TSS, p 130.
120.2	CE-F-39	AIR/EGR/3W/OC.	No	Insufficient number of data points		TWA, sec V, p 128, TSS, p 130.
120.2	CE-F-40	AIR/EGR/3W/OC.	No	Insufficient number of data points		TWA, sec V, p 128.
120.2	CE-F-41	AIR/EGR/3W/OC.	Yes			TWA, sec V, p 128–129, TSS, p 130a.
120.2	CE-F-42	AIR/EGR/3W/OC.	Yes			TWA, sec V, p 128, TSS, p 130a.
120.2	CE-F-43	AIR/EGR/3W/OC.	No	Insufficient number of data points		TWA, sec V, p 128.
90.9	CE-F-44	AIR/EGR/3W/OC.	Yes			TWA, sec V, p 130, TSS, p 130.
120.2	CE-F-45	AIR/EGR/3W/OC.	Yes			TWA, sec V, p 130, TSS, p 130.
90.9	ADV-F-1	FBC/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 131.
90.9	ADV-F-2	FBC/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 131.
90.9	ADV-F-3	FBC/EGR/3W	Yes			TWA, sec V, p 131,TWS,[3] p III–13.
120.2	ADV-F-4	FBC/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 131.
120.2	ADV-F-5	FBC/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 131.
120.2	ADV-F-6	FBC/EGR/3W	Yes	Insufficient number of data points		TWA, sec V, p 131, TWS, p III–13.
120.2	ADV-F-7	SPFI/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 131.
120.2	ADV-F-8	SPFI/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 131.
120.2	ADV-F-9	EFI/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 131.
120.2	ADV-F-10	EFI/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 131.
120.2	ADV-F-11	EFI/EGR/3W	No	Insufficient number of data points		TWA, sec V, p 131.
90.9	CE-F-46	AIR/EGR/3W/OC.	No	Insufficient number of data points		TSS, p 130b.
90.9	CE-F-47	AIR/EGR/3W/OC.	No	Insufficient number of data points		TSS, p 130b.
90.9	CE-F-48	AIR/EGR/3W/OC.	No	Insufficient number of data points		TSS, p 130b.
90.9	CE-F-49	AIR/EGR/3W/OC.	No	Insufficient number of data points		TSS, p 130b.
90.9	CE-F-50	AIR/EGR/3W/OC.	No	Insufficient number of data points		TSS, p 130b.
90.9	CE-F-51	AIR/EGR/3W/OC.	No	Insufficient number of data points		TSS, p 130b.
90.9	CE-F-52	AIR/EGR/3W/OC.	Yes			TSS, p 130b.
90.9	CE-F-53	AIR/EGR/3W/OC.	Yes			TSS, p 130b-130c.
120.2	CE-F-54	AIR/EGR/3W/OC.	No	Insufficient number of data points		TSS, p 130c.
120.2	CE-F-55	AIR/EGR/3W/OC.	No	Insufficient number of data points		TSS, p 130c.

Table V-15.—*Vehicles in Toyo Kogyo Wavier Application*—Continued

Engine	VIN	Emission control system [2]	Entered in Monte Carlo	If not entered in Monte Carlo—Why?	Comment	Reference
120.2	CE-F-56	AIR/EGR/3W/OC.	No	Insufficient number of data points.		TSS, p 130c.
120.2	CE-F-57	AIR/EGR/3W/OC.	No	Insufficient number of data points.		TSS, p 130c.
120.2	CE-F-58	AIR/EGR/3W/OC.	No	Insufficient number of data points.		TSS, p 130c.
120.2	CE-F-59	AIR/EGR/3W/OC:	No	Insufficient number of data points.		TSS, p 130c.
120.2	CE-F-60	AIR/EGR/3W/OC.	Yes			TSS, p 130c.
120.2	CE-F-61	AIR/EGR/3W/OC.	Yes			TSS, p 130d.
35X2	RE-F-28	FBC/EGR/AIR/3W/OC.	No	Insufficient number of data points.		TWS, p III-13

[1] TWA is used here as an abbreviation for reference 1.
[2] TK was not always clear about the use of AIR or PAIR, AIR has been assumed in all questionable cases.
[3] TWS is used here as an abbreviation for reference 30.

Pass/Fail Analysis of Vehicles Using the 70 CID Rotary Engine

In their effort to achieve the 1981 emission standards of 0.41 HC, 3.4 CO, 1.0 NOx, Toyo Kogyo ran a total of six durability vehicles which could be entered into the EPA Monte Carlo Analysis. Five of those vehilces (RE-F-16, RE-F-17, RE-F-18, RE-F-19 and RE-F-22) were prototypes equipped with open loop carburetor/AIR/3W/OC/3WSC systems. These vehicles were essentially identical, according to the vehicle and emission control system descriptions provided by TK. The last vehicle (ODREP-2) was a certification vehicle for California in 1980 using exhaust gas recirculation, air injection and a thermal reactor. Vehicles RE-F-16 and RE-F-17 and RE-F-22 were calibrated specifically for the 1981 Federal emission standards. The other two cars were targeted for the 1981 California emission standards [1 at 36 to 37 and 34 at Status of Present Emission Level].

None of the vehicles submitted by TK were rejected from the Monte Carlo analysis. Vehicle ODREP-2 was not entered in the Monte Carlo as a predictive methodology is not needed when an actual certification vehicle is being considered.

The first choice system of Toyo Kogyo for use in the 1981 model year is the same as that used on the five identical vehicles discussed above [5 at 11]. Improvements which could be incorporated for the 1981 to 1982 model years include recalibration of the ignition timing and increased catalyst noble metal loadings, according to TK [30 at II-2]. This system is not considered to be a prime system by the EPA technical staff because the system is open loop and there is no indication in the TK waiver application that EGR has been optimized with the 3W + OC emission system. These two factors are highly probable causes of high CO emissions from TK vehicles using rotary engines.

The lack of feedback control results in air-fuel ratios below stoichiometry to provide a reducing atmosphere in the 3-way catalyst. If this does not provide sufficient NO_x control, the air-fuel ratio is probably even further reduced due to the absence of EGR. Both of these reductions in air-fuel ratio would tend to increase engine-out and tailpipe CO emissions.

The Monte Carlo results of the five prototype vehicles are shown in table V-16. All five vehicles failed. The EPA technical staff was unable to generate factors to account for the previously mentioned deficiencies in the emission control system for the rotary engine.

Table V-16.—*Monte Carlo Results of TK Vehicles Using Rotary Engines*

VIN	Emission control system	Probability of pass		
		HC	CO	NO_x
	Without factors (Catalysts D, D and C)			
RE-F-16	Open loop/AIR/3W/OC/3WSC	63	97	22
RE-F-17	Open loop/AIR/3W/OC/3WSC	63	99	7
RE-F-18	Open loop/AIR/3W/OC/3WSC	97	0	100
RE-F-19	Open loop/AIR/3W/OC/3WSC	97	0	100
RE-F-22	Open loop/AIR/3W/OC/3WSC	87	48	96

The final vehicle (ODREP-2) utilized in the EPA analysis was the 1980 certification vehicle for California. This vehicle used a thermal reactor, EGR and air injection system. The complete emission results of this vehicle are shown in table V-17.

On the basis of the certification engine family OREP, vehicles using 70 CID rotary engines are projected to pass the 0.41 HC, 3.4 CO, 1.0 NOx emission standards. While this engine family utilizes an emission control system which is not the first choice system of TK, the system is already in production so lead time and driveability should not present insoluble problems for TK.

Table V-17.—*1980 Certification Results of Vehicle ODREP-2*

[Engine family OREP]

Miles	75 FTP		
	HC	CO	NOx
5054	0.361	3.30	0.69
10102	0.350	3.19	0.68
14846	0.347	3.24	0.68
20025	0.358	3.37	0.67
24958	0.322	3.36	0.68
30104	0.318	3.07	0.65
30122	0.326	3.00	0.67
34884	0.309	2.41	0.64
40048	0.342	3.28	0.62
44932	0.351	3.36	0.67
49939	0.332	3.09	0.68
4000(CALC)	0.350	3.26	0.683
50000(CALC)	0.326	3.05	0.651
Deterioration factor	0.930	0.935	0.953

Pass/Fail Analysis of Vehicles Using 91 CID Conventional Engines

Data were submitted by TK for a total of seven durability vehicles. These were all prototype vehicles as no vehicles have been previously certified by Toyo Kogyo using the 91 CID engine. No vehicles submitted by TK were rejected from the Monte Carlo analysis except for reasons of insufficient durability mileage accumulation with a single emission control system or an insufficient number of test points. The seven vehicles in the analysis are shown in table V–18.

All the 3-way catalysts on the vehicles were located under the hood except the catalyst on car ADV–F–3 which was placed under the floor. Also all the vehicles were equipped with open loop carburetion except vehicle ADV–F–3 which had a feedback carburetor.

The first choice TK emission control system for model year 1981 is the open loop AIR/EGR/3W/OC system [5 at 12]. TK indicated that recalibrations of the emission control system and refinements in the catalyst protection system could be incorporated for the 1981 and 1982 model years [30 at II–3]. this is not considered to be a prime system by the EPA technical staff as the need for overly rich air-fuel mixtures to maintain reducing conditions in the 3-way catalyst results in excessive CO emissions.

Table V–18.—*TK Vehicles (Using 91 CID Engines) Entered Into the Monte Carlo Analysis*

VIN	Emission control system	Comment
CE–F–19	AIR/EGR/3W [1]	Open loop, catalyst functions as oxidation catalyst.
CE–F–32	AIR/EGR/3W/OC	Open loop.
CE–F–36	AIR/EGR/3W/OC	Open loop.
CE–F–44	AIR/EGR/3W/OC	Open loop, reduced secondary AIR at high speed and load.[2]
CE–F–52	AIR/EGR/3W/OC	Open loop, overtemperature protection device for rear catalyst.[2]
CE–F–53	AIR/EGR/3W/OC	Open loop, overtemperature protection device for rear catalyst.[2]
ADV–F–3	FBC/EGR/3W	Closed loop.

[1] This was called a 3-way catalyst by Toyo Kogyo, but it functions primarily as an oxidation catalyst.
[2] [34 at Status of Present Emission Level.]

Table V–18.—*TK Vehicles (Using 91 CID Engines) Entered Into the Monte Carlo Analysis*

VIN	Emission control system	Comment
CE–F–19	AIR/EGR/3W [1]	Open loop, catalyst functions as oxidation catalyst.
CE–F–32	AIR/EGR/3W/OC	Open loop.
CE–F–36	AIR/EGR/3W/OC	Open loop.
CE–F–44	AIR/EGR/3W/OC	Open loop, reduced secondary AIR at high speed and load.[2]
CE–F–52	AIR/EGR/3W/OC	Open loop, protection device for rear catalyst.[2]
CE–F–53	AIR/EGR/3W/OC	Open loop, overtemperature device for rear catalyst.[2]
ADV–F–3	FBC/EGR/3W	Closed loop.

[1] This was called a 3-way catalyst by Toyo Kogyo, but it functions primarily as an oxidation catalyst.
[2] [35 at Status of Present Emission Level.]

As shown in table V–19, the vehicle using the AIR/EGR/3W system failed HC and CO badly. This system is no longer under development by TK [1 at 39]. The five vehicles using the AIR/EGR/3W/OC all failed CO badly. The vehicle using the FBC/EGR/3W system failed CO, but was very close to passing (75% probability of passing the 3.4 CO standard—80% is needed).

Factors for hardware improvements were also applied to vehicle ADV–F–3. The additional hardware being simulated was a clean-up oxidation catalyst and switched air injection (to simulate a prime emission control system). The vehicle easily passed the emission standards of 0.41 HC, 3.4 CO, 1.0 NOx in this case. The very high probabilities of success with these factors indicate that TK may be able to pass using an emission control system that is less costly than the prime system which was analyzed.

This last simulation with vehicle ADV–F–3 has relevance for only the 1982 model year as TK provided adequate evidence [30 at section III] that they will not be able to build vehicles with feedback carburetion for the 1981 model year. Thus, vehicles using the 91 CID engines are projected to fail the 0.41 HC, 3.4 CO, 1.0 NOx standard in 1981. In 1982 they are projected to be able to pass using the FBC/EGR/AIR/3W/OC emission control system.

Table V–19.—*Probabilities of Passing the 0.41 HC, 3.4 CO, 1.0 NO_x Standards for Vehicles Using 91 CID Engines*

VIN	Emission control system	Probability of pass		
		HC	CO	NO_x
	Without factors			
CE–F–19	AIR/EGR/3W* (catalyst A)	0	0	93.
CE–F–32	AIR/EGR/3W/OC (catalyst A and A)	74	11	100
CE–F–36	AIR/EGR/3W/OC (catalyst A and A)	68	0	100
CE–F–44	AIR/EGR/3W/OC (catalyst A and A)	79	2	100
CE–F–52	AIR/EGR/3W/OC (catalyst A and A)	99	29	100
CE–F–53	AIR/EGR/3W/OC (catalyst A and A)	84	29	100
ADV–F–3	FBC//EGR/3W (catalyst A)	100	75	100.
	With factors for the addition of AIR injection and a clean-up oxidation catalyst.			
ADV–F–3		100	100	100

*TK called this catalyst a 3-way catalyst even though it functions as an oxidation catalyst under most operating conditions.

Pass/Fail Analysis of Vehicles Using 120 CID Conventional Engines

A total of eight vehicles using the 120 CID engine were analyzed. Those vehicles are shown in table V–20. Again no vehicles that were submitted by TK were rejected from the analysis for any reason except failure to meet the minimum entry criteria.

The 3-way catalyst location was underhood on cars CE–F–25, ODMAP–1, CE–F–21, CE–F–42, CE–F–45, CE–F–60, and CE–F–61 and was underfloor on ADV–F–6. Those catalysts called "catalyst B" in table V–21 actually include catalysts that would be in more than one certification engine family; however, they could not be sorted due to the limitations of the information provided by TK.

TK's first choice system for use in 1981 to meet the 3.4 CO standard is the open loop AIR/EGR/3W/OC system [5 at 12]. Improvements which may be incorporated for the 1981 and 1982 model years include recalibrations and refinements to the catalyst overtemperature protection system [30 at II–5]. As discussed for the vehicles using 91 CID engines, this is not considered to be a prime emission control system by the EPA technical staff.

Table V-20—*TK Vehicles Utilizing 120 CID Engines That Were Entered Into the Monte Carlo Analysis*

VIN	Emission control system	Comment
CE-F-25	AIR/EGR/3W [1]	Open loop.
ODMAP-1	AIR/EGR/3W [1]	Open loop, 1980 California certification vehicle.
CE-F-41	AIR/EGR/3W/OC	Open loop.
CE-F-42	AIR/EGR/3W/OC	Open loop.
CE-F-45	AIR/EGR/3W/OC	Open loop,over temperature protection device for rear catalyst.[2]
CE-F-60	AIR/EGR/3W/OC	Open loop,over temperature protection device for rear catalyst.[2]
CE-F-61	AIR/EGR/3W/OC	Open loop, reduced secondary AIR at high speed/load.[2]
ADV-F-6	FBC/EGR/3W	Closed loop.

[1] These were called 3-way catalysts by TK, but they function primarily as oxidation catalysts.
[2] [34 at Status of Present Emission Level.]

When analyzed in the Monte Carlo analysis in the as received condition, all the TK vehicles failed CO as shown in table V-21. The more recent vehicles (CE-F-60 and CE-F-61); however, did show much improvement capability at 3.4 CO.

Hardware improvement factors were applied to vehicle ADV-F-6 for the addition of a clean-up oxidation catalyst and switched air injection. With the improved emission control system, car ADV-F-6 was projected to easily pass the 1981 Federal emission standard of 0.41 HC, 3.4 CO, 1.0 NO_x.

Due to the inability of TK to provide feedback control of the air-fuel metering system in 1981 for vehicles using 120 CID engines (as with all other TK vehicles for 1981), these vehicles are projected to fail the 3.4 CO emission standard in 1981, and the same vehicles are projected to pass the 0.41 HC, 3.4 CO, 1.0 NO_x standard in 1982 when feedback carburetion becomes available.

Table V-21.—*Monte Carlo Results of Toyo Kogyo Vehicles Using 120 CID Engines*

VIN	Emission control systems	Probability of pass		
		HC	CO	NO_x
	Without Factors			
CE-F-25	AIR/EGR/3W *(catalyst A)	0	0	53
ODMAP-1	AIR/EGR/3W *(catalyst A)	96	25	93
CE-F-41	AIR/EGR/3W/OC (catalysts A and B)	90	0	100
CE-F-42	AIR/EGR/3W/OC (catalysts A and B)	81	0	100
CE-F-45	AIR/EGR/3W/OC (catalysts A and B)	88	0	100
CE-F-60	AIR/EGR/3W/OC (catalysts A and B)	90	48	100
CE-F-61	AIR/EGR/3W/OC (catalysts A and B)	84	52	100
ADV-F-6	FBC/EGR/3W (catalyst A)	77	54	100
	With factors for the addition of a clean-up oxidation catalyst and switched air injection			
ADV-F-6		100	100	100

*These were called 3-way catalysts by TK, but they function primarily as oxidation catalysts.

VI. Cost Analysis of Manufacuturers' Emission Control Systems

EPA Cost Estimates

The EPA costing methodology, as used in the CO Waiver Decision of September 5, 1979 [7] [29 at 53400], was revised to include responses to an EPA subpoena of August 8, 1979. (The subpeona requested prices that suppliers charge the automobile manufacturers for emission control devices or systems.) Table VI-1 represents the cost to the consumer of several emission control devices as derived from the subpoena responses. This table is not complete due to the delayed responses of many of the suppliers. In addition to a mark-up which accounts for the auto manufacturers' expenses, costs of most devices will vary based on production volume or sales volume to each auto manufacturer. Therefore, these are not absolute.

Table VI-1

Emission control device	EPA cost estimate in 1979 dollars
Air injection system	40
Carburetor:	
1 barrel	41
2 barrel	54
4 barrel	96
EGR system	13
Electric choke	6
Thermal vacuum switch (TVS)	3

Table VI-2 presents EPA estimates of cost of compliance with 3.4 vs 7.0 CO (due to lead time problems for certain emission control devices, separate estimates are necessary for 1981 and 1982). The changes in cost were calculated by individual engine size. These changes were based on the differences in emission control hardware between a) systems targeted to meet 7.0 CO, as described by each manufacturer in their applications and b) systems judged capable by EPA of meeting 3.4 CO, based on Monte Carlo results or successful 1980 certification of similar vehicles. (Cars which passed Monte Carlo often needed improved emission control hardware to do so, and these technological improvements were all costed in.) An engine size which was considered to fail in the Monte Carlo analysis was assumed to have no cost increase. Therefore, for TK in 1981, Table VI-2 represents the cost of compliance with 3.4 CO for some engine sizes and 7.0 CO for others.

As shown in Table VI-2, EPA did not find a change in cost for every engine size which passed the 0.41 HC, 3.4 CO, 1.0 NOx emission standard in the Monte Carlo analysis. (For example, certain Monte Carlo factors implied no change or a decrease in cost.) Engine sizes which are labelled "no data" in the Monte Carlo analysis are automatically assumed to have no change in cost.

The range in cost for Fuji indicates the effect of the switched air factor vs. aspirator factor for both engine sizes applying for waiver.

Table VI-2.—*EPA Estimate— Cost of Compliance With 3.4 CO*

Manufacturer	CID	3.4 vs. 7.0 CO in 1979 dollars	
		1981	1982
Fuji	97	+91–+128	+91–+128
	109	+95–+137	+95–+137
Nissan	75	+35	+35
	85/91	0	0
	119	+12	+12
	146/168	+48	+48
	A	(1)	(1)
	B	(1)	(1)
Renault	85	+89	+89
Toyo Kogyo	70	−105	−105
	91	0 (fail)	+10
	120	0(fail)	+10

[1] No data.

Manufacturers' Cost Estimates

Table VI-3 presents the manufacturers' estimates of cost of compliance with the 3.4 CO standard over cost of meeting 7.0 CO [3 at 5–5] [2 at 1.5] [1 at 2]. Most manufacturers claimed some degree of confidentiality for their cost estimates, therefore, this table contains only that information which can be released. All costs are in 1979 dollars.

Table VI-3.—*Manufacturers' Cost Estimates*

Manufacturer	Cost of compliance—3.4 CO vs. 7.0 CO
Fuji	$80-$100
Nissan	$57-$104
Renault	(1)
Toyo Kogyo	2$50

[1] Confidential.
[2] Approximate.

VII. Driveability

Driveability is a specific criterion included in the evaluation of technical feasibility. As in the CO Waiver Decision of September 5, 1979, none of the manufacturers demonstrated that driveability was a crucial criterion on which a CO waiver should be granted.

This section includes a discussion of each applicants ability to maintain acceptable driveability in complying with the 1981–1982 emission standards.

Fuji

Fuji has not made an issue of driveability in their request for a waiver. Although Fuji has indicated that driveability problems exist with their SEEC–T system neither the SEEC–T or the oxidation catalyst systems are designed to meet the 3.4 gm/mile CO standard and no driveability data were presented to support their claims of driveability problems.

With respect to their FBC/3W/EGR system, which was designed to meet a 3.4 gm/mile CO standard, Fuji stated that "some driveability problems still remain which must be solved" [3 at 4–21].

> In addition we remain very concerned about the cold start driveability of these systems [FBC/3W/EGR]. We find that calibrations are very critical, possibly so critical that our internal driveability standards could not be met with production vehicles. Clearly a 7 gram CO standard would permit richer calibrations during warm up and would help alleviate cold start driveability problems [23 at 2].

In an effort to substantiate their claims for potential driveability problems with a 3.4 gm/mile CO standard, Fuji submitted a copy of a newspaper article [23 at 4] which stated that General Motors was not selling 1980 model year X-body cars with manual transmissions in California because of driveability problems, although they were selling these vehicles in the other 49 states. Fuji's reference to this article is not fully understood by the EPA technical staff in light of the fact that the 1980 California CO standard, at 9.0 gm/mile, is higher than the Federal CO standard, which is 7.0 gm/mile. It should be noted that this information comes by way of a newspaper article, not engineering data, and that two different emission control systems were involved. Additionally GM has stated that they expect "to get good driveability at either [3.4 vs. 7.0] standard" [33 at 182]. Fuji's application for a waiver did not include any driveability data. Also, at the hearings Fuji agreed that the following characterization of their position was correct: "* * * you're [Fuji] saying driveability has a potential for being a problem but at this time you don't know that it will be and *you're not claiming it will be* [emphasis added]." [5 at 149] Hardware improvement factors for a clean up oxidation catalyst with a switched AIR system and for an improved three-way catalyst should not adversely affect driveability.

Considering the prior characterization of their position, the EPA technical staff can only conclude that Fuji has not provided technical data to indicate that the driveability of their vehicles will be affected by a 3.4 CO standard as compared to a 7.0 CO standard.

Nissan

Driveability should not be a crucial issue in Nissan's ability to meet the 1981–1982 standards.

For their A-series engines, which include the 75, 85 and 91 CID engines, Nissan stated: "It is not possible to meet the 3.4 gr/mile CO standard when driveability is raised to an acceptable level in consideration of the warranty and recall requirements" [2 at 5.2.3].

These engines have been certified and are now being sold with calibrations that enable them to meet the 1981–1982 standards. The technical staff assumes that the driveability of vehicles being sold with the A-series engines is acceptable and that Nissan can therefore meet the 1981-1982 standards with acceptable driveability. Much of Nissan's early driveability data indicated that driveability was unacceptable when their emission targets were met. Nissan's emission targets are 0.26, 1.7 and 0.78 grams/mile for HC, CO and NO_x respectively. Because the Monte Carlo analysis, rather than Nissan's emission targets, is the criterion by which technical feasibility is determined, the technical staff rejects Nissan's claim that "It is not possible to meet a 3.4 gr/mile CO standard when driveability is raised to an acceptable level * * *" [2 at 5.2.3].

Instead, the technical staff judged that more appropriate emission targets should be set. It was determined that if Nissan's data indicated good driveability with emission levels at 80% of the 1981–1982 standards when multiplied by the deterioration factors of 1980 California durability vehicle AK749, this would satisfy the criteria for technical feasibility in terms of driveability. Vehicle AK749 finished its mileage accumulation with its emissions below the 1981–1982 emission standards. This method was used to approximate the Monte Carlo analysis. The Monte Carlo analysis itself could not be used because Nissan only submitted driveability data on development vehicles which had insufficient data for the Monte Carlo. Nissan did not submit driveability data on its durability vehicles.

Nissan submitted emissions data on two durability vehicles which met the 1981–1982 emission standards with A-series engines. Vehicles AK749 and A–883 had 91 CID and 75 CID engines respectively. All of Nissan's driveability data for A-series engines were from development vehicles with 91 CID engines. The deterioration factors from A–883 were not used because it did not have the same engine displacement as the vehicles which Nissan chose to submit driveability data on and the deterioration factors (d.f.) would have been lower, thus less conservative, had the d.f.'s from both vehicles been averaged.

On September 20, 1979 Nissan submitted data [13 at 3–25] on development vehicle AK714, which gave acceptable driveability while meeting EPA's aforementioned criteria. This vehicle had unacceptable driveability until Nissan recalibrated the choke and ignition timing and also controlled the ignition timing for quick catalyst light-off. Nissan also submitted data on other vehicles representing the A-series engines which had unacceptable driveability, but since Nissan did not submit the specific calibrations, EPA assumes that the improvements made on vehicle AK714 can also be applied to the other vehicles with A-series engines. Therefore, in the judgement of the EPA technical staff, it is technically feasible for Nissan to meet the 1981–1982 standards while maintaining acceptable driveability on their A-series engines. In addition, the use of an improved catalyst as simulated in the Monte Carlo, should not affect driveability.

For the 119 CID engine, Nissan has designed two emission control systems for the 1981–1982 standards, one using open-loop carburetion and the other using open-loop fuel injection. Although Nissan's initial submittal indicated driveability problems [2 at 5.2.2], a later submittal with new data [13 at 3–19] indicated that with a new device, a leaner choke setting, a leaner mixture, and an improved catalyst they were

able to meet their emission target and maintain acceptable driveability. Also, Nissan indicated [2 at 5.2.2 and A.IV.5] that with fuel injection they were able to meet their emission target and maintain good driveability.

Nissan also submitted durability data [2 at 4.3.3] on a vehicle with a 119 CID engine with an EFI/FB/3W/light EGR control system designed to meet a 0.4 NO_x standard, but did not discuss driveability for this system. The use of dual walled exhaust pipe, as simulated in the Monte Carlo, should not affect driveability. In summary, the driveability data that Nissan did submit indicates that driveability will not be a major problem for the 119 CID engine.

Driveability for the 146 and 168 CID engines will be considered together because they have been historically certified as a single engine family. Nissan indicated that they could not meet their CO target of 1.7 grams/mile while maintaining acceptable driveability [2 at 5.2.4]. In a later submittal, Nissan submitted data [13 at 3–43] for a vehicle with advanced ignition timing during warm up which indicated that driveability was acceptable even when CO emissions were below 1.7 gms/mile. Also, three Nissan vehicles passed the Monte Carlo simulation with factors for an AIR system which, if used by Nissan, may allow them to further optimize calibrations for improved driveability and fuel economy. In light of the new data and possibilities available through the use of an AIR system, driveability should not be the crucial criterion in evaluating Nissan's ability to meet the 1981–1982 emission standards for the 146 and 168 CID engines.

Driveability for Nissan's "A" and "B" engines was not considered because they were deemed to be "no data" families.

The EPA technical staff concludes that Nissan has not shown driveability to be a crucial factor in their ability to meet a 3.4 grams/mile CO standard.

Renault

Renault discussed three emission control systems for their 85 CID engine, but did not submit any driveability data. These systems include their: (a) FBC/3W/EGR, (b) AIR/OC/EGR and (c) FBC/3W/OC/EGR/Switched AIR systems.

Renault claimed that the driveability of the three-way catalyst system would be unacceptable if the EGR rate were increased in order to comply with the 1.0 gm/mile NO_x standard, but no data were presented in support of this contention. [5 at 195] Renault also made claims of driveability problems with their oxidation catalyst system in order to comply with a 1.0 gm/mile NO_x standard. [4 at V/6] Again, Renault did not supply driveability data as requested in the guidelines.

Renault did not address driveability for the dual catalyst system, which is their only system designed to meet the 1981 standards. The EPA technical staff therefore can only conclude that driveability cannot be said to be a critical issue with respect to Renault's ability to meet the 3.4 gm/mile CO standard based on the information available.

Toyo Kogyo

In the Monte Carlo analysis of TK vehicles, only one of their three engines was projected to be able to pass the 0.41 HC, 3.4 CO, 1.0 NOx emission standard in 1981. Vehicles using all three engines were projected to be able to pass in 1982. None of those vehicles were projected to pass using the first choice TK emission control system.

TK did not provide driveability data in their waiver application or supporting documentation. The best indication of the driveability of TK vehicles is the qualitative evaluations presented in section II of reference 30. TK's first choice systems for 3.4 and 7.0 CO were all evaluated by TK as "good". The systems that passed in the EPA Monte Carlo analysis were not evaluated by TK. The first choice TK systems were AIR/EGR/3W/OC (open loop) for the conventional engines and AIR/3W/OC (open loop) for the rotary. Their passing systems were AIR/EGR/TR for the rotary and FBC/AIR/EGR/3W/OC for the conventional engines.

So the passing systems for the conventional engines differs from the first choice TK system only by the inclusion of feedback carburetion and the associated electronics and oxygen sensor. In the TK testimony [5 at 29 and 35], Mr. Suzuki suggested that TK was currently having driveability problems with their feedback carburetion. Again no quantitative data were provided.

In the absence of quantified driveability data from TK, the EPA technical staff can only conclude that any driveability problems being experienced by TK with their feedback carburetors may be due to the infancy of the TK program. Ford and GM both indicated that driveability of their vehicles using feedback control systems would not be affected by a 3.4 CO standard in 1981. [33 at 82 and 41 at 209]

The passing system for the rotary engine was not evaluated by Toyo Kogyo. The rotary engine using air injection and a thermal reactor was, however, rated as excellent by TK [30 at II–2]. Also, the passing system is a system currently certified (and presumably being sold). On this basis the EPA technical staff concluded that there is no evidence that the driveability of the passing system would be unaccepatable at either a 7.0 or 3.4 CO emission standard.

Driveability Summary

As discussed, each of the manufacturers indicated that driveability would be a problem in meeting a 3.4 CO standard, but none of these manufactures demonstrated that driveability would be a crucial criterion on which a CO waiver should be based.

VIII. Fuel Economy

Is there a change in fuel economy associated with going from 0.41 HC, 7.0 CO, 1.0 NO_x to 0.41 HC, 3.4 CO, 1.0 NO_x? This is an important issue in considering a manufacturer's request for a CO waiver from 3.4 to 7.0 gm/mi, especially with the fuel economy standards now in effect. There appears to be a disagreement between some of the manufacturers in their testimonies at the CO hearings regarding this issue.

Nissan and Fuji's testimony claimed negligible or no loss in fuel economy [5 at 91], [5 at 122] for meeting 0.41 HC, 3.4 CO, 1.0 NO_x versus meeting 0.41 HC, 7.0 CO, 1.0 NO_x. These agree with General Motors and Ford Motor Company statements in the earlier hearings [33 at 181], [41 beginning at 196]. In fact Nissan indicated that a 15 to 25 percent improvement in fuel economy (compared to their 1979 models) would be achieved in model year 1981 [5 at 91–92].

Renault indicated that they have not been able to achieve 3.4 CO and, as a result, they have not established a position concerning the fuel economy effects between the two CO standards.

The hardware improvement factors applied to these three manufacturers that were not already planned by the manufacturers (the planned improvements are presumably considered in their statements regarding fuel economy) are not expected to have a significant impact on fuel economy. The addition of air injection (AIR) is probably the most debatable in terms of a negative impact on fuel economy. Some manufacturers have estimated that a small loss in fuel economy is incurred with the use of AIR, but GM stated that in actual vehicle testing a loss in fuel economy could not be detected as a result of the addition of air injection [5 at 91–92 and 33 at 181–182].

Toyo Kogyo (TK), however, is claiming that they will experience a fuel economy loss of 5% in their piston

engine in going from 7.0 to 3.4 CO [40 at 4]. This claim is questionable since TK claims that none of their systems have shown the capability to meet 3.4 CO in durability testing. Without fuel economy data at the 3.4 CO level, it would seem that TK's claim is based solely on their engineering judgement about their ability to calibrate their first choice systems to achieve the required CO standard. With the absence of comparative data, the EPA technical staff cannot agree with this judgement. TK also indicated that at either the 3.4 or 7.0 CO standard, fuel economy is improved over their 1979 model vehicles meeting a 15.0 CO standard.

TK reported that if the same open loop 3-way catalyst with air injection and EGR system used to meet the 1980 emission standards of 0.41 HC, 7.0 CO, 2.0 NO_x (with the conventional engines) is tailored to meet the 1981 standards of 0.41 HC, 3.4 CO, 1.0 NO_x, then a fuel economy loss of 5% should be expected [39 at 4]. However, if an open-loop three-way plus oxidation catalyst system with air injection and EGR system could be utilized, then as much as 10% fuel economy increase could be expected over the 1980 system calibrated for 3.4 CO. TK also claims that if this system were targeted for 7.0 CO an additional 5% fuel economy increase would result. TK also reported that their closed loop three-way plus oxidation catalyst system is very promising, and the most likely system to meet 0.41 HC, 3.4 CO, 1.0 NO_x [1 at 3], [5 at 14].

Fuel economy comparisons were made by the EPA technical staff on low mileage vehicles between the data provided by TK and what limited 1980 Toyo Kogyo certification data were available at the time of this analysis. These data are summarized in table VIII–1. These data show a fuel economy loss from 1.3 to 2.3% on vehicles with manual transmissions, compared to 1980 certification durability data at 4,000 miles (projected or calculated 4,000 mile fuel economy). One system, in fact, showed a 9.4% fuel economy increase. All vehicles equipped with automatic transmissions showed an increase in fuel economy from 2.4 to 11.3% over their 1980 certification counterpart. A closer look at the manual transmission data shows that the 2.4% fuel economy loss shown in table VIII–1 occurs when the inertia weight of the vehicle was increased by 250 pounds. This then would indicate that on vehicles of the same weight, a fuel economy loss of only 1.0 to 1.3% was evidenced. In the case of the automatic transmission data, increasing the inertia weight 250 pounds resulted in an 11.3% fuel economy *gain* over its lighter 1980 certification counterpart. It should again be noted that these are low mileage data, which were compared to limited certification data with a smaller engine displacement, but are the best data available at the present to perform this analysis. Although these data are rather limited, it does seem to indicate a potential for a net fuel economy gain for TK in 1981 compared to their 1980 vehicles.

TK supplied further data on an engine rather than model line basis [1 at 133]. These data again were separated with respect to transmission types, and are summarized in table VIII–2. These data, supplied by TK show a composite fuel economy range of 25.6 to 37.3 MPG. This is interesting data in that it exceeds the fuel economy standard of 24 MPG for 1982 (the last model year to which the waiver would apply) by 1.6 to 13.3 MPG or 4.4 to 55.4%.

TK reported that their 1980 rotary engine's fuel economy could be increased 10 to 15% by replacing the thermal reactor system with an open loop 3 way plus oxidation catalyst with air injection system. However, TK's data confirming this conclusion also shows that CO is increased above the 3.4 CO level. An EPA check of TK's contention is shown in table VIII–3. The fuel economy values in table VIII–3 were compared to TK's results of 21.6 MPG_c for vehicles with automatic transmissions and 22.9 MPG_c for vehicles using M5 transmissions and the open loop AIR/3W/OC emission control system. Clearly TK would experience a short term loss in fuel economy using the AIR/EGR/TR system for the vehicles using rotary engines compared to vehicles which would likely meet a 0.41 HC, 7.0 CO, 1.0 NO_x standard. A modest loss would also be incurred if the 1980 California system with air injection, EGR, and a thermal reactor were used on vehicles equipped with manual transmissions compared to the 1980 Federal models with automatic transmissions. The availability of feedback carburetion for the rotary in 1982 should result in fuel economy as good as or better than for the open loop AIR/3W/OC system. Thus, any loss in fuel economy that might be experienced by TK vehicles using rotary engines should be experienced for only one model year, and more importantly, would not appear to harm TK's ability to meet the fuel economy standards.

Table VIII–1*.—*Fuel Economy Comparison at Low Mileage of TK Research to 1980 Certification Date Vehicle: Mazda-GLC*

VIN	(CID) engine displacement	Transmission	Inertia weight	Emission control system	1980 EPA durability 4K certification MPG_a	Average 3.4 CO MPG_a	Percent differential MPG_a	Below 3.4 CO at low mileage?
ODUCP–1	86.3	M–5	2,250	OL–3 way catalyst/air pump/EGR	29.8			No.
CE–F–1, 3, 5, and 15	90.9	M–5	2,250	OL–3 way catalyst/air pump/EGR		29.4	–1.3	Yes.
CE–F–28, and 29	90.9	M–5	2,250	OL–3 way + ox/air/pump/EGR		32.6	+9.4	Yes.
ADV–F–1	90.9	M–5	2,250	CL–3 way-FBC/EGR		29.5	–1.0	Yes.
CE–F–17, 20, and 21	90.9	M–5	2,250	OL–3 way/air pump/EGR		29.3	–2.3	Yes.
CE–F–28, 29, 33, and 34	90.9	M–5	2,250	OL–3 way + ox/air pump/EGR		29.1	–2.3	Yes.
ODUCP–2	86.3	A–3	2,250	OL–3 way/air pump/EGR	24.7			No.
CE–F–2, 4, 6, 7, 8, and 16	90.9	A–3	2,250	OL–3 way/air pump/EGR		25.3	+2.4	Yes.
CE–F–30, 31, and 35	90.9	A–3	2,250	OL–3 way + ox/air pump/EGR		26.7	+8.1	Yes.
ADV–F–2	90.9	A–3	2,250	CL–3 way-FBC/EGR		29.5	+19.4	Yes.
CE–F–30	90.9	A–3	2,250	OL–3 way + ox/air pump/EGR		27.5	+11.3	No.

*TK—CO waiver application P. 113–133.
OL—Open Loop.
CL—Closed Loop.

Table VIII-2*.—*TK Fuel Economy Data on an Engine Basis*

Engine/displacement (CID)	Emission control system	Fuel Economy MPG$_u$ M-5	MPG$_u$ A-3	MPG$_h$ M-5	MPG$_h$ A-3	MPG$_c$ M-5	MPG$_c$ A-3	Percent over 1982 Cafe M-5	Percent over 1982 Cafe A-3
UC/86.3	OL-3 way (underfloor)/air/EGR.	29.8	26.0	40.0	32.0	33.7	28.4	37.5	18.3
MA/120.2		24.7	33.5	33.6	28.4	28.0	30.0	16.6	25.0
ES/90.9	OL-3 way (underhood)/air/EGR.	31.5	28.0	41.7	36.5	35.4	31.3	47.5	30.4
MA/120.2		24.3	23.6	33.3	28.6	27.6	25.6	15.0	4.4
ES/90.9	OL-3 way + ox cat (underhood and under floor)air/EGR.	32.6	27.6	43.1	38.8	36.6	31.7	52.5	32.1
MA/120.2		25.0	23.9	34.2	29.3	28.5	26.1	18.8	8.8
ES/90.9	FB carb + way/EGR	33.1	29.5	44.0	38.5	37.3	33.0	55.4	37.5
MA/120.2	3 way/EGR	25.5	24.5	34.5	31.0	28.9	27.1	20.4	12.9
MA/120.2	CL-single point fuel injection.	26.5		34.5		29.6		23.3	
MA/120.2	EFI/3 way/EGR	25.3	24.0	33.4	31.5	28.4	26.9	18.3	12.1

*TK—CO waiver application P. 133.

Table VIII-3.—*Fuel Economy of 1980 Model Year Vehicles Using Rotary Engines*

VIN	Eng	IV	Axle	N/U	Trans	HC*	CO*	NOx*	MPG$_u$	MPG$_u$	MPG$_u$
With Federal AIR/TR System											
OEREP-2	70	2750	3.91	58.1	A3	.208	2.53	1.39	16	24	19
OEREP-1	70	2750	3.91	58.1	M4	.170	3.70	1.05	16	25	19
OEREP-1	70	2750	3.91	48.0	M5	.202	4.26	1.17	17	28	20
With California AIR/EGR/TR System											
OEREP-4	70	2750	3.91	58.1	A3	.242	4.19	0.56	16	22	18
OEREP-3	70	2750	3.91	58.3	M4	.253	3.39	0.69	16	24	19
OEREP-3	70	2750	3.91	48.1	M5	.288	3.32	0.64	16	27	20

*Including deterioration factor.

TK is in agreement with the conclusion that closed loop systems offer improvements in fuel economy compared to their open loop systems as they stated that "closed loop dual catalyst with air injection plus EGR * * * has the highest potential to meet the fuel economy as well as emission requirements" [5 at 14]. This statement was made by TK in reference to conventional engines, but in the opinion of the EPA technical staff, it is equally true for the TK vehicles powered by rotary engines.

Since the thermal reactor system has already certified at the 0.41 HC, 3.4 CO and 1.0 NO_x standard, in 1980 certification it is evident that TK's position is a marketing rather than a technical issue. Since TK has already shown that they can meet 3.4 CO with their rotary engine, it is apparent that their request for a waiver to 7.0 CO on this engine is to allow their vehicles equipped with this engine to achieve better fuel economy resulting in stronger marketing leverage for TK.

In summary, none of the manufacturers have supplied sufficient data which show that a reduction from 7.0 to 3.4 CO results in a fuel economy penalty. TK may suffer a modest loss in fuel economy in 1981 for vehicles using rotary engines due to their inability to produce feedback air-fuel metering components. This loss could be recovered in 1982, and their ability to comply with the fuel economy standard in 1981 does not appear to be jeopardized. Therefore, EPA's position on this subject remains unchanged from the last hearing in that not inherent fuel economy penalty need be incurred in reducing the CO standard from 7.0 to 3.4 gm/mi.

IX. Lead Time

a. Fuji

Fuji Heavy Industries stated in its waiver application that they are basically committed to installing the three-way catalyst and electronically controlled carburetor system for all 1981 model year vehicles, regardless of the outcome of the waiver request for 7.0 g/mi CO. Considering costs and fuel economy at existing and projected emission standards, coupled with their existing and past development program, they say no other system provides a reasonable alternative for 1981. The development schedule for 1981 requires that final configurations and calibrations be selected by the end of October 1979. [3 at 5–9]

In the public hearings, however, Fuji stated that the performance of their first-choice system "has not been as good as expected", especially in terms of meeting the 1981 CO emission standard. [5 at 106] Two warm-up systems, (1) with high fast idle and ignition timing retard and (2) with low gear hold and ignition timing retard, have been developed to improve the original first-choice system for 1981 during the cold start phase. Warm-up system (1) will be used on manual transmission vehicles and warm-up system (2) on automatic transmission vehicles. [23 at 1]

Also stated at the hearings was that in addition to space limitations, they could not incorporate a larger or additional 3-way catalytic converter into their vehicles due to lack of lead time to change tooling, prove a new design and evaluate such a system. [5 at 133] But, according to Walter D. Biggers, Director, Subaru Technical Center, Subaru of America, there is enough room for an additional oxidation catalyst if they can just provide enough ground clearance for the catalyst heat shields. [5 at 121]. It is the opinion of the technical staff that the heat shield problem can be resolved for the 1981 model year. Testimony given by catalyst manufacturers at the hearings indicate an excessive availability of applicable oxidation catalysts on the market for 1981. [37 at] and [38 at 89] With access to these catalysts, changes in tooling and design would be minimal and durability testing and evaluation are already included in the certification process. Therefore, if Fuji were to apply a three-way plus oxidation catalyst system with an aspirator in between to lower emissions for 1981, it would still seem possible in terms of lead time. Also in the hearings, with regard to the "A–1" three-way catalyst system, they claimed that they could not install an air pump due to lack of space and lack of lead time to modify the engine layout. Other reasons given were that air pumps are too noisy, they drain power and are too expensive. [5 at 128] Based on photographs submitted by Fuji, it appears that modifications to engine layout would not be so significant as to preclude the use of air pumps on their 1981 models. [40] If no other space is available the air pump could be installed in place of the air conditioning compressor.

b. Renault

Renault has proclaimed that their two catalyst (3-way and oxidation) system with Ford ECU feedback carburetor, air

pump and EGR is their first choice system. [4 at V/5] Problems with this system include lack of space for a dual-bed catalyst and poor efficiency of the oxidation catalyst (which for space reasons is located far from the engine). For these reasons Renault states that their first choice system, in its present stage of development, is not able to meet the 1981–82 standards. It seems feasible however, barring space contraints, that Renault could place the oxidation catalyst closer to the engine and achieve better efficiency. In the opinion of the technical staff they have not substantiated that it is not possible to relocate the catalyst further upstream. The problems involved with using the vertical mount position may be soluble, and Renault did not discuss the possibility of locating the catalyst between the vertical mount (downpipe) position and any location in front of the current catalyst position.

c. Toyo Kogyo

Although they project better fuel economy and lower CO emissions with a closed loop system, Toyo Kogyo has stated that their first choice system for their conventional engines is an open-loop dual catalyst configuration with air injection and exhaust gas recirculation. This is their C–1 system. Two other systems which are continuing development to comply with the 1981 standards are C–2; closed loop three-way catalyst plus EGR and C–3; closed loop dual catalyst plus EGR. [5 at 12–13]

Due to lack of reliability of the O_2 sensor, the C–3 system is currently experiencing developmental difficulties. [5 at 37] Satisfactory results are not expected from their oxygen sensor development program until April 1981 unless Toyo Kogyo can achieve significant success with their Step II Engine Dynamometer Test. This step of the program is scheduled to be completed in May, 1980. Six kinds of oxygen sensors, from three suppliers, have been evaluated thus far, and most of the samples in ordinary running showed no deterioration such as probe breakage or output drop. However, under high-speed heavy-load driving conditions where the oxygen sensor probe is exposed to high temperature and a reduction atmosphere, or in a cyclic test at low and high speed operations, "intolerable output drop or probe breakage was detected". [30 at III–2]

Also holding up the C–2 and C–3 systems is the development of the feedback carburetor. Toyo Kogyo's feedback carburetor development started in 1977 in a joint program with the carburetor manufacturers. Three systems (the air bleed solenoid, the fuel metering rod solenoid and the fuel control solenoid systems) are currently being studied. By April, 1980, evaluation of these systems will be complete and a first choice system will be selected. Reliability, compliance with high altitude emission regulations and full-scale vehicle durability are all scheduled to be accomplished by March or April, 1981. [30 at III–3] At the public hearings, Toyo Kogyo stated that they will have the feedback carbutetor and O_2 sensor components ready for the 1982 model year. However, further adjustments that may be necessary to the total system make 1983, Toyo Kogyo says, "a more comfortable dateline if we have to commit to something". [5 at 43] If they can have the necessary components in time, and system adjustments are their only constraints, it is EPA's contention that the feedback carburetor system could be used by Toyo Kogyo in 1982.

d. Nissan

Nissan requests a waiver for two years lead time to develop, simplify and refine their current systems, especially in the areas of driveability and fuel economy. They state in their application that if it is necessary to keep CO emissions under 3.4 g/mile, there is not enough time left to perform part durability and system reliability tests before the decision deadline. [2 at 3.1, 5.5.1]

EPA has received responses from Nissan to some of their public hearing questions concerning lead time for various components. These include responses concerning electronic fuel injection, advanced electronics, and start-up air injection on three-way catalyst vehicles.

Electronic fuel injection (EFI) is said to be available for all engines except the A-series engines [5 at 98], but when warranty and recall requirements are considered, Nissan cannot guarantee that this system will clear the CO standard under different types of actual use. [13 at 5.2.2] Nissan's Electronic Concentrated Engine Control System (ECCS) in the 6 cylinder engine was introduced into the domestic Japanese market in June, 1979.

Nissan says, for the 6 cylinder engine, that ECCS is available for a part of the 1981 U.S. models since this is already done in Japan. [13 at 38] Air pumps and start-up air injection systems on three-way catalyst vehicles are compenents that Nissan has developed and used in the past. However, with their present configurations, especially the EFI engines, they must redesign due to lack of space. Redesigning, they say, requires a lead time incompatible with the time necessary to be ready for the 1981 model year. [13 at 42–44] It is unclear from the photographs sent to EPA [13 at 43–53] whether or not there is enough space to install an air pump on the engines shown. However, from the schematic diagram [13 at 50] for the L6E engine (model 280ZX), it appears entirely possible that space for an air pump exists. If the pump is moved to the side or down slightly, interference with the BCDD control valve is avoided and at most a small adjustment of the air conditioning compressor location would be needed. If necessary, the air pump could be installed in place of the air conditioning compressor. Therefore, since the technology is available and the necessity for time consuming redesign is unapparent, we conclude that it is possible for Nissan to use air pumps on their 146/168 CID engines in 1981.

An additional system involved in lead time considerations is dual-walled exhaust pipes. At present, Nissan uses dual-walled exhaust pipes for 1980 Z20E and L6 series engines, and will also use them in the same engine series for 1981. They said they will also use them for the 1981 Z20S and A-series engines if necessary. [13 at 13].

X. References

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(10) "Corrected Pages to Supplemental Documentation Submitted by Nissan to EPA

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(17) Renault. *Application for Waiver of 1981 and 1982 Carbon Monoxide Emission Standard Supplementary Information,* September 1979.

(18) Renault. *Additional Information Requested by EPA at the September 18, 1979 Public Hearing,* September 24, 1979.

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Appendix B.—Summary of Public Health and Air Quality Analyses as Related to Light Duty Vehicle CO Waiver Applications

Review of CO Air Quality and Health Effects Data

Data concerning the effects of a two year waiver of the light-duty vehicle (LDV) carbon monoxide (CO) emission standard have been obtained from various sources. These sources include: EPA's Office of Air Quality Planning and Standards (OAQPS); EPA's Office of Mobile Source Air Pollution Control (OMSAPC); Ford Motor Company; General Motors; and Chrysler. The data presented here consider the effects on air quality and public health of waiving the Congressionally mandated 1981 LDV CO emission standard of 3.4 grams/mile to 7.0 grams/mile for the 1981 and 1982 model years.

In our consideration of public health issues for this waiver request, we have assumed that the current EPA National Ambient Air Quality Standards (NAAQS) for CO of 35 ppm for a one-hour average and 9 ppm for an eight-hour average determine air quality levels adequate to protect public health. The NAAQS CO standard is designed to protect public health. The effect of a CO waiver on ambient air quality will thus also be considered in this paper as determining the effect of a CO waiver on public health.

This report will serve as a review of the air quality data presented in manufacturers' CO waiver submissions to EPA as well as the results of several of EPA's own air quality studies.

1. EPA—OAQPS Analysis. OAQPS has performed four successive analyses of the air quality impacts of waiving the 3.4 gram/mile LDV CO emission standard [*1 2 3 4*). These analyses used rollback models to predict the differences in air quality for future years in various Air Quality Control Regions (AQCR's) as a result of different CO Emission standards. Neither of the first two of these analyses considered the impact of a two year waiver but considered *either* a 3.4 gram/mile *or* a 7.0 gram/mile CO standard for 1981 and later years. This discussion will deal only with the data contained in the last of these four analyses as it is the most comprehensive in that it delas with the effects of a two year waiver and predicts the air quality effects on a year to year basis. These analyses includes scenarios combining three possible emission control system penetration rates, three emission rates, and three possible in-use deterioration rates. A total of 186 unique emissions scenarios for CO were analyzed and air quality

projections were made for 19 AQCR's for the years 1981 through 1995. Specific details and assumptions made in the OAQPS analysis include the following:

(a) The analysis was done for 19 AQCR's. Criteria for choosing the 19 AQCR's were that appropriate CO data were available, the AQCR's had some of the most severe CO problems, the AQCR's were not in California or at high altitude where different emission rates would be necessary, and these AQCR's had been used frequently in the past by OAQPS. The 19 AQCR's are:

Birmingham
North Alaska
Clark-Mohave
Phoenix-Tucson
Hartford-New Haven
NY–NJ–Conn.
Philadelphia
National Capitol
E. Washington-N. Idaho
Chicago
Indianapolis
Kansas City
Baltimore
Boston
Minneapolis-St. Paul
Central New York
Portland
S.W. Pennsylvania
Puget Sound

(b) OAQPS's Linear Rollback Model was used to predict the reduction in ambient CO concentrations, the number of AQCR's above the 9 ppm, 8-hour NAAQS, and the total number of 9 ppm, 8-hour CO NAAQS violations in the 19 AQCR's in 1981 through 1995.

(c) The 186 CO emissions scenarios are those used in the March 9, 1979 memo from Charles L. Gray to Robert E. Neligan.(5)

(d) One half of the 186 scenarios assumed the following CO emission standards:

1977–79—15.0 grams/mile
1980—7.0 grams/mile
1981–95—3.4 grams/mile

The other half of the 186 scenarios assumed the following:

1977–79—15.0 grams/mile
1980–82—7.0 grams/mile
1983–95—3.4 grams/mile

(e) Each scenario assumed one of the three possible generic emission control system penetration rates. The resulting possibilities are:

(1) 100% 3-way plus oxidation catalyst systems (possible system for 3.4 grams/mile CO and 1.0 grams/mile NO_x).

(2) 100% 3-way catalyst systems (possible system for 7.0 grams/mile CO and 1.0 gram/mile NO_x).

(3) 10% 3-way catalyst systems, 80% 3-way plus oxidation catalyst systems, and 10% oxidation catalyst plus air pump systems (possible systems for 3.4 grams/mile CO and 1.0 gram/mile NO_x).

(f) Each scenario assumed one of three *certification* deterioration factors (DF's). The DF values possible were 1.0, 1.5, and 2.0 and the DF value chosen determined the CO emission level of new (zero mile) vehicles. Certification DF's are 50,000 mile emission levels of prototype vehicles (which must meet the emission standards) divided by 4000 mile emission levels. These DF's are then used to determine what emission levels new (zero mile) vehicles must meet.

(g) For each exhaust treatment system each of three possible *in-use* deterioration rates is applied. The primary deterioration rate is that reported by EPA in Table I–1 of its "Mobile Source Emission Factors" document (7) and referred to as "AP–42." The other two deterioration rates for which scenarios are calculated are the "AP–42" rate divided by two and a zero deterioration rate.

(h) A one percent growth rate compounded annually from mobile source CO was assumed to result from increased vehicle miles traveled (VMT) for each AQCR.

(i) Stationary source CO emissions were projected to grow at a rate of 3.2 percent compounded annually.

(j) The CO base year concentration or "design value" was selected to be the highest second highest 8-hour concentration from the period 1974 through 1976. A background concentration of one ppm was also assumed for each region.

(k) The 1976 base year emissions inventories were taken from the EPA National Emissions Data System (NEDS). Stationary source CO emissions from NEDS are included under electric generation, industrial, or miscellaneous sources.

(l) A stationary source contribution factor of less than 1.0 is used for each CO stationary source category. These factors account for the fact that CO "hot spots" are typically located in areas of high traffic density which are not usually associated with significant stationary sources of CO. CO stationary source contribution factors of 0.0 for power plants, 0.1 for industrial sources, and 0.2 for area sources were selected after considering the results from dispersion models for power plants and other industries, and review of the relationship between traffic density and CO levels in several situations.

(m) Control technology assumptions for stationary source CO control used in the OAQPS analysis are those described in the Three Agency Study. (6)

For each scenario the following projections are calculated for the years 1981 through 1995.

(a) The highest second highest 8-hour concentration of CO for each AQCR.

(b) The number of violations of the 9 ppm, 8-hour CO NAAQS for each AQCR.

(c) The average percent reduction in the highest second highest 8-hour CO concentration for the 19 AQCR's in 1981 through 1995 from the average 1976 concentration.

(d) The number of the 19 AQCR's in violation of the 8-hour CO NAAQS.

(e) The sum of the total number of 8-hour CO NAAQS violations projected to occur in the 19 AQCR's.

As only a limited amount of AQCR's are used in these projections, they must be viewed carefully. The data presented in Table 1 and Reference 4 are the results of projecting either a 3.4 or 7.0 gram/mile CO LDV emissions standard for the years 1981 and 1982 and then a 3.4 gram/mile CO LDV emission standard for the succeeding years. Within the constraints of these projections, both the average percent reduction in the highest second highest 8-hour CO concentration for the 19 AQCR's and the sum of the total number of 8-hour CO NAAQS violations in the 19 AQCR's are representative of what air quality trends that one could expect to see as a result of a two year CO waiver. The number of AQCR's predicted to show eight-hour NAAQS violations also serves as a comparison of the scenarios in the OAQPS data. two scenarios have been chosen for comparison of the effects of the waiver on the above mentioned parameters.

These scenarios as summarized in Table 1 were chosen to represent first a possible reasonable assumption of what systems and deteriorations might be expected for vehicles meeting 3.4 or 7.0 grams per mile standards and second, what might be considered to be a "worst case" comparison looking for maximum differences between the two (but excluding the zero deterioration rate scenarios which although they showed greater improvements in air quality, were judged to be less probable). In 1985, with a CO waiver across the board, this analysis indicates that from 4 percent to over 30 percent more violations of the eight-hour CO NAAQS could occur in the 19 AQCR's analyzed.

Table 1.—*Air Quality Projections*

Scenario	1981	1982	1983	1984	1985
Nominal Case					
Waiver: [1]					
(a)	19	25	30	36	41
(b)	16	16	14	12	12
(c)	660	530	410	310	230
Standard	7.0	7.0	3.4	3.4	3.4

Table 1.—*Air Quality Projections*—Continued

Scenario	1981	1982	1983	1984	1985
Nominal Case					
No waiver:[5]					
(2)	20	25	31	36	41
(3)	16	15	14	12	12
(4)	650	520	400	300	220
Standard	3.4	3.4	3.4	3.4	3.4
Possible Maximum Difference Case					
Waiver:[6]					
(2)	19	24	30	35	40
(3)	16	16	14	12	12
(4)	660	540	420	320	240
Standard	7.0	7.0	3.4	3.4	3.4
No waiver:[7]					
(2)	20	25	32	38	44
(3)	16	15	14	12	11
(4)	650	510	380	270	180
Standard	3.4	3.4	3.4	3.4	3.4

[1] 100% 3-way catalyst system, AP-42 deterioration rates, certification DF = 1.5.
[2] The projected average percent reductions of the highest second highest CO reading over the 19 AQCR's.
[3] The number of the 19 original AQCR's predicted to show 8-hour NAAQS violation.
[4] The total number of 8-hour CO NAAQS violations in the 19 AQCR's.
[5] 100% 3-way plus oxidation catalyst systems, AP-42 deterioration rates, certification DF = 1.5.
[6] 100% 3-way catalyst system, AP-42 deterioration rates, certification DF = 1.0.
[7] 100% 3-way plus oxidation catalyst systems, AP-42/2 deterioration rates, certification DF = 2.0.

2. SRI–EPA CO "Hot Spot" Report. The Atmospheric Sciences Center of SRI International has in preparation for EPA a draft report entitled "Analysis of Pollutant and Meteorological Data Collected in the Vicinity of Carbon Monoxide 'Hot Spots.' " (*8*) The SRI research program currently has the following objectives:

a. Identify the contribution of carbon monoxide (CO) and hydrocarbon (HC) emissions from local sources versus the contribution from regional sources, as determined by the total concentrations measured around urban roadways in areas where concentrations are greatest (i.e., "hot spots").

b. Estimate the percentage of vehicles in different operating categories—e.g., hot start, cold start, and stabilized, as well as traffic mix, volume, speed, and idletime data.

The analysis in the draft report addresses only the first objective. The other objective will be dealt with in another report.

For this study four cities (San Jose, Seattle, Phoenix, and Chicago) were chosen to represent a broad range of climatological areas and different vehicle operating conditions. The area chosen for HC and CO sampling within each city was also selected to provide diverse conditions. The San Jose site was in the vicinity of a congested suburban intersection with considerable commercial development in the immediate area. The Seattle and Chicago sites were in heavily congested downtown areas. The Phoenix site was near numerous government buildings and provided data from an area where there is a simultaneous emptying of many office buildings. The sites were also chosen to be sites expected to show "hot spot" or high CO levels from vehicle traffic. The sites picked in Seattle, Phoenix, and Chicago were ones known to have previously violated the NAAQS. Preliminary measurements at the San Jose site showed that high CO levels were also present at that location.

Within each site area the researchers wished to determine what fraction of the ambient CO level was from the surrounding area and how much from local (motor vehicle) sources. To do this ten monitors were placed at various locations within each site. Some were placed upwind, on tall buildings, or set back from local streets. These monitors would represent the areawide or background concentrations. Other monitors were placed closer to the local sources so that the street level or local source contribution could be determined. The area monitors could, even though they were placed well away from the local monitors, still be influenced by local sources. To minimize this effect, the background concentration was chosen to be the lowest of the measured values of the area monitors.

The report presents, at great length, all of the data for both CO and HC at each of the ten monitors in each of the four sites. These data are also presented in terms of one- and eight-hour CO and HC averages for each site.

The San Jose site shows ten violations in seven days of the 9 ppm, eight-hour CO NAAQS. All of the readings resulting in violations occurred at monitors downwind of the intersection during light wind (2.1 m/s ave.) conditions. The local contribution to ambient CO levels during periods when the CO concentration was above 9 ppm (the eight-hour CO NAAQS) ranged from 62 to 98 percent and averaged 80 percent.

The Seattle site had five eight-hour CO NAAQS violations in the seven day period. Three of these violations were similar to the San Jose violations with relatively high CO concentrations being seen at all the local monitors. The other two violations were more widespread with high CO concentrations at all local and two of four background monitors. This indicates that these high CO concentrations were widespread and not restricted to the immediate study area or to "hot spots." The authors point out that these two violations occurred following heavy traffic volume over a fairly wide area and this probably accounts for the high background levels.

Four eight-hour CO NAAQS violations occurred in the seven days of sampling at Phoenix. They all occurred during eight-hour periods ending at about one to three a.m. During NAAQS violations local CO contributions ranged from 18 to 59 percent with a 35 percent average. This is a relatively small amount. The authors feel that the high night time and low local CO concentrations may be explained by recirculation of air that passed over the city during peak emission periods moving back during the early morning and causing violations at the test site.

Chicago data showed only two eight-hour CO NAAQS violations. Both represented very high local contributions ranging from 79 to 97 percent with a 86 percent average. These are characteristic of classical "hot spot" violations.

The authors conclude that they found important differences between various eight-hour CO NAAQS violations. San Jose and Chicago had the expected high local contributions. In Phoenix all violations occurred when local contributions were relatively small. The Phoenix location could not be classified as a "hot spot." Seattle had several violations that could be classified as "hot spot" violations but several others that were area wide violations. The significance of this work is that it shows that it is not always valid to consider CO just a localized problem occurring in the central business district. It could be that with increased total vehicle miles traveled that CO becomes more of an areawide problem.

3. General Motors Submission. General Motors has made a number of comments regarding public health and air quality data in their CO waiver application, in their testimony, and in their later submissions. They maintain that the 3.4 gram/mile standard is not needed for protection of public health. We will address their comments individually.

a. Present CO Air Quality Standards Provide A Substantial Margin of Safety. EPA has stated on numerous occasions that the present one- and eight-hour NAAQS for CO is designed to adequately protect public health. There is controversy in the scientific literature over what ambient CO levels cause what carboxyhemoglobin (COHb) levels in the blood. The CO NAAQS is designed to prevent blood COHb levels above 2.0 percent saturation in normal

populations. According to GM, COHb levels of 1.5 percent are associated with eight-hour CO NAAQS levels. GM apparently feels that this difference represents too great of a margin for safety. In determining the appropriate margin of safety, EPA must consider the relationship between ambient CO and blood COHb levels, the effects of altitude, the impact on highly sensitive individuals such as pregnant women, fetuses, persons with angina, anemic individuals, persons with chronic obstructive pulmonary disease, etc. which represent significant portions of the population. In taking into account these factors the margin of safety does not appear inappropriate.

b. Estimation of a CO Emission Standard to Protect Public Health. EPA does indeed find that in-use emission rates from the average vehicle exceed the applicable standards by gross amounts for most of the life of the vehicle. This is partly why recent air quality models based upon MOBILE1 deterioration rates show the need for lower CO emission standards.

c. Important Assumptions in Calculation of the CO Standard.

(1) Emission Rates: GM has, in this section, attacked EPA's in-use emission rates as unrepresentatively high and not in agreement with data from the EPA Emission Factor Surveillance Program. They also claim that in-use emission rates for future vehicles will be less than that of present vehicles. The reason given for this is EPA's "parameter adjustment" regulations which are already figured into future year vehicles in MOBILE1.

EPA is in the process of reviewing in-use vehicle emission rates. The emission rates currently being used in MOBILE1 are, as was pointed out by GM in their oral presentation, close to actual in-use measurements for vehicles with 40,000 miles or less. GM contends that data show a leveling off of emission deterioration after 20,000 to 40,000 miles. EPA has claimed that continued deterioration with age is justifiable as emissions system tampering increases with vehicle age. (*9*)

GM, in their oral presentation, made a significant point of how EPA has, in MOBILE1, used a deterioration factor (DF) of 1.7 for 1968–1974 and 1975–1979 vehicles but has used a DF of 3.7 for 1980 and later model year automobiles. GM stated that with "parameter adjustment" regulations and future technologies they would expect future in-use emissions to be much lower. EPA, in fact, has assumed this and GM's interpretation is misleading. First, the DF of 1.7 they refer to for 1968–1974 model year vehicles corresponds to a deterioration rate, as used in MOBILE1 and Reference 6, of 6.15 grams/mile of deterioration per 10,000 miles. The DF of 1.7 GM refers to for 1975–1979 model year vehicles corresponds to a deterioration rate of 2.80 grams/mile per 10,000 miles. The DF of 3.7 GM refers to for "future models" actually in MOBILE1 is applicable only for 1980 model year vehicles and corresponds to a deterioration rate of 2.3 grams/mile per 10,000 miles. For 1981 and future years MOBILE1 assumes a deterioration rate of 2.0 grams/mile per 10,000 miles. It is thus clear that EPA and its MOBILE1 model assume decreasing deterioration rates on a gram/mile basis for newer technology vehicles. The deterioration factors or DF's that GM refers to are not a true reflection of actual vehicle deterioration. The DF's that GM discusses are 50,000 mile emission rate divided by 4000 emission rate. The DF of 1.7 that GM suggests using for future vehicles (Figure 6 of their oral presentation) corresponds to an unrealistic in-use deterioration rate of only 0.75 grams/mile per 10,000 miles for CO.

GM submitted additional information concerning EPA and GM tampering surveys to EPA (*10*) in response to questions asked at the CO Waiver Public Hearing. GM claims that its interpretation of EPA's tampering report shows that EPA's contention that tampering increases with car age is fallacious. They claim that tampering, both in the EPA and GM surveys, grows to a certain level and then levels off after a certain number of miles. They claim that in the EPA data (shown in Figure 1 of Attachment C of their additional submission) this plateau has been reached for the 1973 and 1974 vehicles. They neglect to mention that many 1974 vehicles had relatively primitive emissions control systems and are recognized as a low point in LDV fuel economy ratings and *may* not be validly used to extrapolate other vehicle year's emissions. The GM Customer Car Emission Control Modification Survey that GM mentions does show a tapering off of emission control system tampering with vehicle mileage but again details of the GM study are very sketchy, and cannot be used as a basis to modify the in-use deterioration rates.

(2) Growth Projections: GM presented their concern over EPA's use of a one percent, compounded annually *center city* vehicle miles traveled (VMT) growth rate as being unrealistically high. They claim that birth rates have fallen to replacement only levels and that many mature center city areas are already saturated with traffic. Figure II.C.1. of the GM submission shows U.S. human population growth projections with both a 1.14 percent compounded growth rate (1970–71 growth rate) and the U.S. Bureau of the Census, Series II projection (about a 0.75 percent compounded growth rate). Thus GM assumes that a 0.75 percent growth rate corresponds to what is referred to as "replacement levels." Figure II.C.2. of GM's submission shows VMT growth rate projections for four large metropolitan areas which are also CO non-attainment areas. The cities and their VMT growth rate projections are: Phoenix: 2.5 percent; Los Angeles: 0.75 percent; Chicago: 0.75 percent; New York: 0.35 percent.

(3) "Base Year" Air Quality Data: GM criticized EPA's use of what they consider to be "erroneously high" base year air quality levels in the "Walsh/Lillis" study.(*1*) Revised air quality projections have been made by EPA(*3, 4*) for a more recent "base year" (1976) and only two (of 19) AQCR air quality levels were found to have lower base year concentrations of CO.

d. Historical CO Air Quality Trends. Figure 11.D.1. of GM's submission reportedly shows how CO levels have dropped from about 13 ppm to 5 ppm over the years 1969 to 1977 at the 45th Street monitor in New York City. GM feels that these data reflect a nationwide trend downward in CO levels due to control of motor vehicle emissions. They claim that similar downward trends in CO concentrations have been shown in other large metropolitan areas. GM claims that EPA's rollback model predicts only a 13 percent rather than a measured 59 percent reduction in Manhattan. The Manhattan site which GM chose to measure CO reductions corresponds to the site where EPA has also found the greatest CO reductions. EPA has found a much lower average reduction in ambient CO for this same time period when averaged over all sites. Unfortunately, Figure 11.D.1. can be characterized as highly questionable as it reports data taken with several instruments, the first of which shows no apparent downward trend and a large amount of scatter.

e. Effect of Two-Year Waiver on Air Quality. GM's position is that from their interpretation of air quality data a 7 or 9 gram/mile LDV CO emissions standard is sufficient to achieve the CO NAAQS. They would like to see a permanent relaxation of the 3.4 gram/mile standard. Likewise GM feels that a two year waiver will have no effect on the attainment of the CO NAAQS. GM claims that by using EPA's rollback

model with the assumptions they have questioned (*1*) they only calculate a maximum total fleet emissions rate 1.96 percent lower in 1987 (the year when there is expected to be the maximum effect) if the waiver is not granted. They further calculate that granting the CO waiver will increase ambient CO levels in Chicago by 0.28 ppm and Spokane by 0.16 ppm, which they feel to be two typical cities, in 1987. They call these levels "insignificant" in view of the uncertainities present in the rollback calculations and assumptions.

f. Cost of Hours of Disability. GM criticized EPA's projection of the increased personhours of disability related to cardiac disease (from Reference *1)* as being insignificant. It should be mentioned that the approximately 5,000 personhours of disability projected for the year 1990 by the model are only for the 26 AQCR's and only related to cardiac disease. The so called "Three Agency Study"(*6*) made similar projections of the health consequences of alternate CO emission standards. Although these projections are also dated and apply to slightly different emission standards for slightly offset years, they also project a significant number of additional personhours of disability associated with a higher CO emissions standard.

4. Ford Motor Company. Although Ford has not applied for a CO waiver, they have kept their option open to do so. They have, however, submitted data and reports which they claim show that the 1980 model year 7.0 grams/mile LDV CO emissions standard is sufficient to achieve the 9 ppm eight-hour CO NAAQS and that a further tighting of the vehicle emission standards is not necessary to protect the public health. Ford has submitted specific reports dealing with each of their comments. These reports are discussed below.

a. Air Quality Effects of a CO Waiver. In Ford's attempt to "better" analyze the CO air quality data they duplicated the projections of Lillis (from Reference 1), extended that model to include the effects of a two year CO waiver, and analyzed seasonal air quality and temperature data from various locations. Although no changes were made in its theoretical basis, EPA has since revised and updated the data inputs into the modified rollback model which Ford used in their modeling efforts. This reduces the ability to compare the two analyses.

Ford's modeling results, using input assumptions from Reference 1, showed small air quality differences due to a CO waiver. Projected air quality, rounded to the nearest ppm, indicated a difference in 1985 of no more than one ppm attributable to granting the CO waiver to the entire industry. They found the variability in the rounding procedure to be more significant than the calculated effect of granting the waiver. If Ford had calculated the rollback modeling results to more significant figures, Ford estimates they would have found that air quality in 1985 would be at most 3.3 percent worse on a CO annual tonnage basis if the waiver is granted. (This 3.3 percent is the change in automobile contributions to total CO.) Ford calculates that an 8 grams/mile CO average in-field performance level would be necessary to achieve the CO air quality standard by 1990 in those areas where stationary sources alone do not exceed the standard (North Alaska). This can be compared to the 16.57 grams/mile CO average in-field performance level calculated by EPA to result from the 3.4 grams/mile LDV CO standard. Ford's projected in-field performance requirement neglects cold-start emissions, vehicle speed effects, and model accuracy.

Ford's feels that EPA's rollback model and associated data, as used in Reference 1, understate reductions in air pollution and that emission rates higher than 8 grams/mile average in-use performance figure may be adequate. Ford finds that fall and winter represent periods of higher CO concentrations than spring and summer. They also find that spring and fall represent the extremes in average CO concentrations but not the extremes in average temperature. For 1976 they calculated a correlation of CO air pollution with ambient temperature of −0.25 and conclude that there are other important factors besides temperature which influence ambient CO levels. Ford also presented data from a Chicago CAMP station near an eight lane arterial street which had seasonal CO pollution patterns which suggested what they considered to be a small seasonal effect on CO emissions. Ford did admit, however, that reasons for why greater CO pollution occurs in the fall or winter cannot adequately be explained by stationary source fossil fuel combustion.

Ford finds that air quality data show that significant improvement in CO levels in taking place. They also feel that, based upon this air quality data, EPA's model (from Reference 1) understates expected further reductions in CO air pollution.

b. Prediction of Future Urban Carbon Monoxide Concentrations. In this section of Ford's submission they discuss their own rollback model and compare the results that it predicts with those from various EPA models. Unfortunately this Ford work is dated (February 1975) and thus is not up to date and not comparable in either their results or data base to EPA's most recent (Reference 4) rollback work. Ford apparently made many different assumptions than EPA in deriving their model. Some of these differences include assuming no vehicular growth in the Central Business District and taking spatial distribution of emission sources into account. Ford claims validation of their rollback model based on its agreement with actual Los Angeles County CO data over the 1965 to 1972 time period. They also claim that their analysis demonstrates that greater weight should be given to the driving pattern in the urban centers where highest CO concentrations are observed. They suggest a revised driving cycle and different FTP weighting factors to increase the weighting of central business district driving.

This entire section (Attachment III of Ford's submission) is not pertinent as the work is out of date, the differences in their model versus EPA's are largely unspecified, the model validation is questionable in both its assumptions and breadth, and some of their suggestions and conclusions appear unsubstantiated.

c. The Vehicle Emissions Standard for CO and Air Quality. In this section Ford reiterates their position that the Federal Test Procedure (FTP) does not give a correct evaluation of the vehicle emissions responsible for the high CO concentrations observed in center-city locations. Ford claims that the FTP Bag 3 and particularly Bag 1 emissions are weighted too high in comparison to Bag 2 and that the use of these weightings overpredicts the effective CO emissions. Using this logic, Ford claims that a less stringent LDV CO emissions standard of 7.0 grams/mile, as measured on the FTP, is all that is needed as it does, in fact, correspond to a significantly lower effective CO emissions and thereby provides an additional margin of safety for the protection of public health. EPA studies indicates that catalyst equipped vehicles are probably in a "cold start" mode after a soak of only four hours. The EPA "hot spot" study indicates that high CO concentrations are not always a localized problem.(*8*)

d. Ford's Comments on Two EPA Documents. Ford commented on two EPA documents entitled "Air Quality Impact of Waiving the 3.4 Gram/Mile Automobile CO Standard" and "Status Report on the CO 'Hot Spot' Project." Both of these reports have been superseded by more recent analyses which are summarized elsewhere in this

report. Many of Ford's criticisms have been rectified in the newer revisions of these reports which are discussed in this document.

e. Ambient Temperature Effect on Urban CO Air Quality. In this submission Ford has further discussed the sensitivity of CO air quality to the ambient temperature. Ford has modeled results of ambient CO measurements in both New York City and downtown Los Angeles. They have reported, as mentioned in an earlier section, that the dependence of CO concentrations on ambient temperature is weak. They also investigated with meteorological variables such as mixing height, wind speed and atmospheric stability might have an influence on CO concentrations. Ford found that by analysis of data from the 62 U.S. National Weather Service stations in the contiguous states from five year records that slowest dilution episodes occurred most frequently in December, followed in order by January, November, February, and October. This trend agrees well with observed seasonal patterns of 99th percentile CO values. Although Ford agrees that LDV CO emissions arise largely from vehicles in the cold start mode, they feel that their analysis shows that increased CO standards violations in the winter months can be primarily attributed to differences in meteorology.

5. Chrysler Corporation. Chrysler states that their position is that "The protection of public health does not require attainment of a 90 percent reduction for carbon monoxide (3.4 g/mi) by any of Chrysler's passenger car engine families in model years 1981 and 1982." They further state that " * * *. postponement of the 3.4 g/mi standard until 1983 would have no meaningful effect on overall air quality * * *." Chrysler has divided their position into the following three arguments:

a. Health Effects of Carbon Monoxide. Chrysler feels that epidemiological studies have shown that there is no evidence of any relation between ambient CO levels and morbidity or mortality rates among the general public. They also feel that there is no evidence of significant CO-related cardiovascular problems within the sensitive population of angina patients although until a few years ago many cities were in almost daily violation of the present eight-hour CO NAAQS. They claim that the only documented CO health problems are those associated with actual poisoning or asphyxiation. There are a large number of CO health effect studies documented in EPA's CO Air Quality Criteria Document which contradict this view.

b. Ambient Air Quality and Automotive Emissions. Chrysler states that they feel that the present eight-hour CO NAAQS is sufficient to protect the public health and quote references who state that the present CO NAAQS should be protective of exercising individuals and that it represents an adequate safety margin. They also feel that the one-hour CO NAAQS is adequate.

Chrysler feels measured decreases in ambient CO levels are due to increasing numbers of controlled vehicles. They state that no violations of the one-hour CO NAAQS are presently being recorded and that the downtrend in eight-hour NAAQS violations is so strong that " * * * CO will be the first pollutant to come into compliance with its NAAQS." Chrysler references National Academy of Science, government, industry, and university computer modeling efforts which, they claim, show that a CO emission standard of 9 grams/mile would be adequate to meet the CO NAAQS. Chrysler claims to have used EPA's MOBILE1 model to show that granting of the CO waiver to the entire automobile industry "would slow overall improvement in air quality by only 10 weeks, and to Chrysler by only 11 days." They conclude: "The 'improvement' in air quality produced by going to 3.4 g/mi, whether in 1981 or 1983, must therefore be judged from any rational perspective as being completely negligible in its effects on the public health."

c. Computer Projections of Future Air Quality. Chrysler has interpreted and summarized the results of ten computer projections dealing with various automotive CO emission standards. These projections and Chrysler's interpretations are listed below:

(1) F.P. Grad, *et al;* "The Automobile and the Regulation of its Impact on the Environment" (1975): Chrysler summarizes this book as concluding: "Postponement of the 3.4 g/mi CO standard for five years would have little significant adverse consequences on total aggregate CO emissions in comparison to the reductions achieved since 1967. An interim standard of 9.0 g/mi of CO still results in a reduction of aggregate CO emissions at a rate of 14 percent per year. . . . (T)here is little ultimate difference between a 3.4 g/mi and a 7.0 g/mi standard. Each results in almost the same substantial yearly reduction in CO emissions. The effect of a two year waiver would be even slighter."

(2) 1975 Yale University Study (Partially funded by Chrysler Corporation) (1975): This study was an evaluation of the 1970 Clean Air Act to assess the adverse health effects of air pollutants emitted from automobiles and the expected benefits to be derived from automobile emission controls. The projections of the report suggested, according to Chrysler, that although reductions in automotive emissions are necessary for a substantial elimination of adverse health effects, the automotive emission standards need not be as stringent as the Clean Air Act requires. Their conclusion assumed that stationary sources would be controlled proportionally. By further comparison with several National Academy of Sciences studies, Chrysler was able to conclude that the Yale study showed that an automotive emissions standard of 9.0 or 15.0 grams/mile would be sufficiently stringent to achieve ambient CO concentrations which would prevent adverse health effects. The problem with this projection is that it predicts that an emission standard of 15 grams/mile would result in elimination of COHb levels and thus adverse health effects by 1981. As we approach 1981 this trend is not materializing.

(3) Denver Air Quality; Colorado Department of Health (1976, 77): The U.S. DOT has estimated that 99 percent of all CO emissions in Denver are vehicular in origin. Data from the Colorado Department of Health shows a year-by-year reduction since 1971 in the number of one- and eight-hour CO NAAQS violations. These reductions are attributed to reductions in vehicular emissions. The Colorado Board of Health projects 84 and 85 percent reductions in the one- and eight-hour CO standards respectively in Denver by 1975. The U.S. DOT projects no one-hour CO violations in Denver in 1985 and a 75 percent reduction over 1975 data of violations of the eight-hour standard. Chrysler claims that these trends "clearly indicate that present vehicle emissions regulations will bring an end to the CO problem in Colorado within the next few years. . . . " However, no mention is made in Chrysler's Summary as to which emission standards or factors were used for which years to make these projections.

(4) Panel on Air Quality, Noise, and Health, Interagency Task Force (1976): This report was prepared as a U.S. Government interagency effort to analyze the effects of various air pollution and noise emission limits on air quality, noise, and health implications through the year 2000. This report found that a 7.0 gram/mile LDV CO emission standard would result in a 80 to 85 percent average improvement in air quality from the base year (early

1970's) to the year 2000. Also, in the year 2000 no AQCR's were projected to be in violation of the CO NAAQS at a 9 grams/mile standard. The report also projected possible health consequences of various levels of emissions control for the years 1980, 1990, and 2000, as well as the period 1980 to 2000. They projected that a 15.0 grams/mile standard would be sufficient to reduce all excess cardiac deaths and disability to zero. Chrysler adds that a 7.0 grams/mile standard would thus provide "much more than adequate protection of the public health." Chrysler notes that this projection is based upon each standard being in effect for 23 years (1978–2000) rather than just two (1981–1982) as in the case of the CO waiver. This interagency report is considered to be somewhat dated. Many assumptions are made in the analysis that Chrysler does not detail. Some inspection/maintenance programs are assumed along with very low deterioration rates. EPA considers Reference 4 to be a more reliable source of information as it includes many updates and revisions.

(5) Future Urban Air Quality; Council on Environmental Quality (1977): In the Council on Environmental Quality's 1977 Annual Report, CO air quality projections were made. They found that with the exception of 16 urban areas, all cities are expected to meet the CO NAAQS by 1985. The 16 cities are also expected to be in compliance by 1990. These calculations are based on rollback modeling using 15 grams/mile as an average, on-the-road automobile emission rate for 1990. Chrysler fails to point out that an average, on-the-road, emission value of 15 grams/mile actually represents a much lower emission standard because in-use deterioration is much greater than is predicted under certification type conditions.

(6) Automotive Air Pollution; National Academy of Sciences (1977): Chrysler quotes several sections of the NAS report entitled "Implications of Environmental Regulations for Energy Production and Consumption." The first comment states that CO related health problems are important only to people spending many hours in areas of heavy traffic congestion and that the CO health benefits from a stringent auto emissions standards are minimal compared to those to be gained from CO from cigarette smoke and home gas-fired heaters. The second comment states that "carbon monoxide is not deemed a significant hazard to today's community health at today's (15 grams/mile) emission levels; although the cost of meeting a more stringent standard of carbon monoxide seems low, the added benefits to community health are questionable and the resulting compromise with hydrocarbon elimination should be avoided."

(7) Revised Weighting of CVS/CH Test for CO Emissions; Ford Motor Company (1978): Chrysler, in this section, mentions Ford's contentions that FTP CO emissions are not representative of those found in urban rush hour traffic. They suggest Bag 2 emissions as more appropriate. Ford feels that with the present FTP conditions, a CO emission standard of 11–12 grams/mile would be sufficient to meet the CO NAAQS. Again, in this section Chrysler gives insufficient data or analyses to make use of their projection. EPA's "Hot Spot" report gives some indication that CO may be a regional problem.

(8) Air Quality Impact of Waiving the 3.4 gram/mile Automotive CO Standard; EPA (1978): A revision of this EPA report has been reviewed in the first section of this report.

(9) Effect of a Two-Year Delay on Total Emissions; John B. Pierce Foundation Laboratory (No date): Chrysler hired the John B. Pierce Foundation Laboratory of Yale University to verify its calculations of the effect of a two-year delay in the imposition of the 1980–81 automotive emission standards on Chrysler cars. Calculations showed that holding the CO standard at 15 grams/mile for 1980 and 1981 Chrysler would, for the 1980–1990 time frame, increase CO emissions by a ratio of 1.0086:1. This represents a six week delay in the attainment of air quality benefits. Chrysler feels that: "* * * Holding at 15 grams/mile for two more years is twice as severe a case as holding at 7 grams/mile instead of 3.4 grams/mile for 1981–82. Nevertheless, delay in the expected decrease of total emissions would be only six weeks. The effect on air quality of public health would be so small as to escape detection with any current methodology."

(10) Chrysler's Application of EPA's MOBILE1: Mobile Source Emissions Model: Chrysler reports in this section on their use of and projections made with EPA's MOBILE1 model. The emission factors and methodology used are those described in EPA's "Mobile Source Emission Factors, Final Document." Chrysler has modified the program to allow various timetables for emission standard implementation. Chrysler chose to look at the effects of a CO waiver on air quality in New York and Colorado (as "worst-case" examples), as well as on a national basis. Chrysler found for 1987, the year of maximum air qualify effect, a 2.0 percent difference in CO emissions from all manufacturers' vehicles resulted between the waiver and non-waiver scenarios on a nationwide basis. For New York and Colorado the maximum percent differences were 2.7 and 2.1 percent respectively. For a Chrysler only waiver (assuming a 15 percent market share for Chrysler) the maximum nationwide difference in vehicle emissions found to be 0.30 percent while the New York and Colorado differences were 0.40 and 0.32 percent, respectively. Chrysler states that this shows that a two-year waiver would thus have no practical effect on CO emissions or on air quality and public health. They further state that "* * * if a two year waiver to 7.0 grams/mile were granted to the entire industry, the resulting delay in reduction of CO emissions would slow the rate of improvement in air quality by only 10 weeks. If the waiver were granted to Chrysler alone, the rate of improvement in air quality would be slowed by a mere 11 days. It is difficult to believe that air monitoring stations could even detect this difference."

References

(1) Memo from Edward J. Lillis, Chief, Air Management Technology Branch to Michael P. Walsh, Acting DAA, Office of Mobile Source Air Pollution Control, "Air Quality Impact of Waiving the 3.4 g/m Automotive CO Standard," July 18, 1978.

(2) Memo from Edward J. Lillis to Michael P. Walsh, "Revised Air Quality Projections for Waiving the 3.4 g/m Automotive CO Standard," August 11, 1978.

(3) Memo from Edward J. Lillis to Charles L. Gray, Director, Emission Control Technology Division, "Air Quality Analysis of Waiving the 3.4 Gram/Mile CO Standard for Light-Duty Vehicles," May 14, 1979.

(4) "Revised Air Quality Analysis of Waiving the 3.4 Gram-Mile CO Standard for Light-Duty Vehicles," EPA, August, 1979.

(5) Memo from Charles L. Gray, Director, ECTD to Robert E. Neligan, MDAD, "OAQPS Support on CO Waiver Requests Under Section 202(b)(5)(a) of the CAA," March 9, 1979.

(6) U.S. DOT, EPA, and Federal Energy Administration, "An Analysis of Alternative Motor Vehicle Emission Standards," May 19, 1977.

(7) U.S. Environmental Protection Agency, "Mobile Source Emission Factors, Final Document," EPA–400/9–78–006, March 1978.

(8) Shelar, E., F. L. Ludwig, and H. Shigeishi, Atmospheric Science Center, SRI International for the U.S. Environmental Protection Agency, "Analysis of Pollutant and Meteorological Data Collected in the Vicinity of Carbon Monoxide 'Hot Spots,'" Discussion Draft, May 1979.

(9) U.S. Environmental Protection Agency, "Motor Vehicle Tampering Survey (1978)," November 1978.

(10) Additional Submission for CO Waiver Docket from Betsy Anchor-Johnson, Vice-President, GM Environmental Activities Staff, to Benjamin R. Jackson, DAA, EPA Mobile Source Noise and Enforcement, dated July 20, 1979.

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Part III

Environmental Protection Agency

Guidelines Establishing Test Procedures for the Analysis of Pollutants; Proposed Regulations

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 136

[FRL 1323-D]

Guidelines Establishing Test Procedures for the Analysis of Pollutants

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed regulation.

SUMMARY: EPA proposes to amend its list of approved analytical techniques by adding test procedures for 113 organic toxic pollutants, an additional test procedure for inorganic toxic pollutants, a procedure for carbonaceous BOD_5, and requirements for sample preservation and holding times. The use of these procedures would be required for filing applications for National Pollutant Discharge Elimination System (NPDES) permits, for State certifications, and for compliance monitoring under the Clean Water Act. After considering comments received in response to this proposal, EPA will promulgate a final rule.

DATES: Comments on this proposal must be submitted on or before February 1, 1980.

ADDRESS: Send comments to Dr. Robert B. Medz, Monitoring Technology Division, Office of Research and Development, Environmental Protection Agency (RD–680), 401 M Street, S.W., Washington, D.C. 20460.

FOR FURTHER INFORMATION CONTACT: Dr. Robert B. Medz at the address listed above or call (202) 426–4727.

SUPPLEMENTARY INFORMATION:

I. Authority and Background

This regulation is proposed under authority of sections 304(h) and 501(a) of the Clean Water Act, 33 U.S.C. 1251 et seq (the Federal Water Pollution Control Act Amendments of 1972 as amended by the Clean Water Act of 1977) (the "Act"). Section 304(h) of the Act requires the Administrator of the EPA to "promulgate guidelines establishing test procedures for the analysis of pollutants that shall include the factors which must be provided in any certification pursuant to section 401 of this Act or permit application pursuant to section 402 of this Act." Section 501(a) of the Act authorizes the Administrator to "prescribe such regulations as are necessary to carry out his functions under this Act."

EPA promulgated "Guidelines Establishing Test Procedures for the Analysis of Pollutants" in 40 CFR Part 136 on October 16, 1973 (38 FR 28758). These guidelines, which were amended on December 1, 1976 (41 FR 52780), provided test procedures for 115 well known pollutants and pollutant parameters, including metals and a number of organic compounds. The guidelines also provided "recommendations" for sample preservation techniques and holding times. Only when these preservation techniques and holding times were stipulated in the analytical methods description were they regarded to be mandatory.

Since publication of those guidelines, EPA entered into a Settlement Agreement requiring it to study, if necessary, regulate 65 "priority" pollutants and classes of pollutants. (*See Natural Resources Defense Council, Inc., et al v Train,* 8 ERC 2120 (D.D.C. 1976), modified 12 ERC 1833 (D.D.C. 1979)). In December 1977, Congress passed the Clean Water Act of 1977, emphasizing the control of toxic pollutants and declaring the 65 "priority" pollutants and classes of pollutants to be "toxic" under section 307(a) of the Act.

The list of 65 toxic pollutants and classes of pollutants potentially included thousands of substances, many of which were relatively unknown outside the scientific community; moreover, because only on rare occasions had industry monitored for or had EPA regulated these pollutants, section 304(h) analytical methods were not available in many cases. In order to implement the Act, therefore, EPA first streamlined its regulatory task by defining 129 specific toxic pollutants for initial consideration. Next, the Agency embarked on an intensive literature search and laboratory program to develop section 304(h) methods for these 129 toxic pollutants.

This proposed amendment to 40 CFR Part 136 will provide analytical methods for 113 organic toxic pollutants. For each of these pollutants, two acceptable methods are proposed: (1) Either gas chromatography (GC) with selected detectors, or high performance liquid chromatography (HPLC), depending on the particular pollutant; and (2) GC coupled with mass spectrometry (GC/MS). This proposed amendment also provides another option for analysis of inorganic toxic pollutants by inductively coupled plasma optical emission spectoscopy (ICP), which may be less time-consuming and costly than existing section 304(h) methods for inorganics. Additionally, this proposal provides sample preservation and maximum holding times for a large number of pollutants covered by these proposed or existing section 304(h) methods. Finally, a method for analysis of carbonaceous BOD_5 is included in this proposal.

The use of these testing procedures would be mandatory whenever the measurement of waste constituents is required under the Clean Water Act. For example, on June 14, 1979, EPA published a Draft Consolidated Permit Application Form and Proposed NPDES Regulations, which would require that certain applicants for NPDES permits analyze their discharges for the 129 specific toxic pollutants (See 44 FR 34346). The use of these procedures also would be required for section 401 State certifications under 40 CFR Part 121 and for NPDES compliance monitoring under 40 CFR Part 122 (See 44 FR 32854, June 7, 1979). Additionally, in accordance with 40 CFR 401.13, these testing procedures would apply to expression of pollutant amounts in effluent limitations guidelines, standards of performance, and pretreatment standards (including any monitoring requirements contained therein) under 40 CFR Part 402 et seq., "unless otherwise specifically noted or defined in said parts."

II. Summary of Proposed Methods

A. GC and HPLC Methods

A series of 12 new test procedures are being proposed that employ conventional GC or liquid chromatographic techniques for the quantitative measurement of specific organic materials. Although these methods can sometimes be used for qualitative identification of unknown materials in a sample, they are best used for the measurement of materials that are already known to be present in the sample. The low cost of the conventional detectors relative to MS makes this approach particularly attractive for routine monitoring of expected concentration levels of pollutants. HPLC has developed considerably in the past few years and can be used to achieve separations and measurements that cannot be performed with state-of-the-art GC.

These 12 methods numbered 601 to 612 were developed through in-house and contracted research through EPA's Environmental Monitoring and Support Laboratory, Cincinnati (EMSL-Cin). The 114 organic compounds for which analytical procedures were needed were divided into 12 categories based on their chemical structure in the expectation that members of each class might be analyzed by a single procedure or perhaps with minor variations on a single basic procedure. Separate requests for proposals were issued for

each class and, after competitive bidding, contracts were awarded to a total of five laboratories. Each research effort concentrated on the development of a test procedure with good sensitivity and reliability with full consideration of economic factors including: (1) Availability of instrumentation required; (2) availability of trained personnel capable of performing the analyses; (3) commercial availability, cost and reliability of additional peripheral equipment such as specific detectors and new types of column packings. The 12 methods that resulted from this effort represent state-of-the-art analytical technology.

Methods 601 and 603 are for the measurement of solvents and other volatile materials using variations of the Bellar purge and trap technique. Semispecific detectors are used to minimize background interferences. Seven of the methods involve solvent extraction techniques followed by conventional GC measurements. Cleanup procedures are included with these methods to overcome interferences. Method 605 for benzidines, and Method 610 for polynuclear aromatic hydrocarbons (PAH), rely on HPLC techniques for separation and measurement, although GC is acceptable for use in the measurement of most of the PAH materials.

Each method has been evaluated by the contractor for applicability to a variety of industrial and municipal effluents and each has provided acceptable levels of sensitivity, accuracy, and precision. The Agency is conducting interlaboratory accuracy and precision studies for these 12 methods and will make the results available as soon as these studies are completed.

A copy of the full text of these methods is included as Appendix I to this preamble for the convenience of the public who desire to review it and make comments.

B. GC/MS Methods

Three new test procedures, 613, 624, and 625, are being proposed that require a mass spectrometer detector. Although historically used as a qualitative tool by the analytical chemist, the development of stable electronics and advanced software has resulted in the widespread use of the GC/MS system to quantitate pollutant levels in environmental samples. Although the capital investment for the instrumentation is relatively high, the instrument allows for the simultaneous measurement of large numbers of materials. In addition, the detector can be used to overcome interferences that would mask compound responses obtained with less specific GC detectors. Because of these potential economic advantages to the user, EPA has decided to propose both GC/MS and non-MS approaches so that the user may select the most cost-effective one to suit his monitoring requirements.

Method 613 for Tetrachlorodibenzodioxin (TCDD) was developed through one of the series of EPA contracts discussed above. It involves the use GC/MS to measure low quantities of TCDD after solvent extraction and extensive cleanup of the extract.

Methods 624 and 625 were developed by the combined efforts of the EMSL-Cin and of the Environmental Research Laboratory (ERL), Athens, Georgia. Methods 624 and 625 essentially represent the techniques described in *Sampling Procedures for Screening Industrial Effluents for Priority Pollutants (April 1977).* These methods have been used extensively by EPA's Effluent Guidelines Division (EGD), Regional laboratories and contractors, and by many private laboratories.

A copy of the full text of these methods is included as Appendix II to this preamble for the convenience of the public who desire to review it and make comments.

The Agency is reviewing a number of approaches, involving the analyses of a wide variety of sample types, to determine more thoroughly the precision and accuracy of these techniques. The Agency is considering, also, the addition of more extensive quality assurance and quality control proceedings for proposed methods 624 and 625. The approaches include the potential use of internal standards, surrogate spikes, and labeled compounds. Appendix III to this preamble provides an example of such an additional quality assurance program for public review and comment.

C. Elemental Analysis

The Agency is proposing an ICP method for elemental analysis of the toxic metals. This technique, which is an alternative to existing 304(h) methods for metals, provides a simultaneous multi-element determination of trace elements in solution. Dissolved elements are determined in filtered and acidified samples. Total elements are determined after appropriate digestion procedures are performed. The basis of this instrumental method is the measurement of atomic emission by an optical spectroscopic technique.

The Agency developed the proposed method by requesting the ICP Users Group, consisting of EPA personnel that presently have various makes and models of satisfactory instruments, to provide their input into a methods write-up to be prepared by the staff of the EMSL-Cin. The resulting method represents the current state-of-the-art. The EGD also has made extensive use of ICP procedure. It has already been approved for use in the NPDES permits system on a Regional basis. Improvements are anticipated as time progresses. Users are encouraged to identify problem areas and assist in updating the method.

The write-up includes a list of the elements for which the method applies along with recommended wavelengths and typical estimated instrumental detection limits. Because of the differences between satisfactory instruments, no detailed instrumental operating conditions are provided. Instead, the analyst is referred to the instructions provided by the manufacturer of the particular instrument. Potential matrix interferences are given and instructions for appropriate corrections are provided.

EPA is planning to conduct an interlaboratory precision and accuracy study, using a wide variety of treated effluent samples, to evaluate potential matrix interferences. The Agency will make these studies available as soon as they are completed.

A copy of the full text of the ICP procedure is included as Appendix IV to this preamble for the convenience of the public who desire to review it and make comments.

D. BOD_5 Carbonaceous Method

This method of carbonaceous BOD has been provided in response to many requests for this parameter. It measures the carbonaceous BOD of a sample with the currently approved procedure after first adding a reagent to act as a nitrogen oxygen demand suppressant. A copy of the full text of the BOD_5 method is included as Appendix V to the preamble for the convenience of the public who desire to review it and make comments.

E. Requirements for Sample Containers, Preservation Procedures and Holding Times

Several commentators on the June 9, 1975 Proposed Amendments to the Guidelines Establishing Test Procedures for the Analysis of Pollutants (40 CFR Part 136) requested criteria for sample preservation and holding times. As a result, on December 1, 1976, the Agency cited the recommendations given in "Methods for Chemical Analysis of Water and Wastes," U.S. Environmental Protection Agency, Table II, pp. VIII–XI,

1974, as applicable to the NPDES samples.

Since December 1976, there have been many requests for clarification as to whether the preservation procedures and holding times were recommendations or requirements for NPDES monitoring. Several laboratories also commented that the holding time recommendations were difficult and very expensive to follow because of the short time interval allowed between sample collection and analysis for many of the common parameters.

It is the proposal of the Agency that the sample preservation procedures and holding times published be requirements and not just recommendations. However, the guidance given in the reference cited above was intended for broad application to all environmental sample types. The Agency realizes that it might be less applicable to require laboratories to use preservation procedures and holding times for general uses which extended beyond NPDES monitoring. the Drinking Water Program, for example, has addressed this problem and requires procedures specifically designed for drinking water samples. These have been published in the "Manual for the Interim Certification of Laboratories Involved in Analyzing Public Drinking Water Supplies—Criteria and Procedures," USEPA, Report No. EPA 600/8–78–008, May 1978.

Data collected by the Agency, data in the scientific literature, and data submitted to the Agency by public and private laboratories have been reviewed to determine the state-of-the-art as it applies specifically to the preservation of NPDES samples. The criteria used in reviewing the data and selecting sample preservation procedures and maximum holding times were: (1) That the procedures would retard significant sample degradation, and (2) that the procedures would minimize monitoring costs by extending the holding times when possible.

A list of requirements for sample containers, preservation procedures and maximum holding times for NPDES monitoring is proposed in § 136.3(d), Table II. Information given in § 136.3(d), Table II supersedes past recommendations and directions given by the methods listed in the manuals and references cited in § 136.3(a), Table I.

The preservation procedures listed in Table II are to be used at the start of sample collection in the field and not after sample compositing is completed or when the samples are received in the laboratory for analysis. Aliquots of composite samples, which would require multiple preservatives, should be preserved only by maintaining at 4°C until compositing and sample splitting are completed.

The holding times listed in Table II are the maximum times between sample collection and analysis that are allowed for the sample to be considered valid. When possible, all laboratories are encouraged to analyze samples as quickly as possible after collection. The data base available to EPA shows that no more than 10% sample deterioration occurs when samples are preserved as prescribed in Table II and held for the maximum holding time.

Some effluent samples may be stable longer than the maximum holding time for a given parameter. A longer holding time may be used as long as the discharger or monitoring laboratory has data on file showing the validity of the longer time. Also, some samples may not be stable for the maximum time period given in the table. A discharger or monitoring laboratory is obligated to hold the samples for a shorter time if knowledge exists to show this is necessary to maintain sample stability.

The Agency believes that the proposed requirements for sample preservation will save the monitoring community a substantial savings over the next several years. The recommendations for sample preservation cited in 40 CFR Part 136, December 1, 1976, list holding times of only 24 hours for many common parameters. Many monitoring organizations meet these short holding times by locating small "field," "Regional," or "district" laboratories close to the points of sample collection to minimize travel time. Other organizations maintain large centralized laboratories, ship samples by express methods and work overtime to meet the short holding times. Both of these approaches are very expensive. The proposed extended holding times requirement will allow organizations to review the need for small "field" laboratories, and institute more economical methods of sample shipment and analysis.

III. Cost and Economic Impacts

This proposed regulation does not require monitoring and therefore, does not directly impose costs on the monitoring community. Use of the analytical methods proposed, however, may be required in a variety of EPA programs. Because the costs of analyses may constitute a significant fraction of the cost for some programs, EPA will adress overall economic impacts in program-specific regulation (e.g., economic discussions concerning the recently published Draft Consolidated Permit Application Forms and Proposed NPDES Regulations, starting at 44 FR 34408, June 14, 1979). Nevertheless, the Agency is interested in the unit cost for various analyses since they may be needed to assess the impact of alternative approaches to a given program.

A. Carbonaceous BOD_5

No significant incremental cost is expected for the Carbonaceous BOD_5 method proposed today relative to the previously promulgated BOD_5 method (which measures both carbonaceous and nitrogenous oxygen demand). The main difference between these methods is the use in the Carbonaceous BOD_5 test of an additional chemical to inhibit nitrogenous oxygen demand. Previous estimates of the cost to perform a BOD_5 test on 10–20 samples ranged from $15–$30 per sample.

B. Maximum Holding Times

In the past, maximum sample holding times prior to completion of analysis were not standardized. Small "field," "regional," or "district" EPA, State, commercial and industrial laboratories needed to be close to the source of samples so that the samples could be analyzed quickly after collection. This presented an obstacle to the management trend for more efficient use of equipment and personnel by centralizing laboratory operations. Because of the lack of standardization, incremental costs between past practices and the maximum holding times proposed today cannot be accurately estimated by the EPA. However, the EPA believes that the proposed requirements for sample preservation could save the monitoring community substantial savings. Short sample holding times for many parameters which resulted in increased operational costs would be removed by approval of these proposed requirements. It should be noted that the impact on on-site plant laboratories will be slight.

C. GC and HPLC Methods

EPA has obtained preliminary cost estimates for performance of serveral methods proposed today. It was assumed that properly preserved but unextracted industrial effluent samples were delivered to the laboratory and that a typical lot might involve 40–50 repetitions of a given analytical method. The highest estimate for performance of a given method was typically 3 to 4 times the lowest. Average figures are presented in the following table.

A cost estimate for Method 613 which involves use of GC/MS is included in

this table due to the specific focus of this method on dioxin (in contrast to the broader focus of Methods 624 and 625). Estimates are not yet available for Methods 606 and 607. The Agency is continuing to gather data on all methods to better characterize these costs.

Method No.	Method name	[1] Average
601	Purgeable Halocarbons	130
602	Purgeable Aromatics	150
603	Acrolein/Acrylonitrile	110
604	Phenols	200
605	Benzidines	220
606	Phthalate Esters	110
607	Nitrosamines	150
608	Organochlorine Pesticides & PCBs	110
609	Nitroaromatics and Isophorone	210
610	Polynuclear Aromatic Hydrocarbons	310
611	Haloethers	120
612	Chlorinated Hydrocarbons	160
613	2,3,7,8-Tetrachlorodibenzo-p-dioxin	170

[1] Average estimated cost (dollars per method, per sample).

D. GC/MS Methods

The cost of analyzing the 113 organic toxic pollutants by the GC/MS Methods proposed today has been estimated at a range of $1,000 to $2,000 for quantitative analysis depending upon the amount of quality assurance required. The assumptions and basis for these figures were discussed at length at 44 FR 34408, June 14, 1979.

E. ICP Method

The agency has not yet completed a survey of the unit cost for ICP analysis for metals, but much of the interest in this method stems from its ability to simultaneously analyze for many metals. Analysis for the same series of metals may be performed (one at a time) using atomic adsorption (AA) spectroscopic methods promulgated earlier (41 FR 52780, December 1, 1976).

Since the sensitivity of ICP is generally similar to AA methods, the recent widespread interest in ICP suggests that the cost per pollutant analyzed may be lower with ICP than with AA. The contract cost per pollutant for 10–20 samples using AA typically averages $10.

IV. Future Rulemaking

The following areas of concern are under consideration by the EPA for amendment of the proposed section 304(h) regulation in the near future:

A. Methods for Measuring the Acute Toxicity of Effluents to Aquatic Organisms (Biomonitoring)

Biomonitoring methods are intended for use in determining whether a waste water stream is significantly toxic. These biomonitoring methods may become required measurements in support of the Consolidated Permits Application Regulation which was developed by the Office of Enforcement.

B. Procedures for Determining Detection Limits in Support of the Proposed Consolidated Permit Application Form

In the proposed consolidated regulation, EPA may establish pollutant limitations based upon reported levels in the waste water or a multiple of the detection limit of the analytical method if the pollutant is not detected.

C. An Analytical Procedure to Measure Asbestos in Water

The Agency has already developed an interim method which is being tested for asbestos by environmental analysis laboratories. The present method defines the presence of both chrysotile and amphiboles, but chrysotile is more readily identified. Incoming data from the laboratories is being intercompared in order to improve definition of asbestos fibers and determine the precision, accuracy, and percent recovery of the method in waste water.

D. Updating the Reference in 40 CFR Part 136

Many of the references cited in 40 CFR Part 136 have been superseded by later editions. EPA is planning to amend the regulation to include the following references:

1. "Methods for Chemical Analysis of Water and Wastes, 1979," U.S. Environmental Protection Agency, EPA–600/4–79/020.
2. "Annual Book of Standards, 1979," American Society for Testing Materials, Part 31, Water.
3. "Methods for Analysis of Inorganic Substances in Water and Fluvial Sediments," U.S. Department of the Interior, U.S. Geological Survey, Open-File Report 78–679 unless otherwise stated.

E. Additional Procedures for the Analysis of Organic Pollutants in Wastewater

EPA is planning to propose two additional analytical methods applicable only to specific organic chemicals Standard Industrial Classification (SIC) codes. The first method consists of the GC/MS procedures proposed today, together with the addition of several deuterated internal standards and/or isotopically labeled compounds. The second procedure consists of variations of the GC procedure currently being proposed which are specific to the wastewater matrix found in a specific organic chemical industry (by SIC codes).

F. Development of an EPA Policy on Mandated Control of the Usage of Known or Suspected Carcinogenic Reagents

The Agency shall consider the development of a policy on the usage of known or suspected carcinogenic reagents in environmental analysis. A determination shall be made as to whether the EPA should approve the use of such reagents when other, noncarcinogenic, acceptable reagents are available. Consideration shall be given to the establishment of control of the disposal of known or suspected carcinogenic reagents in order to prevent their introduction to the environment.

V. Request for Comments

A. GC, GC/MS, HPLC

1. EPA solicits comments on the general applicability of the proposed GC, GC/MS, and HPLC methods, or other methods which have been used for measuring "toxic" pollutants in industrial discharges. The Agency is particularly interested in comments on interferants and other analytical obstacles which have been experienced and how these obstacles were overcome to allow quantitative estimations to be made.

2. Commentators are urged to make any data which they may have to better define the sensitivity, precision, accuracy, and detection limits of the proposed methods available to the Agency.

3. Several different configurations of GC columns, detectors, and operating conditions have been indicated in the proposed methods. Comments are solicited on the optimum flexibility which should be specified in such configurations in tailoring the GC, GC/MS, and HPLC procedures for their most general applicability to industrial discharges.

4. The proposed methods have included a minimum level of quality control, that is, the use of replicates, spikes, and blanks as necessary operations. EPA solicits comments regarding the additional levels of quality control that should be specified in the procedures, if any, and those elements of quality control which should be left to the analyst's discretion. Earlier, in the preamble, a suggested intensive quality control regime was discussed which could be included in the GC/MS methods. Comments are solicited relative to the adequacy and desirability for integrating much more intensive quality control requirements within the mandatory language of the GC/MS methods.

5. The proposed regulation includes mandatory preservation techniques and maximum holding times based upon data accumulated by EPA since 1975. The Agency seeks additional data and comments concerning preservation techniques and maximum holding times.

6. EPA is proposing an ICP instrument to supplement the present colorimetric and AA procedures. The Agency believes that the proposed ICP procedures should provide greater flexibility to the analyst to choose the most appropriate analytical technique for measurement of trace elements. Comments are solicited especially relative to the general applicability of ICP to industrial discharges.

7. In response to requests from environmental analysis laboratories that desire to measure the carbonaceous BOD of municipal and industrial wastewaters without the complications caused by the nitrogenous oxygen demand, the carbonaceous BOD method is being proposed. The nitrificaton control incorporated in the proposed method offers an analytical advantage in greatly improving the reproducibility of BOD measurements. The advantages offered by the proposed method's ability to distinguish between carbonaceous and nitrogenous oxygen demands are expected to favorably impact the design and operation of biological nitrification plants because loadings, aeration rates, and chemical doses are based largely on the nitrogenous demand. EPA requests additional data on the control of nitrification in BOD measurements.

8. EPA's cost estimates for the proposed methods are based upon all available data. The Agency solicits comments and data on the estimated unit cost of the proposed methods. Commentators should state the assumptions underlying their estimates.

Dated: November 16, 1979.

Barbara Blum,

Acting Administrator.

Appendices

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Appendix I: Gas Chromatographic and HPCL Methods—Methods 601 through 612.
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Appendix IV: Inductively Coupled Plasma Optical Emission Spectrometric Method for Trace Element Analysis of Water and Wastes.
Appendix V: Biological Oxygen Demand Carbonaceous Method 405.1 (5 days, 20° C).

Appendix I—Gas Chromatographic and HPLC Methods—Methods 601 through 612

Purgeable Halocarbons—Method 601

1. *Scope and Application.*

1.1 This method covers the determination of 29 purgeable halocarbons. The following parameters may be determined by this method:

Parameter	STORET No.
Bromoform	32104
Bromodichloromethane	32101
Bromomethane	34413
Carbon tetrachloride	32102
Chlorobenzene	34301
Chloroethane	34311
2-Chloroethylvinyl ether	34576
Chloroform	32106
Chloromethane	34418
Dibromochloromethane	34105
1,2-Dichlorobenzene	34536
1,3-Dichlorobenzene	34566
1,4-Dichlorobenzene	34571
Dichlorodifluoromethane	34668
1,1-Dichloroethane	34496
1,2-Dichloroethane	34531
1,1-Dichloroethene	34501
trans-1,2-Dichloroethene	34546
1,2-Dichloropropane	34541
cis-1,3-Dichloropropene	34561
trans-1,3-Dichloropropene	34561
Methylene chloride	34423
1,1,2,2-Tetrachloroethane	34516
Tetrachloroethene	34475
1,1,1-Trichloroethane	34506
1,1,/2-Trichloroethane	34511
Trichloroethene	39180
Trichlorofluoromethane	34488
Vinyl chloride	39175

1.2 This method is applicable to the determination of these compounds in municipal and industrial discharges. It is designed to be used to meet the monitoring requirements of the National Pollutant Discharge Elimination System (NPDES). As such, it presupposes a high expectation of finding the specific compounds of interest. If the user is attempting to screen samples for any or all of the compounds above, he must develop independent protocols for the verification of identity.

1.3 The sensitivity of this method is usually dependent upon the level of interferences rather than instrumental limitations. The limits of detection listed in Table 1 represent sensitivities that can be achieved in wastewaters under optimum operating conditions.

1.4 This method is recommended for use only by experienced residue analysts or under the close supervision of such qualified persons.

2. *Summary of Method.*

2.1 An inert gas is bubbled through a 5 ml water sample contained in a specially-designed purging chamber. The halocarbons are efficiently transferred from the aqueous phase to the vapor phase. The vapor is swept through a short sorbent tube where the halocarbons are trapped. After the purge is completed, the trap is heated and backflushed with gas to desorb the halocarbons into a gas chromatographic system. A temperature program is used in the GC system to separate the halocarbons before detection with a halide-specific detector.

2.2 If interferences are encountered, the method provides an optional gas chromatographic column that may be helpful in resolving the compounds of interest from the interferences.

3. *Interferences.*

3.1 Impurities in the purge gas and organic compounds out-gasing from the plumbing ahead of the trap account for the majority of contamination problems. The analytical system must be demonstrated to be free from contamination under the conditions of the analysis by running method blanks. Method blanks are run by charging the purging device with organic-free water and analyzing it in a normal manner. The use of non-TFE plastic tubing, non-TFE thread sealants, or flow controllers with rubber components in the purging device should be avoided.

3.2 Samples can be contaminated by diffusion of volatile organics (particularly freons and methylene chloride) through the septum seal into the sample during shipment and storage. A sample blank prepared from organic-free water and carried through the sampling and handling protocol can serve as a check on such contamination.

3.3 Cross contamination can occur whenever high level and low level samples are sequentially analyzed. To reduce the likelihood of this, the purging device and sample syringe should be rinsed out twice between samples with organic-free water. Whenever an unusually concentrated sample is encountered, it should be followed by an analysis of organic-free water to check for cross contamination. For samples containing large amounts of water-soluble materials, suspended solids, high boiling compounds or high organohalide levels, it may be necessary to wash out the purging device with a soap solution, rinse with distilled water, and then dry in a 105° C oven between analyses.

4. *Apparatus and Materials.*

4.1 Sampling equipment, for discrete sampling.

4.1. Vial, with cap—40 ml capacity screw cap (Pierce #13075 or equivalent). Detergent wash and dry at 105° C before use.

4.1.2 Septum—Teflon—faced silicone (Pierce #12722 or equivalent). Detergent wash, rinse with tap and distilled water, and dry at 105°C for one hour before use.

4.2 Purge and trap device—The purge and trap equipment consists of three separate pieces of apparatus: the purging device, trap, and desorber. Several complete devices are now

available commercially. The device must meet the following specifications: The unit must be completely compatible with the gas chromatographic system; the purging chamber must be designed for a 5 ml volume and be modeled after Figure 1; the dimensions for the sorbant portion of the trap must meet or exceed those in Figure 2. Figures 3 and 4 illustrate the complete system in the purge and the desorb mode.

4.3 Gas chromatograph—Analytical system complete with programmable gas chromatograph suitable for on-column injection and all required accessories including halide-specific detector, column supplies, recorder, and gases. A data system for measuring peak areas is recommended.

4.4 Syringes—5-ml glass hypodermic with luerlok tip (2 each).

4.5 Micro syringes—10, 25, 100 μl.

4.6 2-way syringe valve with Luer ends (3 each).

4.7 Syringe—5-ml gas-tight with shut-off valve.

4.8 Bottle—15-ml screw-cap, with Teflon cap liner.

5. *Regents.*

5.1 Sodium thiosulfate—(ACS) Granular.

5.2 Trap Materials

5.2.1 Porus polymer packing 60/80 mesh chromatographic grade Tenax GC (2,6-diphenylene oxide).

5.2.2 Three percent OV–1 on Chromosorb-W 60/80 mesh.

5.2.3. Silica gel—(35/60 mesh)—Davison, grade–15 or equivalent.

5.2.4 Coconut charcoal 6/10 mesh Barnaby Chaney, CA–580–26 lot # M–2649 or equivalent.

5.3 Activated carbon—Filtrasorb–200 (Calgon Corp.) or equivalent.

5.4 Organic-free water

5.4.1 Organic-free water is defined as water free of interference when employed in the purge ahd trap procedure described herein. It is generated by passing tap water through a carbon filter bed containing about 1 lb. of

5.4.2 A water purfication system (Millipore Super-Q or equivalent) may be used to generate organic-free deionized water.

5.4.3 Organic-free water may also be prepared by boiling water for 15 minutes. Subsequently, while maintaining the temperature at 90° C, bubble a contaminant-free inert gas through the water for one hour. While still hot, transfer the water to a narrow mouth screw cap bottle and seal with a Teflon line septum and cap.

5.5 Stock standards—Prepare stock standard solutions in methyl alcohol using assayed liquids or gas cylinders as appropriate. Because of the toxicity of some of the organohalides, primary dilutions of these materials should be prepared in a hood. A NIOSH/MESA approved toxic gas respirator should be used when the analyst handles high concentrations of such materials.

5.5.1 Place about 9.8 ml of methyl alcohol into a 10 ml ground glass stoppered volumetric flask. Allow the flask to stand, unstoppered for about 10 minutes or until all alcohol wetted surfaces have dried. Weigh the flask to the nearest 0.1 mg.

5.5.2 Add the assayed reference material:

5.5.2.1 Liquids—Using a 100 μl syringe, immediately add 2 drops of assayed reference material to the flask, then reweigh. Be sure that the 2 drops fall directly into the alcohol without contacting the neck of the flask.

5.5.2.2 Gases—To prepare standards for any of the six halocarbons that boil below 30° C (bromomethane, chloroethane, chloromethane, dichlorodifluoromethane, trichlorodifluoromethane, vinyl chloride), fill a 5 ml valved gas-tight syringe with the reference standard to the 5.0-ml mark. Lower the needle to 5 mm above the methyl alcohol menicus. Slowly inject the reference standard above the surface of the liquid (the heavy gas will rapidly dissolve into the methyl alcohol).

5.5.3 Reweigh, dilute to volume, stopper, then mix by inverting the flask several times. Transfer the standard solution to a 15 ml screw-cap bottle with a Teflon cap liner.

5.5.4 Calculate the concentration in micrograms per microliter from the net gain in weight.

5.5.5 Store stock standards at 4° C. Prepare fresh standards weekly for the six gases and 2-chloroethylvinyl ether. All other standards must be replaced with fresh standard each month.

6. *Calibration.*

6.1 Using stock standards, prepare secondary dilution standards in methyl alcohol that contain the compounds of interest, either singly or mixed together. The standards shoud be prepared at concentrations such that the aqueous standards prepared in 6.2 will completely bracket the working range of the analytical system.

6.2 Using secondary dilution standards, prepare calibration standards by carefully adding 20.0 μl of standard in methyl alcohol to 100, 500, or 1000 ml of organic-free water. A 25 μl syringe (Hamilton 702N or equivalent) should be used for this operation. These aqueous standards must be prepared fresh daily.

6.3 Assemble the necessary gas chromatographic apparatus and establish operating parameters equivalent to those indicated in Table 1. By injecting secondary dilution standards, establish the sensitivity limit and the linear range of the analytical system for each compound.

6.4 Assemble the necessary purge and trap device. The trap must meet the minimum specifications as shown in Figure 2 to achieve satisfactory results. Condition the trap overnight at 180° C by backflushing with an inert gas flow of at least 20 ml/min. Prior to use, daily condition traps 10 minutes while backflushing at 180° C. Analyze aqueous calibration standards (6.2) according to the purge and trap procedure in Section 8. Compare the responses to those obtained by injection of standards (6.3), to determine purging efficiency and also calculate analytical precision. The purging efficiencies and analytical precision of the analysis of aqueous standards must be comparable to data presented by Bellar and Lichtenberg (1978) before reliable sample analysis may begin.

6.5 By analyzing calibration standards, establish the sensitivity limit and linear range of the entire analytical system for each compound.

7. *Quality Control.*

7.1 Before processing any samples, the analyst should daily demonstrate through the analysis of an organic-free water method blank that the entire analytical system is interference-free.

7.2 Standard quality assurance practices should be used with this method. Field replicates should be collected to validate the precision of the sampling technique. Laboratory replicates should be analyzed to validate the precision of the analysis. Fortified samples should be analyzed to validate the accuracy of the analysis. Where doubt exists over the identification of a peak on the gas chromatogram, confirmatory techniques such as mass spectroscopy should be used.

7.3 The analyst should maintain constant surveillance of both the performance of the analytical system and the effectiveness of the method in dealing with each sample matrix by spiking each sample, standard and blank with surrogate halocarbons. A combination of bromochloromethane, 2-bromo-1-chloropropane, and 1,4-dichlorobutane is recommended to encompass the boiling range covered by this method. From stock standard solutions prepared as above, add a volume to give 1000 μg of each surrogate to 45 ml of organic-free water contained in a 50-ml volumetric flask, mix and dilute to volume (20 ng/μl). Dose 5.0 μl of this surrogate spiking solution

directly into the 5 ml syringe with every sample and reference standard analyzed. Prepare a fresh surrogate spiking solution on a weekly basis.

8. *Sample Collection, Preservation, and Handling.*

8.1 Grab samples must be collected in glass containers having a total volume in excess of 40 ml. Fill the sample bottles in such a manner that no air bubbles pass through the sample as the bottle is being filled. Seal the bottle so that no air bubbles are entrapped in it. Maintain the hermetic seal on the sample bottle until time of analysis.

8.2. The samples must be iced or refrigerated from the time of collection until extraction. If the sample contains free or combined chlorine, add sodium thiosulfate preservative (10 mg/40 ml will suffice for up to 5 ppm Cl_2) to the empty sample bottles just prior to shipping to the sampling site, fill with sample just to overflowing, seal the bottle, and shake vigorously for 1 minute.

8.3 All samples must be analyzed within 14 days of collection.

9. *Sample Extraction and Gas Chromatograph.*

9.1 Adjust the purge gas (nitrogen or helium) flow rate to 40 ml/min. Attach the trap inlet to the purging device, and set the device to purge. Open the syringe valve located on the purging device sample introduction needle.

9.2 Remove the plunger from a 5 ml syringe and attach a closed syringe valve. Open the sample bottle (or standard) and carefully pour the water into the syringe barrel until it overflows. Replace the syringe plunger and compress the sample. Open the syringe valve and vent any residual air while adjusting the samples volume to 5.0 ml. Since this process of taking an aliquot destroys the validity of the sample for future analysis, the analyst should fill a second syringe at this time to protect against possible loss of data. Add 5.0 ul of the surrogate spiking solution (7.3) through the valve bore, then close the valve.

9.3 Attach the syringe-syringe valve assembly to the syringe valve on the purging device. Open the syringe valves and inject the sample into the purging chamber.

9.4 Close both valves and purge the sample for 11.0 ± .05 minutes.

9.5 After the 11 minute purge time, attach the trap to the chromatograph, and adjust the device to the desorb mode. Introduce the trapped materials to the GC column by rapidly heating the trap to 180°C while back-flushing the trap with an inert gas between 20 and 60 ml/min for 4 minutes. If rapid heating cannot be achieved, the gas chromatographic column must be used as a secondary trap by cooling it to 30°C (or sub/ambient, if problems persist) instead of the initial program temperature of 45°C.

9.6 While the trap is being desorbed into the gas chromatograph, empty the purging chamber using the sample introduction syringe. Wash the chamber with two 5 ml flushes of organic-free water.

9.7 After desorbing the sample for approximately four minutes recondition the trap by returning the purge and trap device to the purge mode. Wait 15 seconds then close the syringe valve on the purging device to begin gas flow through the trap. Maintain the trap temperature at 180°C. After approximately seven minutes turn off the trap heater and open the syringe valve to stop the gas flow through the trap. When cool the trap is ready for the next sample.

9.8 Table 1 summarizes some recommended gas chromatographic column material and operating conditions for the instrument. Included in this table are estimated retention times and sensitivities that should be achieved by this method. An example of the separation achieved by column 1 is shown in Figure 5. Calibrate the system daily by analysis of a minimum of three concentration levels of calibration standards.

10. *Calculations.*

10.1 Determine the concentration of individual compounds directly from calibrations plots of concentration (μg/l) vs. peak height or area units.

10.2 Reports results in micrograms per liter. When duplicate and spiked samples are samples are analyzed, all data obtained should be reported.

11. *Accuracy and Precision.* The U.S. EPA Environmental Monitoring and Support Laboratory in Cincinnati is in the process of conducting an inter-laboratory method study to determine the accuracy and precision of this test procedure.

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3. "Development and Application of Test Procedures for Specific Organic Toxic Substances in Wastewaters. Category 11—Purgeables and Category 12—Acrolein, Acrylonitrile, and Dichlorodifluoromethane." Report for EPA Contract 68-03-2635 (In preparation).

Table 1—*Organohalides Tested Using Purge and Trap Method*

Compound	Retention time (min.)		Detection limit [1]
	Col. 1 [2]	Col. 2 [3]	μg/l
Chloromethane	1.50	5.28	0.0009
Bromomethane	2.17	7.05	0.03
Dichlorodifluoromethane	2.62	(4)	0.03
Vinyl chloride	2.67	5.28	0.01
Chloroethane	3.33	8.68	0.01
Methylene chloride	5.25	10.1	0.01
Trichlorofluoromethane	7.18	(4)	0.01
1,1-Dichloroethene	7.93	7.72	0.006
1,1-Dichloroethane	9.30	12.6	0.004
trans-1, 2-Dichloroethene	10.1	9.38	0.006
Chloroform	10.7	12.1	0.006
1,2-Dichloroethane	11.4	15.4	0.006
1,1,1-Trichloroethane	12.6	13.1	0.005
Carbon tetrachloride	13.0	14.4	0.007
Bromodichloromethane	13.7	14.6	0.006
1,2-Dichloropropane	14.9	16.6	0.004
trans-1,3,-Dichloropropene	15.2	16.6	0.006
Trichloroethene	15.8	13.1	0.005
Dibromochloromethane	16.5	16.6	0.01
1,1,2-Trichloroethane	16.5	18.1	0.006
Cis-1,3-dichloropropene	16.5	18.0	0.008
2-Chloroethylvinyl ether	18.0	(4)	0.06
Bromoform	19.2	19.2	0.02
1,1,2,2-Tetrachloroethane	21.6	(4)	0.006
Tetrachloroethene	21.7	15.0	0.007
Chlorobenzene	24.2	16.8	0.03
1,3-Dichlorobenzene	34.0	22.4	0.04
1,2-Dichlorobenzene	34.9	23.5	0.04
1,4-Dichlorobenzene	35.4	22.3	0.04

[1] Detection limit is calculated from the minimum detectable GC response being equal to five time the GC background noise, using a Hall Model 700-A Detector.

[2] Carbopack B 60/80 mesh coated with 1% SP-1000 packed in an 8 ft × 0.1 in ID stainless steel or glass column with helium carrier gas at 40 ml/min flow rate. Column temperature held at 45°C for 3 min. then programmed at 8°C/min. to 220° then held for 15 min.

[3] Porisil-C 100/120 mesh coated with n-octane packed in a 6 ft × 0.1 in ID stainless steel or glass column with helium carrier gas at 40 ml/min flow rate. Column termperature held at 50°C for 3 min then programmed at 6°C/min to 170° then held for 4 min.

[4] Not determined.

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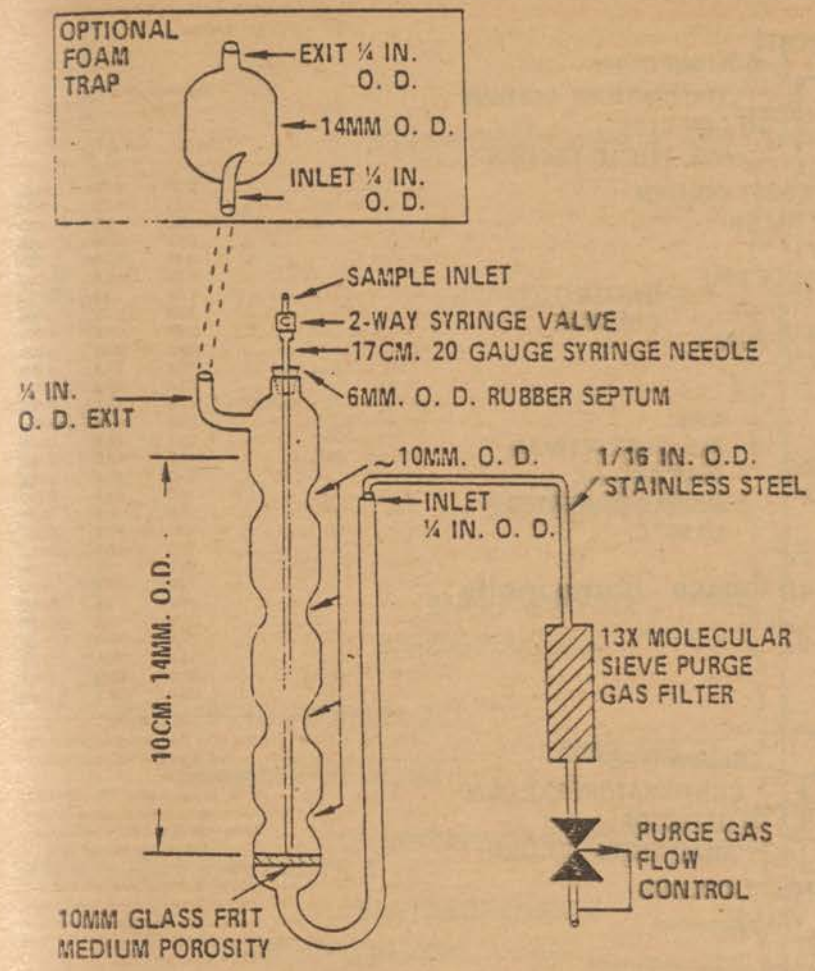


Figure 1. Purging device

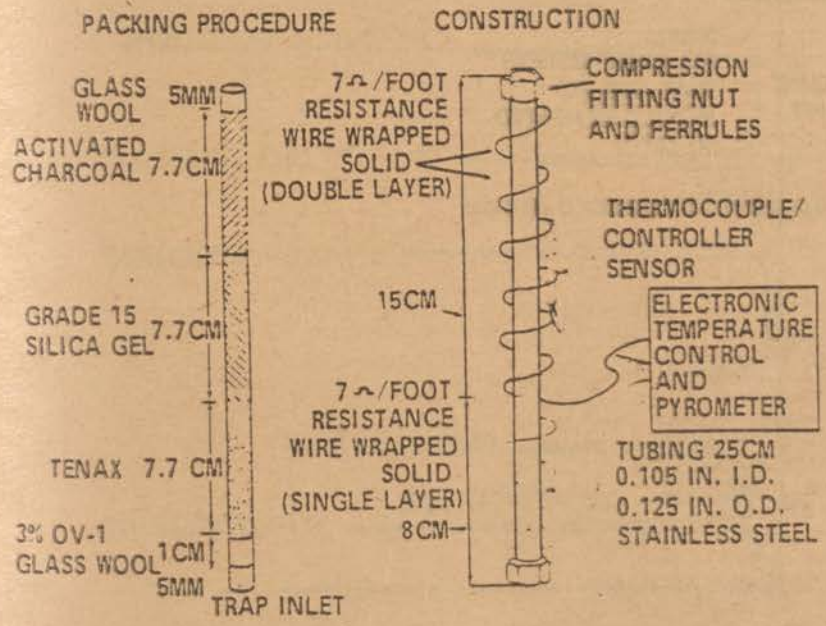


Figure 2. Trap packings and construction to include desorb capability

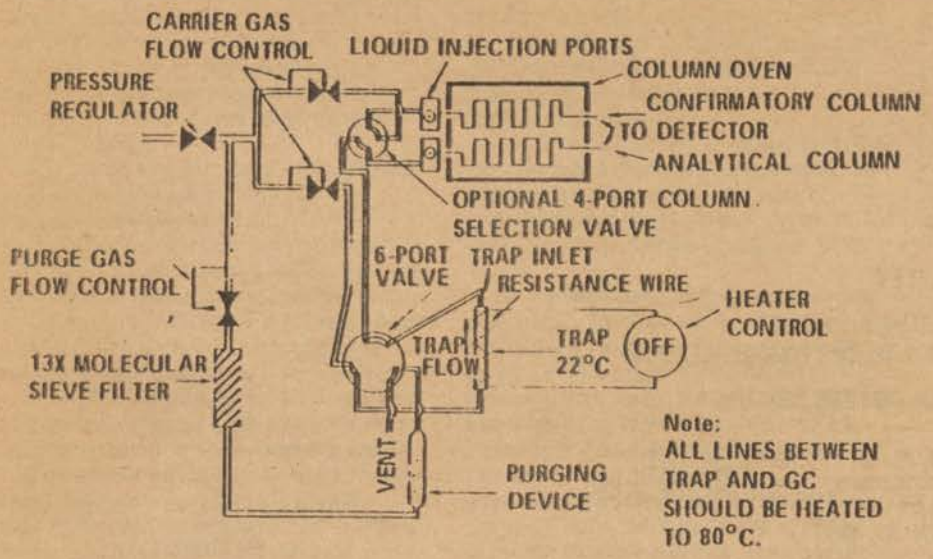


Figure 3. Schematic of purge and trap device - purge mode

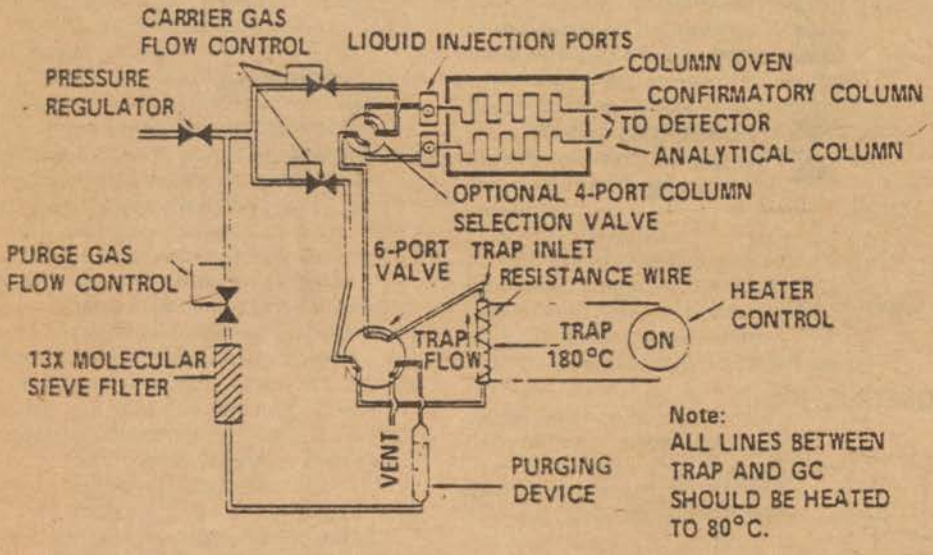


Figure 4. Schematic of purge and trap device - desorb mode

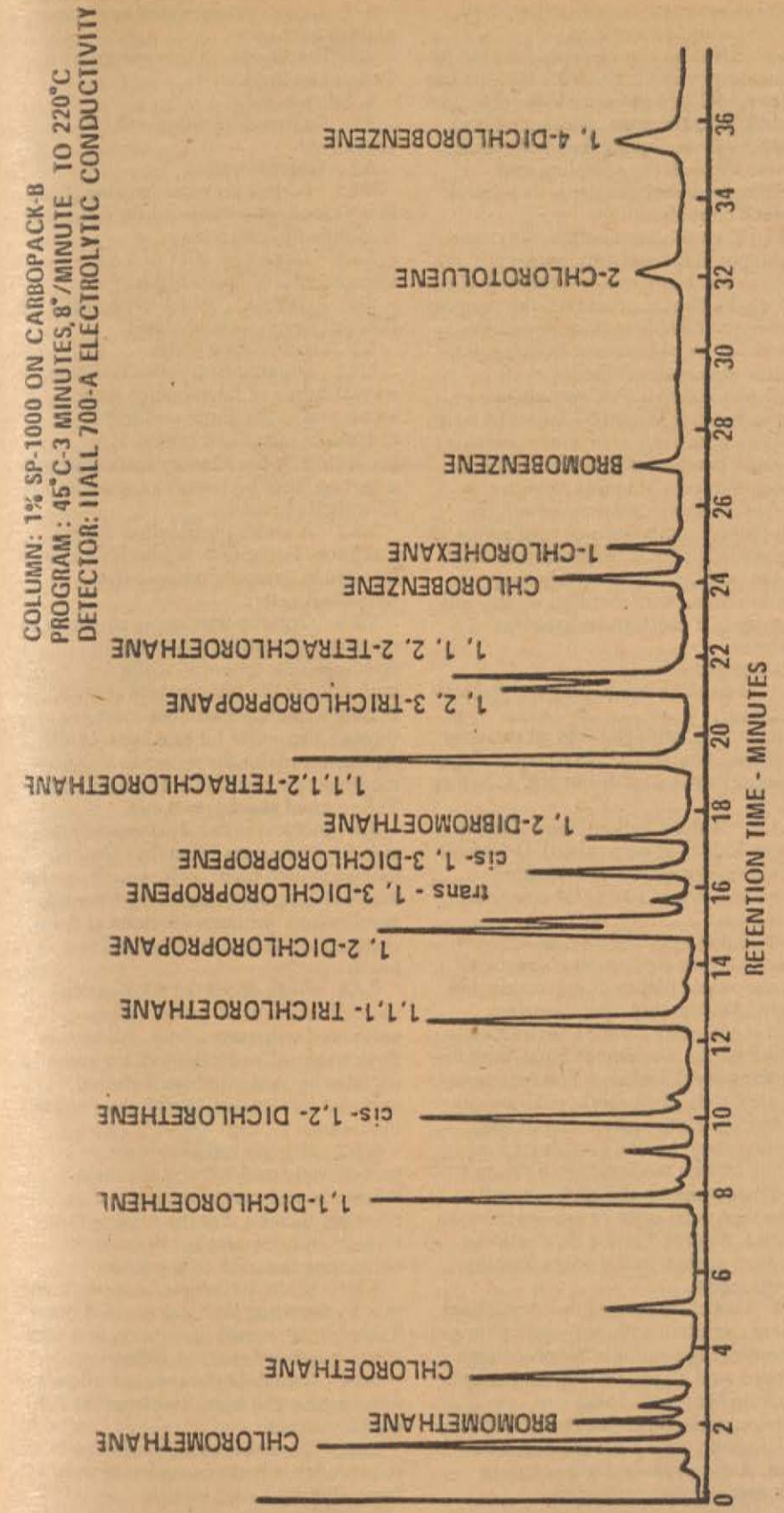


Figure 5. Gas chromatogram of purgeable halocarbons

BILLING CODE 6560-01-C

Purgeable Aromatics—Method 602

1. *Scope and Application.*

1.1 This method covers the determination of various purgeable aromatics. The following parameters may be determined by this method:

Parameter:	Storet No.
Benzene	34030
Chlorobenzene	34301
1,2-Dichlorobenzene	34536
1,3-Dichlorobenzene	34566
1,4-Dichlorobenzene	34571
Ethylbenzene	34371
Toluene	34010

1.2 This method is applicable to the determination of these compounds in municipal and industrial discharges. It is designed to be used to meet the monitoring requirements of the National Pollutant Discharge Elimination System (NPDES). As such, it presupposes a high expectation of finding the specific compounds of interest. If the user is attempting to screen samples for any or all of the compounds above, he must develop independent protocols for the verification of identity.

1.3 The sensitivity of this method is usually dependent upon the level of interferences rather than instrumental limitations. The limits of detection listed in Table 1 represent sensitivities that can be achieved in wastewaters under optimum operating conditions.

1.4 This method is recommended for use only by experienced residue analysts or under the close supervision of such qualified persons.

2. *Summary of Method.*

2.1 An inert gas is bubbled through a 5 ml water sample contained in a specially-designed purging chamber. The aromatics are efficiently transferred from the aqueous phase to the vapor phase. The vapor is swept through a short sorbent tube where the aromatics are trapped. After the purge is completed, the trap is heated and backflushed with gas to desorb the aromatic compounds into a gas chromatographic system. A temperature program is used in the GC system to separate the aromatics before detection with a photoionization detector.

3. *Interferences.*

3.1 Impurities in the purge gas and organic compounds out-gasing from the plumbing ahead of the trap account for the majority of contamination problems. The analytical system must be demonstrated to be free from interferences under the conditions of the analysis by running method blanks. Method blanks are run by charging the purging device with organic-free water and analyzing it in a normal manner. The use of non-TFE plastic tubing, non-TFE thread sealants or flow controllers with rubber components in the purging device should be avoided.

3.2 Samples can be contaminated by diffusion of volatile organics through the septum seal into the sample during shipment and storage. A sample blank prepared from organic free water and carried through the sampling and handling protocol can serve as a check on such contamination.

3.3 Cross contamination can occur whenever high level and low level samples are sequentially analyzed. To reduce the likelihood of this, the purging device and sample syringe should be rinsed out twice between samples with organic-free water. Whenever an unusually concentrated sample is encountered, it should be followed by an analysis of organic-free water to check for cross contamination. For samples containing large amounts of water soluble materials, suspended solids, high boiling compounds or high levels of aromatics, it may be necessary to wash out the purging device with a soap solution, rinse with distilled water, and then dry in a 105°C oven between analyses.

4. *Apparatus and Materials.*

4.1 Sampling equipment, for discrete sampling.

4.1.1 Vial, with cap—40 ml capacity screw cap (Pierce #13075 or equivalent). Detergent wash and dry at 105° C before use.

4.1.2 Septum-Teflon-faced silicone (Pierce §12722 or equivalent). Detergent wash, rinse, with tap and distilled water, and dry at 105° C for one hour before use.

4.2 Purge and trap device—The purge and trap equipment consists of three separate pieces of apparatus: the purging device, trap, and desorber. Several complete devices are available commercially. The device must meet the following specifications: The unit must be completely compatible with the gas chromatograhpic system; the purging chamber must be designed for a 5 ml volume and be modeled after Figure 1; the dimensions for the sorbant portion of the trap must meet or exceed those in Figure 2. Figures 3 and 4 illustrate the complete system in the purge and the desorb mode.

4.3 Gas chromatograph—Analytical system complete with programmable gas chromatograph suitable for on-column injection and all required accessories including Model PI–51–02 photoionization detector (h-nu Systems, Inc.), column supplies, recorder, and gases. A data system for measuring peak areas is recommended.

4.4 Syringes—5-ml glass hyodermic with luerlok tip (2 each).

4.5 Micro syringes—10, 25, 100 μl.

4.6 2-way syringe value with Luer ends (3 each).

4.7 Bottle—15-ml screw-cap, with Teflon cap liner.

5. *Reagents.*

5.1 Solium thiosulfate—(ACS) Granular.

5.2 Trap Materials

5.2.1 Porous polymer packing 60/80 mesh chromatographic grade Tenax GC (2,6-diphenylene oxide).

5.2.2 Three percent OV-1 on Chromosorb-W 60/80 mesh.

5.3 Activated carbon—Filtrasorb-200 (Calgon Corp.) or equivalent.

5.4 Organic-free water

5.4.1 Organic-free water is defined as water free of interference when employed in the purge and trap procedure described herein. It is generated by passing tap water through a carbon filter bed containing about 1 lb. of activated carbon.

5.4.2 A water purification system (millipore Super-Q or equivalent) may be used to generate organic-free deionized water.

5.4.3 Organic-free water may also be prepared by boiling water for 15 minutes. Subsequently, while maintaining the temperature at 90° C, bubble a contaminant-free inert gas through the water for one hour. While still hot, transfer the water to a narrow mouth screw cap bottle and seal with a Teflon lined septum and cap.

5.5 Stock standards—Prepare stock standard solutions in methyl alcohol using assayed liquids. Because benzene an 1,4-dichlorobenzene are suspected carcinogens, primary dilutions of these compounds should be prepared in a hood.

5.5.1 Place about 9.8 ml of methyl alcohol into a 10 ml ground glass stoppered volumetric flask. Allow the flask to stand, unstoppered, for about 10 minutes or until all alcohol wetted surfaces have dried. Weigh the flask to the nearest 0.1 mg.

5.5.2 Using a 100 μl syringe, immediately add 2 drops of assayed reference material to the flask, then reweigh. Be sure that the 2 drops fall directly into the alcohol without contacting the neck of the flask.

5.5.3 Dilute to volume, stopper, then mix by inverting the flask several times. Transfer the standard solution to a 15 ml screw-cap bottle with a Teflon cap liner.

5.5.4 Calculate the concentration in mircograms per microliter from the net gain in weight.

5.5.5 Store stock standards at 4°C. All standards must be replaced with fresh standard each month.

6. *Calibration.*

6.1 Using stock standards, prepare secondary dilution standards in methyl

alcohol that contain the compounds of interest, either singly or mixed together. The standards should be prepared at concentrations such that the aqueous standards prepared in 6.2 will completely bracket the working range of the analytical system.

6.2 Using secondary dilution standards, prepare calibration standards by carefully adding 20.0 µl of standard in methyl alcohol to 100, 500, or 1000 ml of organic-free water. A 25 µl syringe (Hamilton 702N or equivalent) should be used for this operation. These aqueous standards must be prepared fresh daily.

6.3 Assemble the necessary gas chromatographic apparatus and establish operating parameters equivalent to those indicated in Table 1. By injecting secondary dilution standards, establish the sensitivity limit and the linear range of the analytical system for each compound.

6.4 Assemble th necessary purge and trap device. The Trap must meet the minimum specifications shown in Figure 2 to achieve satisfactory results. Condition the trap overnight at 180°C by backflushing with an inert gas flow of at least 20 ml/min. Prior to use, daily condition traps 10 minutes while backflushing at 180°C. Analyze aqueous calibration standards (6.2) according to the purge and trap procedure in Section 8. Compare the responses to those obtained by injection of standards (6.3), to determine purging efficiency and also to calculate analytical precision. The purging efficiencies and analytical precision of the analysis of aqueous standards must be comparable to data presented by Bellar and Lichtenberg (1978) before reliable sample analysis may begin.

6.5 By analyzing calibration standards, establish the sensitivity limit and linear range of the entire analytical system for each compound.

7. *Quality Control.*

7.1 Before processing any samples, the analyst should demonstrate daily through the analysis of an organic-free water method blank that the entire analytical system is interference-free.

7.2 Standard quality assurance practices should be used with this method. Field replicates should be collected to validate the precision of the sampling technique. Laboratory replicates should be analyzed to validate the precision of the analysis. Fortified samples should be analyzed to validate the accuracy of the analysis. Where doubt exists over the identification of a peak on the gas chromatogram, confirmatory techniques such as mass spectroscopy should be used.

7.3 The analyst should maintain constant surveillance of both the performance of the analytical system and the effectiveness of the method in dealing with each sample matrix by spiking each sample, standard and blank with surrogate compounds (e.g. $\alpha\alpha\alpha$-trifluorotoluene).

8. *Sample Collection, Preservation, and Handling.*

8.1 Collect about 500 ml sample in a clean container. Adjust the pH of the sample to about 2 by adding 1:1 diluted HCl while stirring vigorously. If the sample contains free or combined chlorine, add 35 mg of sodium thiosulfate per part per million of free chlorine per liter of sample. Fill a 40 ml sample bottle in such a manner that no air bubbles pass through the sample as the bottle is being filled. Seal the bottle so that no air bubbles are entrapped in it. Maintain the hermetic seal on the sample bottle until time of analysis.

8.2 The samples must be iced or refrigerated from the time of collection until extraction.

8.3 All samples must be analyzed within 7 days of collection.

9. *Sample Extraction and Gas Chromatography.*

9.1 Adjust the purge gas (nitrogen or helium) flow rate to 40 ml/min. Attach the trap inlet to the purging device, and set the device to purge. Open the syringe valve located on the purging device sample introduction needle.

9.2 Remove the plunger from a 5 ml syringe and attach a closed syringe valve. Open the sample bottle (or standard) and carefully pour the water into the syringe barrel until it overflows. Replace the syringe plunger and compress the sample. Open the syringe valve and vent any residual air while adjusting the sample volume to 5.0 ml. Since this process of taking an aliquot destroys the validity of the sample for future analysis, the analyst should fill a second syringe at this time to protect against possible loss of data. Add the surrogate spiking solution (7.3) through the valve bore, then close the valve.

9.3 Attach the syringe-syringe valve assembly to the syringe valve on the purging device. Open the syringe valves and inject the sample into the purging chamber.

9.4 Close both valves and purge the sample for 12.0 ± .05 minutes.

9.5 After the 12 minute purge time, disconnect the purge chamber from the trap. Dry the trap by maintaining a flow rate of 40 cc/min dry purge gas for 6 min. Attach the trap to the chromatograph, and adjust the device to the desorb mode. Introduce the trapped materials to the GC column by rapidly heating the trap to 180°C while backflushing the trap with an inert gas between 20 and 60 ml/min for 4 minutes. If rapid heating cannot be achieved, the gas chromatographic column must be used as a secondary trap by cooling it to 30°C (or subambient, if problems persist) instead of the initial program temperature of 50°C.

9.6 While the trap is being desorbed into the gas chromatograph, empty the purging chamber using the sample introduction syringe. Wash the chamber with two 5 ml flushes of organic-free water.

9.7 After desorbing the sample for approximately four minutes recondition the trap by returning the purge and trap device to the purge mode. Wait 15 seconds then close the syringe valve on the purging device to begin gas flow through the trap. Maintain the trap temperature at 180°C. After approximately seven minutes turn off the trap heater and open the syringe valve to stop the gas flow through the trap. When cool the trap is ready for the next sample.

9.8 Table 1 summarized the recommended gas chromatographic column material and operating conditions for the instrument. Included in this table are estimated retention times and sensitivities that should be achieved by this method. An example of the separation achieved by this column is shown in Figure 5. Calibrate the system daily by analysis of a minimum of three concentration levels of calibration standards.

10. *Calculations.*

10.1 Determine the concentration of individual compounds directly from calibrations plots of concentration (µg/l) vs. peak height or area units.

10.2 Report results in micrograms per liter. When duplicate and spiked samples are analyzed, all data obtained should be reported.

11. *Accuracy and Precision.* The U.S. EPA Environmental Monitoring and Support Laboratory in Cincinnati is in the process of conducting an interlaboratory method study to determine the accuracy and precision of this test procedure.

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1. Bellar, T. A., and J. J. Lichtenberg, Journal American Water Works Association, Vol. 66, No. 12, Dec. 1974, pp. 739–744.

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3. Bellar, T. A., and J. J. Lichtenberg, "The Determination of Purgeable Aromatic

Compounds in Drinking Waters and Industrial Wastes," (In preparation).

4. "Development and Application of Test Procedures for Specific Organic Toxic Substances in Wastewaters. Category 11—Purgeables and Category 12—Acrolein, Acrylonitrile, and Dichlorodifluoromethane." Report for EPA Contract 68–03–2635 (In preparation).

Table 1.—*Chromatography of Aromatics Using Purge and Trap Method*

Compound	Retention time (min.) Col. 1 [1]	Detection limit μg/l [2]
Benzene	3.33	(3)
Toluene	5.75	(3)
Ethyl benzene	8.25	(3)
Chlorobenzene	9.17	(3)
1,4-Dichlorobenzene	16.8	(3)
1,3-Dichlorobenzene	18.2	(3)
1,2-Dichlorobenzene	25.9	(3)

[1] Supelcoport 100/120 mesh coated with 5% SP–2100 and 1.75% Bentone-34 packed in a 6 ft. x 0.085 in ID stainless steel column with helium carrier gas at 36 cc/min flow rate. Column temperature held at 50°C for 2 min. then programmed at 6°C/min. to 90°C for a final hold.

[2] Detection limit is calculated from the minimum detectable GC response being equal to five times the GC background noise, using a h-nu Model PI–51–02 photoionization detector with a 10.2 ev lamp.

[3] Not determined.

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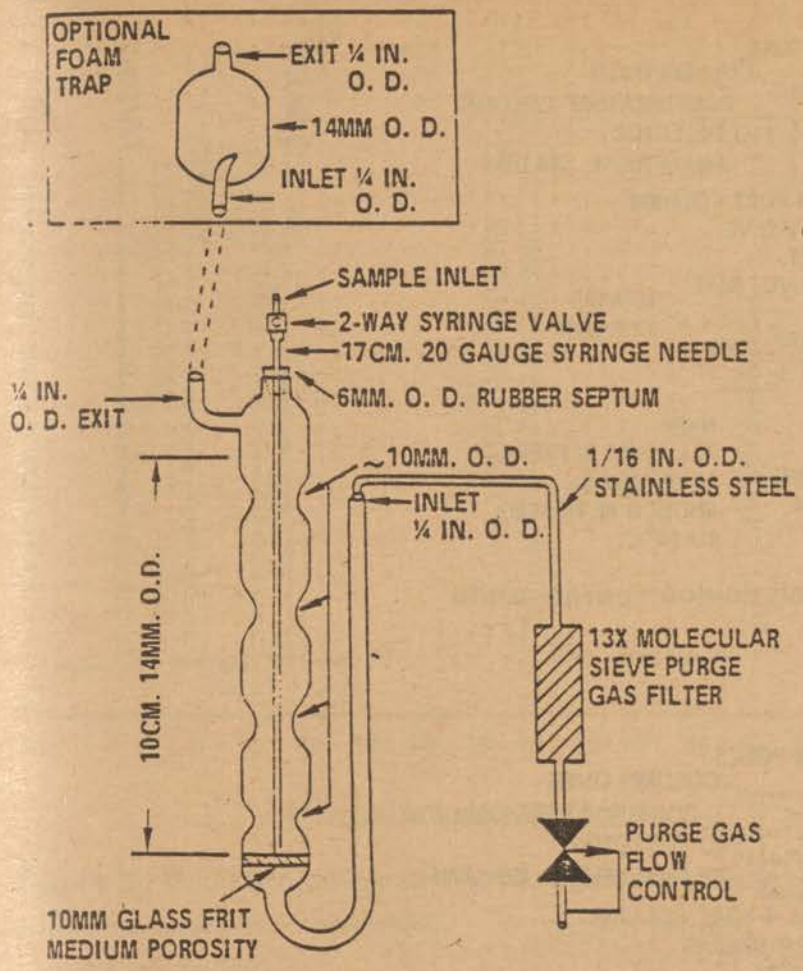


Figure 1. Purging device

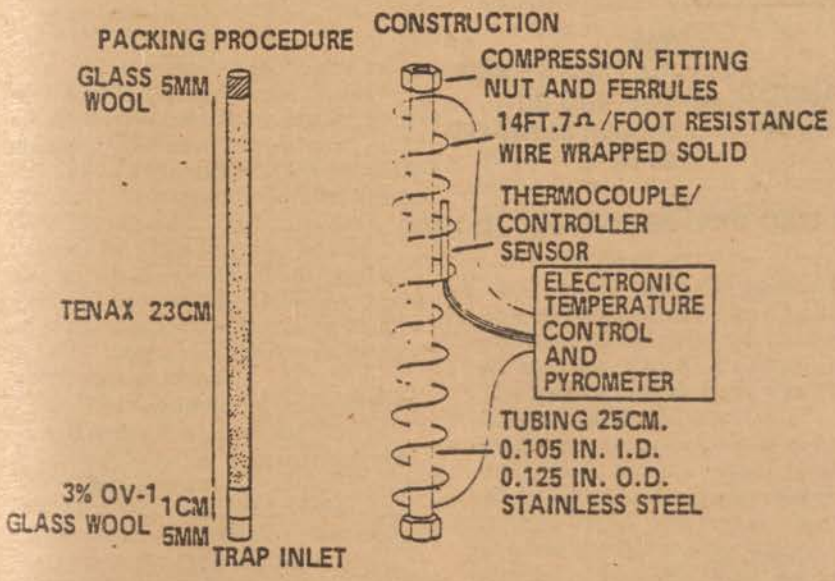


Figure 2. Trap packings and construction to include desorb capability

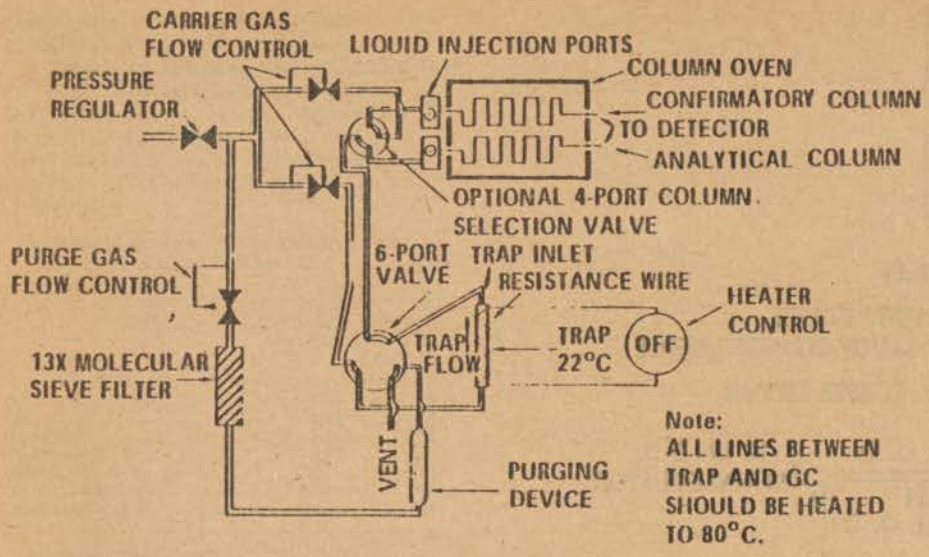


Figure 3. Schematic of purge and trap device - purge mode

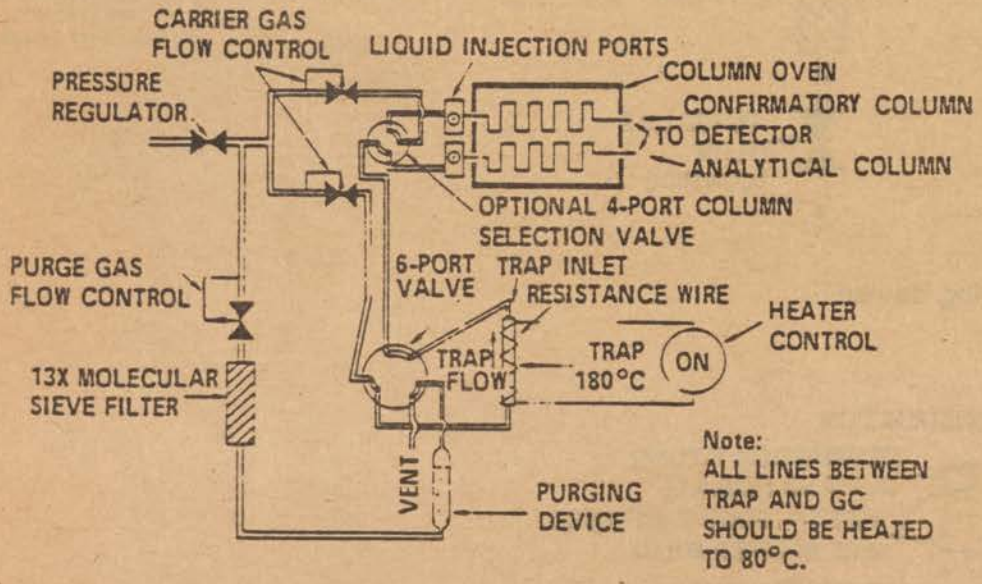


Figure 4. Schematic of purge and trap device - desorb mode

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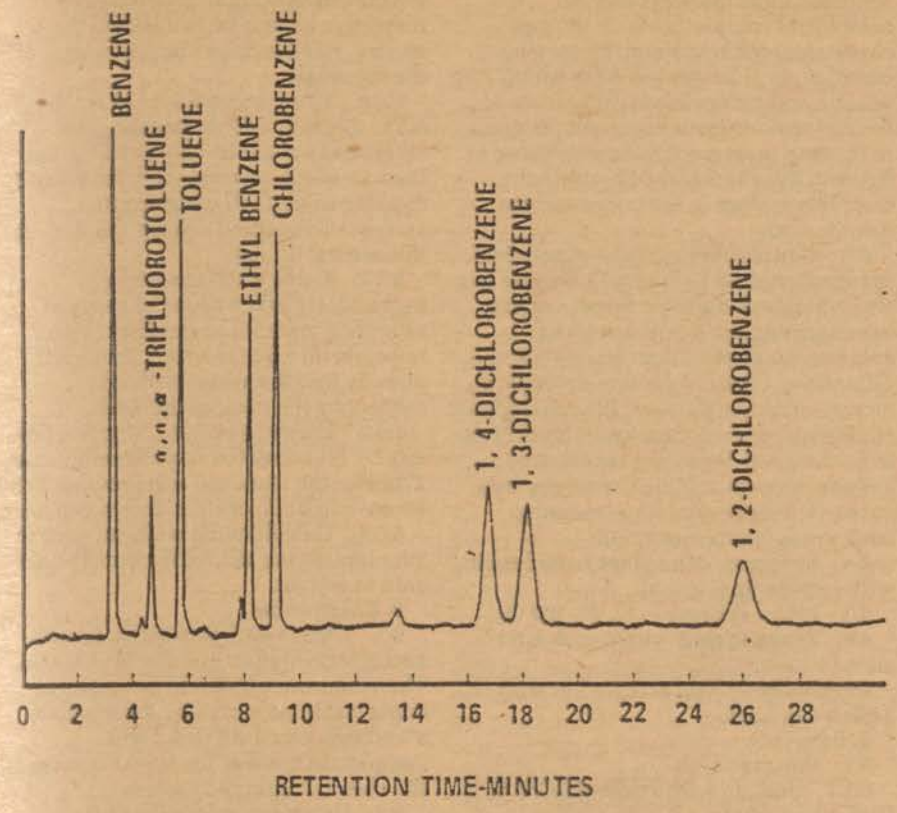


Figure 5. Gas chromatogram of purgeable aromatics

Acrolein and Acrylonitrile—Method 603

1. *Scope and Application.*

1.1 This method covers the determination of acrolein and acrylonitrile. The following parameters may be determined by this method:

Parameter	Storet No.
Acrolein	34210
Acrylonitrile	32415

1.2 This method is applicable to the determination of these compounds in municipal and industrial discharges. It is designed to be used to meet the monitoring requirements of the National Pollutant Discharge Elimination System (NPDES). As such, it presupposes a high expectation of finding the specific compounds of interest. If the user is attempting to screen samples for any or all of the compounds above, he must develop independent protocols for the verification of identity.

1.3 The sensitivity of this method is usually dependent upon the level of interferences rather than instrumental limitations. The limits of detection listed in Table 1 represent sensitivities that can be achieved in wastewaters under optimum operating conditions.

1.4 This method is recommended for use only by experienced residue analysts or under the close supervision of such qualified persons.

2. *Summary of Method.*

2.1 An inert gas is bubbled through a 5 ml water sample contained in a specially-designed heated purging chamber. Acrolein and acrylonitrile are transferred from the aqueous phase to the vapor phase. The vapor is passed through a short sorbent tube where the compounds are trapped. After the extraction is completed, the trap is heated and backflushed with gas to desorb the compounds into a gas chromatographic system. A temperature program is used in the GC system to separate the compounds before detection with a flame ionization detector.

3. *Interferences.*

3.1 Impurities in the purge gas and organic compounds out-gasing from the plumbing ahead of the trap account for the majority of contamination problems. The analytical system must be demonstrated to be free from interferences under the conditions of the analysis by running method blanks. Method blanks are run by charging the purging device with organic-free water and analyzing it in a normal manner. The use of non-TFE plastic tubing, non-TFE thread sealants, or flow controllers with rubber components in the purging device should be avoided.

3.2 Samples can be contaminated by diffusion of volatile organics (particularly methylene chloride) through the septum seal into the sample during shipment and storage. A sample blank prepared from organic-free water and carried through the sampling and handling protocol can serve as a check on such contamination.

3.3 Cross contamination can occur whenever high level and low level samples are sequentially analyzed. To reduce the likelihood of this, the purging device and sample syringe should be rinsed out twice between samples with organic-free water. Whenever an unusually concentrated sample is encountered, it should be followed by an analysis of organic-free water to check for cross-contamination. For samples containing large amounts of water soluble materials, suspended solids, high boiling compounds or high organohalide levels it may be necessary to wash out the purging device with a soap solution, rinse with distilled water, and then dry in a 105° C oven between analyses.

3.4 Interferences are sometimes reduced or eliminated by first purging the water samples for 5 minutes at room temperature in 9.4. Then the purge device is rapidly heated to 85° C and purged as in 9.4. With such a modification, approximately 5 to 10% of the acrylonitrile and a trace of the acrolein in the sample will be lost. Therefore, calibration must be established for the compounds under the conditions of this modified procedure.

4. *Apparatus and Materials.*

4.1 Sampling equipment, for discrete sampling.

4.1.1 Vial, with cap—40 ml capacity screw cap (Pierce #13075 or equivalent). Detergent wash and dry at 105° C before use.

4.1.2 Septum-Teflon-faced silicone (Pierce #12722 or equivalent). Detergent wash, rinse with tap and distilled water, and dry at 105° C for one hour before use.

4.2 Purge and trap device—The purge and trap equipment consists of three separate pieces of apparatus: the purging device, trap, and desorber. The purging device should be equipped for heating in the same manner as the trap (electrically) or with a circulating water jacket. If electrical heating is used the electrical parts must be protected so that water will not drip on the conductors, causing dangerous electrical shock or shorts. All temperature parameters must be carefully controlled. Several complete devices are available commercially although most are not equipped to heat the purging chamber. The device must meet the following specifications: the unit must be completely compatible with the gas chromatographic system; the purging chamber must be designed for a 5 ml volume and be modeled after Figure 1; the dimensions for the sorbant portion of the trap must meet or exceed those in figure 2. Figures 3 and 4 illustrate the complete system in the purge and the desorb mode.

4.3 Gas chromatograph—Analytical system complete with programmable gas chromatograph suitable for on-column injection, equipped with matched columns for dual column analysis and a differential flame ionization detector. A nitrogen specific detector (thermionic or Hall) may be used if only acrylonitrile is to be detected. Required accessories include: column supplies, recorder, and gases. A data system for measuring peak areas is recommended.

4.4 Syringes—5-ml glass hypodermic with luerlok tip (2 each).

4.5 Micro syringes—10, 25, 100 ul.

4.6 2-way syringe valve with Luer ends (3 each).

4.7 Bottle—15-ml screw-cap, with Teflon cap liner.

5. *Reagents.*

5.1 Preservatives

5.1.1 Sodium hydroxide—(ACS) 10 N in distilled water.

5.1.2. Sulfuric acid—(ACS). Mix equal volumes of conc. H_2SO_4 with distilled water.

5.1.3 Sodium thiosulfate—(ACS) Granular.

5.2 Trap absorbent—Porous polymer packing, 50/80 mesh chromatographic grade Porapak N.

5.3 Activated carbon—Filtrasorb-200 (Calgon Corp.) or equivalent.

5.4 Organic-free water.

5.4.1 Organic-free water is defined as water free of interference when employed in the purge and trap procedure described herein. It is generated by passing tap water through a carbon filter bed containing about 1 lb. of activated carbon.

5.4.2 A water purification system (Millipore Super-Q or equivalent) may be used to generate organic-free deionized water.

5.4.3 Organic-free water may also be prepared by boiling water for 15 minutes. Subsequently, while maintaining the temperature at 90° C, bubble a contaminant-free inert gas through the water for one hour. While still hot, transfer the water to a narrow mouth screw cap bottle and seal with a Teflon lined septum and cap.

5.5 Stock standards—Prepare stock standard solutions daily in water using assayed standards. Because of toxicity, primary dilutions of these materials should be prepared in a hood. A NIOSH/MESA approved toxic gas respirator should be used when the analyst handles high concentrations of the materials.

5.5.1 Place about 9.8 ml of water (pH 6.5 to 7.5) into a 10 ml ground glass stoppered volumetric flask. Allow the flask to stand, unstoppered, for about 10 minutes or until all water wetted surfaces have dried. Weigh the flask to the nearest 0.1 mg.

5.5.2 Using a 100 ul syringe, immediately add 2 drops of assayed reference material to the flask, then reweigh. Be sure that the 2 drops fall directly into the water without contacting the neck of the flask.

5.5.3 Dilute to volume, stopper, then mix by inverting the flask several times. Transfer the standard solution to a 15 ml screw-cap bottle with a Teflon cap liner.

5.5.4 Calculate the concentration in micrograms per microliter from the net gain in weight.

6. *Calibration.*

6.1 Using stock standards, prepare secondary dilution standards in water. The standards should be prepared at concentrations such that the aqueous standards prepared in 6.2 will completely bracket the working range of the chromatographic system.

6.2 Using secondary dilution standards, prepare calibration standards by carefully adding 20 ul of stock standard to 100, 500, or 1000 ml of organic-free water.

6.3 Assemble the necessary gas chromatographic apparatus and establish operating parameters equivalent to those indicated in Table 1. By injecting secondary dilution standards, establish the sensitivity limit and the linear range of the analytical system for each compound.

6.4 Assemble the necessary purge and trap device. The trap must meet the minimum specifications as shown in Figure 2 to achieve satisfactory results. Condition the trap overnight at 180° C by backflushing with an inert gas flow of at least 20 ml/min. Prior to use, daily condition traps 10 minutes while backflushing at 180° C. Analyze aqueous calibration standards (6.2) according to the purge and trap procedure in Section 9. Compare the responses to those obtained by injection of standards (6.3), to determine purging efficiency and also to calculate analytical precision. The purging efficiencies and analytical precision of the analysis of aqueous standards should be 85±5% for acrolein and 98±5% for acrylonitrile.

6.5 By analyzing calibration standards, establish the sensitivity limit and linear range of the entire analytical system for each compound.

7. *Quality Control.*

7.1 Before processing any samples, the analyst should demonstrate daily through the analysis of an organic-free water method blank that the entire analytical system is interference-free.

7.2 Standard quality assurance practices should be used with this method. Field replicates should be collected to validate the precision of the sampling technique. Laboratory replicates should be analyzed to validate the precision of the analysis. Fortified samples should be analyzed to validate the accuracy of the analysis. Where doubt exists over the identification of a peak on the gas chromatogram, confirmatory techniques such as mass spectroscopy should be used.

7.3 The analyst should maintain constant surveillance of both the performance of the analytical system and the effectiveness of the method in dealing with each sample matrix by spiking each sample, standard and blank with surrogate compounds.

8. *Sample Collection, Preservation, and Handling.*

8.1 Collect about 500 ml sample in a clean container. Adjust the pH of the sample to 6.5 to 7.5 by adding 1:1 diluted H_2SO_4 or NaOH while stirring vigorously. If the sample contains residual chlorine, add 35 mg of sodium thiosulfate per part per million of free chlorine per liter of sample. Fill a 40 ml sample bottle and seal the bottle so that no air bubbles are entrapped in it. Maintain the hermetic seal on the sample bottle until time of analysis.

8.2 The samples must be iced or refrigerated at 4°C from the time of collection until extraction.

8.3 All samples must be analyzed within 3 days of collection.

9. *Sample Extraction and Gas Chromatography.*

9.1 Adjust the helium purge gas flow rate to 20±1 ml/min and the temperature of the purge device to 85°C. Attach the trap inlet to the purging device, and set the device to purge. Open the syringe valve located on the purging device sample introduction needle.

9.2 Remove the plunger from a 5 ml syringe and attach a closed syringe valve. Open the sample bottle (or standard) and carefully pour the water into the syringe barrel until it oveflows. Replace the syringe plunger and compress the sample. Open the syringe valve and vent any residual air while adjusting the sample volume to 5.0 ml.

9.3 Attach the syringe-syringe valve assembly to the syringe valve on the purging device. Open the syringe valves and inject the sample into the purging chamber.

9.4 Close both valves and purge the sample for 30.0±0.1 minutes. Monitor and control the temperature of the purge device to obtain 85±1°C.

9.5 After the 30-minute purge time, attach the trap to the chromatograph, and adjust the device to the desorb mode. Introduce the trapped materials to the GC column by rapidly hearing the trap to 170°C while backflushing the trap with helium at 45 ml/min for 5 minutes. The backflushing time and gas flow rate must be carefully reproduced from sample to sample. During blackflushing the chromatographic column is held at 100°C. Record GC retention time from the beginning of desorption.

9.6 While the trap is being desorbed into the gas chromatograph, empty the purging chamber using the sample introduction syringe. Wash the chamber with two 5 ml flushes of organic-free water.

9.7 After desorbing the sample for 5 minutes recondition the trap by returning the purge and trap device to the purge mode and begin the GC progrm. Wait 15 seconds then close the syringe valve on the purging device to begin gas flow through the trap. Maintain the trap temperature at 170°C. After approximately seven minutes turn off the trap heater and open the syringe valve to stop the gas flow through the trap. when cool the trap is ready for the next sample.

9.8 Table 1 summarizes some recommended gas chromatographic column materials and operating conditions for the instrument. Included in this table are estimated retention times and sensitivities that should be achieved by this method. An example of the separation achieved by this column is shown in Figure 5. Calibrate the system daily by analysis of a minimum of three concentrations levels of calibration standards.

10. *Calculations.*

10.1 Determine the concentration of individual compounds directly from calibrations plots of concentration (ug/l) vs. peak height or area units.

10.2 Report results in micrograms per liter. When duplicate and spiked samples are analyzed, all data obtained should be reported.

11. *Accuracy and precision*

The U.S. EPA Environmental Monitoring and Support Laboratory in Cincinnati is in the process of conducting an interlaboratory method study to determine the accuracy and precision of this test procedure.

Bibliography

1. Bellar, T.A., and J.J. Lichtenberg, Journal American Water Works Association, Vol. 66, No. 12, Dec. 1974, pp. 739–744.

2. Bellar, T.A., and J.J. Lichtenberg, "Semi-Automated Headspace Analysis of Drinking Waters and Industrial Waters for Purgeable Volatile Organic Compounds," Proceeding from ASTM Symposium on Measurement of Organic pollutants in Water and wastewater, June 1978 (In Press).

3. "Development and application of Test Procedures for Specific Organic Toxic Substances in Wastewaters. Category 11–Purgeables and Category 12–Acrolein, Acrylonitrile, and Dichlorodifluoromethane." Report for EPA Contract 68–03–2635 (In preparation).

4. Going, John, et al., "Environmental Monitoring Near Industrial Sites-Acrylonitrile," EPA Report No. 560/6–79–003, 1979.

Table 1.—*Gas Chromatography by Heated Purge and Trap*

Compound [1]	Retention Time (min.)	Detection Limit ug/1 [2]
Acrolein	7.6	2
Acrylonitrile	8.9	

[1] Column conditions: Chromosorb 101 80/100 mesh packed in a 6' × ⅛" O.D. stainless steel column with helium carrier gas at 45 m1/min flow rate. Column temperature is held at 100° C for 5 minutes during trap desorption, then programmed at 10 ° C/min to 140 °C and held for 5 minutes.

[2] Detection limit is estimated, based upon the use of a flame ionization detector.

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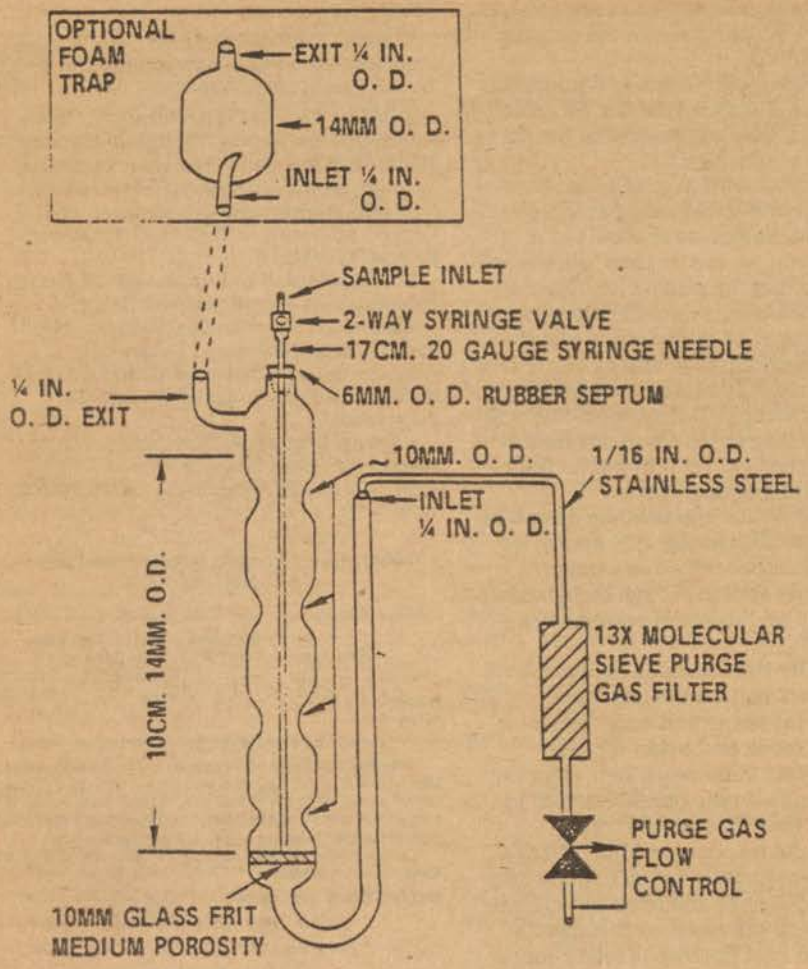


Figure 1. Purging device

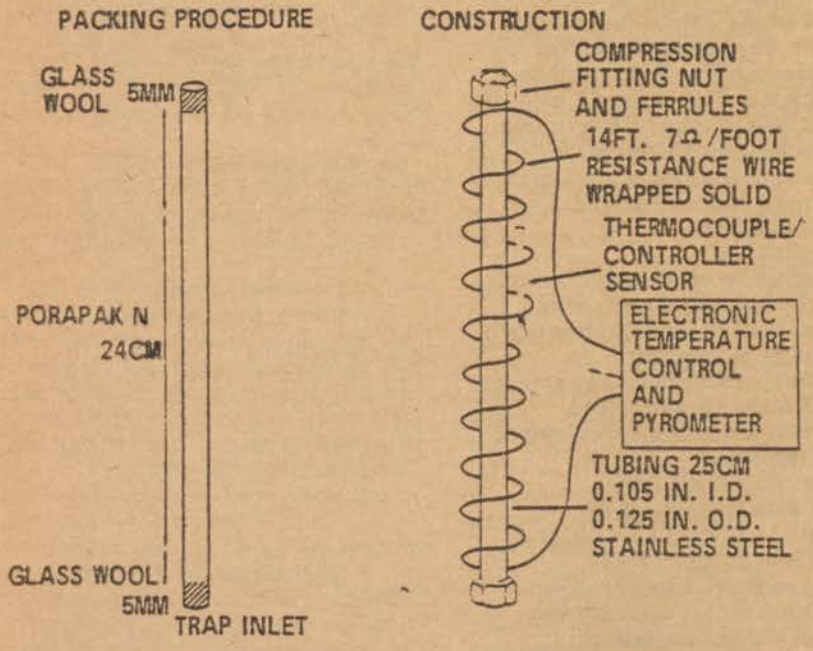


Figure 2. Trap packings and construction to include desorb capability

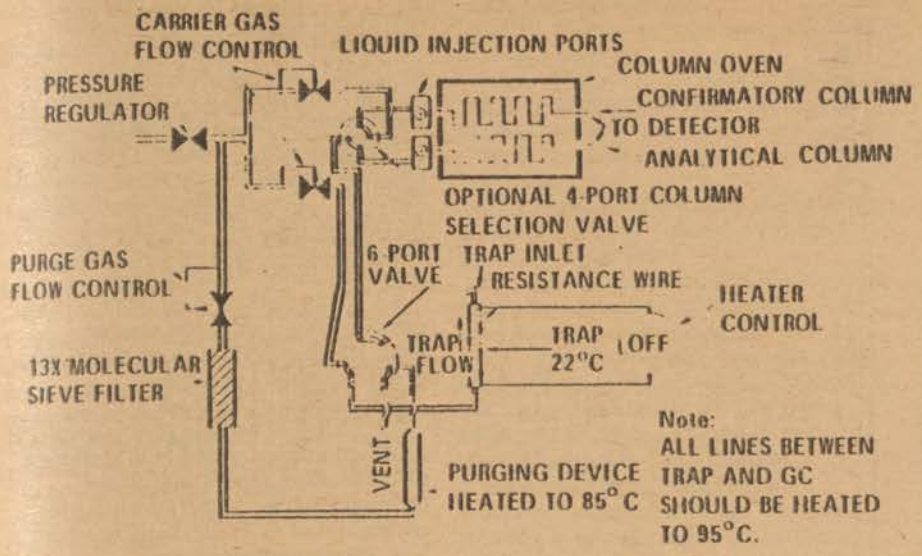


Figure 3. Schematic of purge and trap device - purge mode

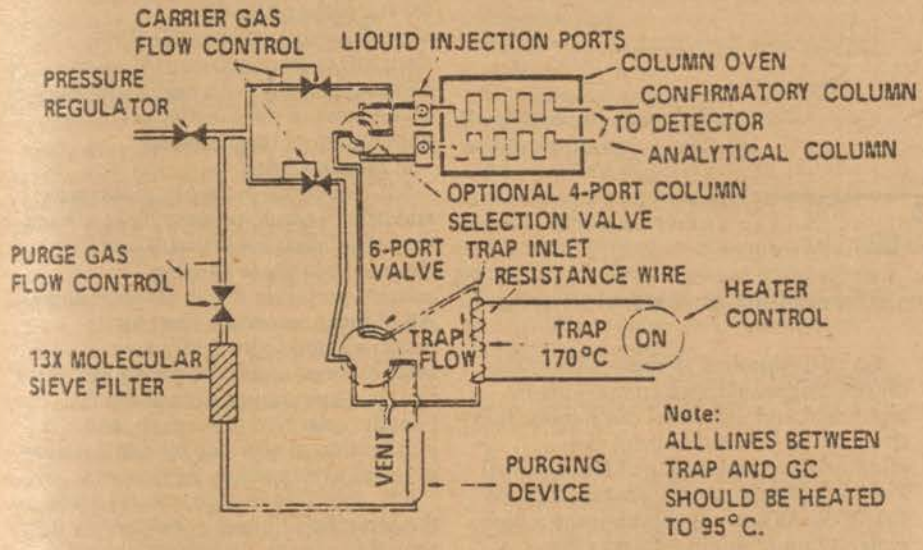


Figure 4. Schematic of purge and trap device - desorb mode

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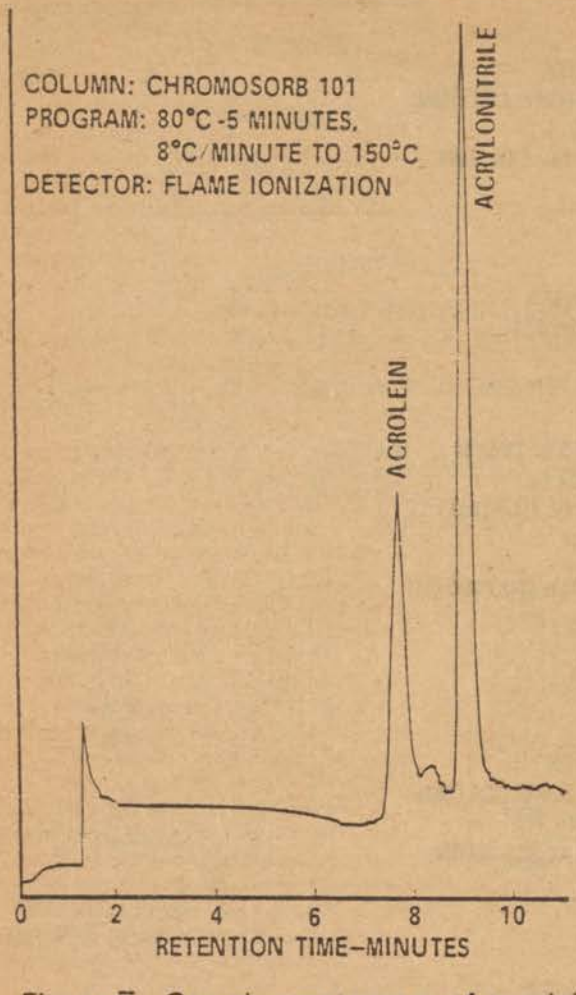


Figure 5. Gas chromatogram of acrolein and acrylonitrile

Phenols—Method 604

1. *Scope and Application.*

1.1 This method covers the determination of various phenolic compounds. The following parameters may be determined by this method:

Parameter	Storet No.
4-Chloro-3-methylphenol	34452
2-Chlorophenol	34586
2,4-Dichlorophenol	34601
2,4-Dimethylphenol	34606
2,4-Dinitrophenol	34616
2-Methyl-4,6-dinitrophenol	34657
2-Nitrophenol	34591
4-Nitrophenol	34646
Pentachlorophenol	39094
Phenol	34694
2,4,6-Trichlorophenol	34621

1.2 This method is applicable to the determination of these compounds in municipal and industrial discharges. It is designed to be used to meet the monitoring requirements of the National Pollutant Discharge Elimination System (NPDES). As such, it presupposes a high expectation of finding the specific compounds of interest. If the user is attempting to screen samples for any or all of the compounds above, he must develop independent protocols for the verification of identity.

1.3 The sensitivity of this method is usually dependent upon the level of interferences rather than instrumental limitations. The limits of detection listed in Table I represent sensitivities that can be achieved in wastewaters with a flame ionization detector in the absence of interferences. If the derivatization cleanup is required, the sensitivity of the method is 10 μg/1. This concentration represents the minimum amount proven to date to give reproducible and linear response during derivatization.

1.4 This method is recommended for use only by experienced residue analysts or under the close supervision of such qualified persons.

2. *Summary of Method.*

2.1 A 1-liter sample of wastewater is acidified and extracted with methylene chloride using separatory funnel techniques. The extract is dried and concentrated to a volume of 10 ml or less. Flame ionization gas chromatographic conditions are described which allow for the measurement of the compounds in the extract.

2.2 The method also provides for the preparation of pentafluorobenzylbromide (PFB) derivatives for electron capture gas chromatography with additional cleanup procedures to aid the analyst in the elimination of interferences.

3. *Interferences.*

3.1 Solvents, reagents, glassware, and other sample processing hardware may yield discrete artifacts and/or elevated baselines causing misinterpretation of gas chromatograms. All of these materials must be demonstrated to be free from interferences under the conditions of the analysis by running method blanks. Specific selection of reagents and purification of solvents by distillation in all-glass systems may be required.

3.2 Interferences coextracted from the samples will vary considerably from source to source, depending upon the diversity of the industrial complex or municipality being sampled. While general cleanup techniques are provided as part of this method, unique samples may require additional cleanup approaches to achieve the sensitivities stated in Table I.

4. *Apparatus and Materials.*

4.1 Sampling equipment, for discrete or composite sampling.

4.1.1 Grab sample bottle—amber glass, 1-liter or 1-quart volume. French or Boston Round design is recommended. The container must be washed and solvent rinsed before use to minimize interferences.

4.1.2 Bottle caps—Threaded to screw on to the sample bottles. Caps must be lined with Teflon.

4.1.3 Compositing equipment—Automatic or manual compositing system. Must incorporate glass sample containers for the collection of a minumum of 250 ml. Sample containers must be kept refrigerated during sampling. No tygon or rubber tubing may be used in this system.

4.2 Separatory funnel—2000 ml, with Teflon stopcock.

4.3 Drying column—20 mm ID Pyrex chromatographic column with coarse frit.

4.4. Kuderna-Danish (K-D) Apparatus

4.4.1 Concentrator tube—10 ml, graduated (Kontes K–570050–1025 or equivalent). Calibration must be checked. Ground glass stopper (size 19/22 joint) is used to prevent evaporation of extracts.

4.4.2 Evaporative flask—500 ml (Kontes K–57001–0500 or equivalent). Attach to concentrator tube with springs. (Kontes K–662750–0012).

4.4.3 Snyder column—three-ball macro (Kontes K–503000–0121 or equivalent).

4.4.4 Snyder column—two-ball micro (Kontes K–569001–0219 or equivalent).

4.4.5 Boiling chips—solvent extracted, approximately 10/40 mesh.

4.5 Water bath—Heated, with concentric ring cover, capable of temperature control (±2°C). The bath should be used in a hood.

4.6 Gas chromatograph—Analytical system complete with gas chromatograph suitable for on-column injection and all required accessories including flame ionization and electron capture detector, column supplies, recorder, gases, syringes. A data system for measuring peak areas is recommended.

4.7 Chromatographic column—10 mm ID by 100 mm length, with Teflon stopcock.

4.8 Reaction vial—20 ml, with Teflon-lined cap.

5. *Reagents.*

5.1 Preservatives:

5.1.1 Sodium hydroxide—(ACS) 10 N in distilled water.

5.1.2 Sulfuric acid—(1+1) Mix equal volumes of conc. H_2SO_4 (ACS) with distilled water.

5.1.3 Sodium thiosulfate—(ACS) Granular.

5.2 Methylene chloride, acetone, 2-propanol, hexane, toluene—Pesticide quality or equivalent.

5.3 Sodium sulfate—(ACS) Granular, anhydrous (purified by heating at 400° C for 4 hrs. in a shallow tray).

5.4 Stock standards—Prepare stock standard solutions at a concentration of 1.00 μg/μl by dissolving 0.100 grams of assayed reference material in pesticide quality 2-propanol and diluting to volume in a 100 ml ground glass stoppered volumetric flask. The stock solution is transferred to ground glass stoppered reagent bottles, stored in a refrigerator, and checked frequently for signs of degradation or evaporation, especially just prior to preparing working standards from them.

5.5 Sulfuric acid—(ACS) 1 N in distilled water.

5.6 Potassium carbonate—(ACS) powdered.

5.7 Pentafluorobenzyl bromide (a-Bromopentafluorotoluene)—97% minimum purity.

5.8 1,4,7,10,13,16—Hexaoxacyclooctadecane (18 crown 6)—98% minimum purity.

5.9 Derivatization reagent—Add 1 ml pentafluorobenzyl bromide and 1 gram 18 crown 6 to a 50 ml volumetric flask and dilute to volume with 2-propanol. Prepare fresh weekly.

5.10 Silica gel—(ACS) 100/200 mesh, grade 923; activated at 130°C and stored in a sesiccator.

6. *Calibration.*

6.1 Prepare calibration standards for the flame ionization detector that contain the compounds of interest, either singly or mixed together. The standards should be prepared at concentrations covering two or more orders of magnitude that will completely bracket the working range of the chromatographic system. If the sensitivity of the detection system can be calculated from Table I as 100 μg/l in the final extract, for example, prepare standards at 10 μg/l, 50 μg/l, 100 μg/l, 500 μg/l, etc. so that injections of 1–5 μl of each calibration standard will define the linearity of the detector in the working range.

6.2 Assemble the necessary gas chromatographic apparatus and establish operating parameters equivalent to those indicated in Table I. By injecting calibration standards, establish the sensitivity limit of the detector and the linear range of the analytical system for each compound.

6.3 Before using the derivatization clean up procedure, the analyst must process a series of calibration standards through the procedure to validate the precision of the derivatization and the absence of interferences from the reagents.

7. *Quality Control.*

7.1 Before processing any samples, the analyst should demonstrate through the analysis of a distilled water method blank, that all glassware and reagents are interference-free. Each time a set of samples is extracted or there is a change in reagents, a method blank should be processed as a safeguard against chronic laboratory contamination.

7.2 Standard quality assurance practices should be used with this method. Field replicates should be collected to validate the precision of the sampling technique. Laboratory replicates should be analyzed to validate the precision of the analysis. Fortified samples should be analyzed to validate the accuracy of the analysis. Where doubt exists over the identification of a peak on the chromatogram, confirmatory techniques such as mass spectroscopy should be used.

8. *Sample Collection, Preservation, and Handling.*

8.1 Grab samples must be collected in glass containers. Conventional sampling practices should be followed, except that the bottle must not be prewashed with sample before collection. Composite samples should be collected in refrigerated glass containers in accordance with the requirements of the program. Automatic sampling equipment must be free of tygon and other potential sources of contamination.

8.2 The samples must be iced or refrigerated from the time of collection until extraction. At the sampling location fill the glass container with sample. Add 35 mg of sodium thiosulfate per part per million free chlorine per liter. Adjust the sample pH to approximately 2, as measured by pH paper, using appropriate sulfuric acid

solution or 10N sodium hydroxide. Record the volume of acid used on the sample identification tag so the sample volume can be corrected later.

8.3 All samples must be extracted within 7 days and completely analyzed within 30 days of collection.

9. *Sample Extraction.*

9.1 Mark the water meniscus on the side of the sample bottle for later determination of sample volume. Pour the entire sample into a two-liter separatory funnel. Adjust the sample pH to 12 with sodium hydroxide.

9.2 Add 60 ml methylene chloride to the sample bottle, seal, and shake 30 seconds to rinse the inner walls. Transfer the solvent into the separatory funnel, and extract the sample by shaking the funnel for one minute with periodic venting to release vapor pressure. Allow the organic layer to separate from the water phase for a minimum of ten minutes. If the emulsion interface between layers is more than one-third the size of the solvent layer, the analyst must employ mechnical techniques to complete the phase separation. The optimum technique depends upon the sample, but may include stirring, filtration of the emulsion through glass wool, or centrifugation. Discard the methylene chloride layer, and wash the sample with an additional two 60 ml portions of methylene chloride in similar fashion.

9.3 Adjust the aqueous layer to a pH of 1–2 with sulfuric acid.

9.4 Add 60 ml of methylene chloride to the sample and shake for two minutes. Allow the solvent to separate from the sample and collect the methylene chloride in a 250 ml Erlenmeyer flask.

9.5 Add a second 60 ml volume of methylene chloride to the sample bottle and complete the extraction procedure a second time, combining the extracts in the Erlenmeyer flask.

9.6 Perform a third extraction in the same manner. Pour the combined extract the through a drying column containing 3–4 inches of anhydrous sodium sulfate, and collect it in a 500-ml Kuderna-Danish (K-D) flask equipped with a 10 ml concentrator tube. Rinse the Erlenmeyer flask and column with 20–30 ml methylene chloride to complete the quantitative transfer.

9.7 Add 1–2 clean boiling chips to the flask and attach a three-ball Snyder column. Prewet the Snyder column by adding about 1 ml methylene chloride to the top. Place the K-D apparatus on a hot water bath (60–65°C) so that the concentrator tube is partially immersed in the hot water, and the entire lower rounded surface of the flask is bathed in vapor. Adjust the vertical position of the appartus and the water temperature as required to complete the concentration in 15–20 minutes. At the proper rate of distillation the balls of the column will actively chatter but the chambers will not flood. When the apparent volume of liquid reaches 1 ml, remove the K-D apparatus and allow it to drain for at least 10 minutes while cooling.

9.8 Increase the temperature of the hot water bath to 95–100°C. Remove the Snyder column and rinse the flask and its lower joint into the concentrator tube with 1–2 ml of 2-propanol. A 5-ml syringe is recommended for this operation. Attach a micro-Snyder column to the concentrator tube and prewet the column by adding about 0.5 ml 2-propanol to the top. Place the micro-K-D apparatus on the water bath so that the concentrator tube is partially immersed in the hot water. Adjust the vertical position of the apparatus and the water temperature as required to complete concentration in 5–10 minutes. At the proper rate of distillation, the balls of the column will actively chatter but the chambers will not flood. When the apparent volume of the liquid reaches 2.5 ml, remove the K–D apparatus and allow it to drain for at least 10 minutes while cooling. Add an additional 2 ml of 2-propanol through the top of the micro-Snyder column and resume concentrating as before. When the apparent volume of liquid reaches 0.5 ml, remove the K-D apparatus and allow it to drain for at least 10 minutes while cooling. Remove the micro-Snyder column and rinse its lower joint into the concentrator tube with a minimum amount of 2-propanol. Adjust the extract volume to 1.0 ml. Stopper the concentrator tube and store in refrigerator, if further processing will not be performed immediately. If the sample extract requires no further cleanup, proceed with flame ionization gas chromatographic analysis. If the sample requires cleanup, proceed to section 11.

9.9 Determine the original sample volume by refilling the sample bottle to the mark and transferring the liquid to a 1000 ml graduated cylinder. After correction for sulfuric acid preservative, record the sample volume to the nearest 5 ml.

10. *Gas Chromatography-Flame Ionization Detector.*

10.1 Table I summarizes some recommended gas chromatographic column materials and operating conditions for the instrument. Included in this table are estimated retention times and sensitivities that should be achieved by this method. An example of the separation achieved by one of these columns is shown in Figure 1. Calibrate the gas chromatographic system daily with a minimum of three injections of calibration standards.

10.2 Inject 2–5 μl of the sample extract using the solvent-flush technique. Smaller (1.0 μl) volumes can be injected if automatic devices are employed. Record the volume injected to the nearest 0.05 μl, and the resulting peak size, in area units.

10.3 If the peak area exceeds the linear range of the system, dilute the extract and reanalyze.

10.4 If the peak area measurement is prevented by the presence of interferences, the phenols must be derivatized and analyzed by electron capture gas chromatography.

11. *Derivatization and Electron Capture Gas Chromatography.*

11.1 Pipet a 1.0 ml aliquot of the 2-propanol solution of standard or sample extract into a glass reaction vial. Add 1.0 ml derivatization reagent. This is a sufficient amount of reagent to derivatize a solution whose total phenolic content does not exceed 0.3 mg/ml.

11.2 Add about 3 mg of potassium carbonate to the solution and shake gently.

11.3 Cap the mixture and heat it for 4 hours at 80°C in a hot water bath.

11.4 Remove the solution from the hot water bath and allow it to cool.

11.5 Add 10 ml hexane to the reaction vial and shake vigorously for one minute. Add 3.0 ml of distilled, deionized water to the reaction vial and shake for two minutes.

11.6 Decant organic layer into a concentrator tube and cap with a glass stopper.

11.7 Pack a 10 mm ID chromatographic column with 4.0 grams of activated silica gel. After settling the silica gel by tapping the column, add about two grams of anhydrous sodium sulfate to the top.

11.8 Pre-elute the column with 6 ml hexane. Discard the eluate and just prior to exposure of the sulfate layer to air, pipet onto the column 2.0 ml of the hexane solution (11.6) that contains the derivatized sample or standard. Elute the column with 10.0 ml of hexane (Fraction 1) and discard this fraction. Elute the column, in order, with: 10.0 ml 15% toluene in hexane (Fraction 2); 10.0 ml 40% toluene in hexane (Fraction 3); 10.0 ml 75% toluene in hexane (Fraction 4); and 10.0 ml 15% 2-propanol in toluene (Fraction 5). Elution patterns for the phenolic derivatives are shown in Table II. Fractions may be combined as desired, depending upon the specific phenols of interest or level of interferences.

11.9 Analyze the fractions by electron capture gas chromatography.

Table II summarizes some recommended gas chromatographic column materials and operating conditions for the instrument. Included in this table are estimated retention times that should be achieved by this method. Examples of the separation achieved by this column is shown in Figure 2. Calibrate the system daily with a minimum of three aliquots of calibration standards, containing each of the phenols of interest that are derivatized according to the procedure.

11.10 Inject 2–5 μl of the column fractions using the solvent-flush technique. Smaller (1.0 μl) volumes can be injected if automatic devices are employed. Record the volume injected to the nearest 0.05 μl, and the resulting peak size, in area units. If the peak area exceeds the linear range of the system, dilute the extract and reanalyze.

12. *Calculations*

12.1 Determine the concentration of individual compounds measured by the flame ionization procedure (without derivatization) according to the formula:

$$\text{Concentration, } \mu g/l = \frac{(A)\ (B)\ (V_t)}{(V_i)\ (V_s)}$$

Where:

A = Calibration factor for chromatographic system, in nanograms material per area unit.

B = Peak size in injection of sample extract, in area units

V_i = Volume of extract injected (μl)

V_t = Volume of total extract (μl)

V_s = Volume of water extracted (μl)

12.2 Determine the concentration of individual compounds measured by the derivatization and electron capture procedure according to the following procedure:

12.2.1 From the concentration of the calibration standards that were derivatized with the samples, calculate the amounts, in nanograms, of underivatized phenols that were added as 2-propanol solution (11.1). From the size of the injection into the electron capture gas chromatograph, determine the nanograms of material (calculated as the underivatized phenol) injected onto the column. Compare the detector responses obtained to develop a calibration factor for the chromatographic system, in nanograms of material per area unit.

12.2.2 Determine the concentration of individual compounds according to the formula:

$$\text{Concentration, } \mu g/l = \frac{(A)(B)(V_t)(10)(D)}{(V_i)(V_s)(C)(E)}$$

Where:

A = Calibration factor for chromatographic system, in nanograms material per area unit, calculated as underivatized phenol.

B = Peak size in injection of sample extract, in area units.

V_i = Volume of eluate injected (μl)

V_t = Total volume of column eluate (μl)

V_s = Volume of water extracted (ml)

C = Volume of hexane sample solution added to cleanup column, in ml.

D = Total volume of 2-propanol extract after concentration.

E = Volume of 2-propanol extract used for derivatization.

12.3 Report results in micrograms per liter without correction for recovery data. When duplicate and spiked samples are analyzed, all data obtained should be reported.

13. *Accuracy and Precision*

13.1 The U.S. EPA Environmental Monitoring and Support Laboratory in Cincinnati is in the process of conducting an interlaboratory method study to determine the accuracy and precision of this test procedure.

Bibliography

"Development and Application of Test Procedures for Specific Organic Toxic Substances in Wastewaters. Category 3—Chlorinated Hydrocarbons and Category 8—Phenols." Report for EPA Contract 68–03–2625 (In preparation).

Table I.— *Flame Ionization Gas Chromatography of Phenols*

Compound [1]	Retention time	Detection limit (μg/L) [2]
2-Chlorophenol	1.70	2.0
2-Nitrophenol	2.00	2.5
Phenol	3.01	1.4
2,4-Dimethylphenol	4.03	1.7
2,4-Diclorophenol	4.30	2.1
2,4,6-Trichlorophenol	6.05	5.0
4-Chloro-3-methylphenol	7.50	8.3
2,4-Dinitrophenol	10.00	7.0
2-Methyl-4,6-dinitrophenol	10.24	10.0
Pentachlorophenol	12.42	10.0
4-Nitrophenol	24.25	10.0

[1] Column conditions: Supelcoport 80/100 mesh coated with 1% SP–1240 DA in 6 ft long × 2 mm ID glass column with nitrogen carrier gas at 30 ml/min flow rate. Column temperature is 80°C at injection, programmed immediately at 8°C/min to 150°C final temperature.

[2] Detection limit is calculated from the minimum detectable GC response being equal to five times the GC background noise, assuming a 10 ml final extract volume of the 1 liter sample extract, and assuming a GC injection of 5 microliters.

Table II.—*Electron Capture Gas Chromatography of PFB Derivatives*

Parent compound [1]	Rentention time (minutes)	Recovery percent by fraction [3]				
		1	2	3	4	5
2-chlorophenol	3.3			90	>1	
2-nitrophenol	9.1				9	90
Phenol	1.8			90	10	
2,4-Dimethyphenol	2.9			95	7	
2,4-Dichlorophenol	5.8			95	>1	
2,4,6-Trichlorophenol	7.0		50	50		
4-Chloro-2-methyphenol	4.8			84	14	
Pentach lorophenol	28.8		75	20		
4-Nitrophenol	14.0				>1	90
(2,4-Dinitrophenol)	[2]46.9					
(2-Methyl-4,6-dinitrophenol	[2]36.6					

[1] Column conditions: Chromosorb W-AW-DMCS 80/100 mesh coated with 5% OV-17 packed in a 1.8 m long x 2.0 mm ID glass column with 5% methane/95% argon carrier gas at 30 ml/min flow rate. Column temperature is 200°C.

[2] From: "Development and Application of Test Procedures for Specific Organic Toxic Substances in Wastewaters. Categories 3-Chlorinated Hydrocarbons and Category 8-Phenols."

[3] Retention times included for qualitative information only. The lack of accuracy and precision of the derivatization reaction precludes the use of this approach for quantitative purposes.

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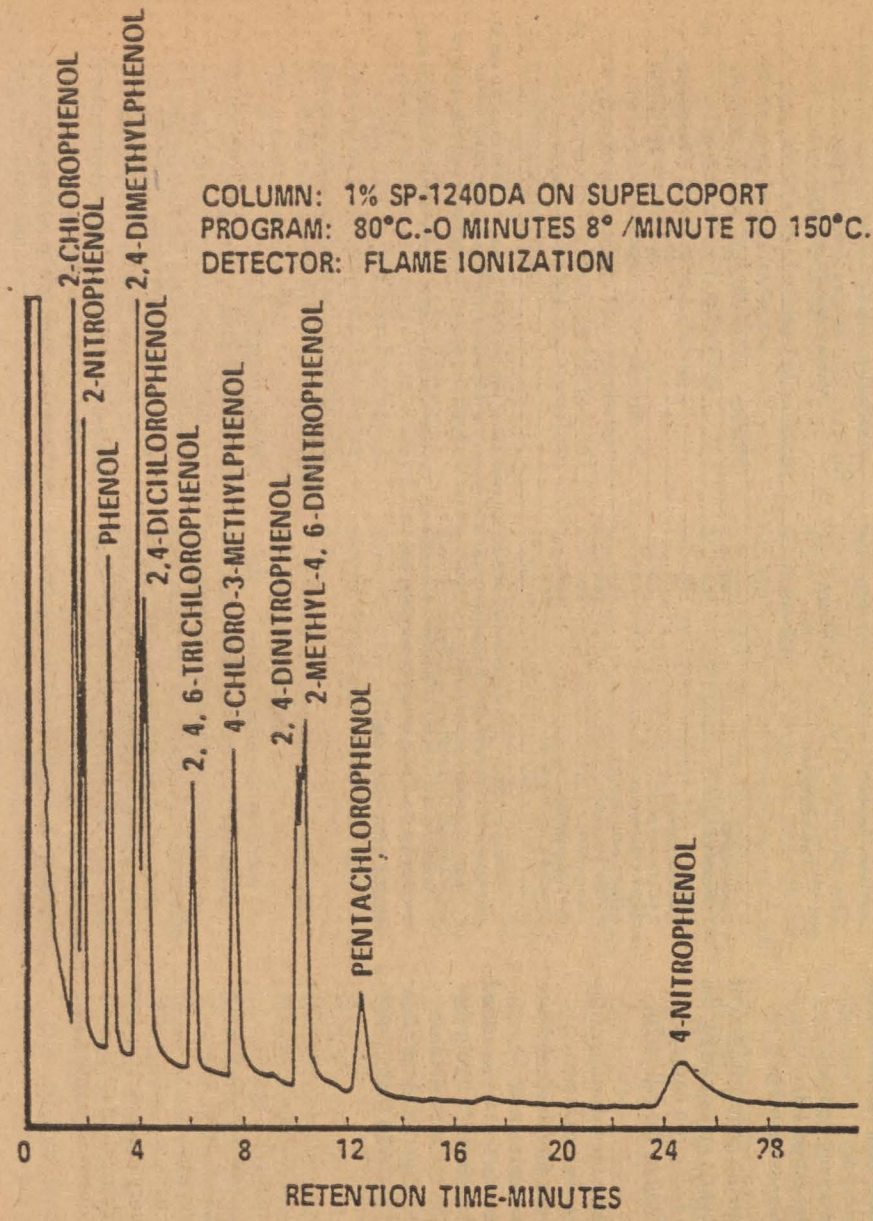


Figure 1. Gas chromatogram of phenols

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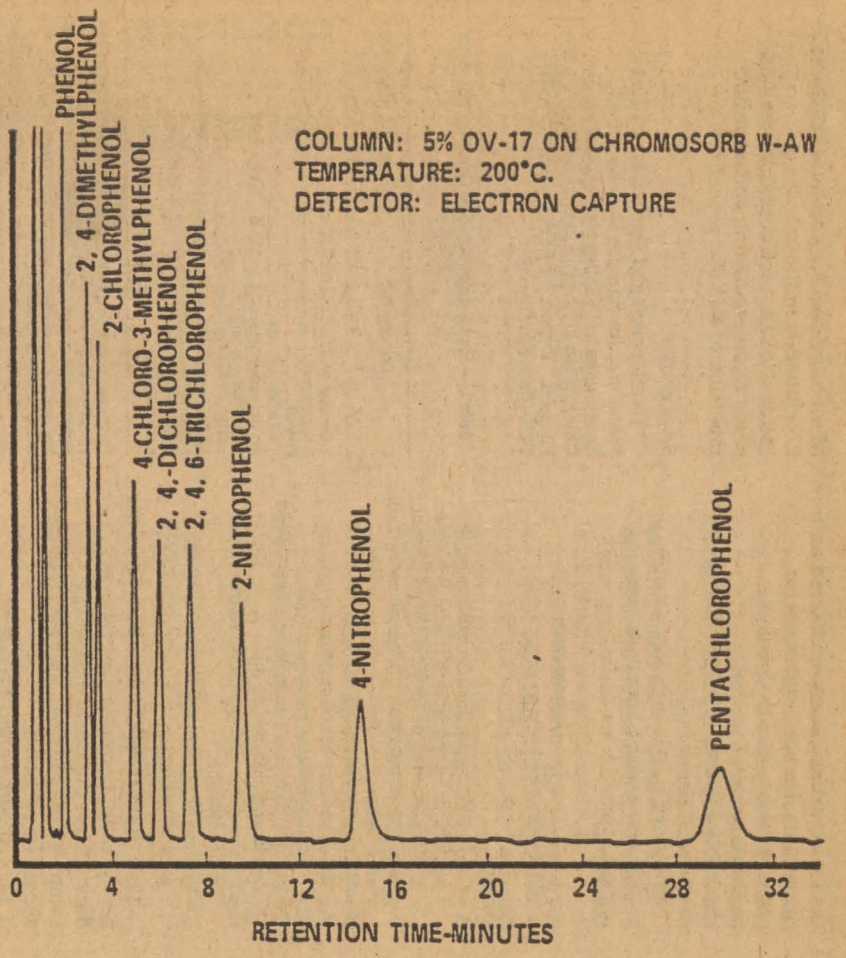


Figure 2. Gas chromatogram of PFB derivatives of phenols

Benzidines—Method 605

1. *Scope and Application.*

1.1 This method covers the determination of benzidine and selected derivatives. The following parameters may be determined by this method:

Parameter:	Storet No.
Benzidine	39120
3,3'-Dichlorobenzidine	34631

1.2 This method is applicable to the measurement of these compounds in municipal and industrial discharges. It is designed to be used to meet the monitoring requirements of the National Pollutant Discharge Elimination System (NPDES). As such, it presupposes a high expectation of finding the specific compounds of interest. If the user is attempting to screen samples for any or all of the compounds above, he must develop independent protocols for the verification of identifications implied with the use of these techniques.

1.3 This sensitivity of this method is usually dependent upon the level of interferences rather than instrumental limitations. The limits of detection listed in Table I represent sensitivities that can be achieved in wastewaters in the absence of interferences.

1.4 This method is recommended for use only by experienced residue analysts or under the close supervision of such qualified persons.

2. *Summary of Method.*

2.1 Benzidine and 3,3-dichlorobenzidine (DCB) are extracted from the sample at pH 7–8 using chloroform. The extract is then back extracted into acid, re-extracted into chlorofom at neutral pH, and concentrated. The benzidines are determined in the final extract using high performance liquid chromatography (HPLC) with electrochemical detection.

2.2 If interferences are encountered with the measurement of benzidine, the method provides additional detector settings to increase the selectivity of the analytical system.

3. *Interferences.*

3.1 Although the detection system is highly selective, solvents, reagents, glassware, and other sample processing hardware may yield discrete artifacts and/or elevated baselines causing misinterpretation of chromatograms. All of these materials must be demonstrated to be free from interferences under the conditions of the analysis. Specific selection of reagents and purification of solvents by distillation in all-glass systems may be required.

3.2 Interferences coextracted from the samples will vary considerably from source to source, depending upon the diversity of the industrial complex or municipality being sampled. While general cleanup techniques are provided as part of this method, unique samples may require additional cleanup approaches to achieve the sensitivities stated in Table I.

3.3 Some dye plant effluents contain large amounts of components with retention times in the vicinity of benzidine. In these cases, it has been found useful to reduce the electrode potential in order to eliminate the interferences but still detect the benzidine.

4. *Apparatus and Materials.*

4.1 Sampling equipment, for discrete or composite sampling.

4.1.1 Grab sample bottle—amber glass, 1-pint or 1-quart volume. Quart bottles should be only half filled in the field. French or Boston Round design is recommended. The container should be washed and solvent rinsed before use to minimize interferences.

4.1.2 Bottle caps—Threaded to screw on to the sample bottles. Caps must be lined with Teflon. Foil may be substituted if the sample is not corrosive.

4.1.3 Compositing equipment—Automatic or manual compositing system. Must incorporate glass sample containers for the collection of a minimum of 250 ml. Sample containers must be kept refrigerated during sampling. No tygon or rubber tubing or fittings may be used in the system.

4.2 Separatory funnel—1000 ml and 250 ml, with Teflon stopcock.

4.3 Water bath—Heated, with concentric ring cover, capable of temperature control within 2°C. The bath should be used in a hood.

4.4 Rotating evaporator.

4.5 Flasks—round bottom, 100 ml, with 24/40 joints.

4.6 Centrifuge tubes—conical, screw capped, graduated, with Teflon lined caps.

4.7 Pipettes—Pasteur, with bulbs.

4.8 High performance liquid chromatograph—Analytical system complete with column supplies, recorder, syringes, and the following components:

4.8.1 Solvent delivery system—with pulse damper (Altex 110A, or equivalent).

4.8.2 Injection valve Waters Model USK (or equivalent).

4.8.3 Electrochemical detector Bioanalytical Systems LC–2A with glassy carbon electrode, (or equivalent).

4.8.4 Electrode polishing kit Princeton Applied Research Model 9320 (or equivalent).

5. *Reagents.*

5.1 Preservatives:

5.1.1 Sodium hydroxide—(ACS) 10 N in distilled water.

5.1.2 Sulfuric acid—(ACS) Mix equal volumes in conc. H_2SO_4 with distilled water.

5.1.3 Sodium thiosulfate—(ACS) granular.

5.2 Sulfuric acid (1M)—(ACS) 58 ml/liter in distilled water.

5.3 Sodium hydroxide (20%)—(ACS) 20 grams/100 ml in distilled water.

5.4 Sodium hydroxide (IM)—(ACS) 40 grams/liter in distilled water.

5.5 Sodium tribasic phosphate (0.4M)—(ACS) 160 grams Na_3PO_4 $(12H_2O)$ in 1 liter of distilled water.

5.6 Acetate buffer 0.1*M*, pH 4.7; 5.8 mls glacial acetic acid (ACS) and 13.6 grams of sodium acetate trihydrate (ACS) per liter in distilled water.

5.7 Acetonitrile—Pesticide quality or equivalent.

5.8 Methyl alcohol—Pesticide quality or equivalent.

5.9 Chloroform (preserved with 1% ETOH)—Burdick and Jackson (or equivalent).

5.10 Water—Purified (e.g. from Millipore RO–4 System or equivalent).

5.11 HPLC mobile phase—Place 1 liter of filtered (through Millipore type FH filter, or equivalent) acetonitrile and 1 liter of filtered (through Millipore type GS filter, or equivalent) acetate buffer in a narrow mouth, glass, one gallon jug and mix thoroughly. Prepare fresh weekly.

5.12 Stock standards—Prepare stock standard solutions at a concentration of 0.100 ug/μl by dissolving 0.0100 gram of assayed reference material in pesticide quality methyl alcohol and diluting to volume in a 100 ml ground glass stoppered volumetric flask. The stock solution is transferred to ground glass stoppered reagent bottles, stored in a refrigerator, and checked frequently for signs of degradation or evaporation, especially just prior to preparing working standards from them.

6. *Calibration.*

6.1 Prepare calibration standards that contain the compounds of interest, either singly or mixed together. The standards should be prepared from the stock standards at the following concentrations that will bracket the working range of the chromatographic system:

Solution Conc. (ng/μl)	Sensitivity (nA Full Scale)
0.05	10
0.10	10
0.50	50
1.0	100
5.0	500

6.2 Assemble the necessary liquid chromatographic apparatus and

establish operating parameters equivalent to those indicated in Table I.

6.3 A constant injection volume of 25 microliters should be employed for all subsequent measurements.

6.4 In order to determine the precision of the HPLC system, a series of 6 replicate injections of a 1 ng/μl solution of benzidine and 3,3'-dichlorobenzidine (DCB) should be made on the 50nA full scale setting. A precision of ±4% should be achieved for the peak heights of both benzidine and DCB. This measurement should be made every few weeks or whenever instrument related problems are apparent. A sample chromatogram is shown in Figure 1.

6.5 Retention times should remain relatively constant (within ±5% day to day) with benzidine being 6.1 minutes and DCB being 12.1 minutes under the specified conditions. These values should be checked daily when the calibration injections are made.

6.6 If serious loss of response occurs, it may be necessary to polish the surface of the carbon electrode (according to the instructions supplied with the polishing kit). In this case, it will be necessary to recalibrate the system.

6.7 When leaving the instrument idle, it is advisable to maintain a flow of 0.1 ml/min of mobile phase through the HPLC column in order to prolong column life.

7. *Quality Control.*

7.1 Before processing any samples, the analyst should demonstrate through the analysis of a distilled water blank, that all glassware and reagents are interference-free. Each time a set of samples is extracted or there is a change in reagents, a method blank should be processed as a safeguard against laboratory contamination.

7.2 Standard quality assurance practices should be used with this method. Field replicates should be collected to validate the precision of the sampling technique. Laboratory replicates should be analyzed to validate the precision of the analysis. Fortified samples should be analyzed to validate the accuracy of the analysis. Where doubt exists over the identification of a peak on the chromatogram, confirmatory techniques such as mass spectroscopy should be used.

8. *Sample Collection, Preservation, and Handling.*

8.1 Grab samples must be collected in glass containers. Conventional sampling practices should be followed, except that the bottle must not be prewashed with sample before collection. Composite samples should be collected in refrigerated glass containers in accordance with the requirements of the program. Automatic sampling equipment must be free of tygon and other potential sources of contamination.

8.2 The samples must be iced or refrigerated from the time of collection to extraction. Benzidine and dichlorobenzidine are easily oxidized by materials such as free chlorine. For chlorinated wastes, *immediately* add 35 mg sodium thiosulfate per part per million of free chlorine per liter.

8.3 If 1,2-diphenylhydrazine is likely to be present, adjust the pH of the sample to 4 ±0.2 units to prevent rearrangement to benzidine. Otherwise, if the samples will not be extracted within 48 hours of collection, the sample pH should be adjusted to 2–3 with sodium hydroxide or sulfuric acid.

8.4 All samples must be extracted within 7 days and completely analyzed within 30 days of collection.

9. *Sample Extraction.*

9.1 Mark the water meniscus on the side of the sample bottle for later determination of sample volume. Quantitatively pour the entire sample into a one-liter separatory funnel. Check the pH of the sample with wide-range pH paper and adjust to within the range of 6.5–7.5 with sodium hydroxide or sulfuric acid.

9.2 Add 100 ml chloroform to the sample bottle, seal, and shake 30 seconds to rinse the inner walls. Transfer the solvent into the separatory funnel, and extract the sample by shaking the funnel for two minutes. Allow the organic layer to separate from the sample a minimum of ten minutes, then collect the chloroform extract in a 250-ml separatory funnel.

9.3 Add 50 ml chloroform to the sample bottle and complete the extraction procedure a second time, combining the extracts in the separatory funnel. Perform a third extraction in the same manner with an additional 50 ml volume.

9.4 Discard any aqueous layer from the 250 ml funnel containing the combined organic layers. Add 25 ml of l M sulfuric acid and extract the sample by shaking the funnel for two minutes. Transfer the aqueous layer to a 250 ml beaker. Extract with two additional 25 ml portions of l M sulfuric acid and combine the acid extracts in the beaker.

9.5 Place a stirbar in the 250 ml beaker and stir the acid extract while carefully adding 5 ml of a .4M sodium tribasic phosphate. With the aid of a pH meter neutralize the extract to pH 6–7 by dropwise addition of 20 percent NaOH while stirring the solution vigorously. Approximately 25–30 ml of 20 percent NaOH will be required and it should be added over at least a 2-minute period. Do not allow the sample pH ever to exceed pH 8.

9.6 Pour the neutralized extract into a 250 ml separatory funnel. Add 30 ml of chloroform and shake the funnel for 2 minutes. Allow phases to separate, and transfer the organic layer in a second 250 ml separatory funnel.

9.7 Extract the aqueous layer with two additional 20 ml aliquots of chloroform as before. Combine the extracts in the 250 ml separatory funnel.

9.8 Add 20 ml of distilled water to the combined organic layers, shake for 30 seconds, and discard aqueous layer.

9.9 Transfer the organic extract into a 100 ml round bottom flask. Add 20 ml of methyl alcohol and concentrate to 5 ml on a rotating evaporator at 35°C.

9.10 Using a 9-inch Pasteur pipette, transfer the extract to a 15 ml conical scew-capped centrifuge tube. Rinse the flask, including the entire side wall, with two ml portions of methyl alcohol and combine with the original extract.

9.11 Carefully concentrate the extract to 0.5 ml using a gentle stream of nitrogen and a 30°C water bath, dilute to 2 ml with methyl alcohol, reconcentrate to 1 ml, and dilute to 5 ml with acetate buffer. Mix extract thoroughly. Stopper the ampul and store refrigerated if further processing with not be performed immediately.

9.12 Determine the original sample volume by refilling the sample bottle to the mark and transferring the liquid to a 1000 ml graduated cylinder. Record the sample volume to the nearest 5 ml.

10. Liquid Chromatography (HPLC).

10.1 Table I summarizes the recommended liquid chromatographic column material and operating conditions for the instrument. Included in this table are estimated retention times and sensitivities that should be achieved by this method. An example of the separation achieved by this column is shown in Figure 1. Calibrate the system daily with a minimum of three injections of calibration standards.

10.2 Inject 25 ul of the sample extract. If the peak area exceeds the linear range of the system, dilute the extract and reanalyze.

10.3 If the peak area measurement for benzidine is prevented by the presence of interferences, reduce the electrode potential to 0.7 V and reanalyze.

11. Calculations.

11.1 Determine the concentration of individual compounds according to the formula:

$$\text{Concentration, } \mu g/l = \frac{(A)(B)(V_t)}{(V_i)(V_s)}$$

Where:
A = Calibration factor for chromatographic system, in nanograms material per unit peak area.
B = Peak size in injection of sample extract, in peak area units
V_i = Volume of extract injected(μl)
V_t = Volume of total extract (μl)
V_s = Volume of water extracted (ml)

11.2 Report results in micrograms per liter without correction for recovery data. When duplicate and spiked samples are analyzed, all data obtained should be reported.

12. Accuracy and Precision.
12.1 The U.S. EPA Environmental Monitioring and Support Laboratory in Cincinnati is in the process of conducting an interlaboratory method study to determine the accuracy and precision of this test procedure.

Bibliography

"Development and Application of Test Procedures for Specific Organic Toxic Substances in Wastewaters Category 7—Benzidines," Report for EPA Contract 68–03–2624 (In preparation).

Table I.—*Liquid Chromatography of Benzidines*

Compound [1]	Retention time (min.)	Detection limit (µg/l) [2]
Benzidine	6.1	0.05
3,3'-dichlorobenzidine	12.1	0.1

[1] Column conditions: Lichrosorb RP–2, 5 micron particle diameter, packed in a 25 cm × 4.6 mm ID stainless steel column with 0.8 ml/min flow rate of mobile phase (50 percent acetonitrile: 50 percent 0.1 M pH 4.7 acetate buffer).
[2] Detection limit is calculated from the minimum detectable response of the electrochemical detector at 0.8 volts being equal to five times the background noise, assuming a 5 ml final extract volume of the 500 ml sample, and assuming an injection volume of 25 microliters.

Phthalate Esters—Method 606

1. *Scope and Application.*

1.1 This method covers the determination of certain phthalate esters. The following parameters may be determined by this method:

Parameter:	Sloret No.
Benzyl butyl phthalate	34292
Bis(2-ethylhexyl) phthalate	39100
Di-n-butyl phthalate	34110
Di-n-octyl phthalate	34596
Diethyl phthalate	34336
Dimethyl phthalate	34341

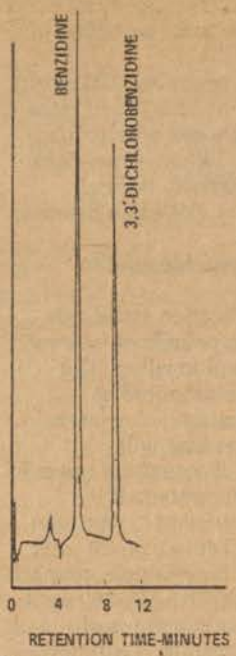


Figure 1. Liquid chromatogram of benzidines

1.2 This method is applicable to the determination of these compounds in municipal and industrial discharges. It is designed to be used to meet the monitoring requirements of the National Pollutant Discharge Elimination System (NPDES). As such, it presupposes a high expectation of finding the specific compounds of interest. If the user is attempting to screen samples for any or all of the compounds above, he must develop independent protocols for the verification of identity.

1.3 The sensitivity of this method is usually dependent upon the level of interferences rather than instrumental limitations. The limits of detection listed in Table I represent sensitivities that can be achieved in wastewaters in the absence of interferences.

1.4 This method is recommended for use only by experienced residue analysts or under the close supervision of such qualified persons.

2. *Summary of Method.*

2.1 A 1-liter sample of wastewater is extracted with methylene chloride using separatory funnel techniques. The extract is dried and concentrated to a volume of 10 ml or less. Chromatographic conditions are described which allow for the accurate measurement of the compounds in the extract.

2.2 If interferences are encountered, the method provides selected general purpose cleanup procedures to aid the analyst in their elimination.

3. *Interferences.*

3.1 Solvents, reagents, glassware, and other sample processing hardware may yield discrete artifacts and/or elevated baselines causing misinterpretation of gas chromatograms. All of these materials must be demonstrated to be free from interferences under the conditions of the analysis by running method blanks. Specific selection of reagents and purification of solvents by distillation in all-glass systems may be required.

3.2 Interferences coextracted from the sample will vary considerably from source to source, depending upon the diversity of the industrial complex or municipality being sampled. While general cleanup techniques are provided as part of this method, unique samples may require additional cleanup approaches to achieve the sensitivities stated in Table I.

3.3 Phthalate esters contaminate many types of products commonly found in the laboratory. The analyst must demonstrate that no phthalate residues contaminate the sample or solvent extract under the conditions of the analysis. Of particular importance is the avoidance of plastics because phthalates are commonly used as plasticizers and are easily extracted from plastic materials. Serious phthalate contamination may result at any time if consistent quality control is not practiced.

4. *Apparatus and Materials.*

4.1 Sampling equipment, for discrete or composite sampling.

4.1.1 Grab sample bottle—amber glass, 1-liter or 1-quart volume. French or Boston Round design is recommended. The container must be washed and solvent rinsed before use to minimize interferences.

4.1.2 Bottle caps—Threaded to screw on to the sample bottles. Caps must be lined with Teflon. Foil may be substituted if sample is not corrosive.

4.1.3 Compositing equipment—Automatic or manual compositing system. Must incorporate glass sample containers for the collection of a minimum of 250 ml. Sample containers must be kept refrigerated during sampling. No tygon or rubber tubing may be used in the system.

4.2 Separatory funnel—2000 ml, with Teflon stopcock.

4.3 Drying column—20 mm ID pyrex chromatographic column with coarse frit.

4.4 Kuderna-Danish (K–D) Apparatus

4.4.1 Concentrator tube—10 ml, graduated (Kontes K–570050–1025 or equivalent). Calibration must be checked. Ground glass stopper (size 19/22 joint) is used to prevent evaporation of extracts.

4.4.2 Evaporative flask—500 ml (Kontes K–57001–0500 or equivalent). Attach to concentrator tube with springs. (Kontes K–662750–0012).

4.4.3 Snyder column—three-ball macro (Kontes K503000–0121 or equivalent).

4.4.4 Snyder column—two-ball micro (Kontes K–569001–0219 or equivalent).

4.4.5 Boiling chips—solvent – extracted, approximately 10/40 mesh.

4.5 Water bath—Heated, with concentric ring cover, capable of temperature control (± 2°C). The bath should be used in a hood.

4.6 Gas chromatograph—Analytical system complete with gas chromatograph suitable for on-column injection and all required accessories including electron capture or flame ionization detector, column supplies, recorder, gases, syringes. A data system for measuring peak areas is recommended.

4.7 Chromatography column—300 mm long × 10 mm ID with coarse fritted disc at bottom and Teflon stopcock (Kontes K–420540–0213 or equivalent).

5. *Reagents.*

5.1 Preservatives:

5.1.1 Sodium hydroxide—(ACS) 10 N in distilled water.

5.1.2 Sulfuric acid—(ACS) Mix equal volumes of conc. H_2SO_4 with distilled water.

5.2 Methylene chloride—Pesticide quality or equivalent.

5.3 Sodium Sulfate—(ACS) Granular, anhydrous (purified by heating at 400°C for 4 hrs. in a shallow tray).

5.4 Stock standards—Prepare stock standard solutions at a concentration of 1.00 μg/μl by dissolving 0.100 grams of assayed reference material in pesticide quality isooctane or other appropriate solvent and diluting to volume in a 100 ml ground glass stoppered volumetric flask. The stock solution is transferred to ground glass stoppered reagent bottles, stored in a refrigerator, and checked frequently for signs of degradation or evaporation, especially just prior to preparing working standards from them.

5.5 Diethyl Ether—Nanograde, redistilled in glass if necessary.

5.5.1 Must be free of peroxides as indicated by EM Quant test strips. (Test strips are available from EM Laboratories, Inc., 500 Executive Blvd., Elmsford, N.Y. 10523.)

5.5.2 Procedures recommended for removal of peroxides are provided with the test strips. After cleanup, 20 ml ethyl alcohol preservative must be added to each liter of ether.

5.6 Florisil—PR grade (60/100 mesh); purchase activated at 1250°F and store in dark in glass container with ground glass stoppers or foil-lined screw caps.

5.7 Alumina—Activity Super I, Neutral, W200 series, (ICN Life Sciences Group, No. 404583).

5.8 Hexane—Pesticide quality.

6. *Calibration.*

6.1 Prepare calibration standards that contain the compounds of interest, either singly or mixed together. The standards should be prepared at concentrations covering two or more orders of magnitudes that will completely bracket the working range of the chromatographic system. If the sensitivity of the detection system can be calculated from Table I as 100 μg/1 in the final extract, for example, prepare standards at 10 μg/1, 50 μg/1, 100 μg/1, 500 μg/1, etc. so that injections of 1–5 μl of each calibration standard will define the linearity of the detector in the working range.

6.2 Assemble the necessary gas chromatographic apparatus and establish operating parameters equivalent to those indicated in Table I. By injecting calibration standards, establish the sensitivity limit of the detector and the linear range of the analytical system for each compound.

6.3 Before using any cleanup procedure, the analyst must process a series of calibration standards through the procedure to validate elution patterns and the absence of interferences from the reagents.

7. *Quality Control.*

7.1 Before processing any samples, the analyst should demonstrate through the analysis of a distilled water method blank, that all glassware and reagents are interference-free. Each time a set of samples is extracted or there is a change in reagents, a method blank should be processed as a safeguard against chronic laboratory contamination.

7.2 Standard quality assurance practices should be used with this method. Field replicates should be collected to validate the precision of the sampling technique. Laboratory replicates should be analyzed to validate the precision of the analysis. Fortified samples should be analyzed to validate the accuracy of the analysis. Where doubt exists over the identification of a peak on the chromatogram, confirmatory techniques such as mass spectroscopy should be used.

8. *Sample Collection, Preservation, and Handling.*

8.1 Grab samples must be collected in glass containers. Conventional sampling practices should be followed, except that the bottle must not be prewashed with sample before collection. Composite samples should be collected in refrigerated glass containers in accordance with the requirements of the program. Automatic sampling equipment must be free of tygon and other potential sources of contamination.

8.2 The samples must be iced or refrigerated from the time of collection until extraction. Chemical preservatives should not be used in the field unless more than 24 hours will elapse before delivery to the laboratory. If the samples will not be extracted within 48 hours of collection, the sample should be adjusted to a pH range of 6.0–8.0 with sodium hydroxide or sulfuric acid.

8.3 All samples must be extracted within 7 days and completely analyzed within 30 days of collection.

9. *Sample Extraction.*

9.1 Mark the water meniscus on the side of the sample bottle for later determination of sample volume. Pour the entire sample into a two-liter separatory funnel. Check the ph of the sample pH with wide-range paper and adjust to within the range of 5–9 with sodium hydroide or sulfuric acid.

9.2 Add 60 ml methylene chloride to the sample bottle, seal, and shake 30 seconds to rinse the inner walls. Transfer the solvent into the separatory funnel, and extract the sample by shaking the funnel for two minutes with periodic venting to release vapor pressure. Allow the organic layer to separate from the water phase for a minimum of ten minutes. If the emulsion interface between layers is more than one-third the size of the solvent layer, the analyst must employ mechanical techniques to complete the phase separation. The optimum technique depends upon the sample, but may include stirring, filtration of the emulsion through glass wool, or centrifugation. Collect the methylene chloride extract in a 250-ml Erlenmeyer flask.

9.3 Add a second 60-ml volume of methylene chloride to the sample bottle and complete the extraction procedure a second time, combining the extracts in the Erlenmeyer flask.

9.4 Perform a third extraction in the same manner. Pour the combined extract through a drying column containing 3–4 inches of anhydrous sodium sulfate, and collect it in a 500-ml Kuderna-Danish (K–D) flask equipped with a 10 ml concentrator tube. Rinse the Erlenmeyer flask and column with

20–30 ml methylene chloride to complete the quantitative transfer.

9.5 Add 1–2 clean boiling chips to the flask and attach a three-ball Snyder column. Prewet the Snyder column by adding about 1 ml methylene chloride to the top. Place the K–D apparatus on a hot water bath (60–65°C) so that the concentrator tube is partially immersed in the hot water, and the entire lower rounded surface of the flask is bathed in vapor. Adjust the vertial position of the apparatus and the water temperature as required to complete the concentration in 15–20 minutes. At the proper rate of distillation the balls of the column will actively chatter but the chambers will not flood. When the apparent volume of liquid reaches 1 ml, remove the K–D apparatus and allow it to drain for at least 10 minutes while cooling.

9.6 Increase the temperature of the hot water bath to about 80°C. Momentarily remove the Snyder column, add 50 ml of hexane and a new boiling chip and reattach the Snyder column. Pour about 1 ml of hexane into the top of the Snyder column and concentrate the solvent extract as before. Elapsed time of concentration should be 5 to 10 minutes. When the apparent volume of liquid reaches 1 ml, remove the K–D apparatus and allow it to drain at least 10 minutes while cooling. Remove the Snyder column and rinse the flask and its lower joint into the concentrator tube with 1–2 ml of hexane, and adjust the volume to 10 ml. A 5–ml syringe is recommended for this operation. Stopper the concentrator tube and store refrigerated if further processing will not be performed immediately. If the sample extract requires no further cleanup, proceed with gas chromatographic analysis. If the sample requires cleanup, proceed to Section 10.

9.7 Determine the original sample volume by refilling the sample bottle to the mark and transferring the liquid to a 1000 ml graduated cylinder. Record the sample volume to the nearest 5 ml.

10. *Cleanup and Separaton.*

10.1 If the entire extract is to be cleaned up by one of the following two procedures, it must be concentrated to about 2 ml. To the concentrator tube in 9.6, add a clean boiling chip and attach a two-ball micro-Snyder column. Prewet the column by adding about 0.5 ml hexane through the top. Place the K–D apparatus on a hot water bath (80°C) so that the concentrator tube is partially immersed in the hot water. Adjust the vertical position of the apparatus and the water temperature as required to complete the concentration in 5–10 minutes. At the proper rate of distillation the balls of the column will actively chatter but the chambers will not flood. When the apparent volume of liquid reaches about 0.5 ml, remove the K–D apparatus and allow it to drain for at least 10 minutes while cooling. Remove the micro-Snyder column and rinse its lower joint into the concentrator tube with 0.2 ml of hexane. Proceed with one of the following cleanup procedures.

10.2 Florisil Column Cleanup for Phthalate Esters

10.2.1 Place 100 g of Florisil into a 500 ml beaker and heat for approximately 16 hours at 400°C. After heating transfer to a 500 ml reagent bottle. Tightly seal and cool to room temperature. When cool add 3 ml of distilled water which is free of phthalates and interferences. Mix thoroughly by shaking or rolling for 10 minutes and let it stand for at least 2 hours. Keep the bottle sealed tightly.

10.2.2 Place 10g of this Florisil preparation into a 10 mm ID chromatography column and tap the column to settle the Florisil. Add 1 cm of anhydrous sodium sulfate to the top of the Florisil.

10.2.3 Preelute the column with 40 ml of hexane. Discard this eluate and just prior to exposure of the sodium sulfate layer to the air transfer the 2 ml sample extract onto the column, using an additional 2 ml of hexane complete the transfer.

10.2.4 Just prior to exposure of the sodium sulfate layer to the air add 40 ml hexane and continue the elution of the column. Discard this hexane eluate.

10.2.5 Next elute the phthalate esters with 100 ml of 20 percent ethyl ether/80 percent hexane (V/V) into a 500 ml K–D flask equipped with a 10 ml concentrator tube. Elute the column at a rate of about 2 ml per minute for all fractions. Concentrate the collected fraction by standard K–D technique. No solvent exchange is necessary. After concentration and cooling, adjust the volume of the cleaned up extract to 10 ml in the concentrator tube and analyze by gas chromatography.

10.3 Alumina Column Cleanup for Phthalate Esters

10.3.1 Place 100 g of alumina into a 500 ml beaker and heat for approximately 16 hours at 400° C. After heating transfer to a 500 ml reagent bottle. Tightly seal and cool to room temperature. When cool add 3 ml of distilled water which is free from phthalates and interferences. Mix thoroughly by shaking or rolling for 10 minutes and let it stand for at least 2 hours. Keep the bottle sealed tightly.

10.3.2 Place 10 g of this alumina preparation into a 10 mm ID chromatography column and tap the column to settle the alumina. Add 1 cm of anhydrous sodium sulfate to the top of the alumina.

10.3.3 Preelute the column with 40 ml of hexane. Discard this eluate and just prior to exposure of the sodium sulfate layer to the air, transfer the 2 ml sample extract onto the column, using an additional 2 ml of hexane to complete the transfer.

10.3.4 Just prior to exposure of the sodium sulfate layer to the air add 35 ml hexane and continue to elution of the column. Discard this hexane eluate.

10.3.5 Next elute the column with 140 ml of 20 percent ethyl ether/80 percent hexane (V/V) into a 500 ml K–D flask equipped with a 10 ml concentrator tube. Elute the column at a rate of about 2 ml per minute for all fractions. Concentrate the collected fraction by standard K–D technique. No solvent exchange is necessary. After concentration and cooling adjust the volume of the cleaned up extract to 10 ml in the concentrator tube and analyze by gas chromatography.

11. *Gas Chromatography.*

11.1 Table I summarizes some recommended gas chromatographic column materials and operating conditions for the instrument. Included in this table are estimated retention times and sensitivities that should be achieved by this method. Examples of the separations achieved by the primary column are shown in Figures 1 and 2. Calibrate the system daily with a minimum of three injections of calibration standards.

11.2 Inject 2–5 μl of the sample extract using the solvent-flush technique. Smaller (1.0 μl) volumes can be injected if automatic devices are employed. Record the volume injected to the nearest 0.05 μl, and the resulting peak size, in area units.

11.3 If the peak area exceeds the linear range of the system, dilute the extract and reanalyze.

11.4 If the peak area measurement is prevented by the presence of interferences, further cleanup is required.

12. *Calculations.*

12.1 Determine the concentration of individual compounds according to the formula:

$$\text{Concentration, } \mu g/l = \frac{(A)(B)(B_v)}{(V_i)(V_s)}$$

Where:
A = Calibration factor for chromatographic system, in nanograms material per area unit.
B = Peak size in injection of sample extract, in area units
V_i = Volume of extract injected (μl)
V_t = Volume of total extract (μl)
V_s = Volumeof water extracted (ml)

12.2 Report results in micrograms per liter without correction for recovery data. When duplicate and spiked samples are analyzed, all data obtained should be reported.

13. *Accuracy and Precision.*

13.1 The U.S. EPA Environmental Monitoring and Support Laboratory in Cincinnati is in the process of conducting a interlaboratory method study to determine the accuracy and precision of this test procedure.

Bibliography

"Development and Application of Test Procedures for Specific Organic Toxic Substances in Wastewaters. Category 1- Phthalates." Report for EPA Contract 68-03-2606 (In preparation).

Table I—*Gas Chromatography of Phthalate Esters*

Compound	Retention time (min.)		Detection (μg/l)	
	Col. 1	Col. 2	EC [3]	FID
Dimethyl phthalate	2.03	0.95	0.11	19
Diethyl phthalate	2.82	1.27	0.13	31
Di-n-butyl phthalate	8.65	3.50	0.02	14
Benzyl butyl phthalate	*6.94	**5.11	0.02	15
Bis(2-ethylhexyl) phthalate	*8.92	**10.5	0.04	20
Di-n-octyl phthalate	*16.2	1**8.0	0.11	31

* Supelcoport 100/120 mesh coated with 1.5% SP-2250/1.95% SP-2401 packed in a 180 cm long×4 mm ID glass column with carrier gas at 60 ml/min flow rate. Column temperature is 180°C except where * indicates 220°C. Under these conditions R.T. of Aldrin is 5.49 min. at 180°C and 1.84 min at 220°C.

** Supelcoport 100/120 mesh with 3% OV-1 in a 180 cm long×4 mm ID glass column with carrier gas at 60 ml/min flow rate. Column temperature is 200°C except where ** indicates 220°C. Under these conditions R.T. of Aldrin is 3.18 min. at 200°C and 1.46 min. at 220°C.

[3] Detection limit is calculated from the minimum detectable GC response being equal to five times the GC background noise, assuming a 10 ml final volume of the 1 liter sample extract, and assuming a GC injection of 5 microliters.

BILLING CODE 6560-01-M

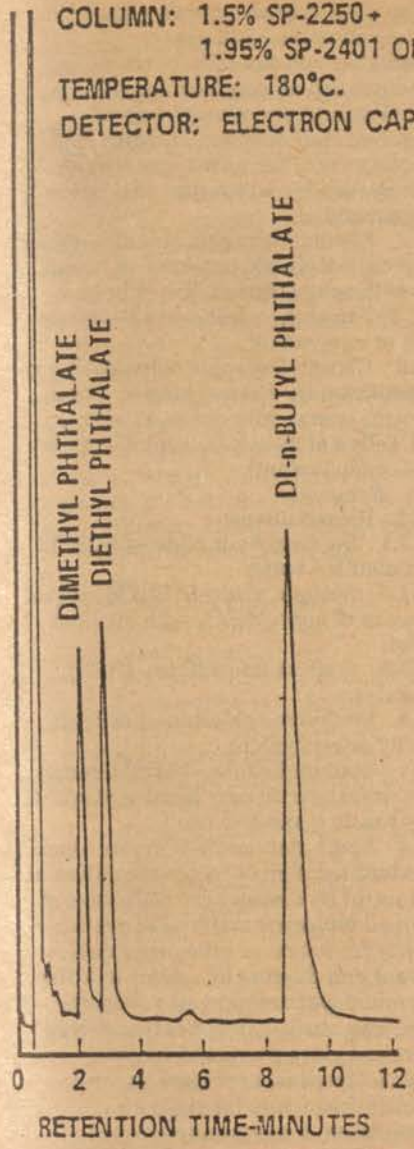


Figure 1. Gas chromatogram of phthalates

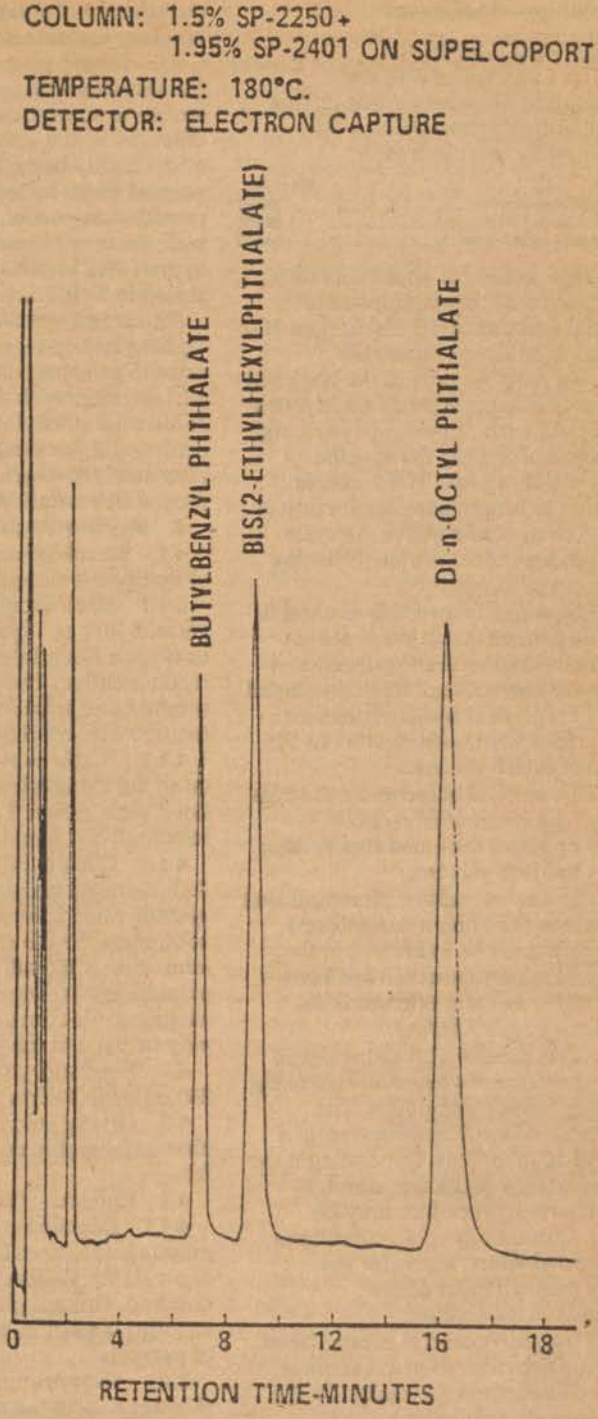


Figure 2. Gas chromatogram of phthalates

BILLING CODE 6560-01-C

Nitrosamines—Method 607

1. *Scope and Application.*

1.1 This method covers the determination of certain nitrosamines. The following parameters may be determined by this method:

Parameter:	Storet No.
N-nitrosodimethylamine	34438
N-nitrosodiphenylamine	34433
N-nitrosodi-n-propylamine	34428

1.2 This method is applicable to the determination of these compounds in municipal and industrial discharges. It is designed to be used to meet the monitoring requirements of the National Pollutant Discharge Elimination System (NPDES). As such, it presupposes a high expectation of finding the specific compounds of interest. If the user is attempting to screen samples for any or all of the compounds above, he must develop independent protocols for the verification of identity.

1.3 The sensitivity of this method is usually dependent upon the level of interferences rather than instrumental limitations. The limits of detection listed in Table I represent sensitivities that can be achieved in wastewaters in the absence of interferences.

1.4 This method is recommended for use only by experienced residue analysts or under the close supervision of such qualified persons.

1.5 The analyst must understand that nitrosamines are known carcinogens. Utmost care must be exercised in the handling of materials which are known or believed to contain nitrosamines.

2. *Summary of Method.*

2.1 1-liter sample of wastewater is extracted with methylene chloride using separatory funnel techniques. The extract is dried and concentrated to a volume of 10 ml or less. Depending upon the nitrosamines being measured, a column cleanup procedure may be required. Chromatographic conditions are described which allow for the accurate measurement of the compounds in the extract.

2.2 If interferences are encountered, the method provides selected general purpose cleanup procedures to aid the analyst in their elimination.

3. *Interferences*

3.1 Solvents, reagents, glassware, and other sample processing hardware may yield discrete artifacts and/or elevated baselines causing misinterpretation of gas chromatograms. All of these materials must be demonstrated to be free from interferences under the conditions of the analysis by running method blanks. Specific selection of reagents and purification of solvents by distillation in all-glass systems may be required.

3.2 Interferences coextracted from the samples will vary considerably from source to source, depending upon the diversity of the industrial complex or municipality being sampled. While general clean-up techniques are provided as part of this method, unique samples may require additional cleanup approaches to achieve the sensitivities stated in Table 1.

3.3 It is necessary to remove diphenylamine from the sample extract prior to gas chromatography because it will interfere with the determination of N-nitrosodiphenylamine. Removal is achieved if the sample is processed completely through one of the clean-up procedures detailed in the method.

4. *Apparatus and Materials.*

4.1 Sampling equipment, for discrete or composite sampling.

4.1.1 Grab sample bottle—amber glass, 1-liter or 1-quart volume. French or Boston Round design is recommended. The container must be washed and solvent rinsed before use to minimize interferences.

4.1.2 Bottle caps—Threaded to screw on to the sample bottle. Caps must be lined with Teflon. Foil may be substituted if sample is not corrosive.

4.1.3 Compositing equipment—Automatic or manual compositing system. Must incorporate glass sample containers for the collection of a minimum of 250 ml. Sample containers must be kept refrigerated during sampling. No tygon or rubber tubing may be used in the system.

4.2 Separatory funnels—2000 ml and 250 ml, with Teflon stopcock.

4.3 Drying column—20 mm ID pyrex chromatographic column with coarse frit.

4.4 Kuderna-Danish (K-D) Apparatus

4.4.1 Concentrator tube—10 ml, graduated (Kontes K–570050–1025 or equivalent). Calibration must be checked. Ground glass stopper (size 19/22 joint) is used to prevent evaporation of extracts.

4.4.2 Evaporative flask—500 ml (Kontes K–57001–0500 or equivalent). Attach to concentrator tube with springs. (Kontes K–662750–0012).

4.4.3 Snyder column—three-ball macro (Kontes K503000–0121 or equivalent).

4.4.4 Snyder column—two-ball micro (Kontes K–569001–0219 or equivalent).

4.4.5 Boiling chips—solvent extracted, approximately 10/40 mesh.

4.5 Water bath—Heated, with concentric ring cover, capable of temperature control (±2°C). The bath should be used in a hood.

4.6 Gas chromatograph—Analytical system complete with gas chromatograph suitable for on-column injection and all required accessories including nitrogen-phosphorus or reductive Hall detector, column supplies, recorder, gases, syringes. A data system for measuring peak areas is recommended.

4.7 Chromatographic column—Pyrex (approximately 300 mm long × 10 mm ID) with coarse fritted disc at bottom and Teflon stopcock (Kontes K–420540–0213 or equivalent).

4.8 Chromatographic column—Pyrex (approximately 400 mm long × 22 mm ID) with coarse fritted disc at bottom and Teflon stopcock (Kontes K–420540–0234 or equivalent).

5. *Reagents.*

5.1 Preservatives:

5.1.1 Soidium hydroxide—(ACS) 10 N in distilled water.

5.1.2 Sulfuric acid—(ACS) Mix equal volumes of conc. H_2SO_4 with distilled water.

5.1.3 Sodium thiosulfate—(ACS) Granular.

5.2 Methylene chloride—Pesticide quality or equivalent.

5.3 Sodium Sulfate—(ACS) Granular, anhydrous (purified by heating at 400° C for 4 hrs. in a shallow tray).

5.4 Stock standards—Prepare stock standard solutions at a concentration of 1.00 μg/μl by dissolving 0.100 grams of assayed reference material in pesticide quality isooctane or other appropriate solvent and diluting to volume in a 100 ml ground glass stoppered volumertic flask. The stock solution is transferred to ground glass stoppered reagent bottles, stored in a refrigerator, and checked frequently for signs of degradation or evaporation, especially just prior to preparing working standards from them.

5.5 Methyl alcohol, pentane, acetone—Pesticide quality or equivalent.

5.6 Diethyl Ether—Nanograde, redistilled in glass if necessary.

5.6.1 Must be free of peroxides as indicated by EM Quant test strips. (Test strips are available from EM Laboratories, Inc., 500 Executive Blvd., Elmsford, N.Y. 10523.)

5.6.2 Procedures recommended for removal of peroxides are provided with the test strips. After cleanup, 20 ml ethyl alcohol preservative must be added to each liter of ether.

5.7 Florisil—PR grade (60/100 mesh); purchase activiated at 1250° F and store in dark in glass containers with glass stoppers or foil-lined screw caps. Before use, activate each batch at least 16 hours at 130° C in a foil covered glass container.

5.8 Alumina—Activity Super I, Basic, W200 series (ICN Life Sciences Group, No. 404571).

5.9 Hydrochloric acid, 10%-(ACS) Add one volume of conc. HCl to nine volumes distilled water.

6. *Calibration.*

6.1 Prepare calibration standards that contain the compounds of interest, either singly or mixed together. The standards should be prepared at concentrations covering two or more orders of magnitude that will completely backet the working range of the chromatographic system. If the sensitivity of the detection system can be calculated from Table I as 100 μg/l in the final extract, for example, prepare standards at 10 μg/l, 50 μg/l, 100 μg/l, 500 μg/l, etc. so that injections of 1–5 μl of each calibration standard will define the linearity of the detector in the working range.

6.2 Assemble the necessary gas chromatographic apparatus and establish operating parameters equivalent to those indicated in Table I. By injecting calibration standards, establishe the sensitivity limit of the detector and the linear range of the analytical system for each compound.

6.3 Before using any cleanup procedure, the analyst must process a series of calibration standards through the procedure to validate elution patterns and the absence of interferences from the reagents.

7. *Quality Control.*

7.1 Before processing any samples, the analyst should demonstrate through the analysis of a distilled water method blank, that all glassware and reagents are interference-free. Each time a set of samples is extracted or there is a change in reagents, a method blank should be processed as a safeguard against chronic laboratory contamination.

7.2 Standard quality assurance practices should be used with this method. Field replicates should be collected to validate the precision of the sampling technique. Laboratory replicates should be analyzed to validate the precision of the analysis. Fortified samples should be analyzed to validate the accuracy of the analysis. Where doubt exists over the identification of a peak on the chromatogram, confirmatory techniques such as mass spectorscopy should be used.

8. *Sample Collection, Preservation, and Handling.*

8.1 Grab samples must be collected in glass containers. Conventional sampling practices should be followed, except that the bottle must not be prewashed with sample before collection. Composite samples should be collected in refrigerated glass containers in accordance with the requirements of the program. Automatic sampling equipment must be free of tygon and other potential sources of contamination.

8.2 The samples must be iced or refrigerated from the time of collection until extraction. Chemical preservatives should not be used in the field unless more than 24 hours will elapse before delivery to the laboratory. If the samples will not be extracted within 48 hours of collection, they must be preserved as follows:

8.2.1 Add 35 mg of sodium thiosulfate per part per million of free chlorine per liter of sample.

8.2.2 Adjust the pH of the water sample to pH 7 to 10 using sodium hydroxide or sulfuric acid. Record the volume of acid or base added.

8.3 All samples must be extracted within 7 days and completely analyzed within 30 days of collection.

9. *Sample Extraction.*

9.1 Mark the water meniscus on the side of the sample bottle for later determination of sample volume. Pour the entire sample into a two-liter separatory funnel. Check the pH of the sample with wide-range pH paper and adjust to within the range of 7 to 10 with sodium hydroxide or sulfuric acid.

9.2 Add 60 ml methylene chloride to the sample bottle, seal, and shake 30 seconds to rinse the inner walls. Transfer the solvent into the separatory funnel, and extract the sample by shaking the funnel for two minutes with periodic venting to release vapor pressure. Allow the organic layer to separate from the water phase for a minimum of ten minutes. It the emulsion interface between layers is more than one-third the size of the solvent layer, the analyst must employ mechanical techniques to complete the phase separation. The optimum technique depends upon the sample, but may include stirring, filtration of the emulsion through glass wool, or centrifugation. Collect the methylene chloride extract in a 250-ml separatory funnel.

9.3 Add a second 60-ml volume of methylene chloride to the sample bottle and complete the extraction procedure a second time, combining the extracts in the 250-ml separatory funnel.

9.4 Perform a third extraction in the same manner. Add 10 ml of 10% HCl solution to the combined extracts and shake for 2 minutes. Allow the layers to separate. Drain the methylene chloride layer through a drying column containing 3–4 inches of anhydrous sodium sulfate, and collect it in a 500-ml Kuderna-Danish (K-D) flask equipped with a 10 ml concentrator tube. Rinse the column with 20–30 ml methylene chloride to complete the quantitative transfer.

9.5 Add 1–2 clean boiling chips to the flask and attach a three-ball Snyder column. Prewet the Snyder column by adding about 1 ml methylene chloride to the top. Place the K-D apparatus on a hot water bath (60–65° C) so that the concentrator tube is partially immersed in the hot water, and the entire lower rounded surface of the flask is bathed in vapor. Adjust the vertical position of the apparatus and the water temperature as required to complete the concentration in the 15–20 minutes. At the proper rate of distillation the balls of the column will actively chatter but the chambers will not flood. Because of the volatility of N-nitrosodimethylamine, K-D concentration must be carefully carried out. When the apparent volume of liquid reaches 1 ml, remove the K-D apparatus and allow it to drain for at least 10 minutes while cooling. Remove the Snyder column and rinse the flask and its lower joint into the concentrator tube with 1–2 ml of methylene chloride. A 5-ml syringe is recommended for this operation. Unless the entire extract will be subjected to a cleanup operation (Section 10), adjust the extract volume to 10.0 ml with methylene chloride, add stopper, and refrigerate.

9.6 If the sample is being analyzed for N-nitrosodiphenylamine, the analyst must immediately proceed with one of the cleanup methods in Section 10 to remove potential diphenylamine interference. Depending upon the sensitivity requirement for the analysis, the analyst may use the entire extract for this cleanup as described, or adjust the extract volume to 10.0 ml with methylene chloride and pipet a 2 ml aliquot onto the column in 10.2.2 or 10.3.3.

9.7 If N-nitrosodiphenylamine is of no interest, the analyst must choose between proceeding directly to Section II, or submitting the extract to a cleanup procedure before gas chromatography. A solvent exchange from methylene chloride to methyl alcohol is required for direct gas chromatography. Once the entire extract is in methyl alcohol it cannot be treated to either of the cleanup procedures in Section 10. Therefore, in the absence of previous experience with the sample matrix, the analyst should remove a 2.0 ml aliquot of the extract for gas chromatography and retain the remainder for cleanup if required later.

9.8 Determine the original sample volume by refilling the sample bottle to the mark and transferring the liquid to a

1000 ml graduated cylinder. Record the sample volume to the nearest 5 ml.

10. *Cleanup and Separation.*

10.1 If the entire extract is to be cleaned up by one of the following procedures, it must be concentrated to 2.0 ml. To the concentrator tube in 9.5, add a clean boiling chip and attach a two-ball micro-Snyder column. Prewet the column by adding about 0.5 ml methylene chloride to the top. Place the K–D apparatus on a steaming hot (60–65° C) water bath so that the concentrator tube is partially immersed in the hot water. Adjust the vertical position of the apparatus and the water temperature as required to complete the concentration in 5–10 minutes. At the proper rate of distillation the balls of the column will actively chatter but the chambers will not flood. When the apparent volume of liquid reaches about 0.5 ml, remove the K–D and allow it to drain for at least 10 minutes while cooling. Remove the micro-Snyder column and rinse its lower joint into the concentrator tube with 0.2 ml of methylene chloride. Adjust the final volume to 2.0 ml and proceed with one of the following cleanup procedures.

10.2 Florisil Column Cleanup for Nitrosamines

10.2.1 Place 22g of activated Florisil in a 22 mm ID chromatographic column. After settling the Florisil by tapping the column,add about a 5 mm layer of anhydrous granular sodium sulfate to the top.

10.2.2 Preelute the column, after cooling, with 40 ml of 15% ethyl ether/85% pentane. Discard the eluate and just prior to exposure of the sodium sulfate layer to air, quantitatively transfer 2.0 ml of sample extract into the column by decantation using an additional 2 ml of pentane to complete the transfer.

10.2.3 Perform the first elution with 90 ml of 15% ethyl ether/85% pentane (V/V) and discard the eluate. This fraction will contain any diphenylamine.

10.2.4 Perform the second elution with 100 ml of 5% acetone/95% ethyl ether (V/V) and collect the eluate in a 500-ml K–D flask equipped with a 10-ml concentrator tube. This fraction will contain all of the nitrosamines.

10.2.5 Add 15 ml of methanol to the collected eluate and concentrate as in 9.5 at 70–75°C, substituting pentane for methylene chloride.

10.2.6 Analyze by gas chromatography.

10.3 Alumina Column Cleanup for Nitrosamines

10.3.1 Place 100g of alumina, as it comes from the manufacturer, into a 500 ml reagent bottle and add 2 ml of distilled water, which is free of nitrosamines and interferences. Mix the alumina preparation thoroughly by shaking or rolling for 10 minutes and let it stand for at least 2 hours. The preparation should be homogeneous before use. Keep the bottle sealed tightly to ensure proper activity.

10.3.2 Place 12 grams of the alumina preparation into a 10 mm ID chromatographic column and tap the column to settle the alumina. Add 1–2 cm of anhydrous sodium sulfate to the top of the alumina.

10.3.3 Preelute the column with 10 ml of 30% ethyl ether/70% pentane (V/V). Discard the eluate (about 2 ml) and, just prior to exposure of the sodium sulfate layer the air, transfer 2.0 ml of sample extract onto the column by decantation using an additional 2 ml of pentane to complete the transfer.

10.3.4 Just prior to exposure of the sodium sulfate layer to the air, add 70 ml of 30% ethyl ether/70% pentane. Discard the first 10 ml of eluate but collect the rest of the eluate in a 500-ml K–D flask equipped with a 10 ml concentrator tube. This fraction contains N-nitrosodiphenylamine and probably a small amount of N-nitrosodi-n-propylamine.

10.3.5 Next elute the column with 60 ml of 50% ethyl ether/50% pentane, collecting the eluate in a second K–D flask equipped with a 10 ml concentrator tube. Add 15 ml methyl alcohol to the K–D. This fraction will contain N-nitrosodimethylamine, most of the N-nitrosodi-n-propylamine and any diphenylamine.

10.3.6 Concentrate both fractions as in 9.5 substituting pentane for methylene chloride.

10.3.7 Analyze by gas chromatography.

11. *Gas Chromatography.*

11.1 N-nitrosodiphenylamine completely reacts to form diphenylamine at normal operating temperatures of the GC injection port. Therefore, N-nitrosodiphenylamine is actually chromatographed and detected as diphenylamine. The determination of either of the compounds in the original sample would be uncertain without the use of one of the previous cleanup procedures which separate the two compounds.

11.2 Table I summarizes some recommended gas chromatographic column materials and operating conditions for the instrument. Included in this table are estimated retention times and sensitivities that should be achieved by this method. Examples of the separations achieved by the primary column are shown in Figures 1 and 2. Calibrate the system daily with a minimum of three injections of calibration standards.

11.3 If the extract has not been submitted to one of the cleanup procedures in Section 10, it is necessary to exchange the solvent from methylene chloride to methyl alcohol before the thermionic detector can be used. To a 1–10 ml volume of methylene chloride extract in a concentrator tube, add 2 ml methyl alcohol, and a clean boiling chip. Attach a two-ball micro-Snyder column. Prewet the column by adding about 0.5 ml methylene chloride through the top. Place the K–D apparatus on a boiling water bath so that the concentrator tube is partially immersed in the hot water. Adjust the vertical position and insulate the apparatus as necessary to complete the concentration in 5–10 minutes. At the proper rate of distillation the balls of the column will actively chatter but the chambers will not flood. When the apparent volume of liquid reaches about 0.5 ml, remove the K-D and allow it to drain for at least 10 minutes while cooling. Remove the micro-Snyder column and rinse its lower joint into the concentrator tube with 0.2 ml of methyl alcohol. Adjust the final volume to 2.0 ml.

11.4 Inject 2–5 μl of the sample extract using the solvent-flush technique. Smaller (1.0 μl) volumes can be injected if automatic devices are employed. Record the volume injected to the nearest 0.05 μl, and the resulting peak size, in area units.

11.5 If the peak area exceeds the linear range of the system, dilute the extract and reanalyze.

11.6 If the peak area measurement is prevented by the presence of interferences, further cleanup is required.

12. *Calculations.*

12.1 Determine the concentration of individual compounds according to the formula:

$$\text{Concentration, } \mu g/l = \frac{(A)(B)(V_t)}{(V_i)(V_s)}$$

Where:

A = Calibration factor for chromatographic system, in nanograms material per area unit.

B = Peak size in injection of sample extract, in area units

V_i = Volume of extract injected (μl)

V_t = Volume of total extract (μl)

V_s = Volume of water extracted (ml)

12.2 Report results in micrograms per liter without correction for recovery data. When duplicate and spiked samples are analyzed, all data obtained should be reported.

13. *Accuracy and Precision.*

The U.S. EPA Environmental Monitoring and Support Laboratory in Cincinnati is in the process of conducting an interlaboratory method study to determine the accuracy and precision of this test procedure.

Bibliography

"Development and Application of Test Procedures for Specific Organic Toxic Substances in Wastewaters. Category 5—Nitrosamines." Report for EPA Contract 68-03-2606 (In preparation).

Table I.—Gas Chromatography of Nitrosamines

Nitrosamine	Retention time (min)		Detection limit (μg/l) [3]
	Col. 1 [1]	Col. 2 [2]	
N-nitrosodidimethylamine	4.1	0.88	0.3
N-nitrosodi-n-dipropylamine	12.1	4.2	0.5
N-nitrosodiphenylamine	*12.8	**6.4	1.0

[1] Chromosorb WAW 80/100 mesh coated with 10% Carbowax 20M/2% KOH packed in a 180 cm long x 4 mm ID glass column with helium carrier gas at 40 ml/min flow rate. Isothermal column temperature is 110°C except where * indicates 220°C.

[2] Supelcoport 100/120 mesh coated with 10% SP-2250 packed in a 180 cm long x 4 mm ID glass column with helium carrier gas at 40 ml/min flow rate. Isothermal column temperature is 120°C except where ** indicates 210°C.

[3] Detection limit is calculated from the minimum detectable GC response being equal to five times the GC background noise, assuming a 10 ml final volume of the 1 liter sample extract, and assuming a GC injection of 5 microliters. A nitrogren-phosphorus detector was used to collect this data, but a Thermal Energy Analyzer exhibited equivalent sensitivity.

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COLUMN: 10% CARBOWAX 20M + 2% KOH ON CHROMOSORB W-AW
TEMPERATURE: 110°
DETECTOR: PHOSPHORUS/NITROGEN

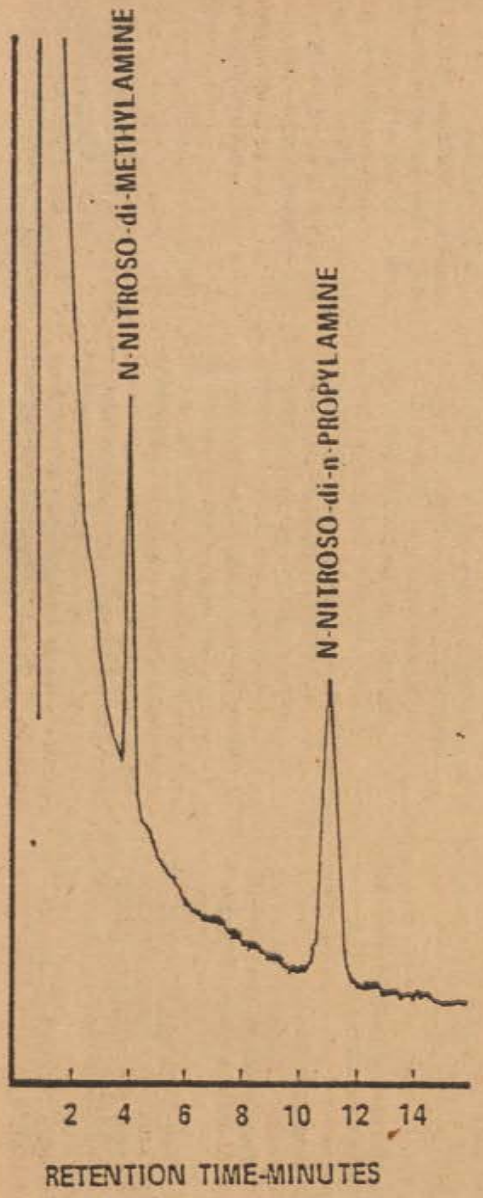


Figure 1. Gas chromatogram of nitrosamines

COLUMN: 10% CARBOWAX 20M + 2% KOH ON CHROMOSORB W-AW
TEMPERATURE: 220°C.
DETECTOR: PHOSPHORUS/NITROGEN

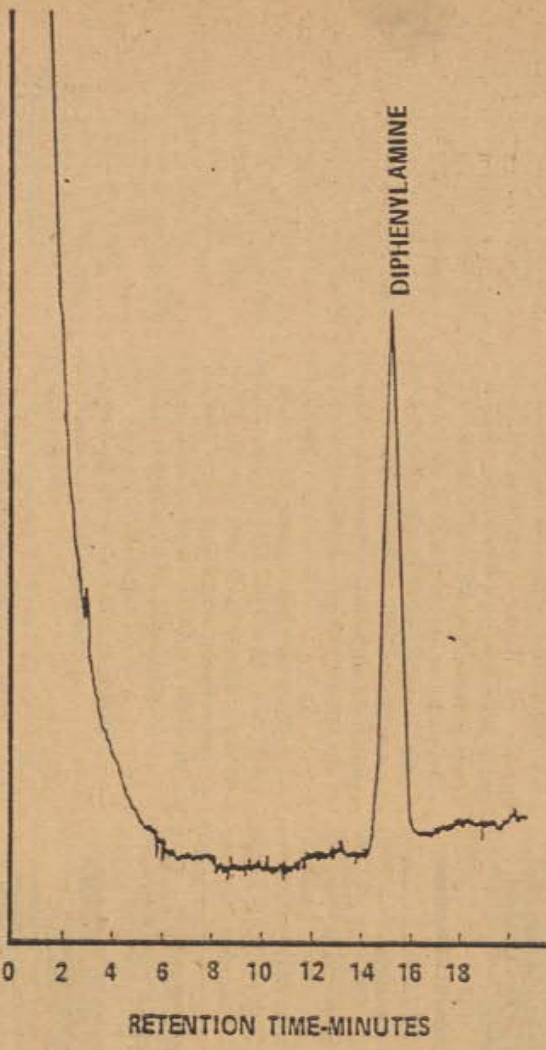


Figure 2. Gas chromatogram of N-nitrosodiphenylamine as diphenylamine

BILLING CODE 6560-01-C

Organochlorine Pesticides and PC3's—Method 608

1. *Scope and Application.*

1.1 This method covers the determination of certain organochlorine pesticides and polychlorinated biphenyls (PCBs). The following parameters may be determined by this method:

Parameter:	Storet No.
Aldrin	39330
a-BHC	39337
b-BHC	39338
d-BHC	39259
g-BHC	39340
Chlordane	39350
4,4'-DDD	39310
4,4'-DDE	39320
4,4'-DDT	39300
Dieldrin	39380
Endosulfan I	34361
Endosulfan II	34356
Endosulfan Sulfate	34351
Endrin	39390
Endrin Aldehyde	34366
Heptachlor	39410
Heptachlor Epoxide	39420
Toxaphene	39400
PCB-1016	34671
PCB-1221	39488
PCB-1232	39492
PCB-1242	39496
PCB-1248	39500
PCB-1254	39504
PCB-1260	39508

1.2 This method is applicable to the determination of these compounds in municipal and industrial discharges. It is designed to be used to meet the monitoring requirements of the National Pollutant Discharge Elimination System (NPDES). As such, it presupposes a high expectation of finding the specific compounds of interest. If the user is attempting to screen samples for any or all of the compounds above, he must develop independent protocols for the verification of identity.

1.3 The sensitivity of this method is usually dependent upon the level of interferences rather than instrumental limitations. The limits of detection listed in Table I represent sensitivities that can be achieved in wastewaters in the absence of interferences.

1.4 This method is recommended for use only by experienced residue analysts or under the close supervision of such qualified persons.

2. *Summary of Method.*

2.1 A 1-liter sample of wastewater is extracted with methylene chloride using separatory funnel techniques. The extract is dried and concentrated to a volume of 10 ml or less. Chromatographic conditions are described which allow for the accurate measurement of the compounds in the extract.

2.2 If interferences are encountered, the method provides selected general purpose cleanup procedures to aid the analyst in their elimination.

3. *Interferences.*

3.1 Solvents, reagents, glassware, and other sample processing hardware may yield discrete artifacts and/or elevated baselines causing misinterpretation of gas chromatograms. All of these materials must be demonstrated to be free from interferences under the conditions of the analysis by running method blanks. Specific selection of reagents and purification of solvents by distillation in all-glass systems may be required.

3.2 Interferences coextracted from the samples will vary considerably from source to source, depending upon the diversity of the industrial complex or municipality being sampled. While general cleanup techniques are provided as part of this method, unique samples may require additional cleanup approaches to achieve the sensitivities stated in Table 1.

3.3 Glassware must be scrupulously clean. Clean all glassware as soon as possible after use by rinsing with the last solvent used. This should be followed by detergent washing in hot water. Rinse with tap water, distilled water, acetone and finally pesticide quality hexane. Heavily contaminated glassware may require treatment in a muffle furnace at 400°C for 15 to 30 minutes. Some high boiling materials, such as PCBs, may not be eliminated by this treatment. Volumetric ware should not be heated in a muffle furnace. Glassware should be sealed/stored in a clean environment immediately after drying or cooling to prevent any accumulation of dust or other contaminants. Store inverted or capped with aluminum foil.

3.4 Interferences by phthalate esters can pose a major problem in pesticide analysis. These materials elute in the 15% and 50% fractions of the Florisil cleanup. They usually can be minimized by avoiding contact with any plastic materials. The contamination from phthalate esters can be completely eliminated with the use of a microcoulometric or electrolytic conductivity detector.

4. *Apparatus and Materials.*

4.1 Sampling equipment, for discrete or composite sampling.

4.1.1 Grab sample bottle—amber glass, 1-liter or 1-quart volume. French or Boston Round design is recommended. The container must be washed and solvent rinsed before use to minimize interferences.

4.1.2 Bottle caps—Threaded to screw on to the sample bottles. Caps must be lined with Teflon. Foil may be substituted if sample is not corrosive.

4.1.3 Compositing equipment—Automatic or manual compositing system. Must incorporate glass sample containers for the collection of a minimum of 250 ml. Sample containers must be kept refrigerated during sampling. No tygon or rubber tubing may be used in the system.

4.2 Separatory funnel—2000 ml, with Teflon stopcock.

4.3 Drying column—20 mm ID pyrex chromatographic column with coarse frit.

4.4 Kuderna-Danish (K–D) Apparatus

4.4.1 Concentrator tube—10 ml, graduated (Kontes K–570050–1025 or equivalent). Calibration must be checked at 1.0 and 10.0 ml level. Ground glass stopper (size 19/22 joint) is used to prevent evaporation of extracts.

4.4.2 Evaporative flask—500 ml (Kontes K–57001–0500 or equivalent). Attach to concentrator tube with springs. (Kontes K–662750–0012).

4.4.3 Snyder column—three-ball macro (Kontes K503000–0121 or equivalent).

4.4.4 Boiling chips—extracted, approximately 10/40 mesh.

4.5 Water bath—Heated, with concentric ring cover, capable of temperature control (±2°C). The bath should be used in a hood.

4.6 Gas chromatograph—Analytical system complete with gas chromatograph suitable for on-column injection and all required acessories including electron capture or halogen-specific detector, column supplies, recorder, gases, syringes. A data system for measuring peak areas is recommended.

4.7 Chromatographic column—Pyrex, 400 mm × 25 mm OD, with coarse fritted plate and Teflon stopcock (Kontes K–42054–213 or equivalent).

5. *Reagents.*

5.1 Preservatives:

5.1.1 Sodium hydroxide—(ACS) 10 N in distilled water.

5.1.2 Sulfuric acid (1+1)—(ACS) Mix equal volumes of conc. H_2SO_4 with distilled water.

5.2 Methylene chloride—Pesticide quality or equivalent.

5.3 Sodium Sulfate—(ACS) Granular, anhydrous (purified by heating at 400°C for 4 hrs. in a shallow tray).

5.4 Stock standards—Prepare stock standard solutions at a concentration of 1.00 μg/μl by dissolving 0.100 grams of assayed reference material in pesticide quality isooctane or other appropriate solvent and diluting to volume in a 100 ml ground glass stoppered volumetric flask. The stock solution is transferred to ground glass stoppered reagent bottles, stored in a refrigerator, and checked frequently for signs of degradation or evaporation, especially just prior to preparing working standards from them.

5.5 Boiling chips—Hengar granules (Hengar Co.; Fisher Co.) or equivalent.

5.6 Mercury—triple distilled.

5.7 Aluminum oxide—basic or neutral, active.

5.8 Hexane—pesticide residue analysis grade.

5.9 Isooctane (2,2,4-trimethyl pentane)—pesticide residue analysis grade.

5.10 Acetone—pesticide residue analysis grade.

5.11 Diethyl ether—Nanograde, redistilled in glass if necessary.

5.11.1 Must be free of peroxides as indicated by EM Quant test strips (Test strips are available from EM Laboratories, Inc., 500 Executive Blvd., Elmsford, N.Y., 10523).

5.1.2 Procedures recommended for removal of peroxides are provided with the test strips. After cleanup 20 ml ethyl alcohol preservative must be added to each liter of ether.

5.12 Florisil—PR grade (60/100 mesh); purchase activated at 1250°F and store in glass containers with glass stoppers or foil-lined screw caps. Before use activate each batch at least 16 hours at 130°C in a foil covered glass container.

6. *Calibration.*

6.1 Prepare calibration standards that contain the compounds of interest, either singly or mixed together. The standards should be prepared at concentrations covering two or more orders of magnitude that will completely bracket the working range of the chromatographic system. If the sensitivity of the detection system can be calculated from Table I as 100 μg/l in the final extract, for example, prepare standards at 10 μg/l, 50 μg/l, 100 μg/l, 500 μg/l, etc., so that injections of 1–5 μl of each calibration standard will define the linearity of the detector in the working range.

6.2 Assemble the necessary gas chromatographic apparatus and establish operating parameters equivalent to those indicated in Table I. By injecting calibration standards, establish the sensitivity limit of the detector and the linear range of the analytical system for each compound.

6.3 The cleanup procedure in Section 10 utilizes Florisil chromatography. Florisil from different batches or sources may vary in absorption capacity. To standardize the amount of Florisil which is used, the use of lauric acid value (Mills, 1968) is suggested. The referenced procedure determines the adsorption from hexane solution of lauric acid (mg) per gram Florisil. The amount of Florisil to be used for each column is calculated by dividing this factor into 110 and multiplying by 20 grams.

6.4 Before using any cleanup procedure, the analyst must process a series of calibration standards through the procedure to validate elution patterns and the absence of interferences from the reagents.

7. *Quality Control.*

7.1 Before processing any samples, the analyst should demonstrate through the analysis of a distilled water method blank, that all glassware and reagents are interference-free. Each time a set of samples is extracted or there is a change in reagents, a method blank should be processed as a safeguard against chronic laboratory contamination.

7.2 Standard quality assurance practices should be used with this method. Field replicates should be collected to validate the precision of the sampling technique. Laboratory replicates should be analyzed to validate the precision of the analysis. Fortified samples should be analyzed to validate the accuracy of the analysis. Where doubt exists over the identification of a peak on the chromatogram, confirmatory techniques such as mass spectroscopy should be used.

8. *Sample Collection, Preservation, and Handling.*

8.1 Grab samples must be collected in glass containers. Conventional sampling practices should be followed, except that the bottle must not be prewashed with sample before collection. Composite samples should be collected in refrigerated glass containers in accordance with the requirements of the program. Automatic sampling equipment must be free of tygon and other potential sources of contamination.

8.2 The samples must be iced or refrigerated from the time of collection until extraction. Chemical preservatives should not be used in the field unless more than 24 hours will elapse before delivery to the laboratory. If the samples will not be extracted within 48 hours of collection, the sample should be adjusted to a pH range of 6.0–8.0 with sodium hydroxide or sulfuric acid.

8.3 All samples must be extracted within 7 days and completely analyzed within 30 days of collection.

9. *Sample Extraction.*

9.1 Mark the water meniscus on the side of the sample bottle for later determination of sample volume. Pour the entire sample into a two-liter separatory funnel. Check the pH of the sample with wide-range pH paper and adjust to within the range of 5–9 with sodium hydroxide or sulfuric acid.

9.2 Add 60 ml methylene chloride to the sample bottle, seal, and shake 30 seconds to rinse the inner walls. Transfer the solvent into the separatory funnel, and extract the sample by shaking the funnel for two minutes with periodic venting to release vapor pressure. Allow the organic layer to separate from the water phase for a minimum of ten minutes. If the emulsion interface between layers is more than one-third the size of the solvent layer, the analyst must enploy mechanical techniques to complete the phase separation. The optimum technique depends upon the sample, but may include stirring, filtration of the emulsion through glass wool, or centrifugation. Collect the methylene chloride extract in a 250–ml Erlenmeyer flask.

9.3 Add a second 60-ml volume of methylene chloride to the sample bottle and complete the extraction procedure a second time, combining the extracts in the Erlenmeyer flask.

9.4 Perform a third extraction in the same manner. Pour the combined extract through a drying column containing 3–4 inches of anhydrous sodium sulfate, and collect it in a 500-ml Kuderna-Danish (K–D) flask equipped with a 10 ml concentrator tube. Rinse the Erlenmeyer flask and column with 20–30 ml methylene chloride to complete the quantitative transfer.

9.5 Add 1–2 clean boiling chips to the flask and attach a three-ball Snyder column. Prewet the Snyder column by adding about 1 ml methylene chloride to the top. Place the K–D apparatus on a hot water bath (60–65°C) so that the concentrator tube is partially immersed in the hot water, and the entire lower rounded surface of the flask is bathed in vapor. Adjust the vertical position of the apparatus and the water temperature as required to complete the concentration in 15–20 minutes. At the proper rate of distillation the balls of the column will actively chatter but the chambers will not flood. When the apparent volume of liquid reaches 1 ml, remove the K–D apparatus and allow it to drain for at least 10 minutes while cooling.

9.6 Increase the temperature of the hot water bath to about 80°C. Momentarily remove the Snyder column, add 50 ml of hexane and a new boiling chip and reattach the Snyder column. Pour about 1 ml of hexane into the top of the Snyder column and concentrate the solvent extract as before. The elapsed time of concentration should be 5 to 10 minutes. When the apparent volume of liquid reaches 1 ml, remove the K–D apparatus and allow it to drain at least 10 minutes while cooling. Remove the Snyder column and rinse the flask and

its lower joint into the concentrator tube with 1–2 ml of hexane, and adjust the volume to 10 ml. A 5-ml syringe is recommended for this operation. Stopper the concentrator tube and store refrigerated if further processing will not be performed immediately. If the sample extract requires no further cleanup, proceed with gas chromatographic analysis. If the sample requires cleanup, proceed to Section 10.

9.7 Determine the original sample volume by refilling the sample bottle to the mark and transferring the liquid to a 1000 ml graduated cylinder. Record the sample volume to the nearest 5 ml.

10. *Cleanup and Separation.*

10.1 Cleanup procedures are used to extend the sensitivity of a method by minimizing or eliminating interferences that mask or otherwise disfigure the gas chromatographic response to the pesticides and PCB's. The Florisil column allows for a select fractionation of the compounds and will eliminate polar materials. Elemental sulfur interferes with the electron capture gas chromatography of certain pesticides but can be removed by the techniques described below.

10.2 Florisil Column Cleanup

10.2.1 Add a weight of Florisil, (nominally 21g,) predetermined by calibration (6.3, 6.4), to a chromatographic column. Settle the Florisil by tapping the column. Add sodium sulfate to the top of the Florisil to form a layer 1–2 cm deep. Add 60 ml of hexane to wet and rinse the sodium sulfate and Florisil. Just prior to exposure of the sodium sulfate to air, stop the elution of the hexane by closing the stopcock on the chromatography column. Discard the eluate.

10.2.2 Adjust the sample extract volume to 10 ml and transfer it from the K–D concentrator tube to the Florisil column. Rinse the tube twice with 1–2 ml hexane, adding each rinse to the column.

10.2.3 Place a 500 ml K–D flask and clean concentrator tube under the chromatography column. Drain the column into the flask until the sodium sulfate layer is nearly exposed. Elute the column with 200 ml of 6% ethyl ether in hexane (Fraction 1) using a drip rate of about 5 ml/min. Remove the K–D flask and set aside for later concentration. Elute the column again, using 200 ml of 15% ethyl ether in nexane (Fraction 2), into a second K–D flask. Perform the third elution using 200 ml of 50% ethyl in hexane (Fraction 3). The elution patterns for the pesticides and PCB's are shown in Table II.

10.2.4 Concentrate the eluates by standard K–D techniques (9.5), substituting hexane for the glassware rinses and using the water bath at about 85° C. Adjust final volume to 10 ml with hexane. Analyze by gas chromatography.

10.3 Elemental sulfur will usually elute entirely in Fraction 1. To remove sulfur interference from this fraction or the original extract, pipet 1.00 ml of the concentrated extract into a clean concentrator tube or Teflon-sealed vial. Add 1–3 drops of mercury and seal. Agitate the contents of the vial for 15–30 seconds. Place the vial in an upright position on a reciprocal laboratory shaker and shake for 2 hours. Analyze by gas chromatography.

11. *Gas Chromatography.*

11.1 Table I summarizes some recommended gas chromatographic column materials and operating conditions for the instrument. Included in this table are estimated retention times and sensitivities that should be achieved by this method. Examples of the separations achieved by these columns are shown in Figures 1 through 10. Calibrate the system daily with a minimum of three injections of calibration standards.

11.2 Inject 2–5 μl of the sample extract using the solvent-flush technique. Smaller (1.0 μl) volumes can be injected if automatic devices are employed. Record the volume injected to the nearest 0.05 μl, and the resulting peak size, in area units.

11.3 If the peak area exceeds the linear range of the system, dilute the extract and reanalyze.

11.4 If the peak area measurement is prevented by the presence of interferences, further cleanup is required.

12. *Calculations.*

12.1 Determine the concentration of individual compounds according to the formula:

$$\text{Concentration, } \mu g/l = \frac{(A)(B)(V_t)}{(V_i)(V_s)}$$

Where:

A = Calibration factor for chromatographic system, in nanograms material per area unit.

B = Peak size in injection of sample extract, in area units

V_i = Volume of extract injected (μl)

V_t = Volume of total extract (μl)

V_s = Volume of water extracted (ml)

12.2 Report results in micrograms per liter without correction for recovery data. When duplicate and spiked samples are analyzed, all data obtained should be reported.

13. *Accuracy and Precision.*

13.1 The U.S. EPA Environmental Monitoring and Support Laboratory in Cincinnati is in the process of conducting an interlaboratory method study to determine the accuracy and precision of this test procedure.

Bibliography

1. "Development and Application of Test Procedures for Specific Organic Toxic Substances in Wastewaters. Category 10–Pesticides and PCB's." Report for EPA Contract 68–03–2606.

2. Mills, P. A., "Variation of Florisil Activity: Simple Method for Measuring Absorbent Capacity and Its Use in Standardizing Florisil Columns," Journal of the Association of Official Analytical Chemists, *51*, 29 (1968).

Table I. —*Gas Chromatography of Pesticides and PCB's*

Parameter	Retention time (min) Col. 1 [1]	Col.2 [2]	Detection limit (μg/1) [3]
Aldrin	2.40	4.10	0.003
a-BHC	1.35	1.82	0.002
b-BHC	1.90	1.97	0.004
d-BHC	2.15	2.20	0.004
g-BHC	1.70	2.13	0.002
Chlordane	(4)	(4)	0.04
4,4†-DDD	7.83	9.08	0.012
4,4†-DDE	5.13	7.15	0.006
4,4†-DDT	9.40	11.75	0.016
Dieldrin	5.45	7.23	0.006
Endosulfan I	4.50	6.20	0.005
Endosulfan II	8.00	8.28	0.01
Endosulfan sulfate	14.22	10.70	0.03
Endrin	6.55	8.10	0.009
Endrin aldehyde	11.82	9.30	0.023
Heptachlor	2.00	3.35	0.002
Heptachlor epoxide	3.50	5.00	0.004
Toxaphene	(4)	(4)	0.40
PCB–1016	(4)	(4)	0.04
PCB–1221	(4)	(4)	0.10
PCB–1232	(4)	(4)	0.10
PCB–1242	(4)	(4)	0.05
PCB–1248	(4)	(4)	0.08
PCB–1254	(4)	(4)	0.08
PCB–1260	(4)	(4)	0.15

[1] Supelcoport 100/120 mesh coated with 1.5% SP–2250/1.95% SP–2401 packed in a 180 cm long x 4 mm ID glass column with 5% Methane/95% Argon carrier gas at 60 ml/min flow rate. Column temperature is 200°C.

[2] Supelcoport 100/120 mesh coated with 3% OV–1 in a 180 cm long x 4 mm ID glass column with 5% Methane/95% Argon carrier gas at 60 ml/min flow rate. Column temperature is 200°C.

[3] Detection limit is calculated from the minimum detectable GC response being equal to five times the GC background noise, assuming a 10 ml final volume of the 1 liter sample extract, and assuming a GC injection of 5 microliters.

[4] Multiple peak response. See Figures 2–10.

Table II. —*Distribution and Recovery of Chlorinated Pesticides and PCBs Using Florisil Column Chromatography*

Parameter	Recovery (percent) by fraction [1]		
	1(6 pct.)	2 (15 pct.)	3 (50 pct.)
Aldrin	100		
a-BHC	100		
b-BHC	97		
d-BHC	98		
g-BHC	100		
Chlordane	100		
4,4'-DDD	99		
4,4'-DDE	98		
4c4'-DDT	100		
Dieldrin	0	100	
Endosulfan I	37	64	
Endosulfan II	0	7	91
Endosulfan sulfate	0	0	106
Endrin	4	96	
Endrin aldehyde	0	68	26
Heptachlor	100		
Heptachlor epoxide	100		
Toxaphene	96		
PCB-1016	97		
PCB-1221	97		
PCB-1232	95	4	
PCB-1242	97		
PCB-1248	103		
PCB-1254	90		
PCB-1260	95		

[1] From: "Development and Application of Test Procedures for Specific Organic Toxic Substances in Wastewaters. Category 10-Pesticides and PCB's. Report for EPA Contract 68-03-2606."

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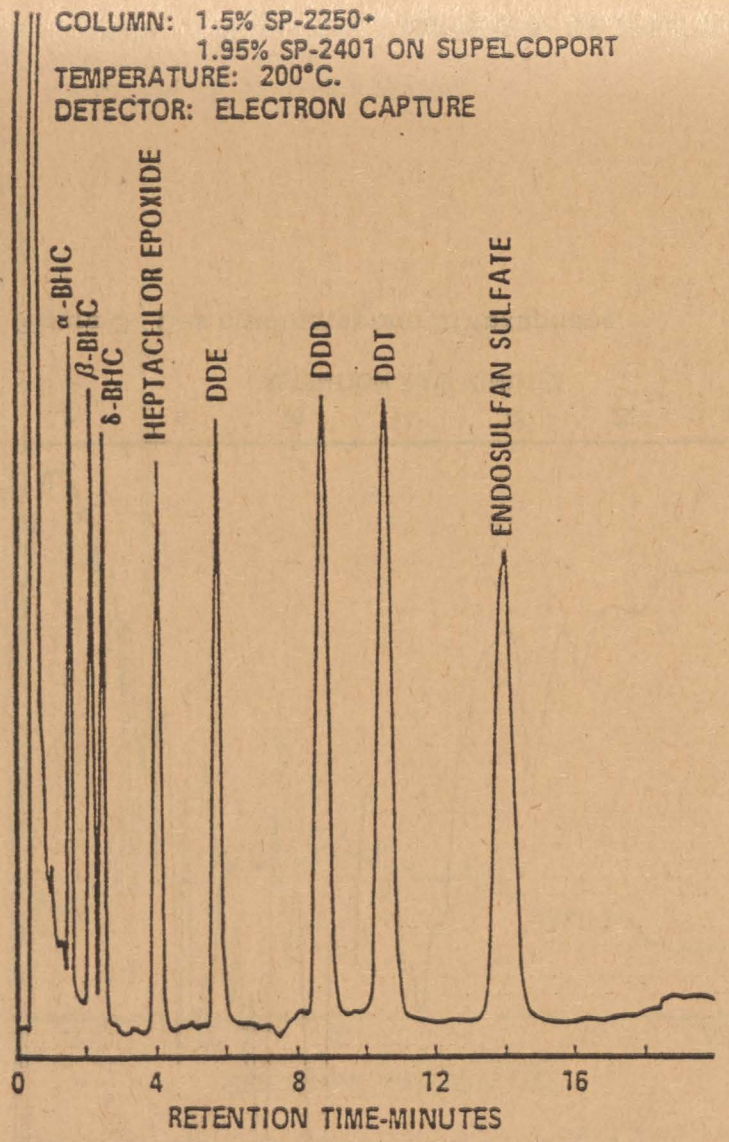


Figure 1. Gas chromatogram of pesticides

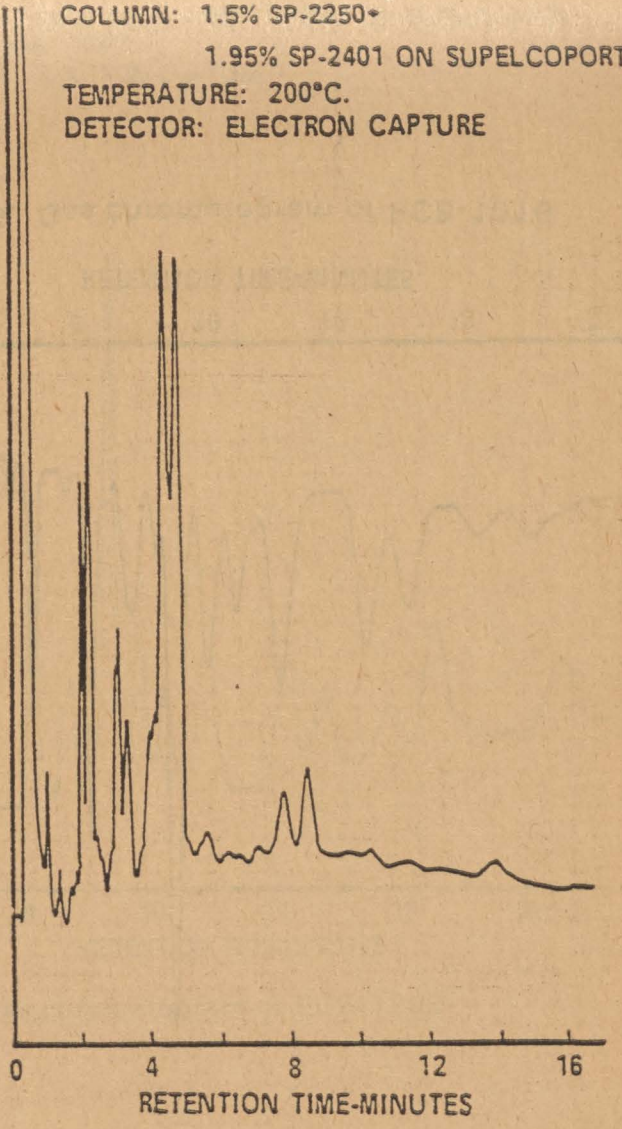


Figure 2. Gas chromatogram of chlordane

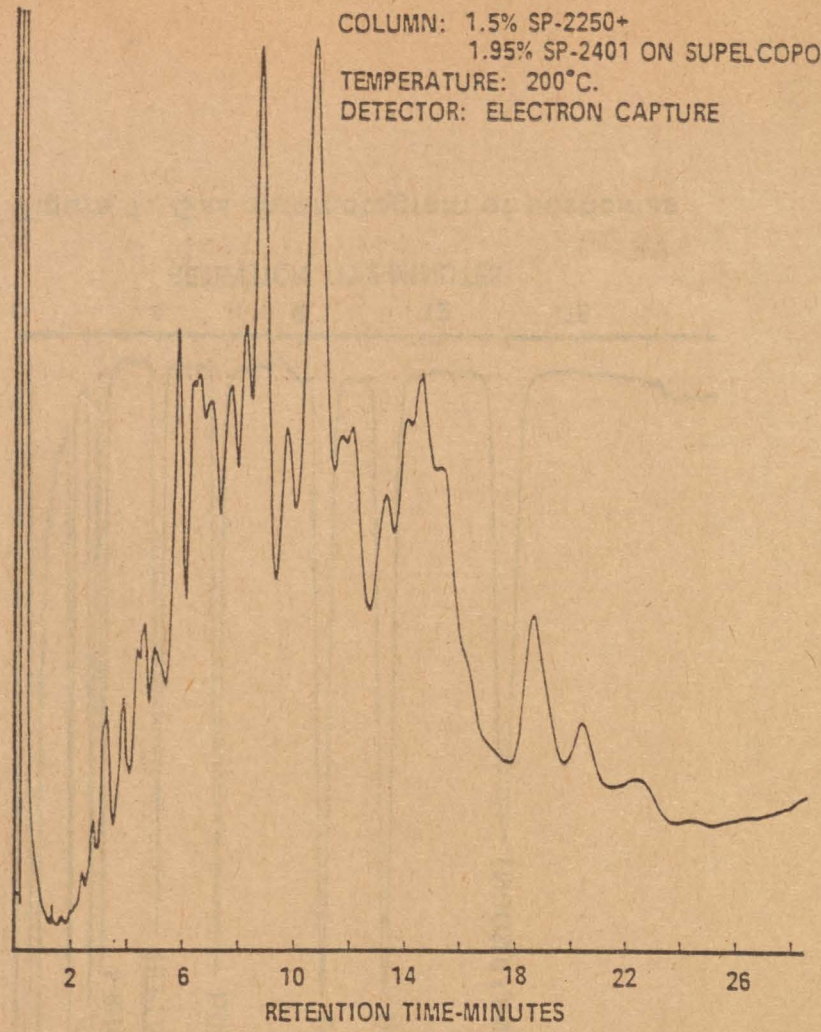


Figure 3. Gas chromatogram of toxaphene

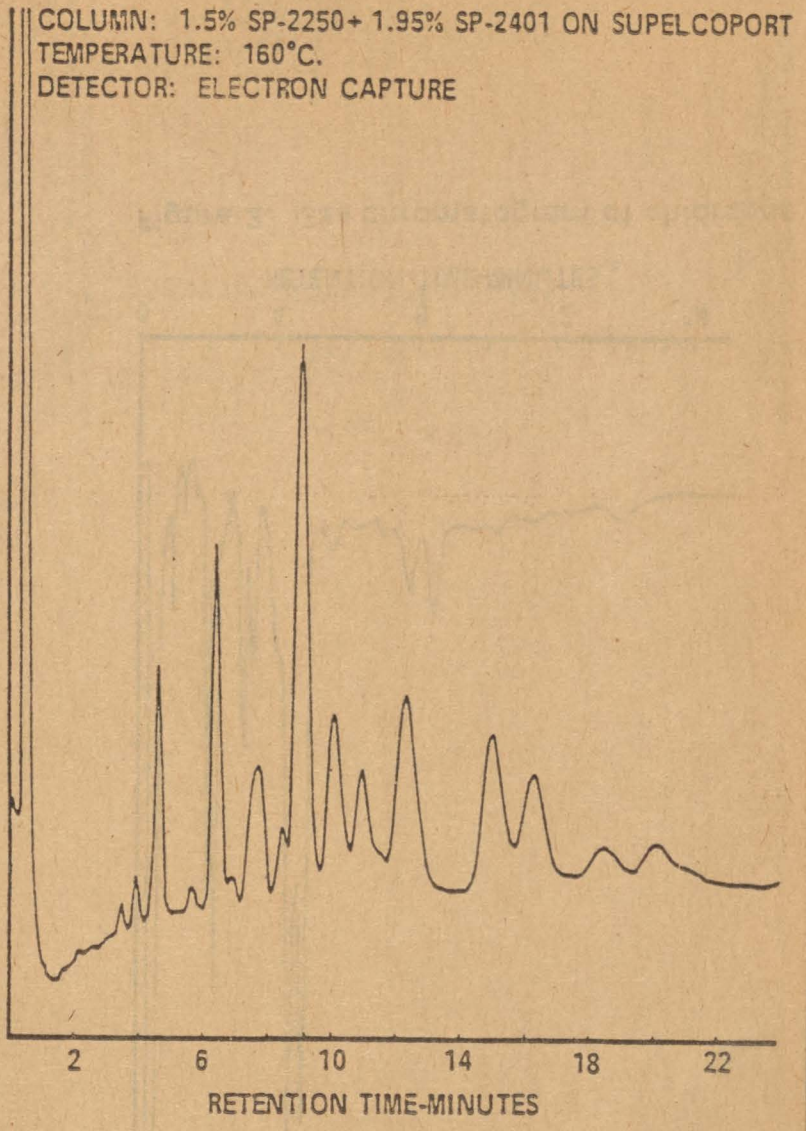


Figure 4. Gas chromatogram of PCB-1016

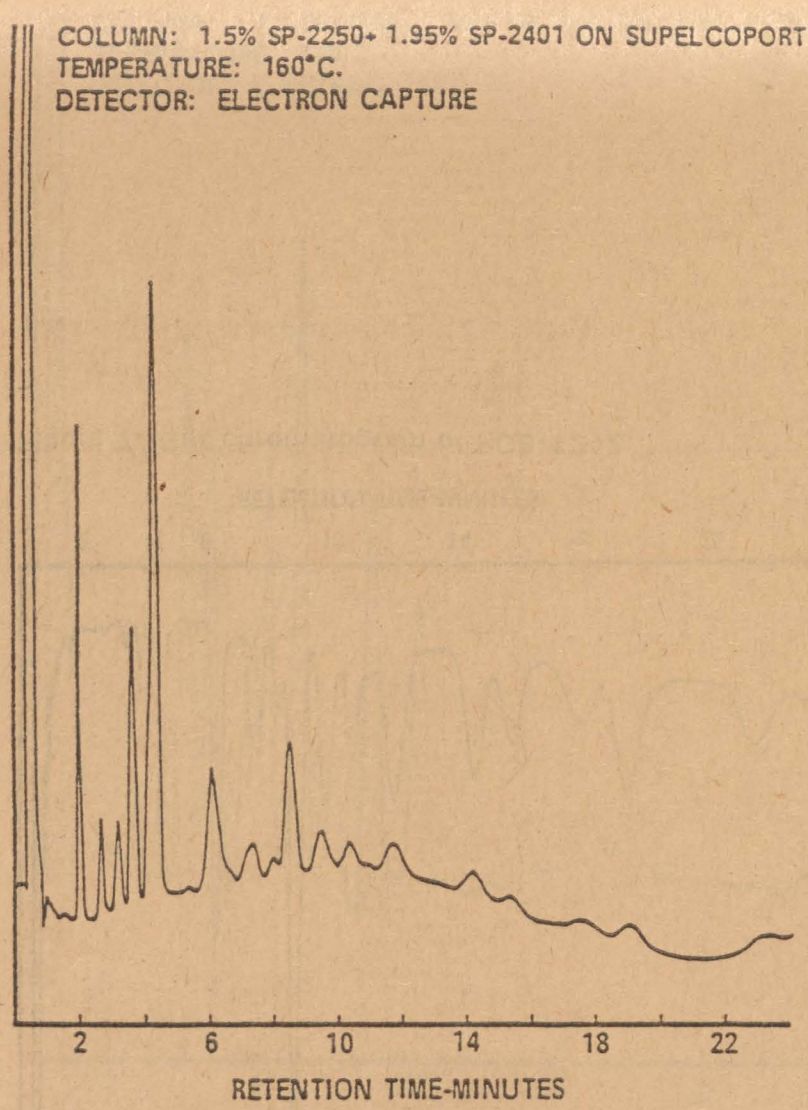


Figure 5. Gas chromatogram of PCB-1221

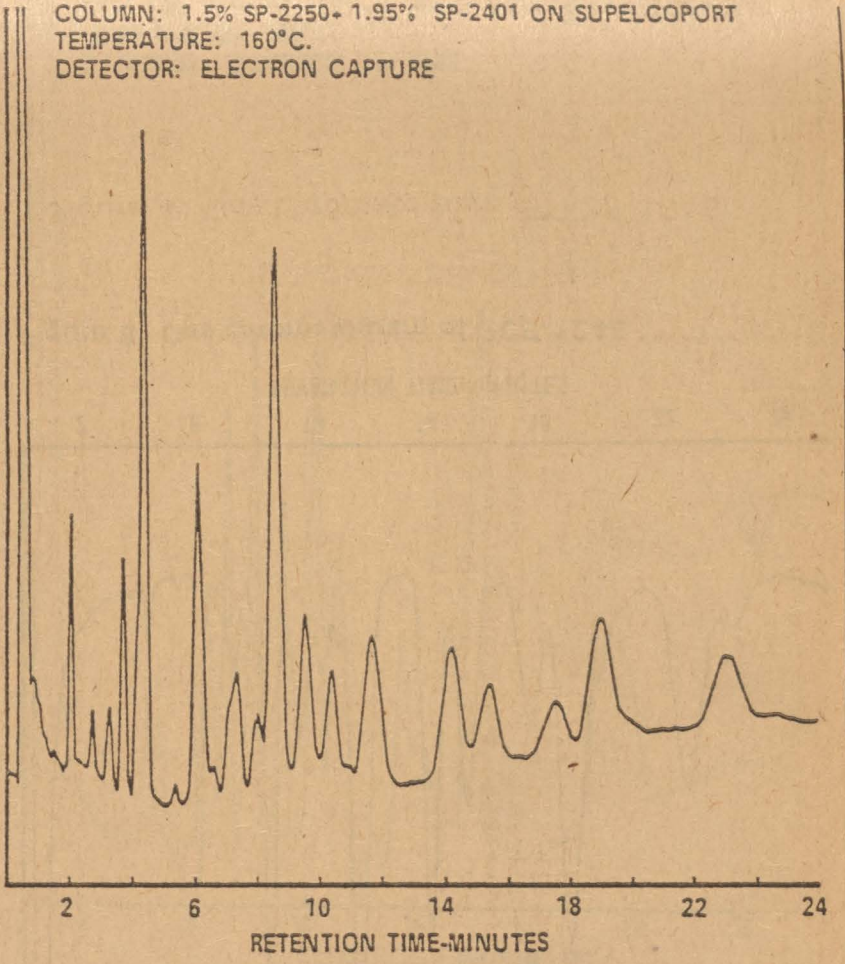


Figure 6. Gas chromatogram of PCB-1232

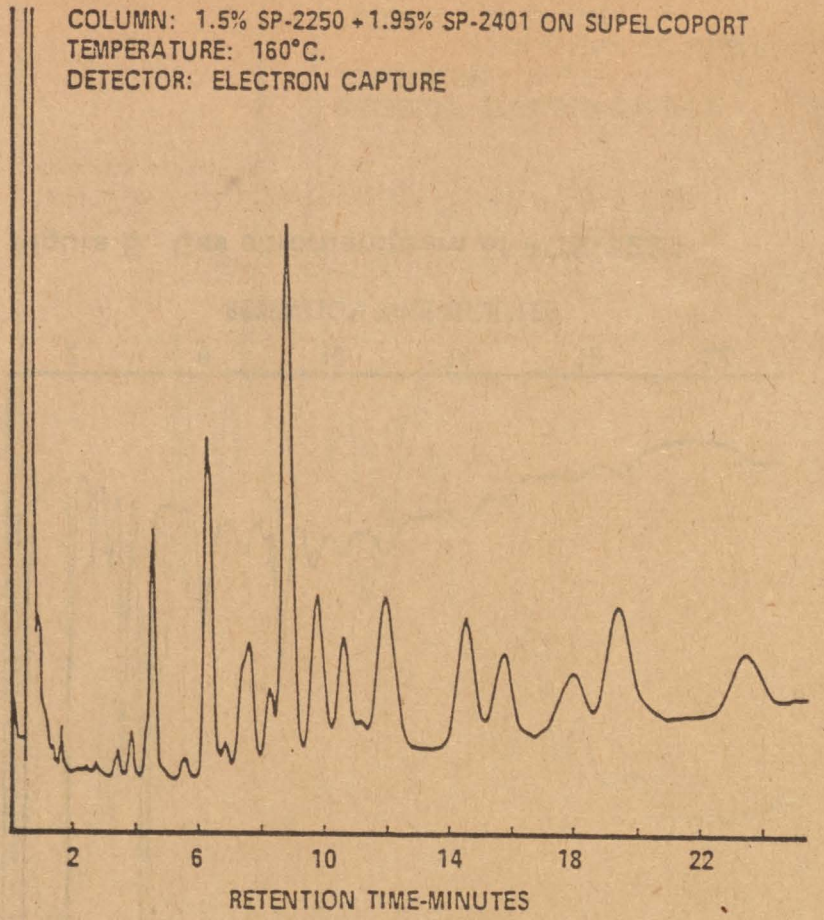


Figure 7. Gas chromatogram of PCB-1242

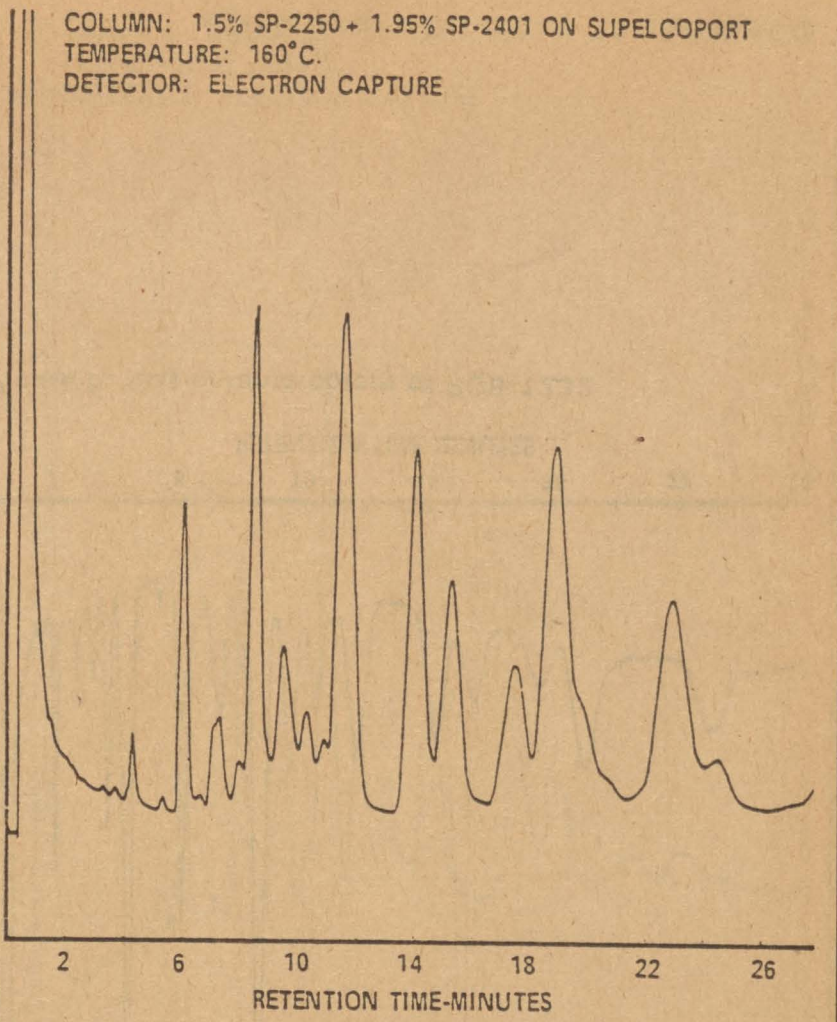


Figure 8. Gas chromatogram of PCB-1248

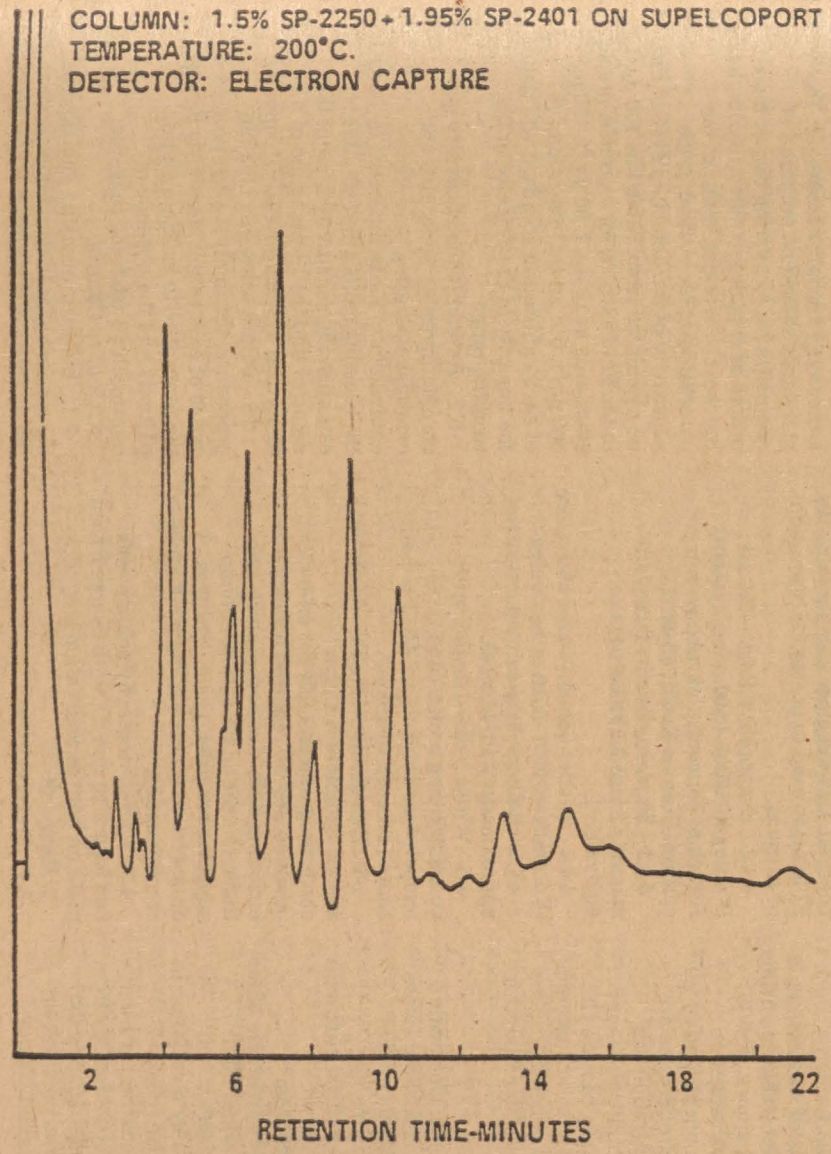


Figure 9. Gas chromatogram of PCB-1254

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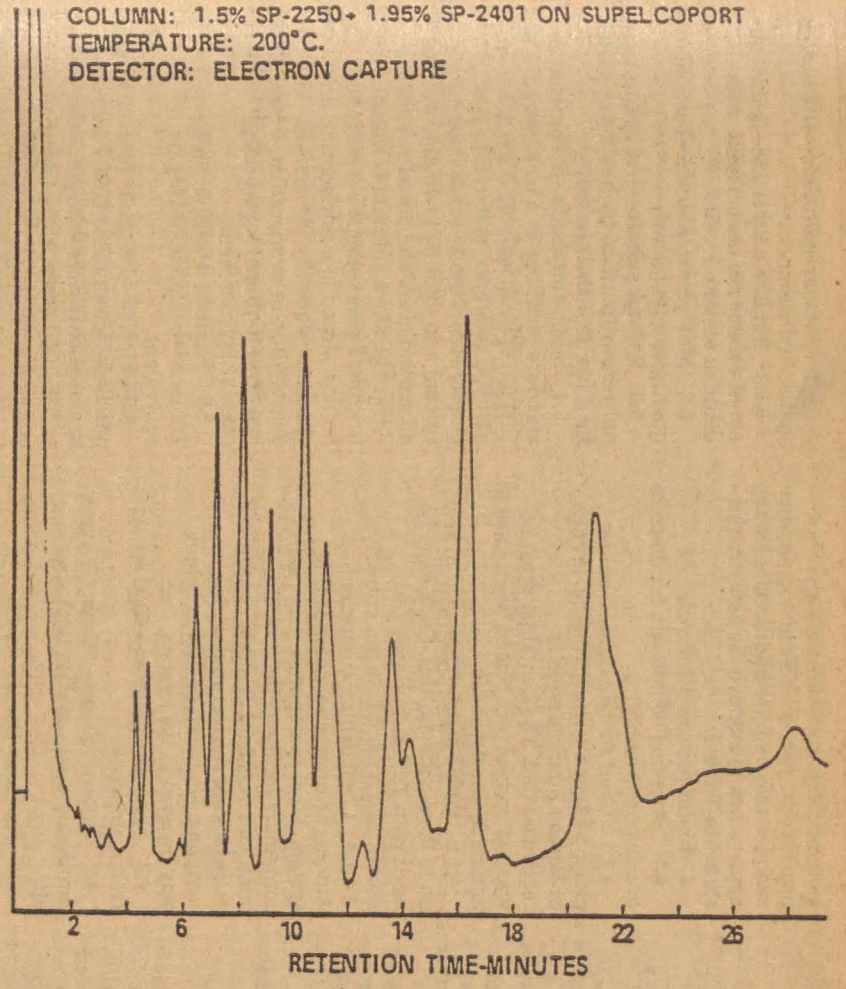


Figure 10. Gas chromatogram of PCB-1260

Nitroaromatics and Isophorone—Method 609

1. *Scope and Application.*

1.1 This method covers the determination of certain nitroaromatics and isophorone. The following parameters may be determined by this method:

Parameter:	Storet No.
Isophorone	34408
Nitrobenzene	34447
2,4-Dinitrotoluene	34611
2,6-Dinitrotoluene	34626

1.2 This method is applicable to the determination of these compounds in municipal and industrial discharges. It is designed to be used to meet the monitoring requirements of the National Pollutant Discharege Elimination System (NPDES). As such, it presupposes a high expectation of finding the specific compunds of interest. If the user is attempting to screen samples for any or all of the compounds above, he must develop independent protocols for the verification of identity.

1.3 The sensitivity of this method is usually dependent upon the level of interferences rather than instrumental limitations. The limits of detection listed in Table I represent sensitivities that can be achieved in wastewaters in the absence of interferences.

1.4 This method is recommended for use only by experienced residue analysts or under the close supervision of such qualified persons.

2. *Summary of Method.*

2.1 A 1-liter sample of wastewater is extracted with methylene chloride using separatory funnel techniques. The extract is dried and exchanged to toluene while being concentrated to 1.0 ml. Isophorone and nitrobenzene are measured by flame ionization gas chromatography. The dinitrotoluenes are measured by electron capture GC.

2.2 If interferences are encountered, the method provides a general purpose cleanup procedure to aid the analyst in their elimination.

3. *Interferences.*

3.1 Solvents, reagents, glassware, and other sample processing hardware may yield discrete artifacts and/or elevated baselines causing misinterpretation of gas chromatograms. All of these materials must be demonstrated to be free from interferences under the conditions of the analysis by running method blanks. Specific selection of reagents and purification of solvents by distillation in all-glass systems may be required.

3.2 Interferences coextracted from the samples will vary considerably from source to source, depending upon the diversity of the industrial complex or municipality being sampled. While general clean-up techniques are provided as part of this method, unique samples may require additional cleanup approaches to achieve the sensitivities stated in Table I.

4. *Apparatus and Materials.*

4.1 Sampling equipment, for discrete or composite sampling.

4.1.1 Grab sample bottle—amber glass, 1-liter or 1-quart volume. French or Boston Round design is recommended. The container must be washed and solvent rinsed before use to minimize interferences.

4.1.2 Bottle caps—Threaded to screw on to the sample bottles. Caps must be lined with Teflon. Foil may be substituted if sample is not corrosive.

4.1.3 Compositing equipment—Automatic or manual compositing system. Must incorporate glass sample containers for the collection of a minimum of 250 ml. Sample containers must be kept refrigerated during sampling. No tygon or rubber tubing may be used in the system.

4.2 Separatory funnel—2000 ml, with Teflon stopcock.

4.3 Drying column—20 mm ID pyrex chromatographic column with coarse frit.

4.4 Kuderna-Danish (K–D) Apparatus

4.4.1 Concentrator tube—10 ml, graduated (Kontes K–570050–1025 or equivalent). Calibration must be checked. Ground glass stopper (size 19/22 joint) is used to prevent evaporation of extracts.

4.4.2 Evaporative flask—500 ml (Kontes K–57001–0500 or equivalent). Attach to concentrator tube with springs. (Kontes K–662750–0012).

4.4.3 Snyder column—three-ball macro (Kontes K503000–0121 or equivalent).

4.4.4 Snyder column—two-ball micro (Kontes K–569001–0219 or equivalent).

4.4.5 Boiling chips-solvent extracted, approximately 10/40 mesh.

4.5 Water bath—Heated, with concentric ring cover, capable of temperature control (±2°C). The bath should be used in a hood.

4.6 Gas chromatograph—Analytical system complete with gas chromatograph suitable for on-column injection and all required accessories including both electron capture and flame ionization detectors, column supplies, recorder, gases, syringes. A data system for measuring peak areas is recommended.

4.7 Chromatography column—400 mm long x 10 mm ID, with coarse fritted plate on bottom and Teflon stopcock.

5. *Reagents.*

5.1 Preservatives:

5.1.1 Sodium hydroxide—(ACS) 10 N in distilled water.

5.1.2 Sulfuric acid (1+1)—(ACS) Mix equal volumes of conc. H_2SO_4 with distilled water

5.2 Methylene chloride—Pesticide quality or equivalent.

5.3 Sodium sulfate—(ACS) Granular, anhydrous (purified by heating at 400°C for 4 hrs. in a shallow tray).

5.4 Stock standards—Prepare stock standard solutions at a concentration of 1.00 μg/ul by dissolving 0.100 grams of assayed reference material in pesticide quality isooctane or other appropriate solvent and diluting to volume in a 100 ml ground glass stoppered volumetric flask. The stock solution is transferred to ground glass stoppered reagent bottles, stored in a refrigerator, and checked frequently for signs of degradation or evaporation, especially just prior to preparing working standards from them.

5.5 Acetone, Haxane, Methanol, Toluene—pesticide quality or equivalent.

5.6 Florisil—PR grade (60/100 mesh); purchase activated at 1250°F and store in glass containers with glass stoppers or foil-lined screw caps. Before use, activate each batch overnight at 200°C in glass containers loosely covered with foil.

6. *Calibration.*

6.1 Prepare calibration standards that contain the compounds of interest, either singly or mixed together. The standards should be prepared at concentrations covering two or more orders of magnitude that will completely bracket the working range of the chromatographic system. If the sensitivity of the detection system can be calculated from Table I as 100 μg/1 in the final extract, for example, prepare standards at 10 μg/1, 50 μg/1, 100 μg/1, 500 μg/1, etc. so that injections of 1–5 μl of each calibration standard will define the linearity of the detector in the working range.

6.2 Assemble the necessary gas chromatographic apparatus and establish operating parameters equivalent to those indicated in Table I. By injecting calibration standards, establish the sensitivity limit of the detector and the linear range of the analytical system for each compound.

6.3 Before using any cleanup procedure, the analyst must process a series of calibration standards through the procedure to validate elution patterns and the absence of interferences from the reagents.

7. *Quality Control.*

7.1 Before processing any samples, the analyst should demonstrate through the analysis of a distilled water method

blank, that all glassware and reagents are interference-free. Each time a set of samples is extracted or there is a change in reagents, a method blank should be processed as a safeguard against chronic laboratory contamination.

7.2 Standard quality assurance practices should be used with this method. Field replicates should be collected to validate the precision of the sampling technique. Laboratory replicates should be analyzed to validate the precision of the analysis. Fortified samples should be analyzed to validate the accuracy of the analysis. Where doubt exists over the identification of a peak on the chromatogram, confirmatory techniques such as mass spectroscopy should be used.

8. *Sample Collection, Preservation, and Handling.*

8.1 Grab samples must be collected in glass containers. Conventional sampling practices should be followed, except that the bottle must not be prewashed with sample before collection. Composite samples should be collected in refrigerated glass containers in accordance with the requirements of the program. Automatic sampling equipment must be free of tygon and other potential sources of contamination.

8.2 The samples must be iced or refrigerated from the time of collection until extraction. Chemical preservatives should not be used in the field unless more than 24 hours will elapse before delivery to the laboratory. If the samples will not be extracted within 48 hours of collection, the sample should be adjusted to a pH range of 6.0–8.0 with sodium hydroxide or sulfuric acid.

8.3 All samples must be extracted within 7 days and completely analyzed within 30 days of collection.

9. *Sample Extraction.*

9.1 Mark the water meniscus on the side of the sample bottle for later determination of sample volume. Pour the entire sample into a two-liter separatory funnel. Check the pH of the sample with wide-range pH paper and adjust to within the range of 5–9 with sodium hydroxide or sulfuric acid.

9.2 Add 60 ml methylene chloride to the sample bottle, seal, and shake 30 seconds to rinse the inner walls. Transfer the solvent into the separatory funnel, and extract the sample by shaking the funnel for two minutes with periodic venting to release vapor pressure. Allow the organic layer to separate from the water phase for a minimum of ten minutes. If the emulsion interface between layers is more than one-third the size of the solvent layer, the analyst must employ mechanical techiques to complete the phase separation. The optimum technique depends upon the sample, but may include stirring, filtration of the emulsion through glass wool, or centrifugation. Collect the methylene chloride extract in a 250-ml Erlenmeyer flask.

9.3 Add a second 60-ml volume of methylene chloride to the sample bottle and complete the extraction procedure a second time, combining the extracts in the Erlenmeyer flask.

9.4 Perform a third extraction in the same manner. Pour the combined extract through a drying column containing 3–4 inches of anhydrous sodium sulfate, and collect it in a 500-ml Kuderna-Danish (K–D) flask equipped with a 10 ml concentrator tube. Rinse the Erlenmeyer flask and column with 20–30 ml methylene chloride to complete the quantitative transfer.

9.5 Add 1–2 clean boiling chips to the flask and attach a three-ball Snyder column. Prewet the Snyder column by adding about 1 ml methylene chloride to the top. Place the K–D apparatus on a hot water bath (60–65°C) so that the concentrator tube is partially immersed in the hot water, and the entire lower rounded surface of the flask is bathed in vapor. Adjust the vertical position of the apparatus and the water temperature as required to complete the concentration in 15–20 minutes. At the proper rate of distillation the balls of the column will actively chatter but the chambers will not flood. When the apparent volume of liquid reaches 1 ml, remove the K–D apparatus and allow it to drain for at least 10 minutes while cooling. Remove the Snyder column and rinse the flask and its lower joint into the concentrator tube with 1–2 ml of methylene chloride. A 5-ml syringe is recommended for this operation.

9.6 Add 1.0 ml toluene to the concentrator tube, and a clean boiling chip. Attach a two-ball micro-Snyder column. Prewet the micro-Snyder column by adding about 0.5 ml of methylene chloride to the top. Place this micro-K–D apparatus on a water bath (60–65°C) so that the concentrator tube is partially immersed in the hot water. Adjust the vertical position of the apparatus and water temperature as required to complete the concentration in 5 to 10 minutes. At the proper rate of distillation the balls will actively chatter but the chambers will not flood. When the apparent volume of liquid reaches 0.5 ml, remove the K–D apparatus and allow it to drain for at least 10 minutes while cooling. Remove the micro-Snyder column and rinse its lower joint into the concentrator tube with a small volume of toluene. Adjust the final volume to 1.0 ml and stopper the concentrator tube and store refrigerated if further processing will not be performed immediately. Unless the sample is known to require cleanup, proceed with gas chromatographic analysis.

9.7 Determine the original sample volume by refilling the sample bottle to the mark and transferring the liquid to a 1000 ml graduated cylinder. Record the sample volume to the nearest 5 ml.

10. *Cleanup and Separation.*

10.1 Prepare a slurry of 10g of activated Florisil in 10% methylene chloride in hexane (V/V). Use it to pack a 10 mm ID chromatography column, gently tapping the column to settle the Florisil. Add 1 cm anhydrous sodium sulfate to the top of the Florisil.

10.1.1 Just prior to exposure of the sodium sulfate layer to the air transfer the 1 ml sample extract onto the column using an additional 2 ml of toluene to complete the transfer.

10.1.2 Just prior to exposure of the sodium sulfate layer to the air, add 30 ml 10% methylene chloride in hexane and continue the elution of the column. Elution of the column should be at a rate of about 2 ml per minute. Discard the eluate from this fraction.

10.1.3 Next elute the column with 30 ml of 10% acetone/90% methylene chloride (V/V) into a 500 ml K–D flask equipped with a 10 ml concentrator tube. Concentrate the collected fraction by the K–D technique prescribed in 9.5 and 9.6, including the solvent exchange to 1 ml toluene. This fraction should contain the nitroaromatics and isophorone.

10.1.4 Analyze by gas chromatography.

11. *Gas Chromatography.*

11.1 Isophorone and nitrobenzene are analyzed by injection of a portion of the extract into a gas chromatograph with a flame ionization detector. The dinitrotoluenes are analyzed by a separate injection into an electron capture gas chromatograph. Table I summarizes some recommended gas chromatographic column materials and operating conditions for the instruments. Included in this table are estimated retention times and sensitivities that should be achieved by this method. Examples of the separations achieved by the primary column are shown in Figures 1 and 2. Calibrate the system daily with a minimum of three injections of calibration standards.

11.2 Inject 2–5 μl of the sample extract using the solvent-flush technique. Smaller (1.0 μl) volumes can be injected if automatic devices are employed. Record the volume injected to the nearest 0.05 μl, and the resulting peak size, in area units.

11.3 If the peak area exceeds the linear range of the system, dilute the extract and reanalyze.

11.4 If the peak area measurement is prevented by the presence of interferences, further cleanup is required.

12. *Calculations.*

12.1 Determine the concentration of individual compounds according to the formula:

$$\text{Concentration, } \mu g/l = \frac{(A)(B)(V_t)}{(V_i)(V_s)}$$

Where:

A = Calibration factor for chromatographic system, in nanograms material per area unit.

B = Peak size in injection of sample extract, in area units.

V_i = Volume of extract injected (μl).

V_t = Volume of total extract (μl).

V_s = Volume of water extracted (ml).

12.2 Report results in micrograms per liter without correction for recovery data. When duplicate and spiked samples are analyzed, all data obtained should be reported.

13. *Accuracy and Precision.*

The U.S. EPA Environmental Monitoring and Support Laboratory in Cincinnati is in the process of conducting an interlaboratory method study to determine the accuracy and precision of this test procedure.

Bibliography

"Development and Application of Test Procedures for Specific Organic Toxic Substances in Wastewaters. Category 4-Nitroaromatics and Isophorone," Report for EPA Contract No. 68-03-2624 (In preparation).

Table I. —*Gas Chromatography of Nitroaromatics and Isophorone*

Compound	Retention time (min.)		Detection limit (µg/l)[3]	
	Col. 1[1]	Col. 2[2]	EC	FID
Isophorone	4.49	5.72	.....	5
Nitrobenzene	3.31	4.31	.....	5
2,4-Dinitrotoluene	5.35	6.54	0.06	.....
2,6-Dinitrotoluene	3.52	4.75	0.06	.....

[1] Gas-Chrom Q 80/100 mesh coated with 1.95% OF-1/1.5% OV-17 packed in a 4' × ¼" OD glass column. FID analysis for IP and NB requires nitrogen caier gas at 44 ml/min and 85°C column temperature. EC analysis for the DNTs requires 10% Methane/90% Argon carrier gas at 44 ml/min flow rate and 145°C column temperature.

[2] Gas-Chrom Q 80/100 mesh coated with 3% OV-101 packed in a 10' × ¼" OD glass column. FID analysis of IP and NB requires nitrogen carrier gas at 44 ml/min flow rate and 100°C column temperature. EC analysis for the DNTs requires 10% Methane/90% Argon carrier gas at 44 ml/min flow rate and 150°C column temperature.

[3] Detection limit is calculated from the minimum detectable GC response being equal to five times the GC background noise, assuming a 10 ml final volume of the 1 liter sample extract, and assuming a GC injection of 5 microliters.

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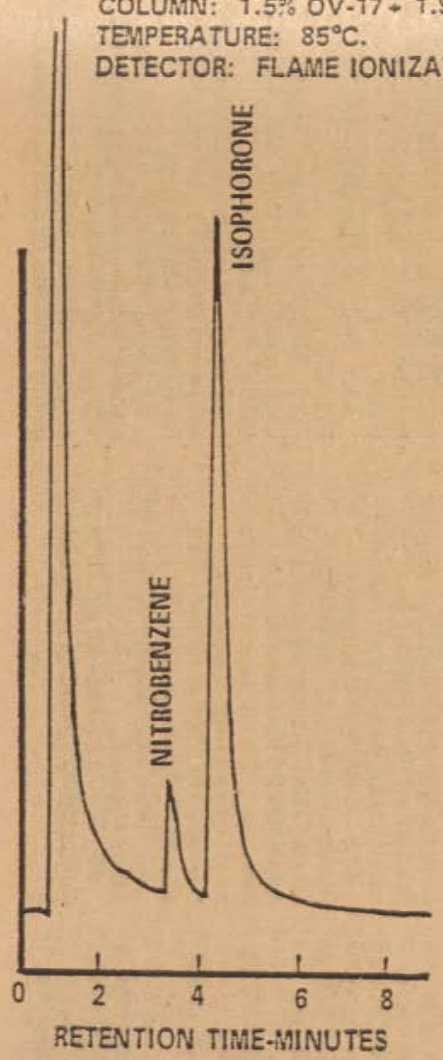


Figure 1. Gas chromatogram of nitrobenzene and isophorone

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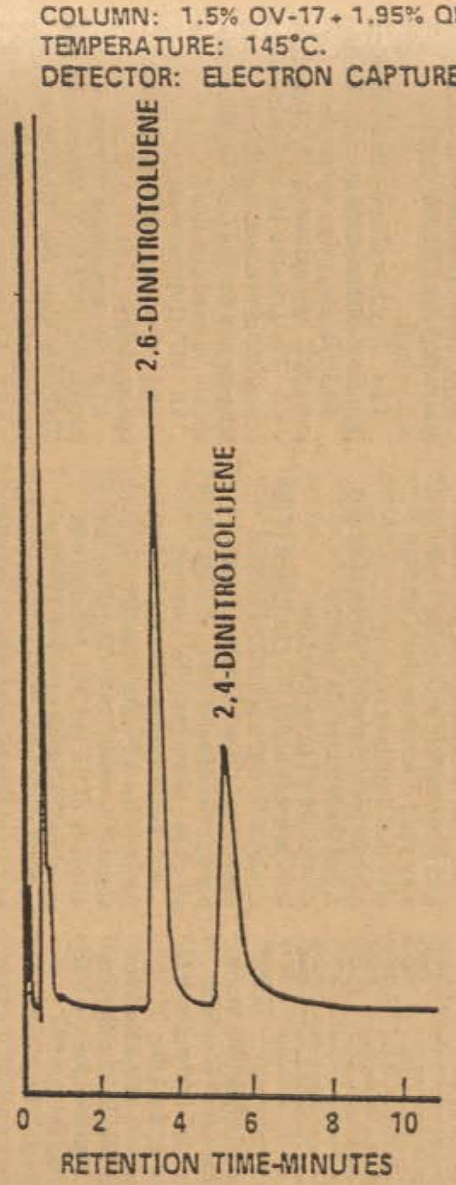


Figure 2. Gas chromatogram of dinitrotoluenes

Polynuclear Aromatic Hydrocarbons—Method 610

1. *Scope and Application.*

1.1 This method covers the determination of certain polynuclear aromatic hydrocarbons (PAH). The following parameters may be determined by this method:

Parameter:	STORET No.
Acenaphthene	34205
Acenaphthylene	34200
Anthracene	34220
Benzo(a)anthracene	34526
Benzo(a)pyrene	34247
Benzo(b)fluoranthene	34230
Benzo(ghi)perylene	34521
Benzo(k)fluoranthene	34242
Chrysene	34320
Dibenzo(a,h)anthracene	34556
Fluoranthene	34376
Fluorene	34381
Indeno(1,2,3-cd)pyrene	34403
Naphthalene	34696
Phenanthrene	34461
Pyrene	34469

1.2 This method is applicable to the determination of these compounds in muncipal and industrial discharges. It is designed to be used to meet the monitoring requirements of the National Pollutant Discharge Elimination System (NPDES). As such, it presupposes a high expectation of finding the specific compounds of interest. If the user is attempting to screen samples for any or all of the compounds above, he must develop independent protocols for the verification of identity.

1.3 This method contains both liquid and gas chromatographic approaches, depending upon the needs of the analyst. The gas chromatographic procedure cannot adequately resolve the following four pairs of compounds: Anthracene and phenanthrene; chrysene and benzo(a)anthracene; benzo(b) fluoranthene and benzo(k)fluoranthene; and dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene. Unless the purposes of the analysis can be served by reporting a sum for an unresolved pair, the liquid chromatographic approach must be used for these compounds. The liquid chromatographic method will resolve all of the 16 compounds listed above.

1.4 The sensitivity of this method is usually dependent upon the level of interferences rather than instrumental limitations. The limits of detection listed in Table I for the liquid chromatographic approach represent sensitivities that can be achieved in wastewaters in the absence of interferences.

1.5 This method is recommended for use only by experienced residue analysts or under the close supervision of such qualified persons.

2. *Summary of Method.*

2.1 A 1-liter sample of wastewater is extracted with methylene chloride using separatory funnel techniques. The extract is dried and concentrated to a volume of 10 ml or less. Chromatographic conditions are described which allow for the accurate measurement of the compounds in the extract by either High Performance Liquid Chromatography (HPLC) or gas chromatography.

2.2 If interferences are encountered, the method provides a selected general purpose cleanup procedure to aid the analyst in their elimination.

3. *Interferences.*

3.1 Solvents, reagents, glassware, and other sample processing hardware may yield discrete artifacts and/or elevated baselines causing misinterpretation of the chromatograms. All of these materials must be demonstrated to be free from interferences under the conditions of the analysis by running method blanks. Specific selection of reagents and purification of solvents by distillation in all-glass systems may be required.

3.2 Interferences coextracted from the samples will vary considerably from source to source, depending upon the diversity of the industrial complex or municipality being sampled. While a general clean-up technique is provided as part of this method, unique samples may require additional clean-up approaches to acheive the sensitivities stated in Table 1.

3.3 The extent of interferences that may be encountered using liquid chromatographic techniques has not been fully assessed. Although the chromatographic conditions described allow for a unique resolution of the specific PAH compounds covered by this method, other PAH compounds may interfere.

4. *Apparatus and Materials.*

4.1 Sampling equipment, for discrete or composite sampling.

4.1.1 Grab sample bottle—amber glass, 1-liter or 1-quart volume. French or Boston Round design is recommended. The container must be washed and solvent rinsed before use to minimize interferences.

4.1.2 Bottle caps—Threaded to screw on to the sample bottles. Caps must be lined with Teflon. Foil may be substituted if sample is not corrosive.

4.1.3 Compositing equipment—Automatic or manual compositing system. Must incorporate glass sample containers for the collection of a minimum of 250 ml. Sample containers must be kept refrigerated during sampling. No tygon or rubber tubing may be used in the system.

4.2 Separatory funnel—2000 ml, with Teflon stopcock.

4.3 Drying column—20 mm ID pyrex chromatographic column with coarse frit.

4.4 Kuderna-Danish (K–D) Apparatus

4.4.1 Concentrator tube—10 ml, graduated (Kontex K–570050–1025 or equivalent). Calibration must be checked. Ground glass stopper (size 19/22 joint) is used to prevent evaporation of extracts.

4.4.2 Evaporative flask—500 ml (Kontes K–57001–0500 or equivalent). Attach to concentrator tube with springs. (Kontes K–662750–0012).

4.4.3 Snyder column—three-ball macro (Kontes K503000–0121 or equivalent).

4.4.4 Snyder column—two-ball micro (Kontes K–569001–0219 or equivalent).

4.4.5 Boiling chips—solvent extracted, approximately 10/40 mesh.

4.5 Water bath—Heated, with concentric ring cover, capable of temperature control (±2° C). The bath should be used in a hood.

4.6 HPLC Apparatus:

4.6.1 Gradient pumping system, constant flow.

4.6.2 Reverse phase column, 5 micron HC–ODS Sil-X, 250 mm × 2.6 mm ID (Perkin Elmer No. 809–0716 or equivalent).

4.6.3 Fluorescence detector, for excitation at 280 nm and emission at 389 nm.

4.6.4 UV detector, 254 nm, coupled to fluorescence detector.

4.6.5 Strip chart recorder compatible with detectors, (A data system for measuring peak areas is recommended).

4.7 Gas chromatograph—Analytical system complete with gas chromatograph suitable for on-column injection and all required accessories including dual flame ionization detectors, column supplies, recorder, gases, syringes. A data system for measuring peak areas is recommended.

4.8 Chromatographic column—250 mm long × 10 mm ID with coarse fritted disc at bottom and Teflon stopcock.

5. *Reagents.*

5.1 Preservatives:

5.1.1 Sodium hydroxide—(ACS) 10 N in distilled water.

5.1.2 Sulfuric acid—(ACS) Mix equal volumes of conc. H_2SO_4 with distilled water.

5.1.3 Sodium thiosulfate—(ACS) Granular.

5.2 Methylene chloride, Pentane, Cyclohexane, High Purity Water—HPLC quality, distilled in glass.

5.3 Sodium sulfate—(ACS) Granular, anhydrous (purified by heating at 400° C for 4 hrs. in a shallow tray).

5.4 Stock standards—Prepare stock standard solutions at a concentration of 1.00 μg/μl by dissolving 0.100 grams of assayed reference material in pesticide quality isooctane or other appropriate

solvent and diluting to volume in a 100 ml ground glass stoppered volumetric flask. The stock solution is transferred to ground glass stoppered reagent bottles, stored in a refrigerator, and checked frequently for signs of degradation or evaporation, especially just prior to preparing working standards from them.

5.5 Acetonitrile—Spectral quality.

5.6 Silica gel—100/120 mesh desiccant (Davison Chemical grade 923 or equivalent). Before use, activate for at least 16 hours at 130° C in a foil covered glass container.

6. *Calibration.*

6.1 Prepare calibration standards that contain the compounds of interest, either singly or mixed together. The standards should be prepared at concentrations covering two or more orders of magnitude that will completely bracket the working range of the chromatographic system. If the sensitivity of the detection system can be calculated from Table I as 100 μg/l in the final extract, for example, prepare standards at 10 μg/l, 50 μg/l, 100 μg/l, 500 μg/l, etc. so that injections of 1–5 μl of each calibration standard will define the linearity of the detector in the working range.

6.2 Assemble the necessary HPLC or gas chromatographic apparatus and establish operating parameters equivalent to those indicated in Table I or II. By injecting calibration standards, establish the sensitivity limit of the detectors and the linear range of the analytical systems for each compound.

6.3 Before using any cleanup procedure, the analyst must process a series of calibration standards through the procedure to validate elution patterns and the absence of interferences from the reagents.

7. *Quality Control.*

7.1 Before processing any samples, the analyst should demonstrate through the analysis of a distilled water method blank, that all glassware and reagents are interference-free. Each time a set of samples is extracted or there is a change in reagents, a method blank should be processed as a safeguard against laboratory contamination.

7.2 Standard quality assurance practices should be used with this method. Field replicates should be collected to validate the precision of the sampling technique. Laboratory replicates should be analyzed to validate the precision of the analysis. Fortified samples should be analyzed to validate the accuracy of the analysis. Where doubt extists over the identification of a peak on the chromatogram, confirmatory techniques such as fraction collection and GC-mass spectroscopy should be used.

8. *Sample Collection, Preservation, and Handling.*

8.1 Grab samples must be collected in glass containers. Conventional sampling practices should be followed, except that the bottle must not be prewashed with sample before collection. Composite samples should be collected in refrigerated glass containers in accordance with the requirements of the program. Automatic sampling equipment must be free of tygon and other potential sources of contamination.

8.2 The samples must be iced or refrigerated from the time of collection until extraction. Chemical preservatives should not be used in the field unless more than 24 hours will elapse before delivery to the laboratory. If the samples will not be extracted within 48 hours of collection, adjust the sample to a pH range of 6.0–8.0 with sodium hydroxide or sulfuric acid and add 35 mg sodium thiosulfate per part per million of free chlorine per liter.

8.3 All samples must be extracted within 7 days and completely analyzed within 30 days of collection.

9. *Sample Extraction.*

9.1 Mark the water meniscus on the side of the sample bottle for later determination of sample volume. Pour the entire sample into a two-liter separatory funnel. Check the pH of the sample with wide-range pH paper and adjust to within the range of 5–9 with sodium hydroxide or sulfuric acid.

9.2 Add 60 ml methylene chloride to the sample bottle, seal, and shake 30 seconds to rinse the inner walls. Transfer the solvent into the separatory funnel, and extract the sample by shaking the funnel for two minutes with periodic venting to release vapor pressure. Allow the organic layer to separate from the water phase for a munimum of ten minutes. If the emulsion inteface between layers is more than one-third the size of the solvent layer, the analyst must employ mechanical techniques to complete the phase separation. The optimum technique depends upon the sample, but may include stirring, filtration of the emulsion through glass wool, or centrifugation. Collect the methylene chloride extract in a 250-ml Erlenmeyer flask.

9.3 Add a second 60-ml volume of methylene chloride to the sample bottle and complete the extraction procedure a second time, combining the extracts in the Erlenmeyer flask.

9.4 Perform a third extraction in the same manner. Pour the combined extract through a drying column containing 3–4 inches of anhydrous sodium sulfate, and collect it in a 500-ml Kuderna-Danish (K–D) flask equipped with a 10-ml concentrator tube. Rinse the Erlenmeyer flask and column with 20–30-ml methylene chloride to complete the quantitative transfer.

9.5 Add 1–2 clean boiling chips to the flask and attach a three-ball Snyder column. Prewet the Snyder column by adding about 1-ml methylene chloride to the top. Place the K–D apparatus on a hot water bath (60–65° C) so that the concentrator tube is partially immersed in the hot water, and the entire lower rounded surface of the flask is bathed in vapor. Adjust the vertical position of the apparatus and the water temperature as required to complete the concentration in 15–20 minutes. At the proper rate of distillation the balls of the column will actively chatter but the chambers will not flood. When the apparatus volumn of liquid reaches 1-ml, remove the K–D apparatus and allow it to drain for at least 10 minutes while cooling. Remove the Snyder column and rinse the flask and its lower joint into the concentrator tube with 1–2-ml of methylene chloride. A 5-ml syringe is recommended for this operation. Stopper the concentrator tube and store refrigerated if further processing will not be performed immediately.

9.6 Determine the original sample volume by refilling the sample bottle to the mark and transferring the liquid to a 1000-ml graduated cylinder. Record the sample volume to the nearest 5-ml.

9.7 If the sample requires cleanup before chromatographic analysis, proceed to Section 10. If the sample does not require cleanup, or if the need for cleanup is unkown, analyze an aliquot of the extract according to Section 11 or Section 12.

10. *Cleanup and Separation.*

10.1 Before the silica gel cleanup technique can be utilized, the extract solvent must be exchanged to cyclohexane. Add a 1–10-ml aliquot of sample extract (in methylene chloride) and a boiling chip to a clean K–D concentrator tube. Add 4-ml cyclohexane and attach a micro-Snyder column. Prewet the micro-Snyder column by adding 0.5-ml methylene chloride to the top. Place the micro-K–D apparatus on a boiling (100° C) water bath so that the concentrator tube is partially immersed in the hot water. Adjust the vertical position of the apparatus and the water temperature as required to complete concentration in 5–10 minutes. At the proper rate of distillation the balls of the column will actively chatter but the chambers will not flood. When the apparent volume of the liquid reaches 0.5-ml, remove K–D

apparatus and allow it to drain for at least 10 minutes while cooling. Remove the micro-Snyder column and rinse its lower joint into the concentrator tube with a minimum of cyclohexane. Adjust the extract volume to about 2-ml.

10.2 Silica Gel Column Cleanup for PAHs.

10.2.1 Prepare a slurry of 10g activated silical gel in methylene chloride and place this in a 10 mm ID chromatography column. Gently tap the column to settle the silica gel and elute the methylene chloride. Add 1–2 cm of anhydrous sodium sulfate to the top of the silica gel.

10.2.2 Preelute the column with 40-ml pentane. Discard the eluate and just prior to exposure of the sodium sulfate layer to the air, transfer the 2-ml cyclohexane sample extract onto the column, using an additional 2-ml of cyclohexane to complete the transfer.

10.2.3 Just prior to exposure of the sodium sulfate layer to the air, add 25-ml pentane and continue elution of the column. Discard the pentane eluate.

10.2.4 Elute the column with 25-ml of 40% methylene chloride/60% pentane and collect the eluate in a 500-ml K–D flask equipped with a 10-ml concentrator tube. Elution of the column should be at a rate of about 2 ml/min.

10.2.5 Concentrate the collected fraction to less than 10-ml by K–D techniques as in 9.5, using pentane to rinse the walls of the glassware. Proceed with HPLC or gas chromatographic analysis.

11. *High Performance Liquid Chromatography HPLC.*

11.1 To the extract in the concentrator tube, add 4 ml acetonitrile and a new boiling chip, then attach a micro-Snyder column. Increase the temperature of the hot water bath to 95–100° C. Concentrate the solvent as above. After cooling, remove the micro-Snyder column and rinse its lower joint into the concentrator tube with about 0.2 ml acetonitrile. Adjust the extract volume to 1.0 ml.

11.2 Table I summarizes the recommended HPLC column materials and operating conditions for the instrument. Included in this table are estimated retention times and sensitivities that should be achieved by this method. An example of the separation achieved by this column is shown in Figure 1. Calibrate the system daily with a minimum of three injections of calibration standards.

11.3 Inject 2–5 μl of the sample extract with a high pressure syringe or sample injection loop. Record the volume injected to the nearest 0.05 μl, and the resulting peak size, in area units.

11.4 If the peak area exceeds the linear range of the system, dilute the extract and reanalyze.

11.5 If the peak area measurement is prevented by the pressure of interference, further cleanup is required.

11.6 The UV detector is recommended for the determination of napthalene and acenaphthylene and the fluorescene detector is recommended for the remaining PAHs.

12. *Gas Chromatography.*

12.1 The gas chromatographic procedure will not resolve certain isomeric pairs as indicated in Table II. The liquid chromatographic procedure (Section 11) must be used for these materials.

12.2 To achieve maximum sensitivity with this method, the extract must be concentrated to 1.0 ml. Add a clean boiling chip to the methylene chloride extract in the concentrator tube. Attach a two-ball micro-Snyder column. Prewet the micro-Snyder column by adding about 0.5 ml of methylene chloride to the top. Place this micro-K-D apparatus on a hot water bath (60–65° C) so that the concentrator tube is partially immersed in the hot water. Adjust the vertical position of the apparatus and water temperature as required to complete the concentration in 5 to 10 minutes. At the proper rate of distillation the balls will actively chatter but the chambers will not flood. When the apparent volume of liquid reaches 0.5 ml, remove the K-D apparatus and allow it to drain for at least 10 minutes while cooling. Remove the micro-Snyder column and rinse its lower joint into the concentrator tube with a small volume of methylene chloride. Adjust the final volume to 1.0 ml and stopper the concentrator tube.

12.3 Table II describes the recommended gas chromatographic column material and operating conditions for the instrument. Included in this table are estimated retention times that should be achieved by this method. Calibrate the gas chromatographic system daily with a minimum of three injections of calibration standards.

12.4 Inject 2–5 μl of the sample extract using the solvent-flush technique. Smaller (1.0 μl) volumes can be injected if automatic devices are employed. Record the volume injected to the nearest 0.05 μl, and the resulting peak size, in ara units.

12.5 If the peak area exceeds the linear range of the system, dilute the extract and reanalyze.

12.6 If the peak ara measurement is prevented by the presence of interferences, further cleanup is required.

13. *Calculations.*

13.1 Determine the concentration of individual compounds according to the formula:

$$\text{Concentration, ug/1} = \frac{(A)\ (B)\ (V_t)}{(V_i)\ (V_s)}$$

Where:

A = Calibration factor for chromatographic system, in nanograms material per area unit.

B = Peak size in injection of sample extract, in area units

V_i = Volume of extract injected (μl)

V_t = Volume of total extract (μl)

V_s = Volume of water extracted (ml)

13.2 Report results in micrograms per liter without correction for recovery data. When duplicate and spiked samples are analyzed, all data obtained should be reported.

14. *Accuracy and Precision.*

14.1 The U.S. EPA Environmental Monitoring and Support Laboratory in Cincinnati is in the process of conducting an interlaboratory method study to determine the accuracy and precision of this test procedure.

Bibliography

"Development and Application of Test Procedures for Specific Organic Toxic Substances in Wastewaters, Category 9-PAHs." Report for EPA Contract 68–03–2624 (In preparation).

Table I.—*High Performance Liquid Chromatography of PAH's*

Compound [1]	Retention time (min)	Detection limit (μg/l) [2]	
		UV	Fluorescence
Naphthalene	16.17	2.5	20.0
Acenaphthylene	18.10	5.0	100.0
Acenaphthene	20.14	3.0	4.0
Fluorene	20.89	0.5	2.0
Phenanthrene	22.32	0.25	1.2
Anthracene	23.78	0.10	1.5
Fluoranthene	25.00	0.50	0.05
Pyrene	25.94	0.10	0.05
Benzo(a)anthracene	29.26	0.20	0.04
Chrysene	30.14	0.20	0.5
Benzo(b)fluoranthene	32.44	1.0	0.04
Benzo(k)fluoranthene	33.91	0.30	0.04
Benzo(a)pyrene	34.95	0.25	0.04
Dibenzo(a,h)anthracene	37.06	1.0	0.08
Benzo(ghi)perylene	37.82	0.75	0.2
Indeno(1,2,3-cd)pyrene	39.21	0.30	0.1

[1] HPLC conditions: Reverse phase HC-ODS Sil-X 2.6 × 250 mm Perkin-Elmer column; isocratic elution for 5 min. using 40% acetonitrile/60% water, then linear gradient elution to 100% acetonitrile over 25 minutes; flow rate is 0.8 ml/min.

[2] Detection limit is calculated from the minimum detectable HPLC response being equal to five times the background noise, assuming an equivalent of a 2 ml final volume of the 1 liter sample extract, and assuming an HPLC injection of 2 microliters.

Table II.—*Gas Chromatography of PAHs*

Compound [1]	Retention Time (min)
Naphthalene	4.5
Acenaphthylene	10.4
Acenaphthene	10.8
Fluorene	12.6

Table II.—*Gas Chromatography of PAHs*—Continued

Compound [1]	Retention Time (min)
Phenanthrene	15.9
Anthracene	15.9
Fluoranthene	19.8
Pyrene	20.6
Benzo(a)anthracene	20.6
Chrysene	24.7
Benzo(b)fluoranthene	28.0
Benzo(k)fluoranthene	28.0
Benzo(a)pyrene	29.4
Dibenzo(a,h)anthracene	36.2
Indeno(1,2,3-cd)pyrene	36.2
Benzo(ghi)perylene	38.6

[1]GC conditions: Chromosorb W-AW-DCMs 100/120 mesh coated with 3% OV-17, packed in a 6' x 2 mm ID glass column, with nitrogen carrier gas at 40 ml/min flow rate. Column temperature was held at 100° C for 4 minutes, then programmed at 8°/minute to a final hold at 280° C.

Haloethers—Method 611

1. *Scope and Application*

1.1 This method covers the determination of certain haloethers. The following parameters may be determined by this method:

Parameter:	STORET No.
Bis(2-chloroethyl) ether	34273
Bis(2-chloroethoxy) methane	34278
Bis(2-chloroisopropyl) ether	34283
4-Bromophenyl phenyl ether	34636
4-Chlorophenyl phenyl ether	34641

1.2 This method is applicable to the determination of these compounds in municipal and industrial discharges. It is designed to be used to meet the monitoring requirements of the National Pollutant Discharge Elimination System (NPDES). As such, it presupposes a high expectation of finding the specific compounds of interest. If the user is attempting to screen samples for any or all of the compounds above, he must develop independent protocols for the verification of identity.

1.3 The sensitivity of this method is usually dependent upon the level of interferences rather than instrumental limitations. The limits of detection listed in Table I represent sensitivities that can be achieved in wastewaters in the absence of interferences.

1.4 This method is recommended for use only by experienced residue analysts or under the close supervision of such qualified persons.

2. *Summary of Method.*

2.1 A 1-liter sample of wastewater is extracted with methylene chloride using separatory funnel techniques. The extract is dried and concentrated to a volume of 10 ml or less. Chromatographic conditions utilizing a halide specific detector are described which allow for the accurate measurement of the compounds in the extract.

2.2 If interferences are encountered, the method provides a selected general

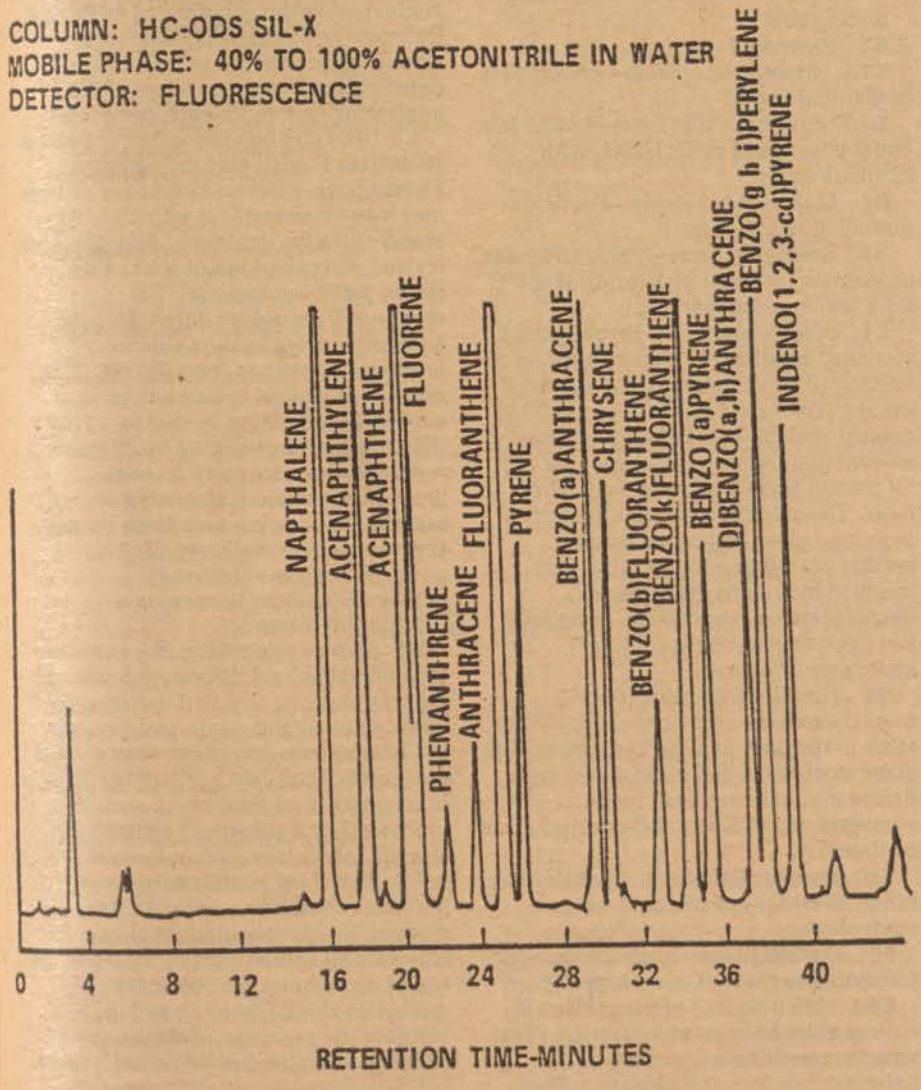


Figure 1. Liquid chromatogram of polynuclear aromatics

purpose cleanup procedure to aid the analyst in their elimination.

3. *Interferences.*

3.1 Solvents, reagents, glassware, and other sample processing hardware may yield discrete artificats and/or elevated baselines causing misinterpretation of gas chromatograms. All of these materials must be demonstrated to be free from interferences under the conditions of the analysis by running method blanks. Specific selection of reagents and purification of solvents by distillation in all-glass systems may be required.

3.2 Interferences coextracted from the samples will vary considerably from source to source, depending upon the diversity of the industrial complex or municipality being sampled. While general clean-up techniques are provided as part of this method, unique samples may require additional cleanup approaches to achieve the sensitivities stated in Table I.

3.3 Dichlorobenzenes are known to coelute with haloethers under some gas chromatographic conditions. If these materials are present together in a sample, it may be necessary to analyze the extract with two different column packings to completely resolve all of the compounds.

4. *Apparatus and Materials.*

4.1 Sampling equipment, for discrete or composite sampling.

4.1.1 Grab sample bottle—amber glass, 1-liter or 1-quart volume. French or Boston Round design is recommended. The container must be washed and solvent rinsed before use to minimize interferences.

4.1.2 Bottle caps—Threaded to screw on to the sample bottles. Caps must be lined with Teflon. Foil may be substituted if sample in not corrosive.

4.1.3 Compositing equipment—Automatic or manual compositing system. Must incorporate glass sample containers for the collection of a minimum of 250 ml. Sample containers must be kept refrigerated during sampling. No tygon or rubber tubing may be used in the system.

4.2 Separatory funnel—2000 ml, with Teflon stopcock.

4.3 Drying column—20 mm ID pyrex chromatographic column with coarse frit.

4.4 Kuderna-Danish (K-D) Apparatus

4.4.1 Concentrator tube—10 ml, graduated (Kontes K-570050-1025 or equivalent). Calibration must be checked. Ground glass stopper (size $^{19}/_{22}$ joint) is used to prevent ecaporation of extracts.

4.4.2 Evaporative flask—500 ml (Kontes K-57001-0500 or equivalent). Attach to concentrator tube with springs. (Kontes K-662750-0012).

4.4.3 Snyder column—three ball macro (Kontes K503000-0121 or equivalent).

4.4.4 Snyder column—two-ball micro (Kontes K-569001-0219 or equivalent).

4.4.5 Boiling chips—solvent extracted, approximately $^{1}/_{40}$ mesh.

4.5 Water bath—Heated, with concentric ring cover, capable of temperature control (±2°C). The bath should be used in a hood.

4.6 Gas chromatograph—Analytical system complete with gas chromatograph suitable for on-column injection and all required accessories including halide specific detector, column supplies, recorder, gases, syringes. A data system for measuring peak areas is recommended.

4.7 Chromatographic Column—400 mm long x 19 mm ID with coarse fritted plate on bottom and Teflon stopcock (Kontes K-420540-0224 or equivalent).

5. *Reagents.*

5.1 Preservatives:

5.1.1 Sodium hydroxide—(ACS) 10 N in distilled water.

5.1.2 Sulfuric acid (1+1)—(ACS) Mix equal volumes of conc. H_2SO_4 with distilled water.

5.2 Methylene chloride—Pesticide quality or equivalent.

5.3 Sodium Sulfate—(ACS) Granular, anhydrous (purified by heating at 400°C for 4 hrs. in a shallow tray).

5.4 Stock standards—Prepare stock standard solutions at a concentration of 1.00 μg/μl by dissolving 0.100 grams of assayed reference material in pesticide quality acetone or other appropriate solvent and diluting to volume in a 100 ml ground glass stoppered volumetric flask. The stock solution is transferred to ground glass stoppered reagent bottles, stored in a refrigerator, and checked frequently for signs of degradation or evaporation, especially just prior to preparing working standards from them.

5.5 Florisil—PR Grade (60/100 mesh); purchase activated at 1250°F and store in the dark in glass containers with glass stoppers or foil-lined screw caps. Before use, activate each batch overnight at 130°C in a foil-covered glass container.

5.6 Hexane, Petroleum ether (boiling range 30–60°C)—pesticide quality or equivalent.

5.7 Diethyl Ether—Nanograde, redistilled in glass, if necessary.

5.7.1 Must be free of peroxides as indicated by EM Quant test strips. (Test strips are available from EM Laboratories, Inc., 500 Executive Blvd., Elmsford, N.Y. 10523.)

5.7.2 Procedures recommended for removal of peroxides are provided with the test strips. After cleanup 20 ml ethyl alcohol preservative must be added to each liter of ether.

6. *Calibration.*

6.1 Prepare calibration standards that contain the compounds of interest, either singly or mixed together. The standards should be prepared at concentrations covering two or more orders of magnitude that will completely bracket the working range of the chromatographic system. If the sensitivity of the detection system can be calculated from Table I as 100 μg/l in the final extract, for example, prepare standards at 10 μg/l, 50 μg/l, 100 μg/l, 500 μg/l, etc. so that injections of 1–5 μl of each calibration standard will define the linearity of the detector in the working range.

6.2 Assemble the necessary gas chromatographic apparatus and establish operating parameters equivalent to those indicated in Table I. By injecting calibration standards, establish the sensitivity limit of the detector and the linear range of the analytical system for each compound.

6.3 The cleanup procedure in Section 10 utilizes Florisil chromatography. Florisil from different batches or sources may vary in absorption capacity. To standardize the amount of Florisil which is used, the use of lauric acid value (Mills, 1968) is suggested. The referenced procedure determines the adsorption from hexane solution of lauric acid (mg) per gram Florisil. The amount of Florisil to be used for each column is calculated by dividing 110 by this ratio and multiplying by 20 grams.

6.4 Before using any cleanup procedure, the analyst must process a series of calibration standards through the procedure to validate elution patterns and the absence of interferences from the reagents.

7. *Quality Control.*

7.1 Before processing any samples, the analyst should demonstrate through the analysis of a distilled water method blank, that all glassware and reagents are interference-free. Each time a set of samples is extracted or there is a change in reagents, a method blank should be processed as a safeguard against chronic laboratory contamination.

7.2 Standard quality assurance practices should be used with this method. Field replicates should be collected to validate the precision of the sampling technique. Laboratory replicates should be analyzed to validate the precision of the analysis. Fortified samples should be analyzed to validate the accuracy of the analysis. Where doubt exists over the

identification of a peak on the chromatogram, confirmatory techniques such as mass spectroscopy should be used.

8. *Sample Collection, Preservation, and Handling.*

8.1 Grab samples must be collected in glass containers. Conventional sampling practices should be followed, except that the bottle must not be prewashed with sample before collection. Composite samples should be collected in refrigerated glass containers in accordance with the requirements of the program. Automatic sampling equipment must be free of tygon and other potential sources of contamination.

8.2 The samples must be iced or refrigerated from the time of collection until extraction. Chemical preservatives should not be used in the field unless more than 24 hours will elapse before delivery to the laboratory. If the samples will not be extracted within 48 hours of collection, the sample should be adjusted to a pH range of 6.0–8.0 with sodium hydroxide or sulfuric acid.

8.3 All samples must be extracted within 7 days and completely analyzed within 30 days of collection.

9. *Sample Extraction.*

9.1 Mark the water meniscus on the side of the sample bottle for later determination of sample volume. Pour the entire sample into a two-liter separatory funnel. Check the pH of the sample with wide-range pH paper and adjust to within the range of 5–9 with sodium hydroxide or sulfuric acid.

9.2 Add 60 ml methylene chloride to the sample bottle, seal, and shake 30 seconds to rinse the inner walls. Transfer the solvent into the separatory funnel, and extract the sample by shaking the funnel for two minutes with periodic venting to release vapor pressure. Allow the organic layer to separate from the water phase for a minimum of ten minutes. If the emulsion interface between layers is more than one-third the size of the solvent layer, the analyst must employ mechanical techniques to complete the phase separation. The optimum technique depends upon the sample, but may include stirring, filtration of the emulsion through glass wool, or centrifugation. Collect the methylene chloride extract in a 250-ml Erlenmeyer flask.

9.3 Add a second 60-ml volume of methylene chloride to the sample bottle and complete the extraction procedure a second time, combining the extracts in the Erlenmeyer flask.

9.4 Perform a third extraction in the same manner. Pour the combined extract through a drying column containing 3–4 inches of anhydrous sodium sulfate, and collect it in a 500-ml Kuderna-Danish (K–D) flask equipped with a 10 ml concentrator tube. Rinse the Erlenmeyer flask and column with 20–30 ml methylene chloride to complete the quantitative transfer.

9.5 Add 1–2 clean boiling chips to the flask and attach a three-ball Snyder column. Prewet the Snyder column by adding about 1 ml methylene chloride to the top. Place the K–D apparatus on a hot water bath (60–65°C) so that the concentrator tube is partially immersed in the hot water, and the entire lower rounded surface of the flask is bathed in vapor. Adjust the vertical position of the apparatus and the water temperature as required to complete the concentration in 15–20 minutes. At the proper rate of distillation the balls of the column will actively chatter but the chambers will not flood. When the apparent volume of liquid reaches 1–2 ml, remove the K–D apparatus and allow it to drain for at least 10 minutes while cooling.

Note.—Haloethers have a sufficiently high volatility that significant losses will occur in concentration steps if care is not exercised. It is important to maintain a constant gentle evaporation rate and not to allow the liquid volume to fall below 1–2 ml before removing the K–D from the hot water bath.

9.6 Momentarily remove the Snyder column, add 50 ml hexane and a new boiling chip and replace the column. Raise the temperature of the water bath to 85–90°C. Concentrate the extract as in 9.5 except use hexane to prewet the column. Remove the Snyder column and rinse the flask and its lower joint into the concentrator tube with 1–2 ml hexane. Stopper the concentrator tube and store refrigerated if further processing will not be performed immediately.

9.7 Determine the original sample volume by refilling the sample bottle to the mark and transferring the liquid to a 1000 ml graduated cylinder. Record the sample volume to the nearest 5 ml.

9.8 Unless the sample is known to require cleanup, proceed to analysis by gas chromatography.

10. *Cleanup and Separation.*

10.1 Florisil Column Cleanup for Haloethers.

10.1.1 Adjust the sample extract volume to 10 ml.

10.1.2 Place a charge (nominally 20 g but determined in Section 6.3) of activated Florisil in a 19 mm ID chromatography column. After settling the Florisil by tapping column, add about one-half inch layer of anhydrous granular sodium sulfate to the top.

10.1.3 Pre-elute the column, after cooling, with 50–60 ml of petroleum ether. Discard the eluate and just prior to exposure of the sulfate layer to air, quantitatively transfer the sample extract into the column by decantation and subsequent petroleum ether washings. Discard the eluate. Just prior to exposure of the sodium sulfate layer to the air, begin eluting the column with 300 ml of 6% ethyl ether/94% petroleum ether. Adjust the elution rate to approximately 5 ml/min and collect the eluate in a 500 ml K–D flask equipped with a 10 ml concentrator tube. This fraction should contain all of the haloethers.

10.1.4 Concentrate the fraction by K–D as in 9.5 except prewet the Snyder column with hexane. When the apparatus is cool, remove the column and rinse the flask and its lower joint into the concentrator tube with 1–2 ml hexane. Analyze by gas chromatography.

11. *Gas Chromatography.*

11.1 Table I summarizes some recommended gas chromatographic column materials and operating conditions for the instrument. Included in this table are estimated retention times and sensitivities that should be achieved by this method. Examples of the separations achieved by these columns are shown in Figures 1 and 2. Calibrate the system daily with a minimum of three injections of calibration standards.

11.2 Inject 2–5 μl of the sample extract using the solvent-flush technique. Smaller (1.0 μl) volumes can be injected if automatic devices are employed. Record the volume injected to the nearest 0.05 μl, and the resulting peak size, in area units.

11.3 If the peak area exceeds the linear range of the system, dilute the extract and reanalyze.

11.4 If the peak area measurement is prevented by the presence of interferences, further cleanup is required.

12. *Calculations.*

12.1 Determine the concentration of individual compounds according to the formula:

$$\text{Concentration, } \mu g/l = \frac{(A)(B)(V_t)}{(V_i)(V_s)}$$

Where:

A = Calibration factor for chromatographic system, in nanograms material per area unit.

B = Peak size in injection of sample extract, in area units

V_i = volume of extract injected (μl)

V_t = volume of total extract (μl)

V_s = volume of water extracted (ml)

12.2 Report results in micrograms per liter without correction for recovery data. When duplicate and spiked samples are analyzed, all data obtained should be reported.

13. *Accuracy and Precision.* The U.S. EPA Environmental Monitoring and Support Laboratory in Cincinnati is in the process of conducting an interlaboratory method study to determine the accuracy and precision of this test procedure.

Bibliography

1. "Development and Application of Test Procedures for Specific Organic Toxic Substances in Wastewaters. Category 2-Haloethers." Report for EPA Contract 68-03-2633 (In preparation).

2. Mills, P. A., "Variation of Florisil Activity: Simple Method for Measuring Absorbent Capacity and Its Use in Standardizing Florisil Columns," Journal of the Association of Official Analytical Chemists, *51*, 29 (1968).

Table I.—*Gas Chromatography of Haloethers* [4]

Compound	Retention time (min.)		Detection limit (ug/L) [3]
	Col. 1 [1]	Col. 2 [2]	
Bis(2-chloroisopropyl) ether	8.41	9.70	0.9
Bis(2-chloroethyl) ether	9.32	9.06	0.5
Bis(2-chloroethoxy) methane	13.1	9.97	0.4
4-Chlorophenyl phenyl ether	19.4	15.0	2.2
4-Bromophenyl phenyl ether	21.2	16.2	1.1

[1] Supelcoport 100/120 mesh coated with 3% SP-1000 packed in 1.8 m long x 2.1 mm ID glass column with ultra-high purity helium carrier/gas at 40 ml/min flow rate. Column temperature is 60°C for 2 minutes after injection then program at 8°C/min to 230°C and hold for 4 minutes. Under these conditions R.T. of Aldrin is 22.6 minutes.

[2] Tenax-GC 60/80 mesh packed in a 1.8 m long x 2.1 mm ID glass column with helium carrier gas at 40 ml/min flow rate. Column temperature 150°C for 4 minutes after injection then program at 16°C/min to 310°C. Under these conditions R.T. of Aldrin is 18.4 minutes.

[3] Detection is calculated from the minimum detectable GC response being equal to five times the GC background noise, assuming a 10 ml final volume of the 1 liter sample extract, and assuming a FC injection of 5 microliters. These values were collected using the Tracor 700 Hall electrolytic conductivity detector with furnace temperature 900°C, transfer line 250°C, 95% ethanol electrolyte at 0.3 ml/min flow rate, and hydrogen reaction gas at 60 ml/min.

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COLUMN: 3% SP-1000 ON SUPELCOPORT
PROGRAM: 60°C-2 MINUTES 8°/MINUTE TO 230°C.
DETECTOR: HALL ELECTROLYTIC CONDUCTIVITY

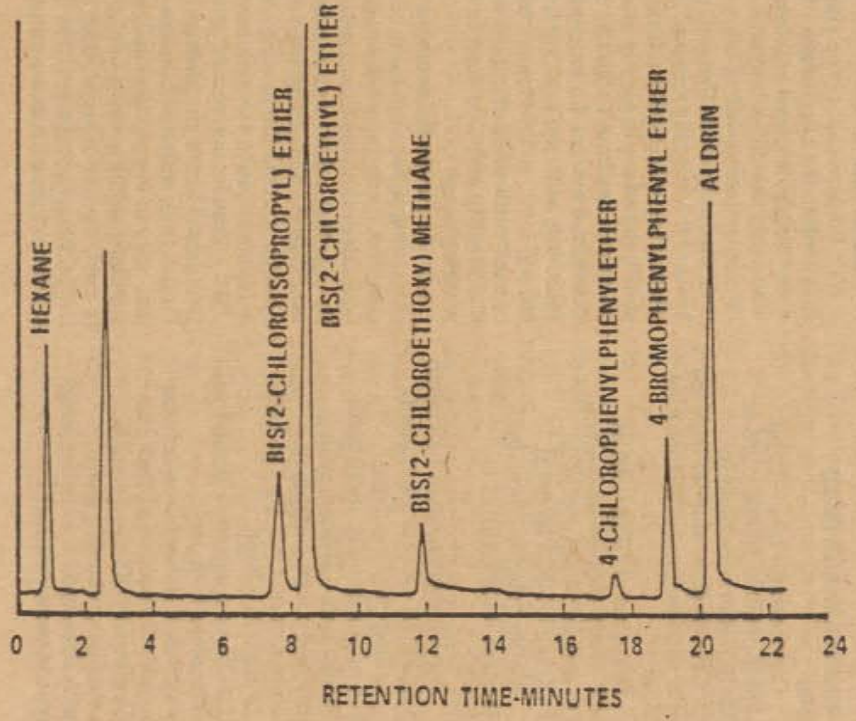


Figure 1. Gas chromatogram of haloethers

COLUMN: TENAX GC
PROGRAM: 150°C.-4 MINUTES 16°/MINUTE TO 310°C.
DETECTOR: HALL ELECTROLYTIC CONDUCTIVITY

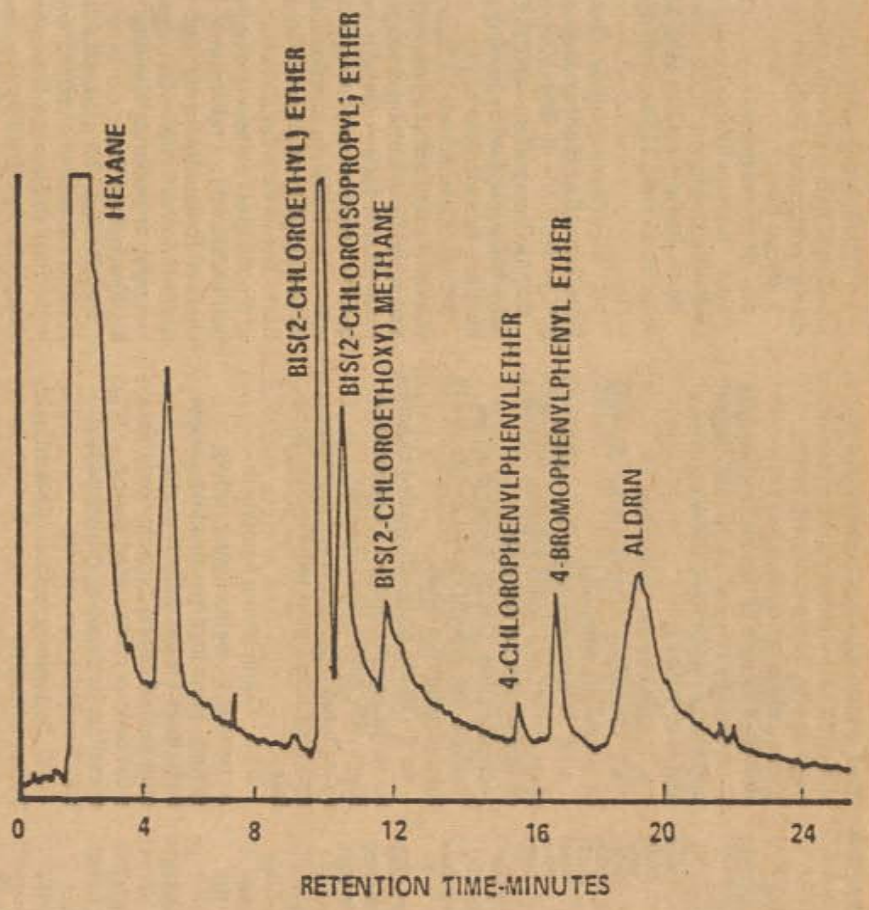


Figure 2. Gas chromatogram of haloethers

Chlorinated Hydrocarbons—Method 612

1. *Scope and Application.*

1.1 This method covers the determination of certain chlorinated hydrocarbons. The following parameters may be determined by this method.

Parameter:	STORET No.
Hexachlorocyclopentadiene	34386
Hexachlorobenzne	39700
Hexachlorobutadiene	34391
Hexachloroethane	34396
1,2-Dichlorobenzene	34536
1,2,4-Drichlorobenzene	34551
1,3-Dichlorobenzene	34566
1,4-Dichlorobenzene	34571
2-chloronaphthalene	34581

1.2 This method is applicable to the determination of these compounds in municipal and industrial discharges. It is designed to be used to meet the monitoring requirements of the National Pollutant Discharge Elimination System (NPDES). As such, it presupposes a high expectation of finding the specific compounds of interest. If the user is attempting to screen samples for any or all of the compounds above, he must develop independent protocols for the verification of identity.

1.3 The sensitivity of this method is ususally dependent upon the level of interferences rather than instrumental limitations. The limits of detection listed in Table I represent sensitivities that can be achieved in wastewaters in the absence of inteferences.

1.4 This method is recommended for use only by experienced residue analysts or under the close supervision of such qualified persons.

2. *Summary of Method.*

2.1 A 1-liter sample of wastewater is extracted with methylene chloride using separatory funnel techniques. The extract is dried by passing through a sodium sulfate column and concentrated to a volume of 10 ml or less. Chromatographic conditions are described which allow for the accurate measurement of the compounds in the extract.

2.2 If inteferences are encountered or expected, the method provides a selected general purpose cleanup procedure to aid the analyst in their elimination.

3. *Interferences.*

3.1 Solvents, reagents, glassware, and other sample processing hardware may yield discrete artifacts and/or elevated baselines causing misinterpretation of gas chromatograms. All of these materials must be demonstrated to be free from inteferences under the conditions of the analysis by running method blanks. Specific selection of reagents and purification of solvents by distillation in all-glass systems may be required.

3.2 Interferences coextracted from the samples will vary considerably from source to source, depending upon the diversity of the industrial complex or municipality being sampled. While general clean-up techniques are provided as part of this method, unique samples may require additional cleanup approaches to achieve the sensitivities states in Table 1.

4. *Apparatus and Materials.*

4.1 Sampling equipment, for discrete or composite sampling.

4.1.1 Grab sample bottle—amber glass, 1-liter or 1-quart volume. French or Boston Round design is recommended. The container must be washed and solvent rinsed before use to minimize interferences.

4.1 2 Bottle caps—Threaded to screw on to the sample bottles. Caps must be lined with Teflon. Foil may be substituted if sample is not corrosive and the foil is found to be interference free.

4.1.3 Compositing equipment—Automatic or manual compositing system. Must incorporate glass sample containers for the collection of a minimum of 250 ml. Sample containers must be kept refrigerated during sampling. No tygon or rubber tubing may be used in the system.

4.2 Separatory funnel—2000 ml, with Teflon stopcock.

4.3 Drying column—20 mm ID pyrex chromatographic column with coarse frit.

4.4 Kuderna-Danish (K–D) Apparatus

4.4.1 Concentrator tube—10 ml, graduated (Kontes K–570050–1025 or equivalent). Calibration must be checked. Ground glass stopper (size 19/22 joint) is used to prevent evaporation of extracts.

4.4.2 Evaporative flask—500 ml (Kontes K–57001–0500 or equivalent). Attach to concentrator tube with springs. (Kontes K–662750–0012).

4.4.3 Snyder column—three-ball macro (Kontes K503000–0121 or equivalent).

4.4.4 Snyder column—two-ball micro (Kontes K–569001–0219 or equivalent).

4.4.5 Boiling chips—solvent extracted, approximately 10/40 mesh.

4.5 Water bath—Heated, with concentric ring cover, capable of temperature control (±2° C). The bath should be used in a hood.

4.6 Gas chromatograph—Analytical system complete with gas chromatograph suitable for on-column injection and all required accessories including electron capture detector, column supplies, recorder, gases, syringes. A data system for measuring peak areas is recommended.

4.7 Chromatography column—300 mm long×10 mm ID with coarse fritted disc at bottom and Teflon stopcock.

5. *Reagents.*

5.1 Preservatives:

5.1.1 Sodium hydroxide—(ACS) 10 N in distilled water.

5.1.2 Sulfuric acid—(ACS) Mix equal volumes of conc. H_2SO_4 with distilled water.

5.2 Methylene chloride, Hexane and Petroleum ether (boiling range 30–60°C)—Pesticide quality or equivalent.

5.3 Sodium sulfate—(ACS) Granular, anhydrous (purified by heating at 400°C for 4 hrs. in a shallow tray).

5.4 Stock standards—Prepare stock standard solutions at a concentration of 1.00 μg/ul by dissolving 0.100 grams of assayed reference material in pesticide quality isooctane or other appropriate solvent and diluting to volume in a 100 ml ground glass stoppered volumetric flask. The stock solution is transferred to ground glass stoppered reagent bottles, stored in a refrigerator, and checked frequently for signs of degradation or evaporation, especially just prior to preparing working standards from them.

5.5 Florisil—PR grade (60/100 mesh); purchase activated at 1250°F and store in the dark in glass containers with glass stoppers or foil-lined screw caps. Before use, activate each batch at 130°C in foil-covered glass containers.

6. *Calibration.*

6.1 Prepare calibration standards that contain the compounds of interest, either singly or mixed together. The standards should be prepared at concentrations covering two or more orders of magnitude that will completely bracket the working range of the chromatographic system. If the sensitivity of the detection system can be calculated from Table I as 100 μg/1 in the final extract, for example, prepare standards at 10 μg/1, 50 μg/1, 100 μg/1, 500 μg/1, etc. so that injections of 1–5 μl of each calibration standard will define the linearity of the detector in the working range.

6.2 Assemble the necessary gas chromatographic apparatus and establish operating parameters equivalent to those indicated in Table I. By injecting calibration standards, establish the sensitivity limit of the detector and the linear range of the analytical system for each compound.

6.3 The cleanup procedure in Section 10 utilizes Florisil chromatography. Florisil from different batches or sources may vary in absorption capacity. To standardize the amount of Florisil which is used, the use of lauric acid value (Mills, 1968) is suggested. The referenced procedure determines the

adsorption from hexane solution of lauric acid (mg) per gram Florisil. The amount of Florisil to be used for each column is calculated by dividing this ratio by 110 and multiplying by 20 grams.

6.4 Before using any cleanup procedure, the analyst must process a series of calibration standards through the procedure to validate elution patterns and the absence of interferences from the reagents.

7. *Quality Control.*

7.1 Before processing any samples, the analyst should demonstrate through the analysis of a distilled water method blank, that all glassware and reagents are interference-free. Each time a set of samples is extracted or there is a change in reagents, a method blank should be processed as a safeguard against chronic laboratory contamination.

7.2 Standard quality assurance practices should be used with this method. Field replicates should be collected to validate the precision of the sampling technique. Laboratory replicates should be analyzed to validate the precision of the analysis. Fortified samples should be analyzed to validate the accuracy of the analysis. Where doubt exists over the identification of a peak on the chromatogram, confirmatory techniques such as mass spectroscopy should be used.

8. *Sample Collection, Preservation, and Handling.*

8.1 Grab samples must be collected in glass containers, leaving a minimum headspace. Conventional sampling practices should be followed, except that the bottle must not be prewashed with sample before collection. Composite samples should be collected in refrigerated glass containers in accordance with the requirements of the program. Automatic sampling equipment must be free of tygon and other potential sources of contamination.

8.2 The samples must be iced or refrigerated from the time of collection until extraction. Chemical preservatives should not be used in the field unless more than 24 hours will elapse before delivery to the laboratory. If the samples will not be extracted within 48 hours of collection, the sample should be adjusted to a pH range of 6.0–8.0 with sodium hydroxide or sulfuric acid.

8.3 All samples should be extracted immediately and must be extracted within 7 days and completely analyzed within 30 days of collection.

9. *Sample Extraction.*

9.1 Mark the water meniscus on the side of the sample bottle for later determination of sample volume. Pour the entire sample into a two-liter separatory funnel. Check the pH of the sample with wide-range pH paper and adjust to within the range of 5–9 with sodium hydroxide or sulfuric acid.

9.2 Add 60 ml methylene chloride to the sample bottle, seal, and shake 30 seconds to rinse the inner walls. Transfer the solvent into the separatory funnel, and extract the sample by shaking the funnel for two minutes with periodic venting to release vapor pressure. Allow the organic layer to separate from the water phase for a minimum of ten minutes. If the emulsion interface between layers is more than one-third the size of the solvent layer, the analyst must employ mechanical techniques to complete the phase separation. The optimum technique depends upon the sample, but may include stirring, filtration of the emulsion through glass wool, or centrifugation. Collect the methylene chloride extract in a 250-ml Erlenmeyer flask.

9.3 Add a second 60-ml volume of methylene chloride to the sample bottle and complete the extraction procedure a second time, combining the extracts in the Erlenmeyer flask.

9.4 Perform a third extraction in the same manner. Pour the combined extract through a drying column containing 3–4 inches of anhydrous sodium sulfate, and collect it in a 500-ml Kuderna-Danish (K-D) flask equipped with a 10 ml concentrator tube. Rinse the Erlenmeyer flask and column with 20–30 ml methylene chloride to complete the quantitative transfer.

9.5 Add 1–2 clean boiling chips to the flask and attach a three-ball Snyder column. Prewet the Snyder column by adding about 1 ml methylene chloride to the top. Place the K–D apparatus on a hot water bath (60–65° C) so that the concentrator tube is partially immersed in the hot water, and the entire lower rounded surface of the flask is bathed in vapor. Adjust the vertical position of the apparatus and the water temperature as required to complete the concentration in 15–20 minutes. At the proper rate of distillation the balls of the column will actively chatter but the chambers will not flood. When the apparent volume of liquid reaches 1–2 ml, remove the K–D apparatus and allow it to drain for at least 10 minutes while cooling.

Note.—The dichlorobenzenes have a sufficiently high volatility that significant losses may occur in concentration steps if care is not exercised. It is important to maintain a constant gentle evaporation rate and not to allow the liquid volume to fall below 1–2 ml before removing the K-D from the hot water bath.

9.6 Momentarily remove the Snyder column, add 50 ml hexane and a new boiling chip and replace the column. Raise the temperature of the water bath to 85–90° C. Concentrate the extract as in 9.5, except using hexane to prewet the column. Remove the Snyder column and rinse the flask and its lower joint into the concentrator tube with 1–2 ml of hexane. A 5-ml syringe is recommended for this operation. Stopper the concentrator tube and store refrigerated if further processing will not be performed immediately.

9.7 Determine the original sample volume by refilling the sample bottle to the mark and transferring the liquid to a 1000 ml graduated cylinder. Record the sample volume to the nearest 5 ml.

9.8 Unless the sample is known to require cleanup, proceed to analysis by gas chromatography.

10. *Cleanup and Separation.*

10.1 Florisil column cleanup for chlorinated Hydro-carbons.

10.1.1 Adjust the sample extract to 10 ml.

10.1.2 Place a 12 gram charge of activated Florisil (see 6.3) in a 10 mm ID chromatography column. After settling the Florisil by tapping the column, add a 1–2 cm layer of anhydrous granular sodium sulfate to the top.

10.1.3 Pre-elute the column, after cooling, with 100 ml of petroleum ether. Discard the eluate and just prior to exposure of the sulfate layer to air, quantitatively transfer the sample extract into the column by decantation and subsequent petroleum ether washings. Discard the eluate. Just prior to exposure of the sodium sulfate layer to the air, begin eluting the column with 200 ml petroleum ether and collect the eluate in a 500 ml K–D flask equipped with a 10 ml concentrator tube. This fraction should contain all of the chlorinated hydrocarbons.

10.1.4 Concentrate the fraction by K–D as in 9.5 except prewet the column with hexane. When the apparatus is cool, remove the Snyder column and rinse the flask and its lower joint into the concentrator tube with 1–2 ml hexane. Analyze by gas chromatography.

11. *Gas Chromatography.*

11.1 Table I summarizes the recommended gas chromatographic column materials and operating conditions for the instrument. Included in this table are estimated retention times and sensitivities that should be achieved by this method. Examples of the separations achieved by this column are shown in Figures 1 and 2. Calibrate the system daily with a minimum of three injections of calibration standards.

11.2 Inject 2–5 ul of the sample extract using the solvent-flush technique. Smaller (1.0 ul) volumes can

be injected if automatic devices are employed. Record the volume injected to the nearest 0.05 ul, and the resulting peak size, in area units.

11.3 If the peak area exceeds the linear range of the system, dilute the extract and reanalyze.

11.4 If the peak area measurement is prevented by the presence of interferences, further cleanup is required.

12. *Calculations.*

12.1 Determine the concentration of individual compounds according to the formula:

$$\text{Concentration, } \mu g/l = \frac{(A)(B)(V_t)}{(V_i)(V_s)}$$

Where:

A = Calibration factor for chromatographic system, in nanograms material per area unit.

B = Peak size in injection of sample extract, in area units

V_i = Volume of extract injected (ul)

V_t = Volume of total extract (ul)

V_s = Volume of water extracted (ml)

12.2 Report results in micrograms per liter without correction for recovery data. When duplicate and spiked samples are analyzed, all data obtained should be reported.

13. *Accuracy and Precision.* The U.S. EPA Environmental Monitoring and Support Laboratory in Cincinnati is in the process of conducting an interlaboratory method study to determine the accuracy and precision of this test procedure.

Table I.—*Gas Chromatography of Chlorinated Hydrocarbons*

Compound	Retention time (min.) col. 1 [1]	Detection limit (μg/l) [2]
1,3-dichlorobenzene	4.0	0.009
1,4-dichlorobenzene	4.3	0.018
Hexachloroethane	4.8	0.001
1,2-dichlorobenzene	5.3	0.012
Hexachlorobutadiene	11.6	0.001
1,2,4-trichlorobenzene	12.4	0.006
Hexachlorocyclopentadiene	*1.5	0.001
2-chloronaphthalene	*2.5	0.015
Hexachlorobenzene	*7.0	0.001

[1] Gas Chrom Q 80/100 mesh coated with 1.5% OV-1/ 1.5% OV-225 packed in a 1.8 m long x 2 mm ID glass column with 5% Methane/95% Argon carrier gas at 30 ml/ min flow rate. Column temperature is 75° C except where * indicates 160° C. Under these conditions R.T. of Aldrin is 18.8 minutes at 160° C.

[2] Detection limit is calculated from the minimum detectable GC response of the electron capture detector being equal to five times the GC background noise, assuming a 10 ml final volume of the 1 liter sample extract, and assuming a GC injection of 5 microliters.

BILLING CODE 6560-01-M

Bibliography

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2. Mills, P. A., "Variation of Florisil Activity: Simple Method for Measuring Absorbent Capacity and Its Use in Standardizing Florisil Columns," Journal of the Association of Official Analytical Chemists, 51, *29* (1968).

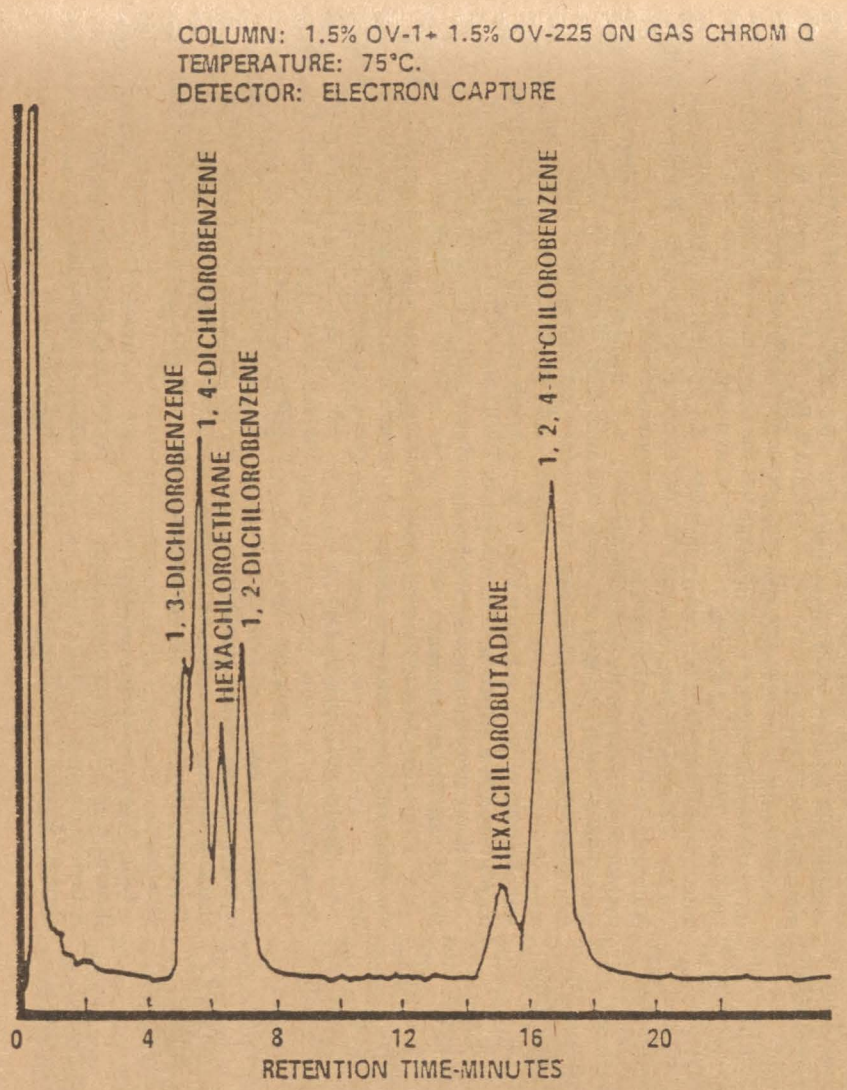


Figure 1. Gas chromatogram of chlorinated hydrocarbons

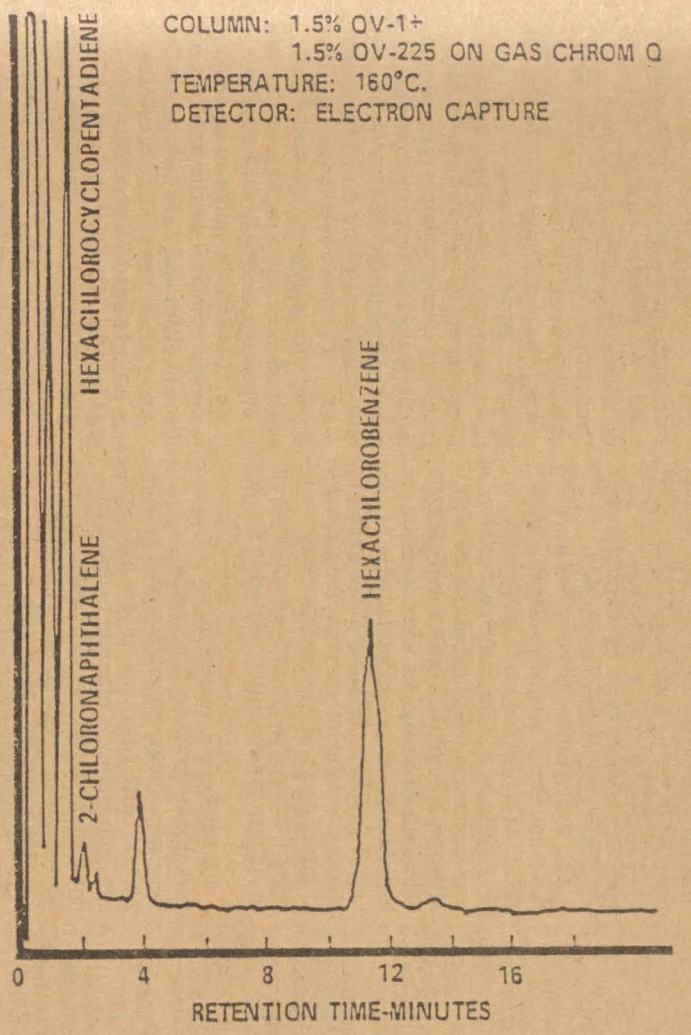


Figure 2. Gas chromatogram of chlorinated hydrocarbons

Appendix II—Gas Chromatographic/ Mass Spectrometric Methods: Methods 613, 624 and 625

2,3,7,8,-Tetrachlorodibenzo-p-Dioxin—Method 613

1. *Scope and Application.*

1.1 This method covers the determination of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). The following parameter may be determined by this method:

Parameter:	STORET No.
TCDD	34675

1.2 This method is applicable to the determination of TCDD in municipal and industrial discharges. It is designed to be used to meet the monitoring requirements of the National Pollutant Discharge Elimination System (NPDES). As such, it presupposes the potential for finding trace levels of TCDD in the sample. The method incorporates techniques that can also be used to screen samples for TCDD using an electron capture detector.

1.3 The sensitivity of this method is usually dependent upon the level of interferences rather than instrumental limitations. The limit of detection listed in Table I represents the sensitivity that can be achieved in wastewaters in the absence of interferences.

1.4 This method is recommended for use only by analysts experienced with residue analysis and skilled in mass spectral analytical techniques.

1.5 Because of the extreme toxicity of this compound, the analyst must take elaborate precautions to prevent exposure to himself, or to others, of materials known or believed to contain TCDD. The appendix to this method contains guidelines and protocols that should serve as minimum safe-handling standards for the laboratory.

2. *Summary of Method.*

2.1 A 1-liter sample of wastewater is extracted with methylene chloride using separatory funnel techniques. The extract is dried and exchanged to hexane while being concentrated to a volume of 1.0 ml or lower. Capillary column GC/MS conditions and internal standard techniques are described which allow for the measurement of TCDD in the extract. Electron capture gas chromatographic conditions are also provided to permit the analyst to use this equipment to prescreen samples before GC/MS analysis.

2.2 If interferences are encountered, the method provides selected general purpose cleanup procedures to aid the analyst in their elimination.

3. *Interferences.*

3.1 Solvents, reagents, glassware, and other sample processing hardware may yield discrete artifacts and/or elevated baselines causing misinterpretation of gas chromatograms. All of these materials must be demonstrated to be free from interferences under the conditions of the analysis by running method blanks. Specific selection of reagents and purification of solvents by distillation in all-glass systems may be required.

3.2 Interferences coextracted from the samples will vary considerably from source to source, depending upon the diversity of the industrial complex or municipality being sampled. TCDD is often associated with other interfering chlorinated compounds which are at concentrations several magnitudes higher than that of TCDD. While general cleanup techniques are provided as part of this method, unique samples may require additional cleanup approaches to achieve the sensitivity stated in Table I.

3.3 The other isomers of tetrachlorodibenzo-p-dioxin may interfere with the measurement of 2,3,7,8-TCDD. Capillary column gas chromatography is required to resolve those isomers that yield virtually identical mass fragmentation patterns.

4. *Apparatus and Materials.*

4.1 Sampling equipment, for discrete or composite sampling.

4.1.1 Grab sample bottle—amber glass, 1-liter or 1-quart volume. French or Boston Round design is recommended. The container must be washed and solvent rinsed before use to minimize interferences.

4.1.2 Bottle caps—Threaded to screw on to the sample bottles. Caps must be lined with Teflon. Foil may be substituted if sample is not corrosive.

4.1.3 Compositing equipment—Automatic or manual compositing system. Must incorporate glass sample containers for the collection of a minimum of 250 ml. Sample containers must be kept refrigerated during sampling. No tygon or rubber tubing may be used in the system.

4.2 Separatory funnels—2000 ml and 500 ml, with Teflon stopcock.

4.3 Drying column—20 mm ID pyrex chromatographic column with coarse frit.

4.4 Kuderna-Danish (K–D) Apparatus.

4.4.1 Concentrator tube—10 ml, graduated (Kontes K–570050–1025 or equivalent). Calibration must be checked. Ground glass stopper (size 19/22 joint) is used to prevent evaporation of extracts.

4.4.2 Evaporative flask—500 ml (Kontes K–57001–0500 or equivalent). Attach to concentrator tube with springs. (Kontes K–662750–0012).

4.4.3 Snyder column—three-ball macro (Kontes K503000–0121 or equivalent).

4.4.4 Snyder column—two-ball micro (Kontes K–569001–0219 or equivalent).

4.4.5 Boiling chips—solvent extracted, approximately 10/40 mesh.

4.5 Water bath—Heated, with concentric ring cover, capable of temperature control (±2° C). The bath should be used in a hood.

4.6 Gas chromatograph—Analytical system complete with gas chromatograph suitable for on-column injection and all required accessories including electron capture, packed and capillary column supplies, recorder, gases, syringes. A data system for measuring peak areas is recommended.

4.7 GC/Mass Spectrometer system—electron ionization source, capable of selected ion monitoring in groups of two or more ions, and related data system.

4.8 Chromatography column—300 mm longx10 mm ID with coarse fritted disc at bottom and Teflon stopcock.

4.9 Chromatography column—400 mm longx11 mm ID with coarse fritted disc at bottom and Teflon stopcock.

4.10 Pipets—Disposable, Pasteur, 150 mm longx5 mm ID (Fisher Scientific Co., No. 13–678–6A or equivalent).

5. *Reagents.*

5.1 Sodium hydroxide—(ACS) 10 N and 1 N in distilled water. Wash the solutions with methylene chloride and with hexane.

5.2 Sulfuric acid—(ACS) (1+1) and 1N. For (1+1), mix equal volumes of conc. H_2SO_4 with distilled water. Wash the solutions with methylene chloride and with hexane.

5.3 Methylene chloride, hexane, benzene, tetradecane—Pesticide quality or equivalent.

5.4 Sodium Sulfate—(ACS) Granular, anhydrous (purified by heating at 400° C for 4 hrs. in a shallow tray).

5.5 Stock standards—In a glovebox, prepare stock standard solutions of TCDD and ^{37}C1–TCDD (molecular weight 328). The stock solutions are stored in the glovebox, and checked frequently for signs of degradation or evaporation, especially just prior to preparing working standards from them.

5.6 Silica gel—high purity grade, 100/120 mesh, (Fisher Scientific Co., No. S–679 or equivalent).

5.7 Alumina—neutral, 80/200 mesh (Fisher Scientific Co., No. A–540 or equivalent). Before use activate for 24 hours at 130° C in a foil-covered glass container.

5.8 Activated Coconut Charcoal—50/200 mesh (Fisher Scientific Co., No. 5–690A or equivalent).

6. *Calibration*

6.1 Prepare GC/MS calibration standards for the internal standard technique that will allow for measurement of relative response factors of at least three TCDD/^{37}C1 TCDD ratios. The ^{37}C1–TCDD concentration in the standards should be fixed and selected to yield a reproducible response at the most sensitive setting of the mass spectrometer.

6.2 Assemble the necessary GC or GC/MS apparatus and establish operating parameters equivalent to those indicated in Table I. Calibrate the GC/MS system according to Eichelberger, et al. (1975). By injecting calibration standards, establish the response factors for TCDD vs. ^{37}C1–TCDD.

6.3 Before using any cleanup procedure, the analyst must process a series of calibration standards through the procedure to validate elution patterns and the absence of interferences from the reagents.

7. *Quality Control.*

7.1 Before processing any samples, the analyst should demonstrate through the analysis of a distilled water method blank, that all glassware and reagents are interference-free. Each time a set of samples is extracted or there is a change in reagents, a method blank should be processed as a safeguard against chronic laboratory contamination.

7.2 Standard quality assurance practices should be used with this method. Field replicates should be collected to validate the precision of the sampling technique. Laboratory replicates should be analyzed to validate the precision of the analysis. Fortified samples should be analyzed to validate the accuracy of the analysis, although surrogate spikes are recommended because of the toxicity of TCDD. Where doubt exists over the identification of a peak on the electron capture chromatogram, mass spectroscopy must be used for clarification or confirmation.

8. *Sample Collection, Preservation, and Handling.*

8.1 Grab samples must be collected in glass containers. Conventional sampling practices should be followed, except that the bottle must not be prewashed with sample before collection. Composite samples should be collected in refrigerated glass containers in accordance with the requirements of the program. Automatic sampling equipment must be free of tygon and other potential sources of contamination.

8.2 The samples must be iced or refrigerated from the time of collection until extraction. Chemical preservatives should not be used in the field unless more than 24 hours will elapse before delivery to the laboratory. If the samples will not be extracted within 48 hours of collection, the sample should be adjusted to a pH range of 6.0–8.0 with sodium hydroxide or sulfuric acid.

8.3 All samples must be extracted within 7 days and completely analyzed within 30 days of collection.

9. *Sample Extraction.*

Caution: If there is a remote possibility that the sample contains TCDD at measurable levels, all of the following operations must be performed in a limited access laboratory with the analyst wearing full protective covering for all exposed skin surfaces. See Appendix.

9.1 Mark the water meniscus on the side of the sample bottle for later determination of sample volume. Pour the entire sample into a two-liter separatory funnel. Check the pH of the sample with wide-range pH paper and adjust to within the range of 5–9 with sodium hydroxide or sulfuric acid.

9.2 Add 60 ml methylene chloride to the sample bottle, seal, and shake 30 seconds to rinse the inner walls. Transfer the solvent into the separatory funnel, and extract the sample by shaking the funnel for two minutes with periodic venting to release vapor pressure. Allow the organic layer to separate from the water phase for a minimum of ten minutes. If the emulsion interface between layers is more than one-third the size of the solvent layer, the analyst must employ mechanical techiques to complete the phase separation. The optimum technique depends upon the sample, but may include stirring, filtration of the emulsion through glass wool, or centrifugation. Collect the methylene chloride extract in a 500-ml separatory funnel.

9.3 Add a second 60-ml volume of methylene chloride to the sample bottle and complete the extraction procedure a second time, combining the extracts in the 500-ml separatory funnel.

9.4 Perform a third extraction in the same mammer. To the combined extracts in the separatory funnel add 100 ml 1 N NaOH. Shake the funnel for 30–60 seconds. Allow the layers to separate and draw the organic layer into a 250 ml Erlenmeyer flask. Discard the aqueous layer and return the organic layer to the separatory funnel. Perform a second wash of the organic layer with 1 N NaOH and discard the aqueous layer.

9.5 In the same manner wash the organic layer twice with 100 ml 1 N H_2SO_4, discarding the aqueous layers.

9.6 Wash the organic layer three times with 100 ml H_2O, discarding the aqueous layers.

9.7 Pour the organic layer extract through a drying column containing 3–4 inches of anhydrous sodium sulfate, and collect it in a 500-ml Kuderna-Danish (K–D) flask equipped with a 10 ml concentrator tube. Rinse the Erlenmeyer flask and column with 20–30-ml methylene chloride to complete the quantitative transfer.

9.8 Add 1–2 clean boiling chips to the flask and attach a three-ball Snyder column. Prewet the Snyder column by adding about 1 ml methylene chloride to the top. Place the K–D apparatus on a hot water bath (60–65° C) so that the concentrator tube is partially immersed in the hot water, and the entire lower rounded surface of the flask is bathed in vapor. Adjust the vertical position of the apparatus and the water temperature as required to complete the concentration in 15–20 minutes. At the proper rate of distillation, the balls of the column will actively chatter but the chambers will not flood. When the apparent volume of liquid reaches 1 ml, remove the K–D apparatus and allow it to drain for at least 10 minutes while cooling.

9.9 Momentarily remove the Snyder column, add 50 ml hexane and a new boiling chip and replace the Snyder column. Increase the temperature of the water bath to 80° C. Prewet the Snyder column by adding about 1 ml hexane to the top. Evaporate the solvent as in 9.8. Remove the Snyder column and rinse the flask and its lower joint into the concentrator tube with 1–2-ml of hexane. A 5-ml syringe is recommended for this operation.

9.10 Add a clean boiling chip and attach a micro-Snyder column. Prewet the column by adding about 1 ml hexane to the top. Place the K–D apparatus on the 80° C water bath so that the concentrator tube is partially immersed in the hot water. Adjust the vertical position of the apparatus and the water temperature as required to complete the concentration in 5–10 minutes. At the proper rate of distillation the balls of the column will actively chatter but the chambers will not flood. When the apparent volume of liquid reaches about 0.5 ml, remove the K–D apparatus and allow it to drain for at least 10 minutes while cooling. Remove the micro-Snyder column and rinse its lower joint into the concentrator tube with 0.2 ml hexane. Adjust the extract volume to 1.0 ml with hexane. Stopper the concentrator tube and store refrigerated if further processing will not be performed immediately.

9.11 Determine the original sample volume by refilling the sample bottle to

the mark and transferring the liquid to a 1000-ml graduated cylinder. Record the sample volume to the nearest 5 ml.

9.12 The analyst has several options available to him depending upon the nature of the sample and the availability of resources:

9.12.1 If the appearance of the extract or previous experience with the matrix indicates cleanup will be required the analyst should proceed with one or more techniques as described in paragraph 10.

9.12.2 If the analyst wishes to screen the sample for the possible presence of TCDD before GC/MS analysis, he can analyze the extract by packed column or capillary column electron capture detection, as in paragraph 11.

9.12.3 The analyst may proceed directly to GC/MS analysis, paragraph 12.

10. *Cleanup and Separation.*

10.1 Several cleanup column choices are offered to the analyst in this section. Although any of them may be used independently, the silica gel column (10.2) followed immediately by the alumina column (10.3) has been used frequently to overcome background problems encountered by the GC/MS.

10.2 Silica Gel Column Cleanup for TCDD.

10.2.1 Fill a 400 mm long x 11 mm ID chromatography column with silica gel to the 300 mm level, tapping the column gently to settle the silica gel. Add 10 mm anhydrous sodium sulfate to the top of the silica gel.

10.2.2 Preelute the column with 50 ml 20% benzene/80% hexane (V/V). Adjust the elution rate to 1 ml/min. Discard the eluate and just prior to exposure of the sodium sulfate layer to the air, transfer the entire 1.0 ml sample extract onto the column, using two 2 ml portions of 20% benzene/80% hexane to complete the transfer.

10.2.3 Just prior to exposure of the sodium sulfate layer to the air, add 40 ml 20% benzene/80% hexane to the column. Collect the eluate in a 500 ml K–D flask equipped with a 10 ml concentrator tube.

10.2.4 Evaporate the fraction to 1.0 ml by standard K–D techniques (9.8–9.10). Analyze by ECGC (11), GC/MS (12) or continue cleanup as described below (10.3).

10.3 Alumina Column Cleanup for TCDD.

10.3.1 If the extract is not in hexane, add 0.1–0.2 ml tetradecane keeper and concentrate it at room temperature down to this volume using a stream of dry nitrogen gas. Dilute to 1.0 ml with hexane.

10.3.2 Fill a 300 mm long x 10 mm ID chromatography column with activated alumina to the 150 mm level, tapping the column gently to settle the alumina. Add 10 mm anhydrous sodium sulfate to the top of the alumina.

10.3.3 Preelute the column with 50 ml hexane. Adjust the elution rate to 1 ml/min. Discard the eluate and just prior to exposure of the sodium sulfate layer to the air, transfer the entire 1 ml sample extract onto the column, using two additional 2 ml portions of hexane to complete the transfer.

10.3.4 Just prior to exposure of the sodium sulfate layer to the air, add 50 ml 3% methylene chloride/97% hexane (V/V) and continue the elution of the column. Discard the eluate.

10.3.5 Next elute the column with 50 ml 20% methylene chloride/80% hexane (V/V) into a 500 ml K–D flask equipped with a 10 ml concentrator tube. Concentrate the collected fraction to 1.0 ml by standard K–D technique (9.8–9.10). Analyze by ECGC (11), GC/MS (12) or continue cleanup as described below (10.4).

10.4 Charcoal and Silica-gel Column Cleanup for TCDD.

10.4.1 Prepare a homogeneous mixture of 1 part activated charcoal to 140 parts silica-gel. Fill a 5 mm ID disposable pipet to a length of 50 mm, tapping the column to settle the mixture.

10.4.2 Preelute the column with 5 ml hexane. Discard the eluate and just prior to exposure of the top of the column to the air, transfer an 0.5 ml aliquot of sample extract onto the column, using an additional 0.5 ml hexane to complete the transfer.

10.4.3 Just prior to exposure of the top of the column to the air, add 10 ml hexane and continue the elution of the column. Discard the eluate.

10.4.4 Next, elute the column with 10 ml benzene into a 10 ml K–D concentrator tube. Concentrate the eluate to 1.0 ml with micro-K–D concentration (9.10) on a boiling water bath. Analyze by ECGC (11) or GC/MS (12).

11. *Electron Capture Screening.*

11.1 The sample extracts can be screened by electron capture gas chormatography at the option of the analyst in an effort to reduce the workload on the GC/MS system. Either packed or capillary column techniques may be used for this purpose. The only acceptable conclusions that can be reached with this technique are: (a) TCDD is not detectable at the detection limit of the procedure: (b) TCDD is not present above a stated concentration or control level: and (c) the presence or absence of TCDD is unresolved.

11.2 Table I summarizes some recommended gas chromatographic column materials and operating conditions for the instrument. Included in this table are estimated retention times and sensitivities that should be achieved by this method. An example of the chromatography achieved by the packed column is shown in Figure 1 and by the capillary column in Figure 2. Calibrate the system daily with a minimum of three injections of calibration standards.

11.3 For packed column GC, inject 2–5 μl of the sample extract using the solvent-flush technique. A splitless injector is recommended for the capillary system, but for optimum peak geometry a solvent exhange to tetradecane is required (10.3.1). Record the volume injected to the nearest 0.05 μl, and the resulting peak size, in area units.

11.4 If there is no measureable baseline deflection at the retention time of TCDD, report the result as less than the detection limit of the electron capture system.

11.5 If a measurable peak appears within the tolerances of the TCDD retention time of the system, the analyst should proceed to GC/MS (12).

11.6 If the complexity of the chromatogram defies interpretation, the analyst may want to pursue cleanup (10) followed by reanalysis by ECGC, or proceed directly to GC/MS.

12. *GC/MS Analysis.*

12.1 Table I summarizes the recommended capillary column gas chromatographic materials and operating conditions for the instrument. Included in this table is the estimated retention time and sensitivity that should be achieved by this method. An example of the chromatography achieved by this column is shown in Figure 2. Calibrate the system daily, with a minimum at three injections of standard mixtures.

12.2 Add a known amount of ^{37}Cl–TCDD to the sample extract.

12.3 Analyze samples with selected ion monitoring of at least two ions characteristic of TCDD (m/e 320 and m/e 322) and of ^{37}Cl–TCDD (m/e 328). Proof of the presence of TCDD exists if the following conditions are met:

12.3.1 The retention time of the peak in the sample must match that in the standard, within the performance specifications of the analytical system.

12.3.2 The ratio of ions (320:322) must agree within 10% must agree within 10% of that in the standard.

12.3.3 The retention time of the peak maximum for the m/e 320 peak must *exactly* match that of the 322 peak.

12.4 Quantities the TCDD peak from the response relative to the ^{37}Cl–TCDD internal standard.

12.5 If a response is obtained for both ions but is outside the expected ratio, then a co-eluting impurity may be suspected. In this case, another set of ions characteristic of the TCDD molecule, should be analyzed. A good choice of ions is m/e 257 and m/e 259. These ions are useful in characterizing the molecular structure of TCDD. Suspected impurities such as DDE, DDD or PCB residues can be confirmed by checking for their major fragments. These materials can be removed by the cleanup columns. If available, an analysis of the EC chromatogram will provide insight into the complexity of the problem and will determine the manner in which the mass spectrometer will be used.

12.6 If broad background interference restricts the sensitivity of the GC/MS analysis, the analyst should employ cleanup procedures (10) and reanalyze by GC/MS.

12.7 In those circumstances where these procedures do not yield a definitive conclusion, then the use of high resolution mass spectrometry is suggested.

13. *Calculations.*

13.1 Determine the concentration of individual compounds according to the formula:

$$\text{Concentration, ug/l} = \frac{(A)\ (V_t)}{(V)_i\ (V_s)}$$

Where:

A = Nanograms TCDD injected into the GC/MS from the calibration curve.

V_i = Volume of extract injected (μl)

V_t = Volume of total extract (μl)

V_s = Volume of water extracted (ml)

13.2 Report results in micrograms per liter without correction for recovery data When duplicate and spiked samples are analyzed, all data obtained should be reported.

14. *Accuracy and Precision.* No data available at this time.

Bibliography

1. "Development and Application of Test Procedures for Specific Organic Toxic Substances in Wastewaters. Category 6-Dioxin." Report for EPA Contract 68-03-2635 (In preparation).

2. "Reference Compound to Calibrate Ion Abundance Measurements in Gas Chromatography—Mass Spectrometry Systems," J. W. Eichelberger, L. E. Harris, and W. L. Budde, *Anal. Chem.* 47, 995–1000 (1975).

Table I.—*Gas Chromatography of TCDD*

Column	Retention time (min.)	Detection limit (μg/L) [1]
Packed [2]	7.3	0.003
Glass Capillary [3]	9.5	0.003

[1] Detection limit is calculated from the minimum detactable GC response being equal to five times the GC background noise, assuming a 1 ml effective final volume of the 1 liter sample extract, and assuming a GC injection of 5 microliters. Detection levels apply to both electron capture and GC/MS detection.

[2] Packed column conditions: Supelcoport 100/120 mesh coated with 1.5% SP-2250/1.95% SP-2401 packed in a 180 cm long x 2 mm ID glass column with 5% methane/95% Argon carrier gas at 25 ml/min flow rate. Column temperature is 220°C.

[3] Glass capillary column conditions: SP-2250 coated on a 30 m long x 0.25 mm ID glass column (Supelco No. 2-3714 or equivalent) with helium carrier gas at 30 cm/sec linear velocity run splitless. Column temperature is 210°C.

Appendix A—Safe Handling Practices for TCDD

Dow Chemical U.S.A. has issued the following precautions for safe handling TCDD in the laboratory. In addition to these practices, the following points are also helpful:

1. Contamination of the laboratory will be minimized by conducting all manipulations in the hood.

2. Effluent of the gas chromatography (from the Nickel-63 detector or as a result of splitting when capillary columns are used) should pass through either a column of activated charcoal or bubbled through a trap containing oil or high-boiling alcohols.

3. Liquid waste can be dissolved in methanol or ethanol and irradiated with ultraviolet light with wavelength greater than 290 nm for several days.

Precautions for Safe Handling of 2,3,7,8-Tetrachlorodibenzo-Para-Dioxin (TCDD) in the Laboratory (Revised 11/78)

The following statements on safe handling are as complete as possible on the basis of available toxicological information. The precautions for safe handling and use are necessarily general in nature since detailed, specific recommendations can be made only for the particular exposure and circumstances of each individual use. Inquiries about specific operations or uses may be addressed to the Dow Chemical Company. Assistance in evaluating the health hazards of particular plant conditions may be obtained from certain consulting laboratories and from State Departments of Health or of Labor, many of which have an industrial health service.

TCDD is extremely toxic to laboratory animals. However, it has been handled for years without injury in analytical and biological laboratories. Techniques used in handling radioactive and infectious materials are applicable to TCDD.

Protective Equipment: Throw-away plastic gloves, apron or lab coat, safety glasses and lab hood adequate for radioactive work.

Training: Workers must be trained in the proper method of getting out of contaminated gloves and clothing without contacting the exterior surfaces.

Personel Hygiene: Thorough washing of hands and forearms after each manipulation and before breaks (coffee, lunch, and shift).

Confinement: Isolated work area, posted with signs, segregated glassware and tools, plastic-backed absorbent paper on benchtops.

Waste: Good technique includes minimizing contaminated waste. Plastic bag liners should be used in waste cans. Janitors must be trained in safe handling of waste (one accidental case of chloracne resulted from handling laboratory waste in a routine manner).

Disposal of Wastes: TCDD decomposes above 800°C. Low-level waste such as the absorbent paper, tissues, animal remains and plastic gloves may be burned in a good incinerator. Gross quantities (milligrams) should be packaged securely and disposed through commercial or governmental channels which are capable of handling high-level radioactive wastes or extremely toxic wastes. Liquids should be allowed to evaporate in a good hood and in a disposable container. Residues may then be handled as above.

Decontamination: Personal—any mild soap with plenty of scrubbing action: *Glassware, Tools, and Surfaces*—Chlorothene [1] NU Solvent is the least toxic solvent shown to be effective. Satisfactory cleaning may be accomplished by rinsing with Chlorothene, then washing with any detergent and water. Dish water may be disposed to the sewer. It is prudent to minimize solvent wastes because they may require special disposal through commercial sources which are expensive.

Laundry: Clothing known to be contaminated should be disposed with the precautions described under "Disposal of Wastes." Lab coats or other clothing worn in TCDD work may be laundered. Clothing should be collected in plastic bags. Persons who convey the bags and launder the clothing should be advised of the hazard and trained in proper handling. The clothing may be put into a washer without contact if the launderer knows

[1] Trademark of the Dow Chemical Company.

the problem. The washer should be run through a cycle before being used again for other clothing.

Wipe Tests: A useful method of determining cleanliness of work surfaces and tools is to wipe the surface with a piece of filter paper. Extraction and analysis by gas chromatography can achieve a limit of sensitivity of 0.1 microgram per wipe. The analytical method is available upon request. Less than 1 microgram TCDD per sample indicates acceptable clealiness; anything higher warrants further cleaning. More than 10 micrograms on a wipe sample indicates an acute hazard and requires prompt cleaning before further use of the equipment or work space. It indicates further that unacceptably sloppy work habits have been employed in the past.

Inhalation: Any procedure that may produce airborne contamination must be done with good ventilation. Gross losses to a ventilation system must not be allowed. Handling of the dilute solutions normally used in analytical and animal work presents no inhalation hazards except in case of an accident.

Accidents: Remove contaminated clothing immediately, taking precautions not to contaminate skin or other articles. Wash exposed skin vigorously and repeatedly until medical attention is obtained.

For clinical advice, contact B. B. Holder, M.D., Medical Director, Dow Chemical U.S.A., Midland, Michigan 48640, (telephone 517/636–2108). For detailed safe handling precautions for specific procedures, contact L. G. Silverstein, Industrial Hygiene Laboratory, Dow Chemical U.S.A., Midland, Michigan 48640 (telephone 517/636–1688).

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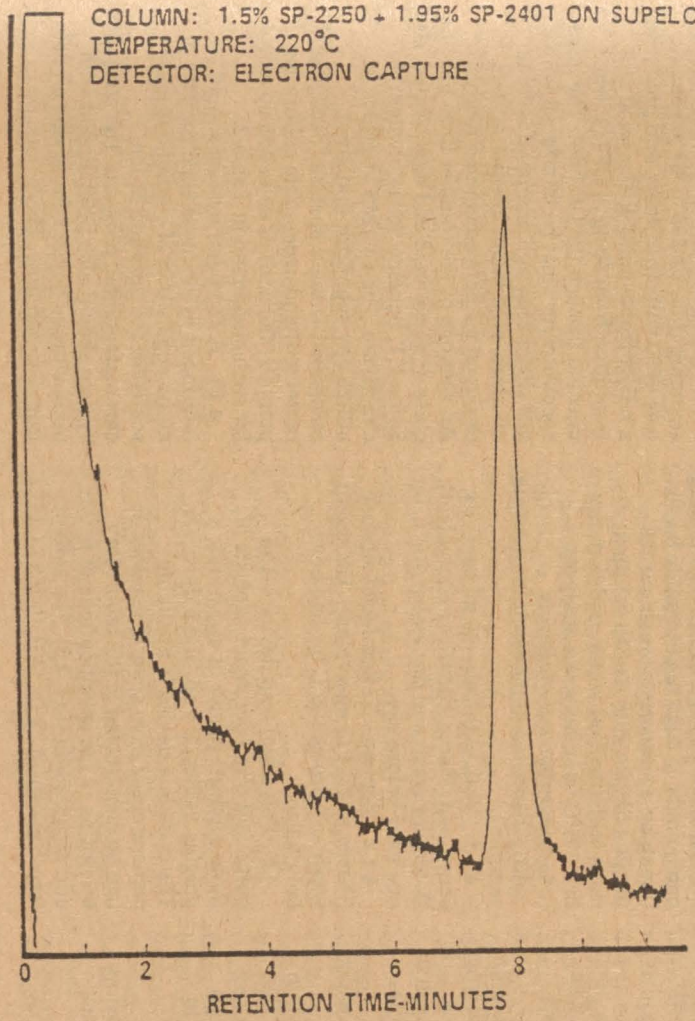


Figure 1. Gas chromatogram of TCDD

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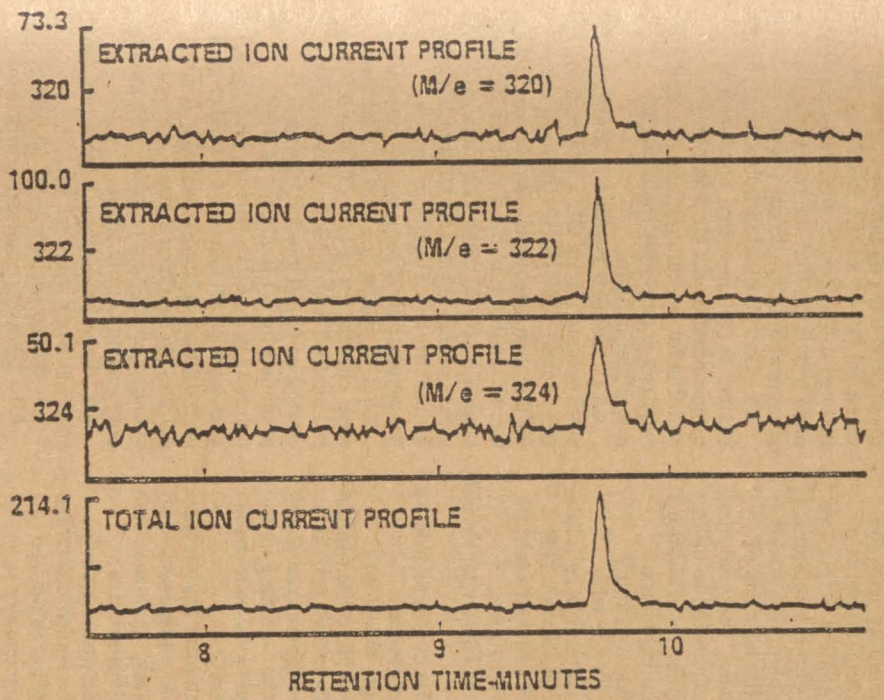


Figure 2. Total and extracted ion current profiles of TCDD

Purgeables—Method 624

1. *Scope and Application.*

1.1 This method is designed to determine volatile organic materials that are amenable to the purge and trap method. The parameters listed in Table 1 may be determined by this method.

1.2 This method is applicable to the determination of these compounds in municipal and industrial discharges. It is designed to be used to meet the monitoring requirements of the National Pollutants Discharge Elimination System (NPDES).

1.3 The detection limit of this method is usually dependent upon the level of interferences rather than instrumental limitations. The limits listed in Table 2 represent sensitivities that can be achieved in wastewaters.

1.4 The GC/MS parts of this method are recommended for use only by persons experienced in GC/MS analysis or under the close supervision of such qualified persons.

1.5 The trapping and chromatographic procedures described do not apply to the very volatile pollutant, dichlorodifluoromethane. An alternative three stage trap containing charcoal is to be used if this compound is to be analyzed. See EPA Method 601 and Reference 1. Primary ion for quantitative analysis of this compound is 101. The secondary ions are 85, 87, and 103.

1.6 Although this method can be used for measuring acrolein and acrylonitrile, the purging efficiencies are low and erratic. For a more reliable quantitative analysis of these compounds, use direct aqueous injection (Ref. 4–6) or EPA Method 603, Acrolein and Acrylonitrile, EMSL, Cincinnati, Ohio.

2. *Summary of Method.*

21. A sample of wastewater is purged with a stream of inert gas. The gas is bubbled through a 5 ml water sample contained in a specially designed purging chamber. The volatile organics are efficiently transferred from the aqueous phase into the gaseous phase where they are passed through a sorbent bed designed to trap out the organic volatiles. After purging is complete, the trap is backflushed while being rapidly heated in order to thermally desorb the components into the inlet of a gas chromatograph. The components are separated via the gas chromatograph and detected using a mass spectrometer which is used to provide both qualitative and quantitative information. The chromatographic conditions as well as typical mass spectrometer operating parameters are given.

3. *Interferences.*

3.1 Interferences coextracted from the samples will vary considerably from source to source, depending upon the diversity of the industrial complex or municipality being sampled. Impurities in the purge gas and organic compounds out-gassing from the plumbing ahead of the trap account for the majority of contamination problems. The analytical system must be demonstrated to be free from interferences under the conditions of the analysis by running method blanks. Method blanks are run by charging the purging device with organic-free water and analyzing it in a normal manner. The use of non-TFE plastic tubing, non-TFE thread sealants, or flow controllers with rubber components in the purging device should be avoided.

3.2 Samples can be contaminated by diffusion of volatile organics (particularly methylene chloride) through the septum seal into the sample during shipment and storage. A field blank prepared from organic-free water and carried through the sampling and handling protocol can serve as a check on such contamination.

3.3 Cross contamination can occur whenever high level and low level samples are sequentially analyzed. To reduce cross contamination, it is recommended that the purging device and sample syringe be rinsed out twice, between samples, with organic-free water. Whenever an unusually concentrated sample is encountered, it should be followed by an analysis of organic-free water to check for cross-contamination. For samples containing large amounts of water soluble materials, suspended solids, high boiling compounds, or high organohalide levels, it may be necessary to wash out the purging device with a soap solution, rinse with distilled water, and then dry in a 105°C oven between analyses.

4. *Apparatus and Materials.*

4.1. Sampling equipment, for discrete sampling.

4.1.1 Vial, with cap—40 ml capacity screw cap (Pierce #13075 or equivalent). Detergent wash and dry vial at 105°C for one hour before use.

4.1.2 Septum—Teflon-faced silicone (Pierce #12722 or equivalent). Detergent wash and dry at 105°C for one hour before use.

4.2 Purge and trap device—The purge and trap equipment consists of three separate pieces of apparatus: a purging device, a trap, and a desorber. The complete device is available commercially from several vendors or can be constructed in the laboratory according to the specifications of Bellar and Lichtenberg (Ref. 2,3). The sorbent trap consists of ⅛ in. O.D. (0.105 in. I.D.) x 25 cm long stainless steel tubing packed with 15 cm of Tenax-GC (60–80 mesh) and 8 cm of Davison Type-15 silica gel (35–60 mesh). See figures 1 through 4. Ten centimeter traps may be used providing that the recoveries are comparable to the 25 cm traps.

4.3 Gas chromatograph—Analytical system complete with a temperature programmable gas chromatograph suitable for on-column injection and all required accessories including an analytical column.

4.3.1 Column 1—An 8 ft. stainless steel column (⅛ in. OD x 0.90 to 0.105 in. ID) packed with 1% SP–1000 coated on 60/80 mesh Carbopack B preceded by a 5-cm precolumn packed with 1% SP–1000 coated on 60/80 mesh Chromosorb W. A glass column (¼ in OD x 2 mm ID) may be substituted. The precolumn is necessary only during conditioning.

4.3.2 Column 2—An 8 ft. stainless steel column (⅛ in OD x 0.09 to 0.105 in. ID) packed with 0.2% Carbowax 1500 coated on 60/80 mesh Carbopack C preceded by a 1 ft. stainless steel column (⅛ in. OD x 0.09 to 0.105 in. ID) packed with 3% Carbowax 1500 coated on 60/80 mesh Chromosorb W. A glass column (¼ in. OD x 2 mm ID) may be substituted. The precolumn is necessary only during conditioning.

4.4 Syringes—glass, 5-ml hypodermic with Luer-Lok tip (3 each).

4.5 Micro syringes—10, 25, 100 μl.

4.6 2-way syringe valve with Luer ends (3 each, Teflon or Kel-F).

4.7 Syringe—5 ml gas-tight with shut-off valve.

4.8 8-inch, 20-gauge syringe needle—One per each 5-ml syringe.

4.9 Mass Spectrometer—capable of scanning from 20–260 in six seconds or less at 70 volts (nominal), and producing a recognizable mass spectrum at unit resolution from 50 ng of DFTPP when injected through the GC inlet. The mass spectrometer must be interfaced with a gas chromatograph equipped with an all-glass, on-column injector system designed for packed column analysis. All sections of the transfer lines must be glass or glass-lined and deactivated. Use Sylon-CT, Supelco, (or equivalent) to deactivate. The GC/MS interface can utilize any separator that gives recognizable mass spectra (background corrected) and acceptable calibration points at the limit of detection specified for each compound in Table 2.

4.10 A computer system should be interfaced to the mass spectrometer to allow acquisition of continuous mass scans for the duration of the chromatographic program. The computer system should also be equipped with mass storage devices for saving all data from GC–MS runs. There must be

computer software available to allow searching any GC/MS run for specific ions and plotting the intensity of the ions with respect to time or scan number. The ability to integrate the area under a specific ion plot peak is essential for quantification.

5. *Reagents.*

5.1 Sodium thiosulfate—(ACS) Granular.

5.2 Trap Materials

5.2.1 Porous polymer packing 60/80 mesh chromatographic grade Tenax GC (2,6-diphenylene oxide).

5.2.3 Silica gel-(35–60 mesh)—

5.2.2 Three percent OV–1 on Chromosorb-W 60/80 mesh. Davison, grade-15 or equivalent.

5.3 Activated carbon—Filtrasorb-200 (Calgon Corp.) or equivalent.

5.4 Organic-free water

5.4.1 Organic-free water is defined as water free of interference when employed in the purge and trap procedure described herein. It is generated by passing tap water or well water through a carbon filter bed containing about 1 lb. of activated carbon.

5.4.2 A water system (Millipore Super-Q or equivalent) may be used to generate organic-free deionized water.

5.4.3 Organic-free water may also be prepared by boiling water for 15 minutes. Subsequently, while maintaining the temperature at 90°C, bubble a contaminant-free inert gas through the water for one hour. While still hot, transfer the water to a narrow mouth screw cap bottle equipped with a Teflon seal.

5.5 Stock standards (2 mg/ml)—Prepare stock standard solutions in methanol using assayed liquids or gases as appropriate. Because of the toxicity of some of the organohalides, primary dilutions of these materials should be prepared in a hood. A NIOSH/MESA approved toxic gas respirator should be worn when the analyst handles high concentrations of such materials.

5.5.1 Place about 9.8 ml of methanol into a 10 ml ground glass stoppered volumetric flask. Allow the flask to stand, unstoppered, for about 10 minutes or until all alcohol wetted surfaces have dried. Tare the flask to the nearest 0.1 mg.

5.5.2 Add the assayed reference material:

5.5.2.1 Liquids—using a 100 μl syringe, immediately add 2 to 3 drops of assayed reference material to the flask, then reweigh. Be sure that the drops fall directly into the alcohol without contacting the neck of the flask.

5.5.2.2 Gases—To prepare standards of bromomethane, chloroethane, chloromethane, and vinyl chloride, fill a 5-ml valved gas-tight syringe with the reference standard to the 5.0-ml mark. Lower the needle to 5 mm above the methyl alcohol menicus. Slowly inject the reference standard into the neck of the flask (the heavy gas will rapidly dissolve into the methyl alcohol).

5.5.3 Reweigh the flask, dilute to volume, stopper, then mix by inverting the flask several times. Transfer the standard solution to a 15-ml screw-cap bottle equipped with a Teflon cap liner.

5.5.4 Calculate the concentration in mg per ml (equivalent to μg per μl) from the net gain in weight.

5.5.5 Store stock standards at 4° C. Prepare fresh standards every second day for the four gases and 2-chloroethylvinyl ether. All other standards must be replaced with fresh standards each week.

5.6 Surrogate Standard Dosing Solution—From stock standard solutions prepared as above, add a volume to give 1000 μg each of bromochloromethane, 2-bromo-1-chloropropane, and 1,4-dichlorobutane to 40 ml of organic-free water contained in a 50-ml volumetric flask, mix and dilute to volume. Prepare a fresh surrogate standard dosing solution weekly. Dose the surrogate standard mixture into every 5-ml sample and reference standard analyzed.

6. *Calibration.*

6.1 Using the stock standards, prepare secondary dilution standards of the compounds of interest, either singly or mixed together in methanol. The standards should be at concentrations such that the aqueous standards prepared in 6.2 will bracket the working range of the chromatographic system. If the limit of detection listed in Table 2 is 10 μg/l, for example, prepare secondary methanolic standards at 100 μg/l, and 500 μg/l, so that aqueous standards prepared from thee secondary calibration standards, and the primary standards, will define the linearity of the detector in the working range.

6.2 Using both the primary and secondary dilution standards, prepare calibration standards by carefully adding 20.0 μl of the standard in methanol to 100, 500, or 1000 ml of organic-free water. A 25 μl syringe (Hamilton 702N or equivalent) should be used for this operation. These aqueous standards must be prepared fresh daily.

6.3 Assemble the necessary gas chromatographic and mass spectrometer apparatus and establish operating parameters equivalent to those indicated in Table 2. By injecting secondary dilution standards, establish the linear range of the analytical system for each compound and demonstrate that the analytical system meets the limit of detection requirements in Table 2.

6.4 Assemble the necessary purge and trap device. Pack the trap as shown in Figure 2 and condition overnight at a nominal 180° C by backflushing with an inert gas flow of at least 20 ml/min. Daily, prior to use, condition the traps for 10 minutes by backflushing at 180° C. Analyze aqueous calibration standards (6.2) according to the purge and trap procedure in Section 9. Compare the responses to those obtained by injection of standards (6.3), to determine the analytical precision. The analytical precision of the analysis of aqueous standards must be comparable to data presented by Bellar and Lichtenberg (1978, Ref. 1) before reliable sample analysis may begin.

6.5 Internal Standard Method—The internal standard approach is acceptable for the purgeable organics. The utilization of the internal standard method requires the periodic determination of response factors (RF) which are defined in equation 1.

Eq. (1) $RF = (A_s C_{is})/(A_{is} C_s)$

Where:

A_s is the integrated area or peak height of the characteristic ion for the priority pollutant standard.

A_{is} is the integrated area or peak height of the characteristic ion for the internal standard.

C_{is} is the amount of the internal standard in μg.

C_s is the amount of the pollutant standard in μg.

The relative response ratio for each pollutant should be known for at least two concentration values—50 ng injected to approximate 10 μg/l and 500 ng to approximate the 100 μg/l level. Those compounds that do not respond at either of these levels may be run at concentrations appropriate to their response. The response factor (RF) must be determined over all concentration ranges of standard (C_s) which are being determined. (Generally, the amount of internal standard added to each extract is the same so that C_{is} remains constant.) This should be done by preparing a calibration curve where the response factor (RF) is plotted against the standard concentration (C_s). Use a minimum of three concentrations over the range of interest. Once this calibration curve has been determined, it should be verified daily by injecting at least one standard solution containing internal standard. If significant drift has occurred, a new calibration curve must be constructed.

Note.—EPA, through its contractors and certain of its Regional Laboratories, is currently evaluating selected compounds for

use as internal standards in the analysis of organics by purge and trap.

6.6 The external standard method can also be used at the discretion of the analyst. Prepare a master calibration curve using a minimum of three standard solutions of each of the compounds that are to be measured. Plot concentrations versus integrated areas or peak heights (selected characteristic ion for GC/MS). One point on each curve should approach the method detection limit. After the master set of instrument calibration curves have been established, they should be verified daily by injecting at least one standard solution. If significant drift has occurred, a new calibration curve must be constructed.

7. *Quality Control.*

7.1 Before processing any samples, the analyst should daily demonstrate, through the analysis of an organic-free water method blank, that the entire analytical system is interference-free.

7.2 Standard quality assurance practices should be used with this method. Field replicates should be collected to validate the precision of the sampling technique. Laboratory replicates should be analyzed to validate the precision of the analysis. Fortified samples should be analyzed to validate the accuracy of the analysis.

7.3 The analyst should maintain constant surveillance of both the performance of the analytical system and the effectiveness of the method in dealing with each sample matrix by determining the precision of the method in blank water and spiking each 5-ml sample, standard, and blank with surrogate halocarbons.

7.3.1 Determine the precision of the method by dosing blank water with the compounds selected as surrogate standards—bromochloromethane, 2-bromo-1-chloropropane, and 1,4-dichlorobutane—and running replicate analyses. Calculate the recovery and its standard deviation. These compounds represent early, middle, and late eluters over the range of the pollutant compounds.

7.3.2 The sample matrix can affect the purging efficiencies of individual compounds; therefore, each sample must be dosed with the surrogate standards and analyzed in a manner identical to the internal standards in blank water. If the recovery of the surrogate standard shows a deviation greater than two standard deviations (7.3.1), repeat the dosed sample analyses. If the deviation is again greater than two standard deviations, dose another aliquot of the same sample with the compounds of interest at approximately two times the measured values and analyze. Calculate the recovery for the individual compounds using these data.

8. *Sample Collection, Preservation, and Handling.*

8.1 Grab samples must be collected in glass containers having a total volume greater than 20 ml. Fill the sample bottles in such a manner that no air bubbles pass through the sample as the bottle is being filled. Seal the bottles so that no air bubbles are entrapped in it. Maintain the hermetic seal on the sample bottle until time of analysis.

8.2 The sample must be iced or refrigerated from the time of collection until extraction. If the sample contains residual chlorine, add sodium thiosulfate preservative (10 μg/40 ml) to the empty sample bottles just prior to shipping to the sample site, fill with sample just to overflowing, seal the bottle, and shake vigorously for 1 minute.

8.3 All samples must be analyzed within 7 days of collection.

9. *Sample Extraction and Gas Chromatography.*

9.1 Remove standards and samples from cold storage (approximately an hour prior to an analysis) and bring to room temperature by placing in a warm water bath at 20–25°C.

9.2 Adjust the purge gas (nitrogen or helium) flow rate to 40 ml/min. Attach the trap inlet to the purging device, and set the device to the purge mode. Open the syringe valve located on the purging device sample introduction needle.

9.3 Remove the plunger from a 5 ml syringe and attach a closed syringe valve. Open the sample bottle (or standard) and carefully pour the sample into the syringe barrel until it overflows. Replace the syringe plunger and compress the sample. Open the syringe valve and vent any residual air while adjusting the sample volume to 5.0 ml. Since this process of taking an aliquot destroys the validity of the sample for future analysis, the analyst should fill a second syringe at this time to protect against possible loss of data. Add 5.0 μl of the surrogate spiking solution (7.3) through the valve bore, then close the valve.

9.4 Attach the syringe-valve assembly to the syringe valve on the purging device. Open the syringe valve and inject the sample into the purging chamber.

9.5 Close both valves and purge the sample for 12.0 ±.05 minutes.

9.6 After the 12-minute purge time, attach the trap to the chromatograph, and adjust the device to the desorb mode. Introduce the trapped materials to the GC column by rapidly heating the trap to 180°C while backflushing the trap, with an inert gas, at 20 to 60 ml/min for 4 minutes. If rapid heating cannot be achieved, the gas chromatographic column must be used as a secondary trap by cooling it to 30°C (or subambient, if problems persist) instead of the initial program temperature of 45°C.

9.7 While the trap is being desorbed into the gas chromatograph, empty the purging chamber using the sample introduction syringe. Wash the chamber with two 5-ml flushes of organic-free water. After the purging device has been emptied, continue to allow the purge gas to vent through the chamber until the frit is dry, and ready for the next sample.

9.8 After desorbing the sample for four minutes, recondition the trap by returning the purge and trap device to the purge mode. Wait 15 seconds then close the syringe valve on the purging device to begin gas flow through the trap. Maintain the trap temperature at 180°C. After approximately seven minutes, turn off the trap heater and open the syringe valve to stop the gas flow through the trap. When cool, the trap is ready for the next sample. (Note: If this bake out step is omitted, the amount of water entering the GC/MS system will progressively increase causing deterioration of and potential shut down of the system.)

9.9 The analysis of blanks is most important in the purge and trap technique since the purging device and the trap can be contaminated by residues from very concentrated samples or by vapors in the laboratory. Prepare blanks by filling a sample bottle with organic-free water that has been prepared by passing distilled water through a pretested activated carbon column. Blanks should be sealed, stored at 4°C, and analyzed with each group of samples.

10. *Gas Chromatography—Mass Spectrometry.*

10.1 Table 2 summarizes the recommended gas chromatographic column materials and operting conditions for the instrument. Included in this table are estimated retention times and sensitivities that should be achieved by this method. An example of the separation achieved by Column 1 is shown in Figure 5.

10.2 GC–MS Determination—Suggested analytical conditions for determination of the pollutants amenable to purge and trap, using the Tekmar LCS–1 and GC/MS are given below. Operating conditions vary from one system to another; therefore, each analyst must optimize the conditions for each purge and trap and GC/MS system.

10.3 Purge Parameters.

Sample size—5.0 ml.
Purge gas—Helium, high purity grade.
Purge time—12 minutes.
Purge flow—40 ml/min.
Trap dimensions—⅛ in. O.D. (0.105 in. I.D.)x25 cm long.
Trap sorbent—Tenax–GC, 60/80 mesh (15 cm), plus Type 15 silica gel, 35/60 mesh (8 cm).
Desorption flow—20 ml/min.
Desorption time—4 min.
Desorption temperature—180° C.

10.4 Mass Spectrometer Parameters.

Electron energy—70 volts (nominal).
Mass range—20–27, 33–260 amu.
Scan time—6 seconds or less.

10.5 Calibration of the gas chromatography-mass spectrometry (GC–MS system—Evaluate the system performance each day that it is to be used for the analysis of samples or blanks by examining the mass spectrum of DFTPP or BFB.

10.5.1 To use DFTPP, remove the analytical column and substitute a column more appropriate to the boiling point of the reference compound (e.g. 3% SP–2250 on Supelcoport). Inject a solution containing 50 ng DFTPP and check to insure that the performance criteria listed in Table 3 are met.

10.5.2 To use BFB, inject a solution containing 20 ng BFB and check to insure that the performance criteria listed in Table 4 are met.

10.5.3 If the system performance criteria are not met for either test, the analyst must retune the spectrometer and repeat the performance check. The performance criteria must be met before any samples or standards may be analyzed.

10.6 Analyze an internal or external calibration standard to develop response factors for each compound.

11. *Qualitative and Quantitative Determination.*

11.1 To qualitatively identify a compound, obtain an Extracted Ion Current Profile (EICP) for the primary ion and at least two other ions (if available) listed in Table 5. The criteria below must be met for a qualitative identification.

11.1.1 The characteristic ions for the compound must be found to maximize in the same or within one spectrum of each other.

11.1.2 The retention time at the experimental mass spectrum must be within ±60 seconds of the retention time of the authentic compound.

11.1.3 The ratios of the three EICP peak heights must agree within ±20% with the ratios of the relative intensities for these ions in a reference mass spectrum. The reference mass spectrum can be obtained from either a standard analyzed through the GC-MS system or from a reference library.

11.1.4 Structural isomers that have very similar mass spectra can be explicitly identified only if the resolution between the isomers in a standard mix is acceptable. Acceptable resolution is achieved if the valley height between isomers is less than 25% of the sum of the two peak heights. Otherwise, structural isomers are identified as isomeric pairs.

11.2 The primary ion listed in Table 5 is to be used to quantify each compound. If the sample produces an interference for the primary ion, use a secondary ion to quantify.

11.3 For low concentrations, or direct aqueous injection of acrylonitrile and acrolein, the characteristic masses listed for the compounds in Table 5 may be used for selected ion monitoring (SIM). SIM is the use of a mass spectrometer as a substance selective detector by measuring the mass spectrometric response at one or several characteristic masses in real time.

11.4 Internal Standard Method Calculations—By adding a constant known amount of internal standard (C_{is} in μg) to every sample extract, the concentration of the pollutant (C_o) in μg/l in the sample is calculated using equation 2,

$$\text{Eq. (2)} C_o = \frac{(A_x)(C_{is})}{(A_{is})(RF)(V_o)}$$

Where:

V_o is the volume of the original sample in liters, and the other terms are defined as in Section 6.5. To quantify, add the internal standard to the 5.0 ml sample no more than a few minutes before purging to minimize the possibility of losses due to evaporation, adsorption, or chemical reaction. Calculate the concentration by using the previous equations with the appropriate response factor taken from the calibration curve.

11.5 Extenral Standard Method Calculations—The concentration of the unknown can be calculated from the slope and intercept of the multiple point calibration curve. The unknown concentration can be determined using equation 3.

$$\text{Eq. (3) micrograms per liter} = \text{ng/ml} = \frac{(A)}{(V_s)}$$

Where:

A = Mass of compound from calibration curve (ng/5 ml).
V_s = volume of water purged (5 ml).

11.6 An alternate external standard approach for purgeables utilizes a single point calibration. Prepare and analyze a reference standard that closely approximates the response for each component in a sample. Calculate the concentration in the sample using Equation 4.

$$\text{Eq. 4 micrograms per liter} = \frac{(A)(B)}{(C)}$$

Where:

A = area of the unknown
B = concentration of standard (μg/l)
C = area of the standard.

11.7 Report all results to two significant figures. When duplicate and spiked samples are analyzed, all data obtained should be reported. Report results in micrograms per liter without correction for recovery data.

12. *References.*

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4. ASTM Annual Standards—Water, part 31, Method D2908 "Standard Recommended Practice for Measuring Water by Aqueous-Injection Gas Chromatography."

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2. "Proceedings: Seminar on Analytical Methods for Priority Pollutants," Volume 1—Denver, Colorado, November 1977; Volume 2—Savannah, Georgia, May 1978; Volume 3—Norfolk, Virginia, March 1979; USEPA, Effluent Guidelines Division, Washington, D.C. 20460.

Table 1

Parameter	STORET No.
Acrolein	34210
Acrylonitrile	34215
Benzene	34236
Bromomethane	34413
Bromodichloromethane	32101
Bromoform	32104
Carbon Tetrachloride	32102
Chlorobenzene	34301
Chloroethane	34311
2-Chloroethylvinyl ether	34576
Chloroform	32106
Chloromethane	34418
Dibromochloromethane	34105
1,1-Dichloroethane	34496

Table 1—Continued

Parameter	STORET No.
1,2-Dichloroethane	34531
1,1-Dichloroethene	34501
trans-1,2-Dichloroethene	34546
1,2-Dichloropropane	34541
cis-1,3-Dichloropropene	34561
trans-1,3-Dichloropropene	34561
Ethylbenzene	34371
Methylene chloride	34423
1,1,2,2-Tetrachloroethane	34516
Tetrachlorethene	34475
1,1,1-Trichloroethane	34506
1,1,2-Trichloroethane	34511
Trichloroethene	39180
Trichlorofluoromethane	34488
Toluene	34010
Vinyl chloride	39175

Table 2.—*Gas Chromatography of Organics by Purge and Trap*

Compound	Retention time (minutes)		Limit of detection [5] (µg/l)
	Col. 1 [1]	Col. 2 [2]	
chloromethane	1.50	2.10	10
bromomethane	2.17	2.50	10
vinyl chloride	2.67	2.57	10
chloroethane	3.33	2.82	10
methylene chloride	5.25	4.03	10
trichlorofluoromethane	7.18	5.14	10
1,1-dichloroethene	7.92	5.25	10
bromochloromethane (SS)	8.48	6.31	
1,1-dichloroethane	9.30	6.48	10
trans-1,2-dichloroethene	10.08	6.81	10
chloroform	10.68	7.70	10
1,2-dichloroethane	11.40	8.29	10
1,1,1-trichloroethane	12.60	9.28	10
carbon tetrachloride	13.02	9.45	10
bromodichloromethane	13.65	10.36	10
1,2-dichloropropane	14.92	11.30	10
trans-1,3-dichloropropene	15.22	11.70	10
trichloroethene	15.80	11.98	10
dibromochloromethane	16.48	12.86	10
1,1,2-trichloroethane	16.52	12.86	10
cis-1,3-dichloropropene	16.53	12.86	10
benzene		12.95	10
2-chloroethylvinyl ether	18.00	13.71	10
2-bromo-1-chloropropane (SS)		13.82	
bromoform	19.23	15.41	10
1,1,2,2-tetrachloroethane	21.62	17.70	10
tetrachloroethene	21.67	17.44	10
1,4-dichlorobutane (SS)		18.13	
toluene		18.53	10
chlorobenzene	24.18	20.57	10
ethylbenzene		25.06	10
acrolein			[4]100
acrylonitrile			[4]100

[1]Eight ft. stainless steel column (1/8 in ODx0.1 in. ID) packed with 1% SP-1000 coated on 60/80 mesh Carbopack B preceded by a 1 ft. stainless steel column (1/8 in. ODx0.1 in. ID) packed with 1% SP-1000 coated on 60/80 mesh Chromosorb W. (A glass column (1/4 in. ODx2 mm ID) may be substituted). Carrier gas helium at 40 ml/min. Temperature program: 3 min isothermal at 45° C, then 8°/min to 220°, hold at 220° for 15 minutes.

[2]Eight ft. stainless steel column (1/8 in. ODx0.1 in. ID) packed with 0.2% Carbowax 1500 coated on 60/80 mesh Carbopack C preceded by a 1 ft. stainless steel column (1/8 in. ODx0.1 in. ID) packed with 3% Carbowax 1500 coated on 60/80 mesh Chromosorb W. A glass column (1/4 in. ODx2 mm ID) may be substituted. Carrier gas: helium at 40 ml/min. Temperature program: 3 min. isothermal at 60° C then 8°/min to 160°, hold at 160 until all compounds elute.

[3]This is a minimum level at which the entire system must give recognizable mass spectra and acceptable calibration points.

[4]Sensitivity refers to either this method or direct aqueous injection GC–FID (Ref. 4,5,6).

Table 3.—*DFTPP Key Ions and Ion Abundance Criteria*

Mass	Ion abundance criteria
51	30 to 60 pct of mass 198.
68	Less than 2 pct of mass 69.
70	Less than 2 pct of mass 69.
127	40 to 60 pct of mass 198.
197	Less than 1 pct of mass 198.
198	Base peak, 100 pct relative abundance.
199	5 to 9 pct of mass 198.
275	10 to 30 pct of mass 198.
365	Greater than 1 pct of mass 198.
441	Present but less than mass 443.
442	Greater than 40 pct of mass 198.
443	17 to 23 pct of mass 442.

Table 4.—*BFB Keyt Ions and Ion Abundance Criteria*

Mass	Ion abundance criteria
50	20 to 40 pct of mass 95.
75	50 to 70 pct of mass 95.
95	Base peak, 100 pct relative abundarice.
96	5 to 9 pct of mass 95.
173	Less than 1 pct of mass 95.
174	70 to 90 pct of mass 95.
175	5 to 9 pct of mass 95.
176	70 to 90 pct of mass 95.
177	5 to 9 pct of mass 95.

Table 5.—*Characteristic Ions of Volatile Organics*

Compound	E I Ions				Primary ion
chloromethane	50	52			50
bromomethane	94	96			94
vinyl chloride	62	64			62
chloroethane	64	66			64
methylene chloride	49	51	84	86	84
trichlorofluoromethane	101	103			101
1,1-dichloroethene	61	96	98		96
bromochloromethane (SS)	49	130	128	51	128
1,1-dichloroethane	63	65	83		63
	85	98	100		
trans-1,2-dichloroethene	61	96	98		96
chloroform	83	85			83
1,2-dichloroethane	62	64	98	100	98
1,1,1-trichloroethane	97	99	117	119	97
carbon tetrachloride	117	119	121		117
bromodichloromethane	83	85	127	129	127
1,2-dichloropropane	63	65	112	114	112
trans-1,3-dichloropropene	75	77			75
trichloroethene	95	97	130	132	130
dibromochloromethane	129	127	208	206	127
cis-1,3-dichloropropene	75	77			75
1,1,2-trichloroethane	83	85	97		
	99	132	134		97
benzene	78				78
2-chloroethytlvinyl ether	63	65	106		106
2-bromo-1-chloropropane (SS)	77	79	156		77
bromoform	171	173	175	250	173
	252	254	256		
tetrachloroethenbe	129	131	164	166	164
1,1,2,2-tetrachloroethane	83	85	131	133	
	166	168			168
1,4-dichlorobutane (SS)	55	90	92		55
toluene	91	92			92
chlorobenzene	112	114			112
ethylbenzene	91	106			106
acrolein	26	27	55	56	56
acrylonitrile	26	51	52	53	53

BILLING CODE 6560-01-M

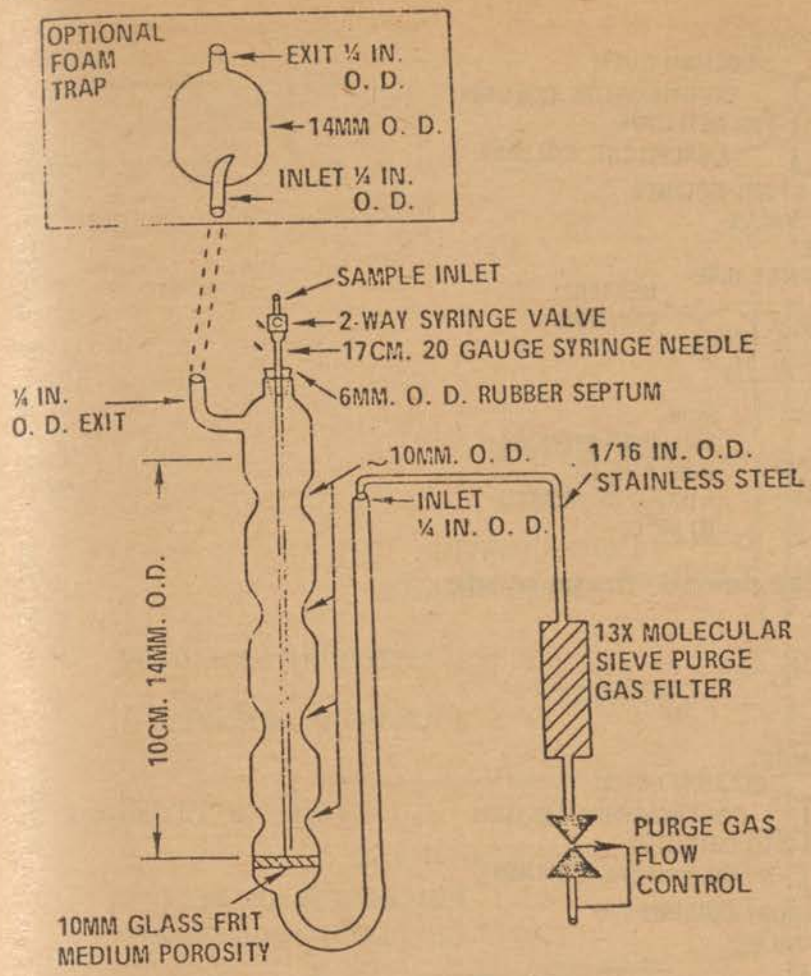


Figure 1. Purging device

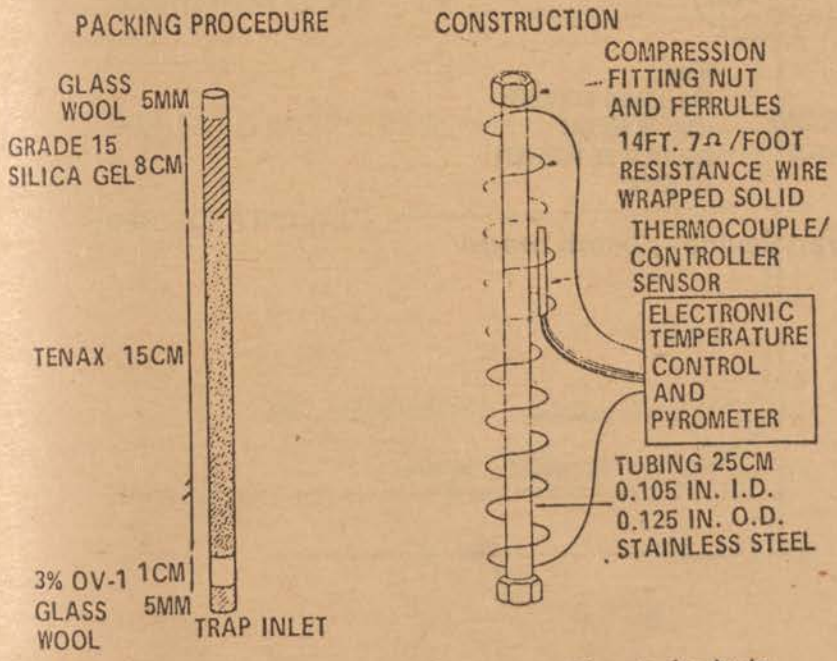


Figure 2. Trap packings and construction to include desorb capability

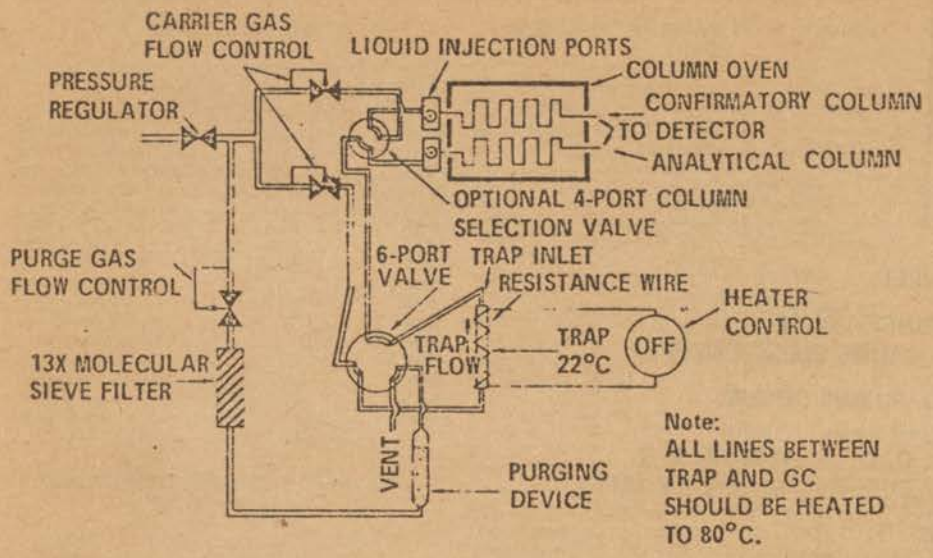


Figure 3. Schematic of purge and trap device - purge mode

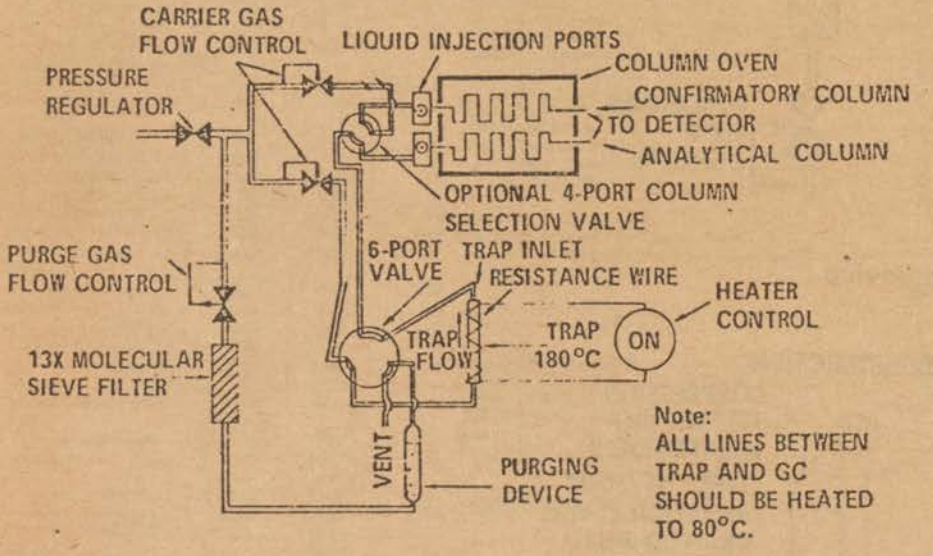


Figure 4. Schematic of purge and trap device - desorb mode

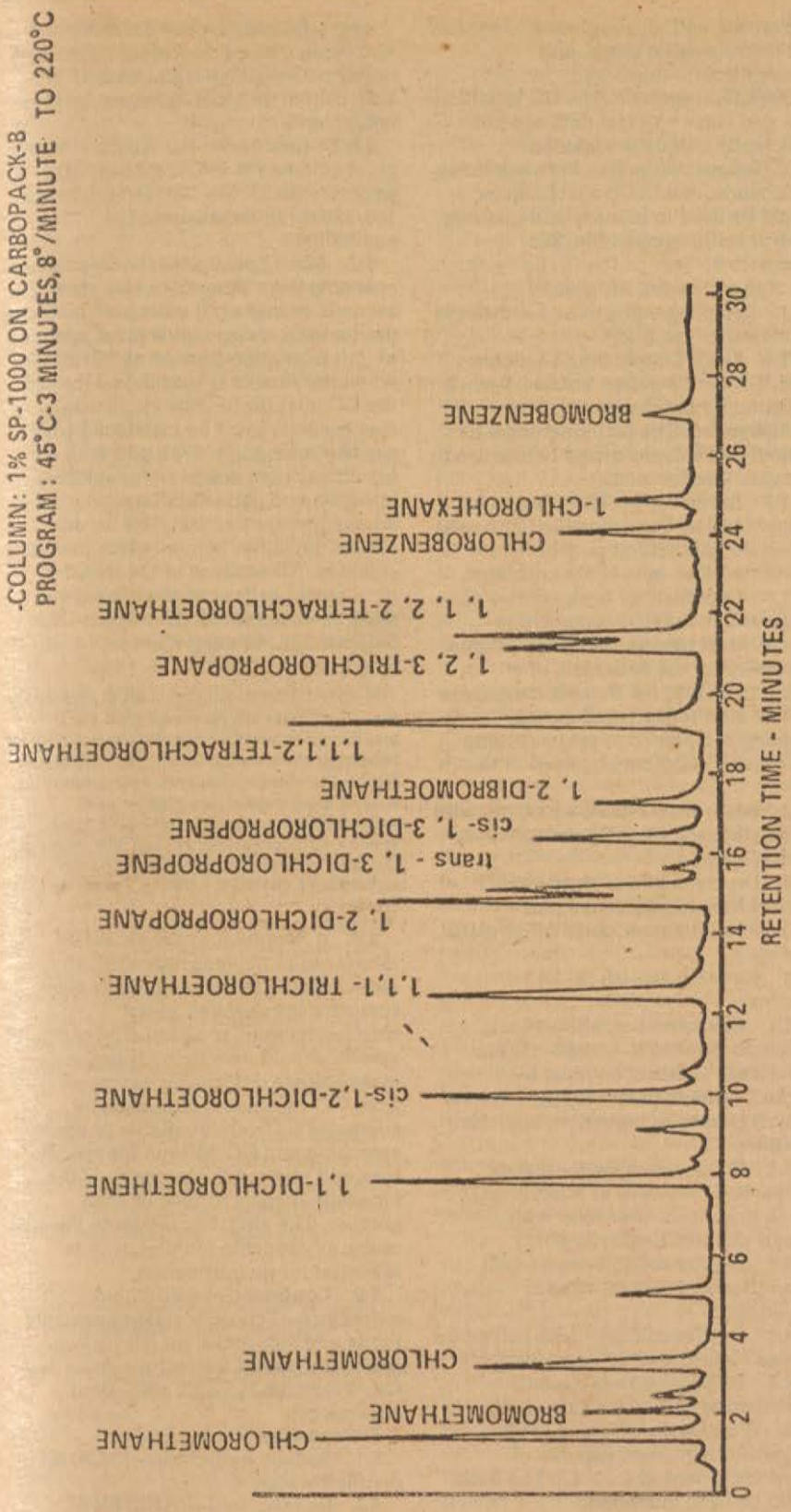


Figure 5. Gas chromatogram of volatile organics by purge and trap

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Base/Neutrals, Acids, and Pesticides—Method 625

1. *Scope and Application.*

1.1 This method covers the determination of a number of organic compounds that are solvent extractable and amenable to gas chromatography. The parameters listed in Tables 1, 2 and 3 may be determined by this method.

1.2 This method is applicable to the determination of these compounds in municipal and industrial discharges. It is designed to be used to meet the monitoring requirements of the National Pollutants Discharge Elimination System (NPDES).

1.3 The detection limit of this method is usually dependent upon the level of interferences rather than instrumental limitations. The limits listed in Tables 4, 5, and 6 represent the minimum quantity that must be injected into the system to get confirmation by the mass spectrometric method described below.

1.4 The GC/MS parts of this method are recommended for use only by analysts experienced with GC/MS or under the close supervision of such qualified persons.

2. *Summary of Method.*

2.1 A 1 to 2 liter sample of wastewater is extracted with methylene chloride using separatory funnel or continuous extraction techniques. If emulsions are a problem, continuous extraction techniques should be used. The extract is dried over sodium sulfate and concentrated to a volume of 1 ml using a Kuderna-Danish (K–D) evaporator. Chromatographic conditions are described which allow for the separation of the compounds in the extract.

2.2 Quantitative analysis is performed by GC/MS using either the internal standard or external standard technique.

3. *Interferences.*

3.1 Solvents, reagents, glassware, and other sample processing hardware may yield discrete artifacts and/or elevated baselines causing misinterpretation of chromatograms. All of these materials must be demonstrated to be free from interferences under the conditions of the analysis by running method blanks. Specific selection of reagents and purification of solvents by distillation in all-glass systems may be required.

3.2 Interferences coextracted from the samples will vary considerably from source to source, depending upon the diversity of the industrial complex or municipality being sampled.

3.3 The recommended analytical procedure may not have sufficient resolution to differentiate between certain isomeric pairs. These are anthracene and phenanthrene, chrysene and benzo(a)anthracene, and benzo(b)fluoranthene and benzo(k)fluoranthene. The GC retention time and mass spectral data are not sufficiently unique to make an unambiguous distinction between these compounds. Alternative techniques should be used to identify and quantify these specific compounds. See Reference 1.

4. *Apparatus and Materials.*

4.1 Sampling equipment, for discrete or composite sampling.

4.1.1 Grab sample bottle—amber glass, 1-liter to 1-gallon volume. French or Boston Round design is recommended. The container must be washed and solvent rinsed before use to minimize interferences.

4.1.2 Bottle caps—Threaded to fit sample bottles. Caps must be lined with Teflon. Aluminum foil may be substituted if sample is not corrosive.

4.1.3 Compositing equipment—Automatic or manual compositing system. Must incorporate glass sample containers for the collection of a minimum of 1000 ml. Sample containers must be kept refrigerated during sampling. No plastic or rubber tubing other than Teflon may be used in the system.

4.2 Separatory funnel—2000 ml, with Teflon stopcock (Ace Glass 7228–T–72 or equivalent).

4.3 Drying column—A 20 mm ID pyrex chromatographic column equipped with coarse glass frit or glass wool plug.

4.4 Kuderna-Danish (K–D) Apparatus

4.4.1 Concentrator tube—10 ml, graduated (Kontes K–570050–1025 or equivalent). Calibration must be checked. Ground glass stopper (size 19/22 joint) is used to prevent evaporation of extracts.

4.4.2 Evaporative flask—500 ml (Kontes K–57001–0500 or equivalent). Attach to concentrator tube with springs. (Kontes K–662750–0012).

4.4.3 Snyder column—three-ball macro (Kontes K503000–0232 or equivalent).

4.4.4 Snyder column—two-ball micro (Kontes K–569002–0219 or equivalent).

4.4.5 Boiling chips-extracted, approximately 10/40 mesh.

4.5 Water bath—Heated, with concentric ring cover, capable of temperature control (±2° C). The bath should be used in a hood.

4.6 Gas chromatograph—Analytical system complete with gas chromatograph capable of on-column injection and all required accessories including column supplies, gases, etc.

4.6.1 Column 1—For Base/Neutral and Pesticides a 6-foot glass column (¼ in OD x 2 mm ID) packed with 3% SP–2250 coated on 100/120 Supelcoport (or equivalent).

4.6.2 Column 2—For Acids, a 6-foot glass column (¼ in OD x 2 mm ID) packed with 1% SP–1240 DA coated on 100/120 mesh Supelcoport (or equivalent).

4.7 Mass Spectrometer—Capable of scanning from 35 to 450 a.m.u. every 7 seconds or less at 70 volts (nominal) and producing a recognizable mass spectrum at unit resolution from 50 ng of DFTPP when the sample is introduced through the GC inlet (Reference 2). The mass spectrometer must be interfaced with a gas chromatograph equipped with an injector system designed for splitless injection and glass capillary columns or an injector system designed for on-column injection with all-glass packed columns. All sections of the transfer lines must be glass or glass-lined and must be deactivated. (Use Sylon-CT, Supelco, Inc., or equivalent to deactivate.)

Note.—Systems utilizing a jet separator for the GC effluent are recommended since membrane separators may lose sensitivity for light molecules and glass frit separators may inhibit the elution of polynuclear aromatics. Any of these separators may be used provided that it gives recognizable mass spectra and acceptable calibration points at the limit of detection specified for each individual compound listed in Tables 4, 5, and 6.

4.8 A computer system must be interfaced to the mass spectrometer to allow acquisition of continuous mass scans for the duration of the chromatographic program. The computer system should also be equipped with mass storage devices for saving all data from GC–MS runs. There must be computer software available to allow searching any GC–MS run for specific ions and plotting the intensity of the ions with respect to time or scan number. The ability to integrate the area under any specific ion plot peak is essential for quantification.

4.9 Continuous liquid-liquid extractors—Teflon or glass connecting joints and stopcocks, no lubrication. (Hershberg-Wolf Extractor—Ace Glass Co., Vineland, N.J. P/N 6841–10 or equivalent).

5. *Reagents.*

5.1 Sodium hydroxide—(ACS) 6N in distilled water.

5.2 Sulfuric acid—(ACS) 6N in distilled water.

5.3 Sodium sulfate—(ACS) granular anhydrous (rinsed with methylene chloride (20 ml/g) and conditioned at 400° C for 4 hrs.).

5.4 Methylene chloride—Pesticide quality or equivalent.

5.5 Stock standards—Obtain stock standard solutions at a concentration of 1.00 μg/μl. For example, dissolve 0.100 grams of assayed reference material in pesticide quality isooctane or other appropriate solvent and dilute to volume in a 100 ml ground glass stoppered volumetric flask. The stock solution is transferred to 15 ml Teflon lined screw cap vials, stored in a refrigerator, and checked frequently for signs of degradation or evaporation, especially just prior to preparing working standards from them. Protect PNA standards from light.

6. *Calibration.*

6.1 Prepare calibration standards that contain the compounds of interest, either singly or mixed together. The standards should be prepared at concentrations that will bracket the working range of the chromatographic system (two or more orders of magnitude are suggested). If the limit of detection (Tables 4, 5, or 6) can be calculated as 20 ng injected, for example, prepare standards at 1 μg/ml, 10 μg/ml, 100 μg/ml, etc. so that injections of 1–5 μl of the calibration standards will define the linearity of the detector in the working range.

6.2 Assemble the necessary gas chromatographic apparatus and establish operating parameters equivalent to those indicated in Tables 4, 5, and 6. By injecting calibration standards, establish the linear range of the analytical system and demonstrate that the analytical system meets the limits of detection requirements of Tables 4, 5, and 6. If the sample gives peak areas above the working range, dilute and reanalyze.

6.3 Internal Standard Method—The internal standard approach is acceptable for all of the semivolatile organics. The utilization of the internal standard method requires the periodic determination of response factors (RF) which are defined in equation 1.

Eq. 1 $RF=(A_sC_{is})/(A_{is}C_s)$

Where:

A_s is the integrated area or peak height of the characteristic ion for the pollutant standard.

A_{is} is the integrated area or peak height of the characteristic ion for the internal standard.

C_{is} is the amount (μg) of the internal standard.

C_s is the amount (μg) of the pollutant standard.

6.3 The relative response ratio for the pollutants should be known for at least two concentration values—20 ng injected to approximate 10 μg/l and 200 ng injected to approximate the 100 μg/l level. (Assuming 1 ml final volume and a 2 μl injection). Those compounds that do not respond at either of these levels may be run at concentrations appropriate to their response.

The response factor (RF) should be determined over all concentration ranges of standard (C_s) which are being determined. (Generally, the amount of internal standard added to each extract is the same (20 μg) so that C_{is} remains constant.) This should be done by preparing a calibration curve where the response factor (RF) is plotted against the standard concentration (C_s), using a minimum of three concentrations over the range of interest. Once this calibration curve has been determined, it should be verified daily by injecting at least one standard solution containing internal standard. If significant drift has occurred, a new calibration curve must be constructed. To quantify, add the internal standard to the concentrated sample extract no more than a few minutes before injecting into the GC/MS to minimize the possibility of losses due to evaporation, adsorption, or chemical reaction. Calculate the concentration by using the previous equations with the appropriate response factor taken from the calibration curve. Either deuterated or fluorinated compounds can be used as internal standards and surrogate standards. Naphthalene-d_8, anthracene-d_{10}, pyridine-d_5, aniline-d_5, nitrobenzene-d_5, 1-fluoronaphthalene, 2-fluoronaphthalene, 2-fluorobiphenyl, 2,2'-difluorobiphenyl, and 1,2,3,4,5-pentafluorobiphenyl have been used or suggested as appropriate internal standards/surrogates for the base-neutral compounds. Phenol-d_6, pentafluorophenol, 2-perfluoromethyl phenol, and 2-fluorophenol have been used or suggested for the acid compounds. Compounds used as internal standards are not to be used as surrogate standards. The internal standard must be different from the surrogate standards.

6.5 The external standard method can also be used at the discretion of the analyst. Prepare a master calibration curve using a minimum of three standard solutions of each of the compounds that are to be measured. Plot concentrations versus integrated areas or peak heights (selected characteristic ion for GC/MS). One point on each curve should approach the limit of detection (Tables 4, 5, and 6). After the master set of instrument calibration curves have been established, they should be verified daily by injecting at least one standard solution. If significant drift has occurred, a new calibration curve must be constructed.

7. *Quality Control.*

7.1 Before processing any samples, demonstrate through the analysis of a method blank, that all glassware and reagents are interference-free. Each time a set of samples is extracted or there is a change in reagents, a method blank should be processed as a safeguard against chronic laboratory contamination.

7.2 Standard quality assurance practices should be used with this method. Field replicates should be collected and analyzed to determine the precision of the sampling technique. Laboratory replicates should be analyzed to determine the precision of the analysis. Fortified samples should be analyzed to determine the accuracy of the analysis. Field blanks should be analyzed to check for contamination introduced during sampling and transportation.

8. *Sample Collection, Preservation, and Handling.*

8.1 Grab samples must be collected in glass containers. Conventional sampling practices should be followed, except that the bottle must not be prerinsed with sample before collection. Composite samples should be collected in refrigerated glass containers in accordance with the requirements of the program. Automatic sampling equipment must be free of tygon and other potential sources of contamination.

8.2 The samples must be iced or refrigerated from the time of collection until extraction. Chemical preservatives should not be used in the field unless more than 24 hours will elapse before delivery to the laboratory. If the samples will not be extracted within 48 hours of collection, they must be preserved as follows:

8.2.1 If the sample contains residual chlorine, add 35 mg of sodium thiosulfate per 1 ppm of free chlorine per liter of sample.

8.2.2 Adjust the pH of the water sample to a pH of 7 to 10 using sodium hydroxide or sulfuric acid. Record the volume of acid or base used.

8.3 All samples must be extracted within 7 days and completely analyzed within 30 days of collection.

9. *Sample Extraction (Base/Neutrals, Acids, and Pesticides).*

9.1 Samples may be extracted by separatory funnel techniques or with a continuous extractor as described in Section 10. Where emulsions prevent acceptable solvent recovery with the separatory funnel technique, the analyst must use the continuous extractor.

9.2 The details of the extraction technique should be adjusted according to the sample volume. The technique described below assumes a sample

volume of 1000 ml. For volumes approximating 2-liters, the volume of extraction solvent should be adjusted to 250, 100, and 100 ml for the serial extraction of the base neutrals, and 200, 100, and 100 ml for the acids.

9.3 Mark the water meniscus on the side of the sample bottle for later determination of sample volume. Pour the entire sample into a two-liter separatory funnel. Adjust the pH of the sample with 6N NaOH to 11 or greater. Use multirange pH paper for the measurements. Proceed to Section 10 if continuous extraction is used.

9.4 Add 60 ml methylene chloride to the sample bottle, cap, and shake 30 seconds to rinse the walls. Transfer the solvent into the separatory funnel, and extract the sample by shaking the funnel for two minutes with periodic venting to release excess vapor pressure. Allow the organic layer to separate from the water phase for a minimum of ten minutes. If the emulsion interface between layers is more than one-third the size of the solvent layer, the analyst must employ mechanical techniques to complete the phase separation. The optimum technique depends upon the sample, but may include stirring, filtration of the emulsion through glass wool, or centrifugation. (If the emulsion cannot be broken, that is, recovery is less than 80% of the added solvent corrected for the water solubility of methylene chloride, transfer the sample, solvent, and emulsion into a continuous extractor and proceed as described in Section 10). Collect the methylene chloride extract in a 250-ml Erlenmeyer flask.

9.5 Add a second 60-ml volume of methylene chloride to the sample bottle and complete the extraction procedure a second time, combining the extracts in the Erlenmeyer flask.

9.6 Perform a third extraction in the same manner. Pour the combined extract through a drying column containing 3–4 inches of anhydrous sodium sulfate, and collect it in a 500 ml K–D flask equipped with 10 ml concentrator tube. Rinse the Erlenmeyer with 20 to 40 ml of methylene chloride. Pour this through the drying column. Seal, label as base/neutral fraction, and proceed with the acid extraction. If the extract must be stored overnight before analysis by GC/MS, it may be transferred to a 2 ml serum vial equipped with a Teflon-lined rubber septum and crimp cap.

9.7 Acid (Phenols) Extraction—Adjust the pH of the water, previously extracted for base-neutrals, with 6N H_2SO_4 to 2 or below. Serially extract with 60, 60 and 60 ml portions of distilled-in-glass methylene chloride. Collect and combine the extracts in a 250-ml Erlenmeyer flask then dry by passing through a column of anhydrous sodium sulfate. Rinse the Erlenmeyer with 20 to 40 ml of methylene chloride and pour through the drying column. Seal, label acid fraction and prepare for concentration.

9.8 Concentrate the extracts (Base/Neutrals and Acids) in a 500 ml K–D flask equipped with a 10 ml concentrator tube.

9.9 Add 1 to 2 clean boiling chips to the flask and attach a three-ball macro-Snyder column. Prewet the Snyder column by adding about 1 ml methylene chloride through the top. Place the K–D apparatus on a warm water bath (60 to 65°C) so that the concentrator tube is partially immersed in the water, and the entire lower rounded surface of the flask is bathed with water vapor. Adjust the vertical position of the apparatus and the water temperature as required to complete the concentration in 15 to 20 minutes. At the proper rate of distillation the balls of the column actively chatter but the chambers do not flood. When the liquid has reached an apparent volume 1 ml, remove the K–D apparatus and allow the solvent to drain for at least 10 minutes while cooling. Remove the Snyder column and rinse the flask and its lower joint into the concentrator tube with 1 to 2 ml of methylene chloride. A 5-ml syringe is recommended for this operation.

9.10 Add a clean boiling chip and attach a two-ball micro-Snyder column to the concentrator tube in 9.8. Prewet the column by adding about 0.5 ml methylene chloride through the top. Place the K–D apparatus on a warm water bath (60 to 65°C) so that the concentrator tube is partially immersed in the water. Adjust the vertical position of the apparatus and the water temperature as required to complete the concentration in 5–10 minutes. At the proper rate of distillation the balls of the column actively chatter but the chambers do not flood. When the liquid reaches an apparent volume of about 0.5 ml, remove the K–D from the water bath and allow the solvent to drain and cool for at least 10 minutes. Remove the micro-Snyder column and rinse its lower joint into the concentrator tube with approximately 0.2 ml of methylene chloride. Adjust the final volume to 1.0 ml, seal, and label as acid fraction.

9.11 Determine the original sample volume by refilling the sample bottle to the mark and transferring the liquid to a 1,000-ml graduated cylinder. Record the sample volume to the nearest 5 ml.

10. *Emulsions/Continuous Extraction.*

10.1 Place 100 to 150 ml of methylene chloride in the extractor and 200–500 ml methylene chloride in the distilling flask.

10.2 Add the aqueous sample (pH 11 or greater) to the extractor. Add blank water as necessary to operate the extractor and extract for 24 hours. Remove the distilling flask and pour the contents through a drying column containing 7 to 10 cm of anhydrous sodium sulfate. Collect the methylene chloride in a 500 ml K–D evaporator flask quipped with a 10 ml concentrator tube. Seal, label as the base/neutral fraction, and concentrate as per sections 9.8 to 9.10.

10.3 Adjust the pH of the sample in the continuous extractor to 2 or below using 6N sulfuric acid. Charge a clean distilling flask with 500 ml of methylene chloride. Extract for 24 hours. Remove the distilling flask and pour the contents through a drying column containing 7 to 10 cm of anhydrous sodium sulfate. Collect the methylene chloride layer on a K–D evaporator flask equipped with a 10 ml concentrator tube. Label as the acid fraction. Concentrate as per sections 9.8 to 9.10.

11. *Calibration of the GC–MS System.*

11.1 At the beginning of each day, the mass calibration of the GC–MS system must be checked and adjusted if necessary to meet DFTPP specifications (11.3). Each day base-neutrals are measured, the column performance specification (12.1) with benzidine must be met. Each day the acids are measured, the column performance specification (13.1) with pentachlorophenol must be met. DFTPP can be mixed in solution with either of these compounds to complete two specifications with one injection, if desired.

11.2 To perform the mass calibration test of the GC–MS system, the following instrumental parameters are required:

Electron energy—70 volts (nominal).
Mass range—35 to 450 a.m.u.
Scan time—7 seconds or less.

11.3 GC–MS system calibration—Evaluate the system performance each day that it is to be used for the analysis of samples or blanks by examining the mass spectrum of DFTPP. Inject a solution containing 50 ug DFTPP and check to insure that performance criteria listed in Table 10 are met. If the system performance criteria are not met, the analyst must retune the spectrometer and repeat the performance check. The performance criteria must be met before any samples or standards may be analyzed.

12. *Gas Chromatography-Mass Spectrometry of Base/Neutral Fraction.*

12.1 At the beginning of each day that base/neutral analyses are to be performed, inject 100 nanograms of benzidine either separately or as part of a standard mixture that may also contain 50 ng of DFTPP. The tailing factor for benzidine should be less than 3. Calculation of the tailing factor is given in Reference 2 and described in Figure 8.

12.2 Establish chromatographic conditions equivalent to those in Tables 4 and 5. Included in these tables are estimated retention times and sensitivities that can be achieved by this method. Examples of the separatioins achieved by these columns are shown in Figures 1 and 3 through 7.

12.3 Program the GC/MS to operate in the Extracted Ion Current Profile (EICP) mode, and collect EICP for the three ions listed in Tables 7 and 8 for each compound being measured. Operating in this mode, calibrate the system response for each compound as described in Section 6, using either the internal or external standard procedure.

12.4 If the internal standard approach is being used, the analyst may not add the standard to sample extracts until immediately before injection into the instrument. Mix thoroughly.

12.5 Inject 2 to 5 μl of the sample extract. The solvent-flush technique is preferred. If external calibration is employed, record the volume injected to the nearest 0.05 μl. If the response for any ion exceeds the linear range of the system, dilute the extract and reanalyze.

12.6 Qualitative and quantitative measurements are made as described in Section 14. When the extracts are not being used for analysis, store them in vials with unpierced septa in the dark at 14° C.

13. *Gas Chromatography/Mass Spectrometry of Acid Fraction.*

13.1 At the beginning of each day that acid fraction analyses are to be performed, inject 50 nanograms of pentachlorophenol either separately or as part of a standard mixture that may also contain DFTPP. The tailing factor for pentachlorophenol should be less than 5. Calculation of the tailing factor is given in Reference 2 and described in Figure 8.

13.2 Establish chromatographic conditions equivalent to those in Table 6. Included in this table are estimated retention times and sensitivities that can be achieved by this method. An example of the separation achieved by the column is shown in Figure 2.

13.3 Program the GC/MS to operate in the Extracted Ion Current Profile mode, and collect EICP for the three ions listed in Table 9 for each phenol being measured. Operating in this mode, calibrate the system response for each compound as described in Section 6 using either the internal or external standard procedure.

13.4 If the internal standard approach is being used, the analyst may not add the standard to sample extracts until immediately before injection into the instrument. Mix thoroughly.

13.5 Inject 2 to 5 μl of the sample extract. The solvent-flush technique is preferred. If external standard calibration is employed, record the volume injected to the nearest 0.05 μl. If the response for any ion exceeds the linear range of the system, dilute the extract and reanalyze.

13.6 Qualitative and quantitative measurements are made as described in Section 14. When the extracts are not being used for analysis, store them in vials with unpierced septa in the dark at 4° C.

14. *Qualitative and Quantitative Determination.*

14.1 To qualitatively identify a compound, obtain an Extracted Ion Current Profile (EICP) for the primary ion and the two other ions listed in Tables 7, 8, or 9. The criteria below must be met for a qualitative identification.

14.1.1 The characteristic ions for the compound must be found to maximize in the same or within one spectrum of each other.

14.1.2 The retention time at the experimental mass spectrum must be within ±60 seconds of the retention time of the authentic compound.

14.1.3 The ratios of the three EICP peak heights must agree within ±20% with the ratios of the relative intensities for these ions in a reference mass spectrum. The reference mass spectrum can be obtained from either a standard analyzed through the GC–MS system or from a reference library.

14.1.4 Structural isomers that have very similar mass spectra can be explicitly identified only if the resolution between the isomers in a standard mix is acceptable. Acceptable resolution is achieved if the valley height between isomers is less than 25% of the sum of the two peak heights. Otherwise, structural isomers are identified as isomeric pairs.

14.2 In samples that contain an inordinate number of interferences the chemical ionization (CI) mass spectrum may make identification easier. In Tables 7 and 8 characteristic CI ions for most of the compounds are given. The use of chemical ionization MS to support EI is encouraged but not required.

14.3 When a compound has been identified, the quantification of that compound will be based on the integrated area from the specific ion plot of the first listed characteristic ion in Tables 7, 8 and 9. If the sample produces an interference for the first listed ion, use a secondary ion to quantify. Quantification will be done by the external or internal standard method.

14.4 Internal Standard—By adding a constant known amount of internal standard (C_{is} in μg) to every sample extract, the concentration of pollutant (C_o) is μg/l in the sample is calculated using equation 2.

Eq. 2 $$C_o = \frac{(A_s)\ (C_{is})}{(A_{is})\ (RF)\ (Vo)}$$

Where: V_o is the volume of the original sample in liters, and the other terms are defined as in Section 6.3.

14.5 External Standard—The concentration of the unknown can be calculated from the slope and intercept of the calibration curve. The unknown concentration can be determined using equation 3.

Eq. 3

$$\text{Micrograms/liter} = \text{ng/ml} = \frac{(A)(V_t)}{(V_i)(V_s)}$$

where:

A = mass of compound from calibration curve (ng).

V_i = volume of extract injected (μl).

V_t = volume of total extract (μl).

V_s = volume of water extracted (ml).

14.6 Report all results to two significant figures. Report results in micrograms per liter (Base/Neutrals and Acids) without correction for recovery data. When duplicate and spiked samples are analyzed, all data obtained should be reported.

14.7 In order to minimize unnecessary GC–MS analysis of method blanks and field blanks, the field blank may be screened on a FID–GC equipped with the appropriate SP–2250 or SP–1240 DA columns.

15. References

1. Method 610, Polynuclear Aromatic Hydrocarbons, EMSL, Cincinnati, Ohio 45268, 1979.
2. "Reference Compound to Calibrate Ion Abundance Measurement in Gas Chromatography—Mass Spectrometry Systems," J. W. Eichelberger, L. E. Harris and W. L. Budde, *Anal. Chem. 47*, 995–1000 (1975).

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2. "Proceedings.—Seminar on Analytical Methods for Priority Pollutants":
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Volume 3—Norfolk, Virginia, March 1979
USEPA, Effluent Guidelines Division, Washington, D.C. 20460.

Table 1.—*Base-Neutral Extractables*

Compound	STORET No.
Acenaphthene	34205
Acenaphthylene	34200
Anthracene	34220
Benzo(a)anthracene	34526
Benzo(b)fluoranthene	34230
Benzo(k)fluoranthene	34242
Benzo(a)pyrene	34247
Benzo(g,h,i)perylene	34521
Benzidine	39120
Bis(2-chloroethyl)ether	34273
Bis(2-chloroethoxy)methane	34278
Bis(2-ethylhexyl)phthalate	39100
Bis(2-chloroisopropyl)ether	34283
4-Bromophenyl phenyl ether	34636
Butyl benzyl phthalate	34292
2-Chloronaphthalene	34581
4-Chlorophenyl phenyl ether	34641
Chrysene	34320
Dibenzo(a,h)anthracene	34556
Di-n-butylphthalate	39110
1,3-Dichlorobenzene	34566
1,4-Dichlorobenzene	34571
1,2-Dichlorobenzene	34536
3,3'-Dichlorobenzidine	34631
Diethylphthalate	34336
Dimethylphthalate	34341
2,4-Dinitrotoluene	34611
2,6-Dinitrotoluene	34626
Dioctylphthalate	34596
1,2-Diphenylhydrazine	34346
Fluoranthane	34376
Fluorene	34381
Hexachlorobenzene	39700
Hexachlorobutadiene	34391
Hexachloroethane	34396
Hexachlorocyclopentadiene	34386
Indeno(1,2,3-cd)pyrene	34403
Isophorone	34408
Naphthalene	39250
Nitrobenzene	34447
N-Nitrosodimethylamine	34438
N-Nitrosodi-n-propylamine	34428
N-Nitrosodiphenylamine	34433
Phenanthrene	34461
Pyrene	34469
2,3,7,8-Tetrachlorodibenzo-p-dioxin	34675
1,2,4-Trichlorobenzene	34551

Table 2.—*Acid Extractables*

Compound	STORET No.
4-Chloro-3-methylphenol	34452
2-Chlorophenol	34586
2,4-Dichlorophenol	34601

Table 2.—*Acid Extractables*—Continued

Compound	STORET No.
2,4-Dimethylphenol	34606
2,4-Dinitrophenol	34616
2-Methyl-4,6-dinitrophenol	34657
2-Nitrophenol	34591
4-Nitrophenol	34646
Pentachlorophenol	39094
Phenol	34694
2,4,6-Trichlorophenol	34621

Table 3.—*Pesticide Extractables*

Compound	STORET No.
Aldrin	39330
a-BHC	39337
b-BHC	39338
d-BHC	39340
g-BHC	34259
Chlordane	39350
4,4'-DDD	39310
4,4'DDE	39320
4,4'DDT	39300
Dieldrin	39380
Endosulfan I	34361
Endosulfan II	34356
Endosulfan Sulfate	34351
Endrin	39390
Endrin Aldehyde	34366
Heptachlor	39410
Heptachlor Epoxide	39420
Toxaphene	39400
PCB-1016	34671
PCB-1221	39488
PCB-1232	39492
PCB-1242	39496
PCB-1248	39500
PCB-1254	39504
PCB-1260	39508

Table 4—*Gas Chromatography of Base/Neutral Extractables*

Compound	Retention time # (min.)	Limit of detection ## ng injected	µg/l
1,3-Dichlorobenzene	7.4	20	10
1,4-Dichlorobenzene	7.8	20	10
Hexachloroethane	8.4	20	10
Bis(2-chloroethyl)ether	8.4	20	10
1,2-Dichlorobenzene	8.4	20	10
Bis(2-chloroisoprooyl)ether	9.3	20	10
N-nitroso-di-n-propyl amine		20	10
Nitrobenzene	11.1	20	10
Hexachlorobutadiene	11.4	20	10
1,2,4-Trichlorobenzene	11.6	20	10
Isophorone	11.9	20	10
Naphthalene	12.1	20	10
Bis(2-chloroethoxy) methane	12.2	20	10
Hexachlorocyclopentadiene	13.9	20	10
2-Chloronaphthalene	15.9	20	10
Acenaphthylene	17.4	20	10
Acenaphthene	17.8	20	10
Dimethyl phthalate	18.3	20	10
2,6-Dinitrotoluene	18.7	20	10
Fluorene	19.5	20	10
4-Chlorophenyl phenyl ether	19.5	20	10
2,4-Dinitrotoluene	19.8	20	10
1,2-Diphenyl hydrazine*	20.1	20	10
Diethyl phthalate	20.1	20	10
N-nitrosodiphenyl amine**	20.5	20	10
Hexachloroberizene	21.0	20	10
4-Bromophenyl phenyl ether	21.2	20	10
Phenanthrene	22.8	20	10
Anthracene	22.8	20	10
Di-n-butyl phthalate	24.7	20	10
Fluoranthene	26.5	20	10
Pyrene	27.3	20	10
Benzidine	28.8	20	10
Butyl benzyl phthalate	29.9	20	10
Bis(2-ethylhexyl) phthalate	30.6	20	10
Chrysene	31.5	20	10

Table 4—*Gas Chromatography of Base/Neutral Extractables*—Continued

Compound	Retention time # (min.)	Limit of detection ## ng injected	µg/l
Benzo(a)anthracene	31.5	20	10
3,3'-Dichlorobenzidine	32.2	20	10
Di-n-octyl phthalate	32.5	20	10
Benzo(b)fluoranthene	34.9	20	10
Benzo(k)fluoranthene	34.9	20	10
Benzo(a)pyrene	36.4	20	10
Indeno(1,2,3-c,d)pyrene	42.7	50	25
Dibenzo(a,h)anthracene	43.2	50	25
Benzo(g,h,i)perylene	45.1	50	25
N-Nitrosodimethylamine			
Bis(chloromethyl)ether			
2,3,7,8-Tetrachlorodibenzo-p-dioxin			

#Six foot glass column (¼ in. OD x 2 mm ID) packed with 3% SP-2250 coated on 100/120 mesh Supelcoport. Carrier gas: helium at 30 ml per min. Temperature program: Isothermal for 4 minutes at 50° C, then 8° per min to 270° C. Hold at 270° C for 30 minutes. If desired, capillary or SCOT columns may be used.

##This is a minimum level at which the entire analytical system must give mass spectral confirmation. (Nanograms injected is based on a 2 µl injection of a one liter sample that has been extracted and concentrated to a volume of 1.0 ml.)

*Detected as azobenzene.

**Detected as diphenylamine.

Table 5.—*Gas Chromatography of Pesticide Extractables*

Compound	Retention time (min)*	Limit of detection# ng injected	µg/l
a-bhc	21.1	40	10
g-bhc	22.4	40	10
b-bhc	23.4	40	10
Heptachlor	23.4	40	10
d-bhc	23.7	40	10
Aldrin	24.0	40	10
Heptachlor epoxide	25.6	40	10
Endosulfan I	26.4	40	10
Dieldrin	27.2	40	10
4,4'-DDE	27.2	40	10
Endrin	27.9	40	10
Endosulfan II	28.6	40	10
4,4'-DDD	28.6	40	10
4,4'-DDT	29.3	40	10
Endosulfan sulfate	29.8	40	10
Chlordane	19 to 30		
Toxaphene	25 to 34		
PCB-1242	20 to 32		
PCB-1254	23 to 32		

*6 foot glass column (¼ in. OD x 2 mm ID) packed with 3% SP-2250 coated on 100/120 mesh Supelcoport. Carrier gas: helium at 30 ml per min. Temperature program: Isothermal for 4 minutes at 50° C, then 8° per minute to 270°. Hold at 270° C for 30 minutes. If desired, capillary or SCOT columns may be used.

#This is a minimum level at which the entire analytical system must give mass spectral confirmation. (Nanograms injected is based on a 4 µl injection of a one-liter sample that has been extracted and concentrated to a volume of 1.0 ml.

Table 6.—*Gas Chromatography of Acid Extractables*

Compound	Retention time* (min)	Limit of detection# ng injected	µg/l
2-Chlorophenol	5.9	50	25
2-Nitrophenol	6.4	50	25
Phenol	8.0	50	25
2,4-Dimethylphenol	9.4	50	25
2,4-Dichlorophenol	9.8	50	25
2,4,6-Trichlorophenol	11.8	50	25
4-Chloro-3-methylphenol	13.2	50	25
2,4-Dinitrophenol	15.9	500	250

Table 6.—*Gas Chromatography of Acid Extractables*—Continued

Compound	Retention time* (min)	Limit of detection#	
		ng injected	µg/l
2-Methyl-4,6-dinitrophenol	16.2	500	250
Pentachlorophenol	17.5	50	25
4-Nitrophenol	20.3	50	25

*6 foot glass column (¼ in. OD x 2 mm ID) Packed with 1% SP-1240 DA coated on 100/120 mesh Supelcoport. Carrier gas: helium at 30 ml per min. Temperature program: 2 min isothermal at 70°, then 8° per min to 200° C. If desired, capillary or SCOT columns may be used.

#This is a minimum level at which the entire analytical system must give mass spectral confirmation. (Nanograms injected is based on a 2 µl injection of a one liter sample that has been extracted and concentrated to 1.0 ml.)

Table 7.—*Base/Neutral Extractables Characteristic Ions*

Compound	Characteristic ions					
	Electron impact			Chemical ionization (methane)		
1,3-Dichlorobenzene	146	148	113	146	148	150
1,4-Dichlorobenzene	146	148	113	146	148	150
Hexachloroethane	117	201	199	199	201	203
Bis(2-chloroethyl) ether	93	63	95	63	107	109
1,2-Dichlorobenzene	146	148	113	146	148	150
Bis(2-chloroisopropyl) ether	45	77	79	77	135	137
N-Nitrosodipropyl amine	130	42	101			
Isophorone	82	95	138	139	167	178
Nitrobenzene	77	123	65	124	152	164
Hexachlorobutadiene	225	223	227	223	225	227
1,2,4-Trichlorobenzene	180	182	145	181	183	209
Naphthalene	128	129	127	129	157	169
Bis(2-chloroethoxy) methane	93	95	123	65	107	137
Hexachlorocyclopentadiene	237	235	272	235	237	239
2-Chloronaphthalene	162	164	127	163	191	203
Acenaphthylene	152	151	153	152	153	181
Acenaphthene	154	153	152	154	155	183
Dimethyl phthalate	63	194	164	151	163	164
2,6-Dinitrotoluene	165	63	121	83	211	223
Fluorene	166	165	167	166	167	195
4-Chlorophenyl phenyl ether	204	206	141			
2,4-Dinitrotoluene	165	89	163	183	211	223
1,2-Diphenylhydrazine[1]	77	93	105	185	213	225
Diethylphthalate	149	177	150	177	223	251
N-Nitrosodiphenylamine[2]	169	168	167	169	170	198
Hexachlorobenzene	284	142	249	284	286	288
4-Bromophenyl phenyl ether	248	250	141	249	251	277
Phenanthrene	178	179	176	178	179	207
Anthracene	178	179	176	178	179	207
Dibutyl phthalate	149	150	104	149	205	279
Fluoranthene	202	101	100	203	231	243
Pyrene	202	101	100	203	231	243
Benzidine	184	92	185	185	213	225
Butyl benzyl phthalate	149	91		149	299	327
Bis(2-ethyl hexyl) phthalate	149	167	279	149		
Chrysene	228	226	229	228	229	257
Benzo(a)anthracene	228	229	226	228	229	257
3,3'-Dichlorobenzidine	252	254	126			
Dioctyl phthalate	149					
Benzo(b)fluoranthene	252	253	125	252	253	281
Benzo(k)fluoranthene	252	253	125	252	253	281
Benzo(a)pyrene	252	253	125	252	253	281
Indeno(1,2,3-c,d)pyrene	276	138	277	276	277	305
Dibenzo(a,h)anthracene	278	139	279	278	279	307
Benzo(g,h,i)perylene	276	138	277	276	277	305
N-nitrosodimethyl amine	42	74	44			
Bis(chloromethyl) ether	45	49	51			
2,3,7,8-Tetrachlorodibenzo-p-dioxin		322	320	59		
Deuterated anthracene(d-10)[3]	188	94	80	189	217	

[1] Detected as azobenzene.
[2] Detected as diphenylamine.
[3] Suggested internal standard.

Table 8.—*Pesticides Characteristic Ions*

Compound	Characteristic ions electron impact		
a-BHC	183	181	109
g-BHC	183	181	109
b-BHC	181	183	109
heptachlor	100	272	274
d-BHC	183	109	181
aldrin	66	263	220
heptachlor epoxide	353	355	351
endosulfan I	201	283	278
dieldrin	79	263	279
4,4'-DDE	246	248	176
4,4'-DDD	235	165	237
endrin	81	263	82
endosulfan II	201	283	278
4,4'-DDT	235	237	165
endosulfan sulfate	272	387	422
chlordane [1]	373	375	377
toxaphene [2]	231	233	235
PCB-1242 [2]	224	260	294
PCB-1254 [2]	294	330	362

[1] Characteristic of alpha and gamma forms of chlordane.
[2] These compounds are mixtures of various isomers.

Table 9.—*Acid Extractable Characteristic Ions*

Compound	Characteristic ions					
	Electron impact			Chemical ionization (methane)		
2-Chlorophenol	128	64	130	129	131	157
2-Nitrophenol	139	65	109	140	168	122
Phenol	94	65	66	95	123	135
2,4-Dimethylphenol	122	107	121	123	151	163
2,4-Dicholorphenol	162	164	98	163	165	167
2,4,6-Trichlorophenol	196	198	200	197	199	201
4-Chloro-3-methyl phenol	142	107	144	143	171	183
2,4-Dinitrophenol	184	63	154	185	213	225
2-Methyl-4,6-dinitrophenol	198	182	77	199	227	239
Pentachlorophenol	266	264	268	267	265	269
4-Nitrophenol	65	139	109	140	168	122
Anthracene (d-10) [1]	188	94	80	189	217	

[1] Suggested internal standard.

Table 10.—*DFTPP Key Ions and Ion Abundance Criteria*

	Ion abundance criteria
Mass:	
51	30 to 60 percent of mass 198.
68	Less than 2 percent of mass 69.
70	Less than 2 percent of mass 69.
127	40 to 60 percent of mass 198.
197	Less than 1 percent of mass 198.
198	Base peak, 100 percent relative abundance.
199	5 to 9 percent of mass 198.
275	10 to 30 percent of mass 198.
365	Greater than 1 percent of mass 198.
441	Present but less than mass 443.
442	Greater than 40 percent of mass 198.
443	17 to 23 percent of mass 442.

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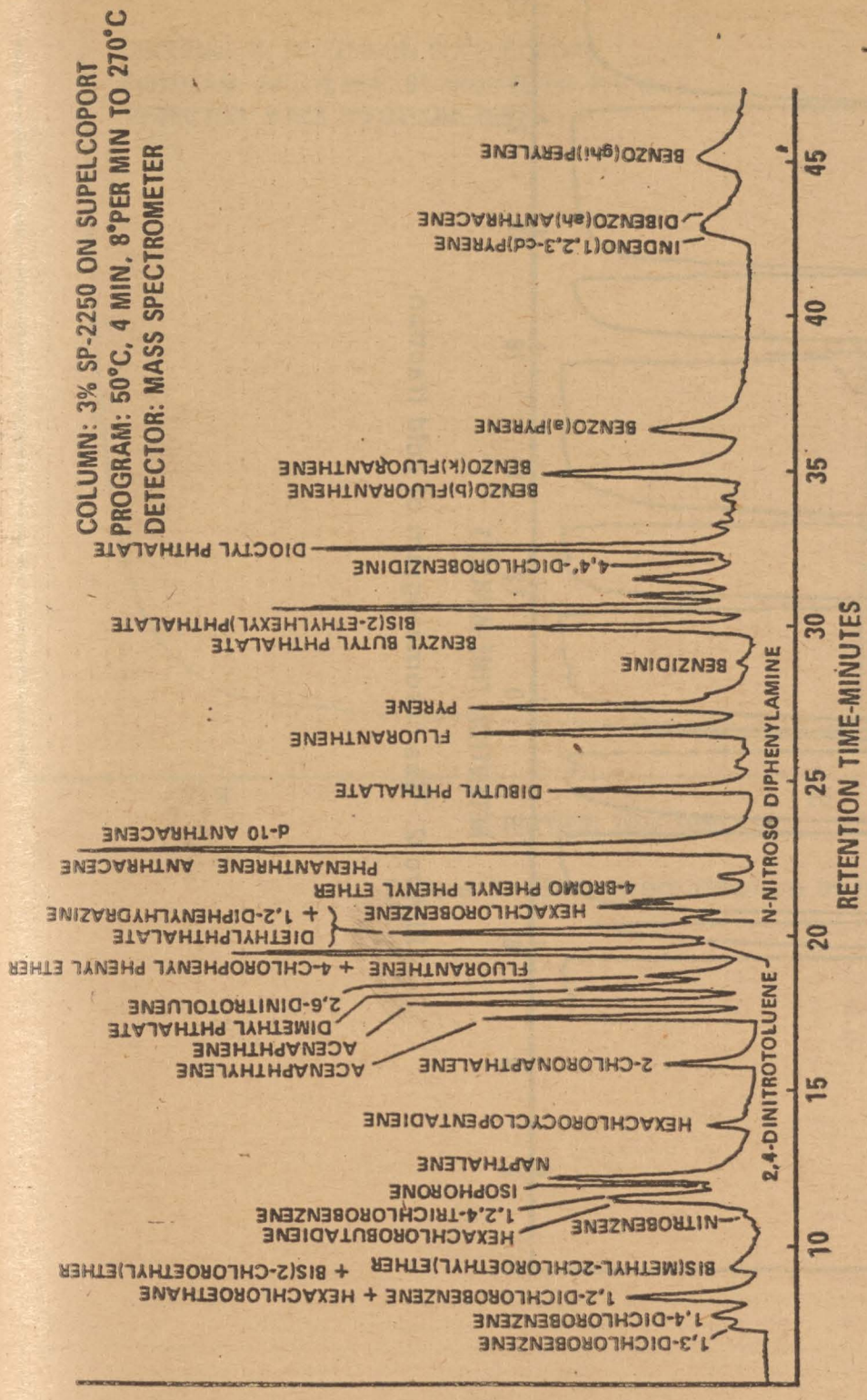


Figure 1. Gas chromatogram of base/neutral fraction

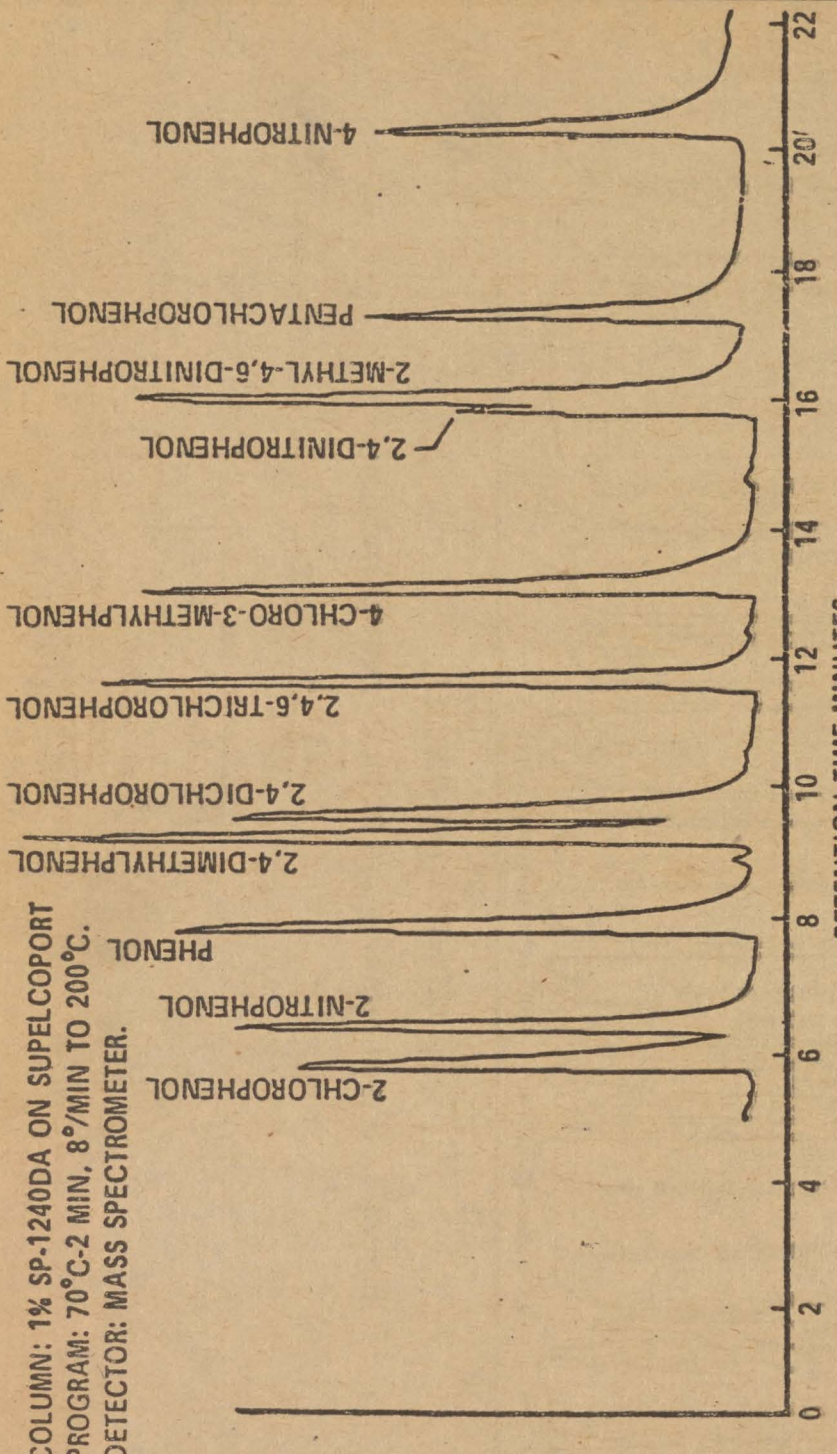


Figure 2. Gas chromatogram of acid fraction

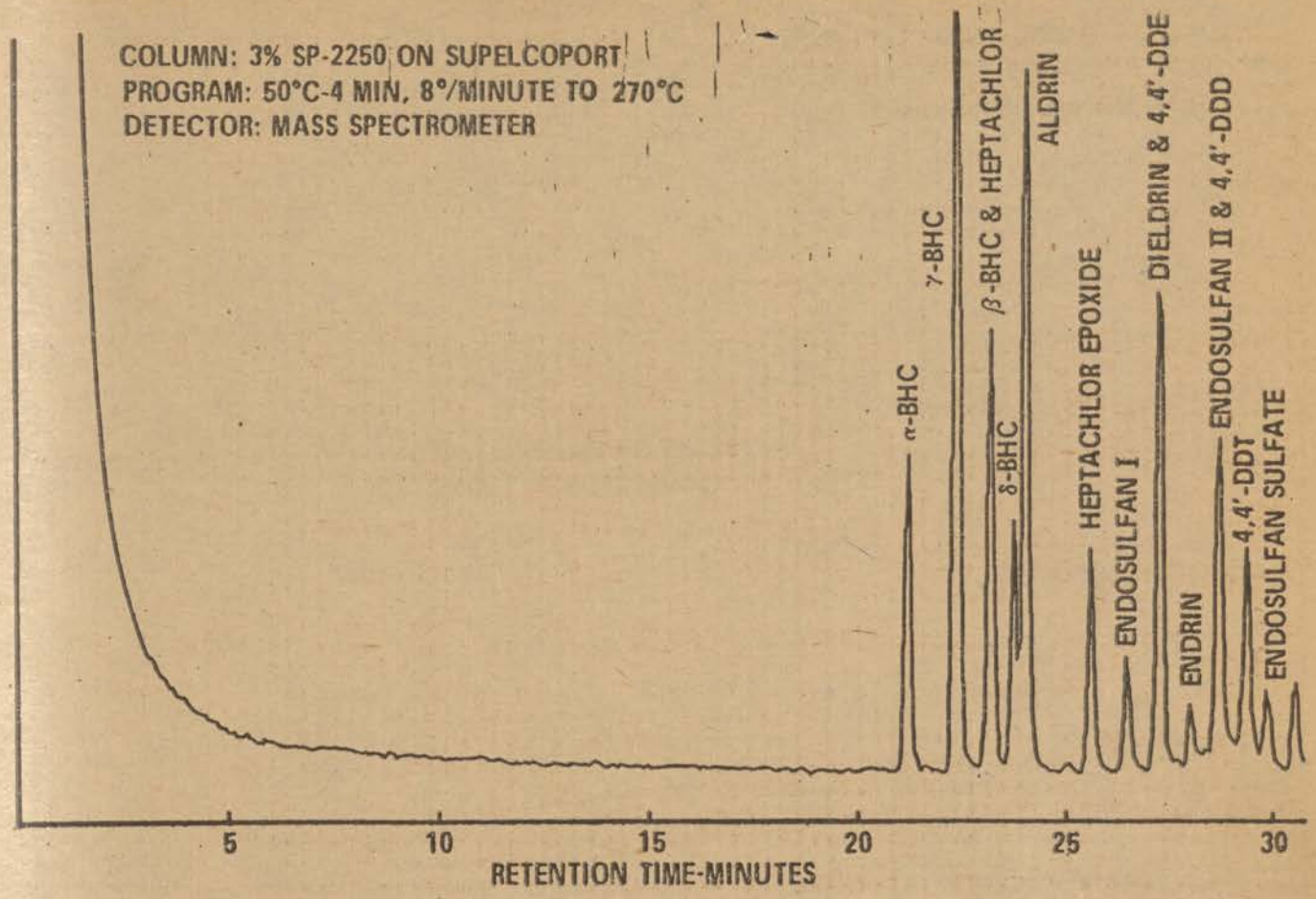


Figure 3. Gas chromatogram of pesticide fraction

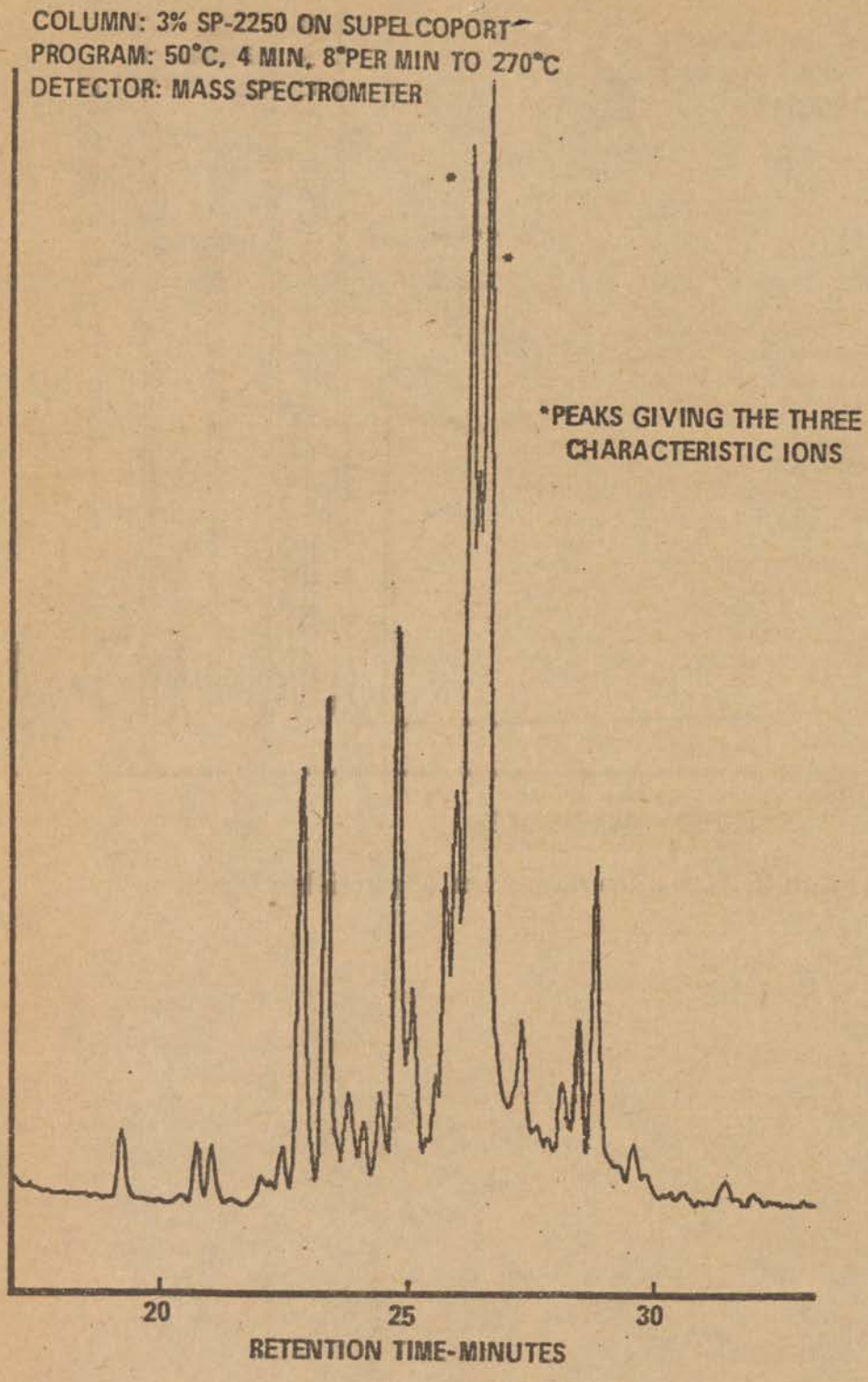


Figure 4. Gas chromatogram of chlordane

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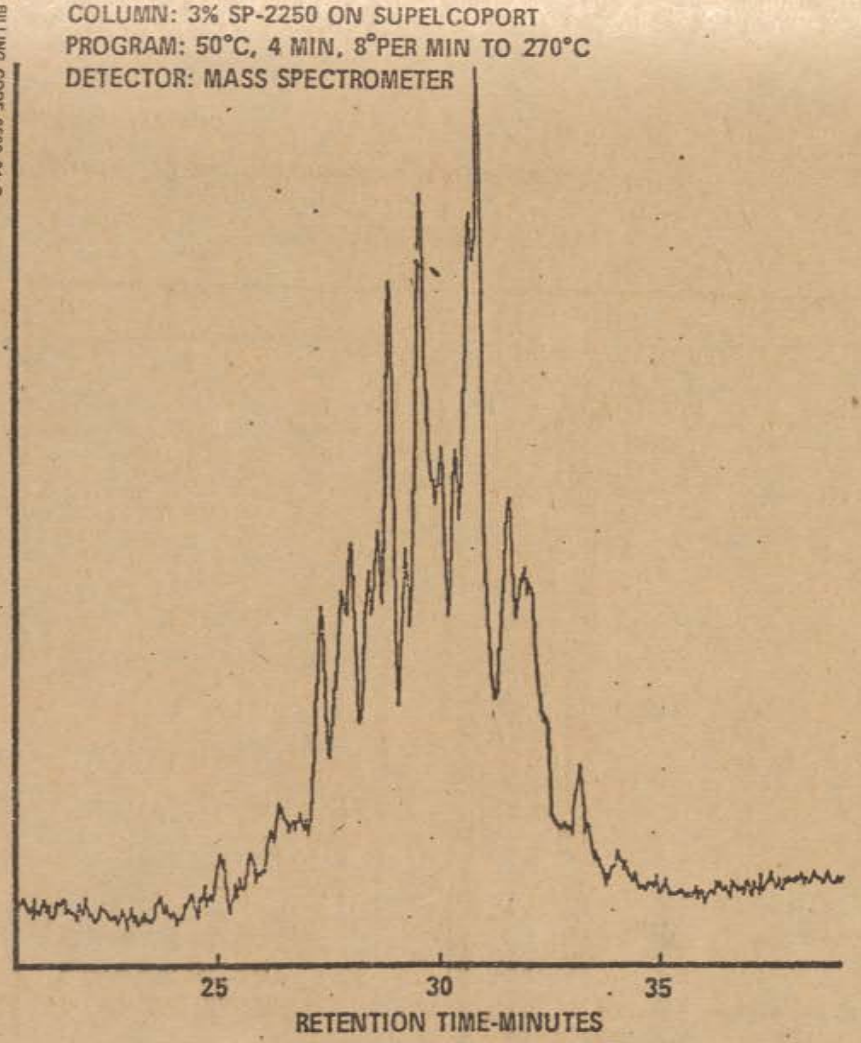


Figure 5. Gas chromatogram of toxaphene

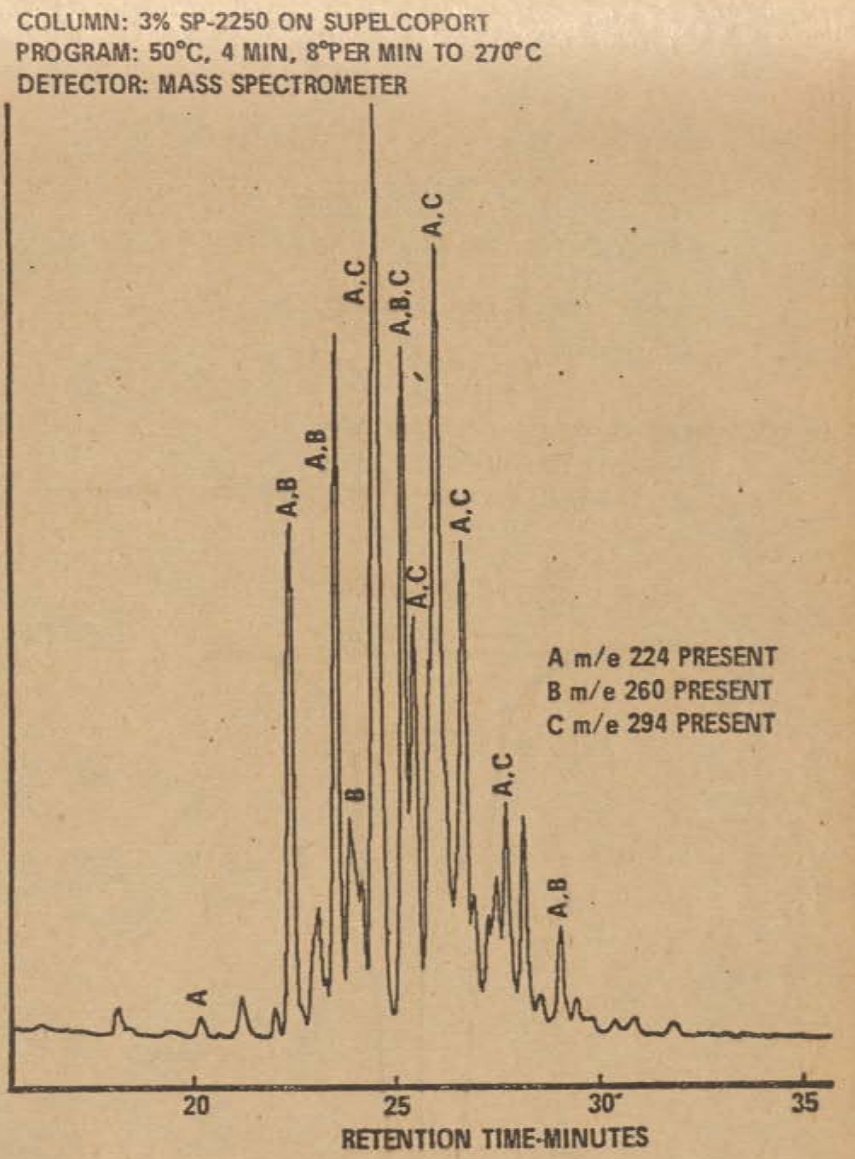


Figure 6. Gas chromatogram of Arochlor 1248

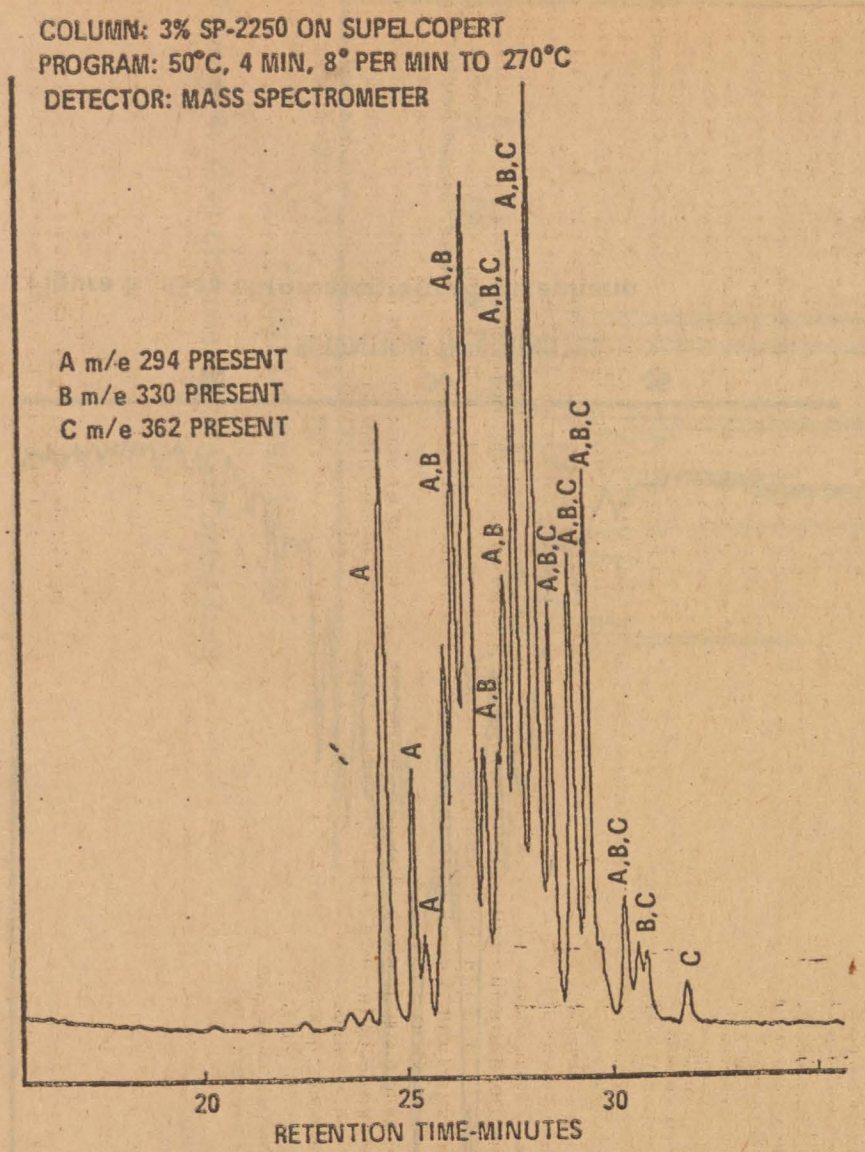
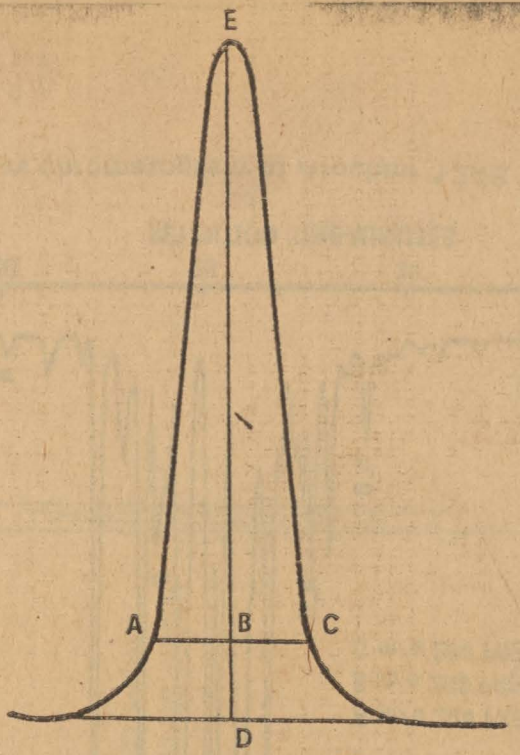


Figure 7. Gas chromatogram of Arochlor 1254

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$$\text{TAILING FACTOR} = \frac{BC}{AB}$$

Example calculation: Peak Height = DE = 100 mm
10% Peak Height = BD = 10 mm
Peak Width at 10% Peak Height = AC = 23 mm
AB = 11 mm
BC = 12 mm

$$\text{Therefore: Tailing Factor} = \frac{12}{11} = 1.1$$

Figure 1. Tailing factor calculation

Appendix III—Example Quality Assurance and Quality Control Procedures for Organic Priority Pollutants

Example Quality Assurance and Quality Control Procedures for Analysis for Organic Priority Pollutants

110 *Scope.*

111 These procedures are provided for use by laboratories performing analyses using EPA Methods 624 and 625. To provide data with a known degree of reliability, a strong quality assurance and quality control program is presented. The procedures are designed to produce data with known precision and accuracy so that a determination of confidence can be placed in the data. Quality Assurance (QA) is the total program for assuring the reliability of the monitoring data. Quality control (QC) is the routine application of procedures for controlling the measurement process.

112 Initially, the methodology must be validated for each industrial subcategory being measured by the laboratory. The requirement for validation of each subcategory is based on the assumed unique nature of the wastewater associated with most of the subcategories. Since the effluent from treatment is to be used for setting control limits, it will be used to develop initial validation data for the method prior to routine sampling and analyses. A particular subcategory may not require verification analyses of all three fractions (Volatiles, Base/Neutrals, and Acids), or for all of the individual compounds, in which case, the method requires validation only for the fraction or the selected compounds of interest.

113 The results of the validation analyses will be used to provide information with which to judge a laboratory's ability to interpret and implement the method for each future sample in the industrial subcategory. Initial QC limits for precision and accuracy will be established using these results, and then used in subsequent analyses as control limits. A numerical example is given in Appendiix A.

114 After the method is validated for each subcategory and routine analysis begins, continuing QA/QC will be required to ensure that the subsequent analyses are within the established control limits.

115 Prior to developing initial method validation and a continuing quality control program, the analyst (individual or group if team approach is used) must demonstrate the ability to perform the required analyses. If a laboratory has not established precision and accuracy criteria for clean water, the laboratory must perform replicate analyses of clean water as prescribed in section 121.

120 *Routine Quality Assurance and Quality Control.*

121 *Preliminary Clean Water Precision and Accuracy.*

121.1 Before any work is begun on actual field samples, a laboratory must demonstrate its ability to properly perform the liquid-liquid extractions, the gas purge extractions, and the required chromatography. Clean water spikes are analyzed to demonstrate the laboratory's ability to implement Methods 624 and 625, and to establish the baseline precision and accuracy criteria for the method in that laboratory.

121.2 Procedure:

121.2.1 Prepare "organic-free" water for use in determining preliminary precision and accuracy according to the procedures given in Methods 624 and 625.

121.2.2 Spike four replicates of clean water with each compound of interest at a concentration approximately equal to 10 times the limit of detection. In addition, spike all purgeable aliquots with a minimum of three surrogate standards at a level of 100 μg/l. For extractable organics, each replicate must be one liter; each purgeable sample requires at least 100 ml. Do not dose purgeables with more than 20 μl of an alcoholic standard per each 100 ml of water. Analyze spiked solutions according to method 624 or 625.

121.3 Precision—For each parameter, use the resulting observed values of the spikes (O_1, O_2, O_3, and O_4) to calculate the standard deviation (S) of the replicates according to Equation 1.

$$\text{Eq. 1} \quad S = \sqrt{\frac{n\sum_{i=1}^{n} O_i^2 - \left(\sum_{i=1}^{n} O_i\right)^2}{n(n-1)}}$$

Where:

n = number of replicates

121.4 Accuracy—For each parameter, use the resulting observed values of the spikes (O_1, O_2, O_3, and O_4) to calculate the mean percent recovery

$$\text{Eq. 2} \quad \overline{P} = \frac{100\left(\sum_{i=1}^{n} O_i\right)}{nT}$$

($\overline{P}$) of the method according to equation 2.

Where:

n = number of replicates

T = true value of the spike

121.5 The precision and accuracy data shall be documented for the record as evidence that the laboratory can properly perform the extractions and chromatography essential for methods 624 and 625.

122 *Method Blank*—The method blank is defined as an appropriate volume of "organic-free" water which has been processed exactly as the sample (including glassware, reagents, solvents, etc.). Reagents or solvents having background levels that interfere with the compounds to be determined must be purified and shown to be acceptable or replaced with some that are acceptable prior to proceeding with analyses. Problems encountered and corrective actions taken shall be documented and reported for the record.

122.1 For the extractable fractions (Base/Neutral or Acid), the method blank requires extraction of 1-liter "organic-free" water. A method blank must be extracted for each set of field samples extracted at a given time (at least one method blank per 20 field samples analyzed) and whenever a new source of reagent or solvent is introduced into the analytical scheme. The method blank can be screened by GC–FID. Analysis by GC–MS is required only if GC–FID analysis of the field blank gives any peaks larger than the internal standard peak.

122.2 For the volatile fraction, 5 ml of "organic-free" water should be analyzed by the purge and trap methodology only if positive interferences are noted during the analysis of a field blank. If positive interference still occurs, repeat the method blank analysis. If interference persists, dismantle the system, thoroughly clean all parts that contact the sample, purge gas and carrier gas. Replace or repack the sorbent trap and change purge and carrier gas.

123. *Field Blank*—The field blank is defined as an appropriate volume of "organic-free" water which has been

sent to the sampling site and back to the analytical laboratory in a container and bottle identical to the type used to collect the samples. Field blanks and samples must be shipped in separate containers. When received in the lab, the field blank is dosed, extracted and concentrated as if it were an actual sample.

123.1 For the extractable fractions (Base/Neutral or Acid), the field blank may be screened by GC–FID. Full GC–MS analysis is to be performed if the screening analysis gives any peaks larger than the internal standard peak.

123.2 For the volatile fraction, analyze a 5-ml field blank after each sample analysis. Follow the guidelines in 121.2 if positive interferences are noted during the analysis of a field blank.

130 *Method Validation.*

131 *Extractable Organics (Base/Neutrals-Acids)*—The following procedures are to be applied, separately, to samples being analyzed for the Base/Neutral-Acid group of compounds. The analyses shall be performed according to the procedures given in Method 625. The validation studies must be performed under the same conditions ordinarily applied to the samples of a given subcategory. That is, if separatory funnels are routinely used for extraction of the samples, the study must be conducted using separatory funnels. If continuous extractors are used for routine analysis of the subcategory, the validation study must be performed using the same type of continuous extractors.

131.1 Sample pretreatment—The laboratory should collect a sample of adequate volume to carry out the validation study and one field blank taken as described in the sampling protocol on the same day from the same source. Mix the sample and withdraw a 1-liter aliquot for analysis. Vigorously mix the sample with some type of stirring device. Withdraw aliquots, while stirring, into a 1-liter graduated cylinder, using a siphon made of glass or Teflon. Measure and record the volume. Transfer the aliquot to a 2-liter separatory funnel or continuous extractor for spiking. Initially analyze a 1-liter aliquot of the sample to determine the sample background so that proper spiking levels can be selected for 131.2.1. The remainder of the sample should be stored at 4° C until the validation study is begun. At the same time, analyze a 1-liter aliquot of the field blank. Choose three levels of compound spikes to cover the expected concentration range of the samples in the subcategory.

131.2 Preparation of Aliquots for Validation Study—Withdraw twelve 1-liter aliquots from the stirred composite sample as described in 131.1. Separate into three groups of four.

131.2.1 Spiking of Aliquots—Spike two aliquots of each group with surrogate standards only. The other two aliquots are spiked with surrogate standards plus the standard pollutant compounds of interest at one of the concentration levels (See Figure 2). Repeat this process for each group of aliquots. Select the three spiking concentrations for the compounds of interest based on the results of the background analysis obtained in 131.1. If the initial background level for a particular pollutant is x, select the three spiking levels to give final concentrations 2×, 10×, and 100×. If x equals 15 μg/l, dose with 15, 135, and 1485 μg per liter. This gives final concentrations of the pollutant of 30, 150, and 1500 μg/l. Spike each 1-liter replicate with each surrogate at a level of 100 μg/l.

Note.—Consideration should be given to the water solubility of the compounds being spiked when selecting the spiking concentration levels.

131.2.2 Prepare spiking standards in concentrations such that no more than 5 ml of spiking solution is added for each liter of sample. This will ensure that the solubility of the standard in water will not be significantly affected by the added organic solvent. Add the spiking solution to the sample aliquots in the separatory funnel using a transfer pipet. After adding the spikes, thoroughly mix the samples and after one hour at room temperature proceed with the extraction. If continuous extractors are used, it may be necessary to spike the 1-liter aliquots before they are placed into the extractor. Place the aliquot in a separatory funnel or a clean bottle, spike, and transfer to the extractor. The bottle must be rinsed with solvent. Wait an hour and begin the extraction.

131.3 Use of the Data from Spiked Samples in Analyses—The data obtained from the determination of pollutants of interest are used to calculate the precision and accuracy of the method and to establish control limits for the individual compounds of interest. Surrogate spikes are added to every sample to provide quality control on every sample by monitoring for matrix effects and gross sample processing errors. The surrogate is *not* used as an internal standard for quantification purposes. Suggested surrogate standards are given in Section 6.4 of Method 625. If validation is needed for only one fraction, only the surrogates for that fraction need be added.

131.4 Extract and analyse all aliquots as directed in Method 625 or other appropriate EPA methods.

131.5 Calculation of Precision and Accuracy—The precision of the method may be calculated from the data obtained during the validation study. There are three spiked concentration levels of pollutants as outlined in Figure 2. The method precision for the background level of pollutants occurring in the sample may be calculated from the three pairs of replicate aliquots which are spiked only with surrogate standards (A1, A2; B1, B2; C1, and C2, See Figure 2). The precision and accuracy for the surrogates may be calculated from all twelve replicates since the spiking level is constant for both sets of six samples. The precision and accuracy for the surrogates may be calculated for each set of six samples if there is an effect due to the added pollutant spike. Similarly, the precision and accuracy at each spike level of the pollutants of interest may be determined from the two replicate aliquots that received that spike (D1, D2; E1, E2; F1, and F2. See Figure 2).

a. *Precision.*

Calculate the range (R) for each pair of replicate aliquots i.e., duplicate analyses, according to equation 3:

Eq. 3 $R = [X_1 - X_2]$

Where:

X_1 and X_2 are each an analytical result from two replicate aliquots.

The concentration level related to R can be represented as in equation 4.

Eq. 4 $$X = \frac{(X_1 + X_2)}{2}$$

Where:

X is the mean of the duplicate analyses, X_1 and X_2.

For any group of n duplicate analyses that are considered similar to each other, their ranges (R_i) and means (X_i), where $i = 1$ to n, can be used to estimate the critical difference (R_c) between similar future duplicate analyses or any specific concentration level (C). Calculate R_c as shown in equation 5.

Eq. 5 $$R_c = \frac{3.27(C)}{n}\left[\sum_{i=1}^{n}\frac{R_i}{X_i}\right]$$

From these data develop a table of R_c values for various concentration (C) values that span the concentration range of interest. Use these initial critical difference values to judge the acceptability of succeeding duplicate results generated under the same conditions. Revise and update as additional duplicate data becomes available. When more than 15 pairs of duplicates are available within any specific concentration level C, R_c should be calculated directly from the average range of these duplicates alone. Equation 5 reduces to

$$R_c = \frac{3.27(C)}{n}\left[\sum_{i=1}^{n} R_i\right]$$

b. *Accuracy for Pollutants.* Calculate the background concentration of priority pollutants occurring in each of the field composite samples. The calculation is similar to equation 4, but there are six pieces of data (A1, A2, B1, B2, C1, C2) available for this calculation as shown in Figure 2. Therefore, the calculation is as shown in equation 6.

Eq. 6 $$\bar{X} = \frac{\left(\sum_{i=1}^{6} X_i\right)}{6}$$

Where:

$\bar{X}$ is the mean X_i, i-1 to 6 are the analytical results for the six 1-liter aliquots of a single composite sample spiked with surrogates only.

Calculate the recovery of each pollutant in each of the 1-liter aliquots spiked with the pollutants of interest (D1, D2, E1, E2, F1 and F2) according to equation 7:

Eq. 7 $$P = \frac{100\ (Z - X)}{T}$$

Where:

P is the percent recovery of the spike
Z is the analytically determined concentration of the pollutant in the spiked aliquot
$\bar{X}$ is the mean background concentration of the pollutant and
T is the true value of the spike.

Determine the percent recoveries for each pollutant of interest at all of its concentration levels. If there is no significant difference between the percent recoveries for the various concentration levels, all n of the percent recovery values may be treated together as in equations 8 and 9. If some of the percent recovery values are significantly different, each group of similar percent recoveries must be treated independently to develop its own characteristic mean percent recovery ($\bar{P}$) and its associated standard deviation (S_p)

Eq. 8 $$\bar{P} = \frac{\sum_{i=1}^{n} P_i}{n}$$

Where:

$\bar{P}$ is the mean percent recovery
P_i is an individual percent recovery value
n is the number of observations at this concentration level

Eq. 9 $$S_p = \sqrt{\frac{n\sum_{i=1}^{n} P_i^2 - \left(\sum_{i=1}^{n} P_i\right)^2}{n(n-1)}}$$

c. *Accuracy for Surrogates.* Proceed exactly as with the pollutants of interest in 131.5b above, keeping the following two differences in mind: there is no background concentration and there are six sets of duplicate analyses for the surrogate spikes; three sets spiked with pollutants of interest (D1, D2; E1, E2; F1, F2) and three sets without (A1, A2; B1, B2; C1, C2), see Figure 2. Calculate the percent recovery as shown in equation 10.

Eq. 10 $$P = \frac{100\ Z}{T}$$

Where:

P is the percent recovery of the surrogate spike.
Z is the measured value of the surrogate spikes in the aliquot.
T is the calculated or true value of the surrogate spikes added to the sample.

Calculate the mean percent recovery ($\bar{P}$) and the standard deviation (S_p) of the percent recovery of the surrogate spikes in all of the sample aliquots according to equations 8 and 9.

132 *Volatile Organics (Purgeables)*

132.1 The validation of the method for purgeables requires a minimum of 600 ml sample. The validation may be performed on a grab sample or a composite sample prepared from discrete grab samples.

Thirteen 5-ml aliquots of each sample are required. They should be treated and spiked according to Sections 132.2 d through f and 132.4.3. The remaining volume of sample is transferred to a clean container, i.e., vial or vials and sealed with no headspace as done when collecting a sample. This sample should be held at 4°C until it is determined that there is no further need for the sample. Figure 3 summarizes the validation study for volatile organics. Caution: Prepare only as many sample aliquots as can be analyzed in the working day. This may mean that each of the three concentration levels will be analyzed on different days.

132.2 Pretreatment of Grab Samples to be composited—Individual grab samples should be composited according to the following procedure:

a. Composite only grab samples of equal volume.

b. Carefully pour the contents of all individual grab samples collected from a given source during the specified time period into a 1000-ml round-bottom flask which is chilled in a wet ice bath.

c. Stir the mixture gently with a glass rod for approximately one minute while in the ice bath.

d. Carefully fill 13 clean 40-ml vials or three 120-ml vials and four 40-ml vials with composited sample.

e. Take one 40-ml vial for immediate analysis to determine the background of the purgeable pollutants.

f. Store the remaining vials at 4° C until the validation study is begun.

132.3 Spiking levels for pollutant and surrogate standards—The spiking levels of the pollutants are determined by the background (X) in the samples. The low level spike will give a final concentration that is 2 times the background level. The intermediate and

high level spikes will give final concentrations that are 10 and 100 times the background level. Concentrations in excess of 1000 μg/l are likely to flood the gas chromatographic column. Therefore, the total concentration (background plus spike) of each individual pollutant should not exceed 900 μg/l. Even at this level, the solubility of the compounds in the sample must be considered. The spiking level for all surrogate standards should be 100 μg/l.

132.4 Spiking Procedures.

132.4.1 Preparation of Spiking Standards—Prepare methanolic stock standard solutions of the pollutants and the surrogate standards according to the directions given in Method 624.

From the methanolic primary dilutions prepare secondary aqueous spiking mixtures of the surrogate standards so that 20.0 μl of the primary standard solution, diluted to 50.0 ml in organic free water will permit adding 5 μl of the resulting solution to the 5 ml sample giving the desired surrogate concentration level of 100 μg/l.

Prepare spiking mixtures of the pollutant standards in methanol so that 20.0 μl of the solution added to 100.0 ml of sample will give the desired concentration levels.

132.4.2 To minimize the solubility effect of methanol on the constituents to be measured, do not inject more than 20 μl of spiking solution per 100 ml of sample. Never use a pipet to transfer samples or aqueous standards that are to be analyszed for volatile purgeable compounds. Transfer samples by pouring into the receiving vessel.

132.4.3 Spiking the Sample Aliquots—Take one of the 120-ml or 3 of the 40 ml sample aliquots from cold storage, equilibrate to room temperature, and fill a 100 ml volumetric flask to mark with the sample. Rapidly inject 20 μl of the methanolic solution of pollutant spiking standard (concentration 2X) into the expanded area of the flask below the neck. Stopper and mix by gently inverting the flask three times. Fill two 5-ml syringes with spiked sample from the flask as directed in the analytical protocol. Open the valve of the syringe and inject 5 μl of the surrogate standard spiking solution. Inject the sample aliquot into the purging device and analyze according to Method 624.

Take one of the 40-ml sample aliquots from cold storage, equilibrate to room temperature and fill two 5-ml syringes with the sample as directed in Method 624. Spike 5 μl of the surrogate standard water solution (concentration 100 μg/l) into the syringe through the valve giving a final concentration of 100 μg/l. Inject the sample aliquot into the purge device and analyze according to Method 624. See Figure 3. Repeat this procedure twice, giving three sets of analyses of two samples spiked with surrogate standards only and two samples spiked with surrogate standards and pollutant compounds of interest.

132.5 Calculation of Precision and Accuracy—The precision and accuracy for the purgeable pollutants and the surrogate standards are calculated as directed for the semivolatile solvent extractable compounds in paragraphs 131.5a, b, and c.

140 *Continuing Quality Assurance and Quality Control.*

141 *Extractable Organics (First Samples)*—The following procedures should be applied to the first sample of a subcategory for the Base/Neutral and Acid groups. An outline diagram for first sample ongoing quality assurance samples is given in Figure 4.

141.1 Withdraw three 1-liter aliquots of the composite sample according to the procedure in 131.1.

141.2 Spiking the Sample Aliquots—Spike one of the aliquots with pollutant standards plus the surrogate standards and two of the aliquots with surrogate standards only.

141.3 Add a spike sufficient to approximately double the background concentration of the priority pollutants as determined in 131.5b. If the original concentration is higher than the midpoint of the calibration curve, then the concentration of the spike should be approximately one-half the original concentration. Surrogate spikes as specified in 131.3 should be added to all three aliquots from each sample at a concentration level of 100 μg/1.

141.4 Analyze according to Method 625.

141.5 Calculations of Precision and Accuracy

a. For the first sample, calculate the precision of the duplicate analyses (X_1 and X_2) from the two 1-liter aliquots for the pollutants background and the surrogate standards. Calculate the range (R) of the results according to equation 11.

$$\text{Eq. 11} \qquad R = |X_1 - X_2|$$

The concentration of each compound is represented by the mean of the duplicate values. Calculate the mean ($\bar{X}$) according to equation 12.

$$\text{Eq. 12} \qquad X = \frac{(\bar{X}_1 + X_2)}{2}$$

Refer to the table of critical range values developed in 131.5a, to find the concentration (C) nearest to X. Use this R_c to evaluate the acceptability of R from Eq. 11. If R is greater than R_c, the system precision is out of control and the source of this unusual variability should be identified and resolved before continuing with routine analyses. After correcting the source of this unusual variability, reanalyze the sample if possible. Record the results of all duplicate analyses and periodically (after 5 to 10 additional duplicate results are obtained), revise, update, and improve the table of critical range values.

b. *Accuracy for Surrogate Spikes.* Calculate the recovery of the surrogate spikes in the duplicates according to equation 13.

$$\text{Eq. 13} \qquad P = \frac{100\ Z}{T}$$

Where:

P is the percent recovery.

Z is the analytically determined concentration of the surrogate standard spikes.

T is the true value of the surrogate standard spikes added in 132.4.3.

If the percent recoveries are not within the interval $P + 3S_p$ as determined in 131.5c, the system should be checked for problems. If problems exist, they must be resolved before continuing with routine analyses. Record the recovery of all surrogate spikes and periodically (every 5 to 10 additional data points), revise and update the recovery criteria.

c. *Accuracy for Priority Pollutant Spikes.* Using the results obtained from the 1-liter aliquot of composite sample spiked with surrogate standards and pollutant standards, calculate the recoveries of the priority pollutants according to equation 14.

$$\text{Eq. 14} \qquad P = \frac{100\ (Z - \bar{X})}{T}$$

Where:

P is the percent recovery

Z is the analytically determined concentration of the pollutant spikes

T is the true value of the pollutant spikes added in 132.4.3, and

$\bar{X}$ is the mean concentration of the pollutant background determined by equation 9.

If the percent recovery is not within the interval of $P + 3S_p$, as determined in 131.5b the system should be checked for problems. If problems exist, they must be resolved before continuing with routine analyses. Record the recovery of all spikes and periodically revise and update the accuracy criteria.

142 *Extractable Organics—(Subsequent Samples)*—The following procedures should be applied to each subsequent sample of a subcategory of the Base-Neutral and Acid groups. A flow diagram for each subsequent ongoing quality assurance sample is given in Figure 5.

142.1 Withdraw a one-liter aliquot as directed in 131.1

142.2 Spike the aliquot with surrogate standards at a concentration of 100μg/l.

142.3 Analyze according to Method 625.

142.4 Determine the percent recovery of the surrogate standards using Equation 10. If the percent recovery is outside the interval $P + 3S_p$ as determined in 131.5c, the analytical system should be checked for problems. If problems exist, they must be resolved before continuing further sample analyses.

142.5 A field blank must be analyzed according to Method 625. If priority pollutants are found and quantified, the values for the field blank should be noted and reported along with sample results. If significant interference problems occur, the method blank must be analyzed to determine if interference was introduced in the field or the laboratory. Appropriate action musts be taken to eliminate the problem before continuing with the analysis of routine samples.

143 *Volatile Organics (First Sample)*—The following procedures should be carried out on the first sample from each subcategory. An outline is given in Figure 4.

143.1 If grab samples are to be composited, follow instructions given in Section 132.2 and 132.4.3. Prepare six 5-ml aliquots for analysis.

143.2 Spike two aliquots with the pollutant standards at a level twice that determined in Section 132.5 and the surrogate standards using the procedures in Section 132.3 and 132.4. Spike four 5-ml aliquots with surrogate standards only as in 132.3 and 132.4.

143.3 Analyze one of the duplicates spiked with pollutants and surrogate standards and two of the four replicates spiked with surrogate standards only. The remaining spiked aliquots are analyzed only if a problem is encountered with the analysis of the first set of aliquots.

143.4 Analyze the spiked aliquots according to Method 624.

143.5 Calculate the precision and accuracy as directed for the semivolatile solvent extractables as directed in 141.5.

144 *Volatile Organics (Subsequent Samples)*—The following procedures should be applied to each subsequent sample of the volatile organics group. An outline is given in Figure 5.

144.1 If grab samples are to be composited, follow the instructions given in Section 132.2 and 132.4.3. Prepare two 5-ml aliquots for analysis.

144.2 Spike both aliquots with surrogate standards only to give a concentration of 100 μg/l.

144.3 Analyze one of the aliquots according to Method 624. The other aliquot is analyzed only if a problem is encountered.

144.4 Determine the percent recovery of the surrogate standards using Equation 10. If the percent recovery is outside the interval $P \pm 3\ S_p$ as determined in 131.5c, then the analytical system should be checked for problems. If problems exist, they must be resolved before continuing further sample analysis.

144.5 Analyze a field blank representing the same day that the samples were collected. Follow the guidelines given in 142.5.

References

1. Eichelberger, J. W., L. E. Harris, and W. L. Budde, "Reference Compound to Calibrate Ion Abundance Measurements in Gas Chromatography-Mass Spectrometry Systems," *Anal. Chem. 47, 995–1000 (1975).*

2. McNair, H. M., and E. J. Bonelli, "Basic Gas Chromatography," p. 52, Consolidated Printing, Berkely, CA 1969.

Figure 2.—*Summary of Initial Validation Analyses for Extractable Samples*

	Liters used	GS/MS runs
1. Collect a minimum of 3½ gallons of sample		
2. Withdraw a 1-liter aliquot. Store composite at 4° C. Separate into three groups of 4 aliquots each	1	
3. Determine the background concentration (X) of each pollutant of interest		1
4. Withdraw twelve 1-liter aliquots from the composite		
5. (a) Dose 2 of aliquots with surrogate standards only at 100 μg/l. Label as A1 and A2	2	
(b) Dose 2 aliquots with surrogate standard at 100 μg/l and pollutants of interest to give a concentration level of 2X. Label as D1 and D2	2	
(c) Analyze A1, A2, D1, and D2 using Method 625		4
6. Repeat 5a, b, and c. Label surrogate standards only as B1 and B2. Use 10X level for priority pollutants. Label as E1 and E2	4	4
7. Repeat 5a, b, and c. Label surrogate standards only as C1 and C2. Use 100X level for priority pollutants of interest. Label as F1 and F2	4	4
Total	13	13

Figure 3.—*Summary of Initial Validation Analyses for Purgeable Samples*

	5-ml syringes used	GC/MS runs
1. Collect a minimum of 600 ml of sample		
2. Fill 13 clean 40-ml vials or 3 clean 120-ml vials + 4 clean 40-ml vials with composite, cap, and store at 4° C.		
3. (a) Fill a 5-ml syringe from one 40-ml vial	1	
(b) Analyze and determine the background concentration (X) of each priority pollutant		1
4. (a) Fill two 5-ml syringes from one 40-ml vial	2	
(b) Dose with surrogate standards at 100 μg/l. Label as A1 and A2		
(c) Analyze A1 and A2 using Method 624		2
(d) Fill a 100 ml volumetric to mark using one 120-ml or three 40-ml vials		
(e) Dose with 20 μl of pollutants of interest to give a concentration of 2X		
(f) Fill two 5-ml syringes from the 100-ml volumetric	2	
(g) Dose each syringe with surrogate standards at a concentration of 100 μg/l. Label as D1 and D2		
(h) Analyze D1 and D2 using Method 624		2
5. Repeat 4. Label surrogates only as B1 and B2. Use 10X level for pollutant of interest. Label priority pollutants plus surrogate standards as E1 and E2	4	4
6. Repeat 4. Label surrogates only as C1 and C2. Use 100X level for pollutant of interest. Label priority pollutants as F1 and F2	4	4
Total	13	13

Figure 4.—*Summary of Ongoing Quality Assurance for First Sample*

Extractables	Liters used	GC/MS runs
1. Composite the Sample		
2. (a) Withdraw three 1-liter aliquots	3	
(b) Dose two aliquots with surrogate standards only at 100 μg/l		
(c) Dose one aliquot with surrogate standards and the pollutants of interest to give a concentration of 2X, Section 131.5		
(d) Analyze using Method 625		3
Total	3	3

Purgeables	5 ml syringes used	GC/MS runs
1. Composite the Sample		
2. (a) Fill 4 clean 4-ml vials or 1 clean 120-ml vial + 1 clean 40-ml vial with composite. Store at 4° C		
3. (a) Fill four 5-ml syringes from one 40-ml vial	4	
(b) Dose each with surrogate standards at 100 µg/l		
(c) Fill a 100 ml volumetric to mark using the 120-ml vial or three 40-ml vials		
(d) Dose with 20 µl of pollutants of interest to give a concentration of 2X, Section 132.5		
(e) Fill two 5-ml syringes from the 100 ml volumetric	2	
(f) Analyze two 5-ml syringes containing surrogate standards only and one 5-ml syringes containing surrogate standards and pollutants of interest using method 624		3
Total	6	3

Figure 5.—*Summary of Ongoing Quality Assurance for Subsequent Samples*

Extractables	Liters used	GC/MS runs
1. Composite the Sample		
2. (a) Withdraw a 1-liter aliquot	1	
(b) Dose with surrogate standards only at 100 µg/l		
(c) Analyze using Method 625		1
Subtotal	1	1
Total (x29 days)	29	*29

Purgeables	5 ml Syringes used	GC/MS runs
1. Composite the Sample		
2. (a) Fill two 5-ml syringes with composite	2	
(b) Dose with surrogate standards at 100 µg/l		
(c) Analyze one 5-ml sample		1
Subtotal	2	1
Total (x29 days)	58	*29

*Assuming that field blank shows no pollutant of interest. If field blank were to be analyzed by GC/MS each subsequent day, the total would be 58.

Appendix A.—*Numerical Example of Validation Phase Results*

The following is an example of the calculations and results of a validation study.

Sample	Surrogate standard (µg/l) Added	Found	Range (Eq. 3)	Mean (Eq. 4)	Percent recovery (Eq. 10)
A1	95	93			98
A2	95	97	4	95	102
B1	95	96			101
B2	95	98	2	97	103
C1	95	90			95
C2	95	94	4	92	99
D1	95	99			104
D2	95	95	4	97	100
E1	95	89			94
E2	95	91	2	90	96
F1	95	94			99
F2	95	96	2	95	101

Critical Difference (Eq. 5) $R_c = 9.8$ at 95 µg/l.

Mean % Recovery (Eq. 8) P=99%.

Standard Dev. of P (Eq. 9) $S_p = 3.1$; $3S_p = 9.4$.

Acceptable Range of Recovery 90 to 100%.

During the same validation study, the following data were obtained for one of the priority pollutants studied.

Sample	Pollutant of interest Background	Added	Found	Range (Eq. 3)	Percent mean (Eq. 4)	Mean recovery (Eq. 7)	Recovery (Eq. 8)	Std. dev. (Eq. 9)
X	X	0	12					
A1	X	0	9					
A2	X	0	11	2	10			
B1	X	0	11					
B2	X	0	14	3	12.5			
C1	X	0	13					
C2	X	0	14	1	13.5			
D1	12	12	17			42		
D2	12	12	18	1	17.5	50	46	5.9
E1	12	110	102			82		
E2	12	110	107	5	106	86	84	3.3
F1	12	1200	1160			96		
F2	12	1200	1140	20	1150	94	95	1.2

Critical Difference (Eq. 5) for priority pollutants:

$R_c = 6.7$ at 12 µg/l
$R_c = 3.3$ at 17.5 µg/l
$R_c = 16.4$ at 106 µg/l
$R_c = 65$ at 1150 µg/l

Mean Value of X (Eq. 6):

X=12.0 µg/l (background concentration)

Is there a significant difference in the recoveries between the 100X and 10X levels? Apply a two tailed student's t-test with a confidence level of 95%.

$s_d = \sqrt{S^2_{100} + S_{10}{}^2} = \sqrt{(1.2)^2 + (3.3)^2} = 3.51$ (2 degrees of freedom)

$\bar{d} = X_{100} - X_{10} = 95 - 84 = TT$

$t_{exp} = d/S_d = 11/3.5T = 3.70$

Since 3.7 is less than 4.3 (t-value, 0.95, 2 degrees of freedom) there is no significant difference between the 100X and 10X levels. Apply equations 8 and 9 to the four recoveries for these two levels. The mean recovery (eq. 8) is 89% with a standard deviation (eq. 9) of 6.5 (3 degrees of freedom). Test the 2X level against this mean recovery and standard deviation.

$S_d = \sqrt{(6.5)^2 + (5.9)^2} = 8.78$ (4 degrees of freedom)

$\bar{d} = 89 - 46 = 43$

$t_{exp} = 43/8.78 = 4.90$

Since 4.90 is greater than 2.78 (t-value, 0.95, 4 degrees of freedom) there is a significant difference between the 2X and the 100X, 10X levels.

	2X	100X, 10X
Mean % Recovery (Eq. 8)	46	89
Standard deviation (Eq. 9)	5.9	6.5
3 S_p	18	20
Acceptable Range (%)	28 to 64	69 to 109

For the first sample of the subcategory the following data were obtained.

Sample	Surrogate std. (µg/l) Added	Found	Recovery (Eq. 13)	Priority pollutant (µg/l) Added	Found	Percent recovery (Eq. 14)
a	100	93	93	0	13	
b	100	90	90	0	15	
c	100	105	105	12	20	50

For the Surrogate Standards, the range between a and b (Eq. 11) is 3, and the mean concentration (Eq. 12) is 91.5 µg/l. Since the critical difference is 9.8 at 95 µg/l, this range is acceptable. The recoveries of the Surrogate Standards in a, b, and c (Eq. 3) are all in the acceptable range of 90 to 109%. Therefore, the accuracy is acceptable.

For the pollutants of interest, the range between a and b is acceptable (less than 6.7), and the recovery is acceptable (acceptable range of 28 to 64%).

The following is an example of the results for samples 2 to 30 of a 30 sample study:

Pollutant (µg/l)		Surrogate standard (µg/l)			
Sample	Found	Added	Found	Percent recovery	
2	14	100	90	90	
3	15	100	99	99	
4	20	00	100	100	
5	11	100	107	107	
6	17	100	100	100	Update recovery for SS.*
7	18	100	100	100	
8	10	100	75	75	Not acceptable, disregard results.
9	14	100	92	92	
10	13	100	93	93	
11	12	100	94	94	Update recovery for SS.**
12	20	100	95	95	
30	15	100	95	95	Give final statistic on recovery of SS.

*Includes 20 results, 12 validation, 3 first day and days 2 through 6. Mean = 99. Std. Dev. = 4.6. Acceptable range 85–113%.
**Includes 25 results; day 8 result not included. Mean = 98. Std. Dev. = 4.6. Acceptable range 84–112%.

Appendix IV.—Inductively Coupled Plasma Optical Emission Spectrometric Method (ICP) for Trace Element Analysis of Water and Wastes

Inductively Coupled Plasma (ICP) Optical Emission Spectrometric Method for Trace Element Analysis of Water and Wastes

Interim

U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268

October 1979.

Foreword

This method has been prepared by the staff of the Environmental Monitoring and Support Laboratory—Cincinnati, with the cooperation of the EPA–ICP Users Group. Their cooperation and support is gratefully acknowledged.

This method represents the current state-of-the-art, but as time progresses, improvements are anticipated. Users are encouraged to identify problems and assist in updating the method by contacting the Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268.

Inductively Coupled Plasma (ICP) Optical Emission Spectrometric Method for Trace Element Analysis of Water and Wastes

1. Scope and Application.

1.1 This method may be used for the determination of dissolved, suspended, or total elements in surface water, drinking water, and domestic and industrial wastewaters.

1.2 Dissolved elements are determined in filtered and acidified samples. Appropriate steps must be taken to ensure that potential interference are taken into account when dissolved solids exceed 1500 mg/l. (See 4.2)

1.3 Total elements are determined after appropriate digestion procedures are performed. Since digestion techniques increase the dissolved solids content of the samples, appropriate steps *must* be taken to correct for potential interference effects.

1.4 Table 1 lists elements for which this method applies along with recommended wavelengths and typical estimated instrumental detection limits. Actual working detection limits are sample dependent and as the sample matrix varies, these concentrations may also vary. In time, other elements may be added as more information becomes available.

1.5 Because of the differences between various makes and models of satisfactory instruments, no detailed instrumental operating instructions can be provided. Instead, the analyst is referred to the instructions provided by the manufacturer of the particular instrument.

Table 1—*Recommended Wavelengths* [1] and Estimated Instrumental Detection Limits

Element	Wavelength, nm	Estimated detection limit, µg/l [2]
Aluminum	308.2	45
Arsenic	193.7	53
Barium	455.5	2
Beryllium	313.0	0.3
Boron	249.8	5
Cadmium	226.5	4
Calcium	317.9	10
Chromium	267.7	7
Cobalt	228.6	7
Copper	324.7	6
Iron	259.9	7
Lead	220.3	42
Lithium	670.7	4
Magnesium	279.1	30
Manganese	257.6	2
Molybdenum	202.0	8
Nickel	231.6	15
Potassium	766.4	see [3]
Selenium	196.0	75
Silica (SiO_2)	288.1	27
Silver	328.0	7
Sodium	589.0	29
Strontium	407.7	0.5
Vanadium	292.4	8
Zinc	213.8	2

[1] The wavelengths listed are recommended because of their sensitivity and overall acceptance. Other wavelengths may be substituted if they can proved the needed sensitivity and are treated with the same corrective techniques for spectral interference. (See 4.1.1).

[2] The estimated instrumental detection limits as shown are taken from "Inductively Coupled Plasma-Optical Emission Spectroscopy Prominent Lines," EPA–600/4–79–017. Detection limits are sample dependent and as the sample matrix varies, these concentration values may also vary.

[3] Highly dependent on operating conditions and plasma position.

2. Summary of Method.

2.1 The method describes a technique for the simultaneous of sequential multielement determination of trace elements in solution. The basis of the method is the measurement of atomic emission by an optical spectroscopic technique. Samples are nebulized and the aerosol that is produced is transported to the plasma torch where excitation occurs. Characteristic atomic-line emission spectra are produced by a radio-frequency inductively coupled plasma (ICP). The spectra are dispersed by a grating spectrometer and the intensities of the lines are monitored by photomultiplier tubes. The photocurrents from the photomultiplier tubes are processed and controlled by a computer system. A background correction technique is required to compensate for variable background contribution to the determination of trace elements. Background must be measured adjacent to analyte lines on samples during analysis. Additional interferences named in 4.1 should also be recognized and appropriate corrections made.

3. Definitions.

3.1 *Dissolved*—Those elements which will pass through a 0.45 µm membrane filter.

3.2 *Suspended*—Those elements which are retained by a 0.45 µm membrane filter.

3.3 *Total*—The concentration determined on an unfiltered sample following vigorous digestion (Section 8.3), or the sum of the dissolved plus suspended concentrations (Section 8.1 plus 8.2).

3.4 *Total recoverable*—The concentration determined on an

unfiltered sample following treatment with hot, dilute mineral acid (Section 8.4).

3.5 *Instrumental detection limit*—The concentration equivalent to a signal, due to the analyte, which is equal to three times the standard deviation of a series of ten replicate measurements of a reagent blank signal at the same wavelength.

3.6 *Sensitivity*—The slope of the analytical curve, i.e. funtional relationship between emission intensity and concentration.

3.7 *Instrument check standard*—A multielement standard of known concentrations prepared by the analyst. Should be included in the analytical scheme with a frequency of 10%. (See 6.6.1.)

3.8 *Reference standard*—A solution obtained from an outside source having known, verified values. Must be used initially to verify the calibration standards and analyzed thereafter as a blind sample on a weekly frequency. (See 6.6.2.)

3.9 *Calibration standards*—A series of known standard solutions used by the analyst for calibration of the instrument (i.e., preparation of the analytical curve). (See 6.4.)

3.10 *Linear dynamic range*—The concentration range over which the analytical curve remains linear.

3.11 *Reagent blank*—A volume of deionized, distilled water containing the same acid matrix as the calibration standards carried through the entire analytical scheme. (See 6.5.2.)

3.12 *Calibration blank*—A volume of deionized, distilled water acidified with HNO_3 and HCl. (See 6.5.1.)

3.13 *Method of standard addition*—The standard addition technique involves the use of the unknown and the unknown plus a known amount of standard. (See 9.6.1.)

4. Interferences.

4.1 Several types of interference effects may contribute to inaccuracies in the determination of trace elements. They can be summarized as follows:

4.1.1 *Spectral interferences* can be categorized as (1) overlap of a spectral line from another element; (2) unresolved overlap of molecular band spectra; (3) background contribution from continuous or recombination phenomena; and (4) background contribution from stray light from the line emission of high concentration elements. The first of these effects can be compensated by utilizing a computer correction of the raw data, requiring measurement of the interfering element. The second effect may require selection of an alternate wavelength. The third and fourth effects can usually be compensated by a background correction adjacent to the analyte line.

4.1.2 *Physical interferences* are generally considered to be effects associated with the sample nebulization and transport processes. Such properties as change in viscosity and surface tension can cause significant inaccuracies especially in samples which may contain high dissolved solids and/or acid concentrations. (See Note 1.) If these types of interferences are operative, they must be reduced by dilution of the sample and/or utilization of standard addition techniques.

Note 1.—The use of a peristaltic pump may lessen these interferences.

4.1.3 *Chemical interferences* are characterized by molecular compound formation, ionization effects and solute vaporization effects. Normally these effects are not pronounced with the ICP technique, however, if observed they can be minimized by careful selection of operating conditions (that is, incident power, observation position, and so forth), by buffering of the sample, by matrix matching, and by standard addition procedures. These types of interferences can be highly dependent on matrix type and the specific analyte element.

4.2 It is recommended that whenever a new or unusual sample matrix is encountered, a series of tests be performed prior to reporting concentration data for analyte elements. These tests, as outlined in 4.2.1 through 4.2.4, will ensure the analyst that neither positive nor negative interference effects are operative on any of the analyte elements thereby distorting the accuracy of the reported values.

4.2.1 *Serial dilution*—If the analyte concentration is sufficiently high (minimally a factor of 10 above the instrumental detection limit after dilution), an analysis of a dilution should agree within 5 percent of the original determination (or within some acceptable control limit (13.3) that has been established for that matrix). If not, a chemical or physical interference effect should be suspected.

4.2.2 *Spike addition*—The recovery of a spike addition added at a minimum level of 10X the instrumental detection limit (maximum 100X) to the original determination should be recovered to within 90 to 110 percent or within the established control limit for that matrix. If not, a matrix effect should be suspected. The use of a standard addition analysis procedure can usually compensate for this effect.

Caution.—The standard addition technique does not detect coincident spectral overlap. If suspected, use of an alternate wavelength or comparison with an alternate method is recommended (See 4.2.3).

4.2.3 *Comparison with alternate method of analysis*—When investigating a new sample matrix, comparison tests may be performed with other analytical techniques such as atomic absorption spectrometry, or other approved methodology.

4.2.4 *Wavelength scanning of analyte line region*—If the appropriate equipment is available, wavelength scanning can be performed to detect potential spectral interferences.

5. Apparatus.

5.1 Inductively Coupled Plasma (ICP) Optical Emission Spectrometer.

5.1.1 Computer controlled atomic emission spectrometer with background correction.

5.1.2 Radiofrequency generator.

5.1.3 Argon gas supply, welding grade or better.

5.2 Operating conditions—Because of the differences between various makes and models of satisfactory instruments, no detailed operating instructions can be provided. Instead, the analyst should follow the instructions provided by the manufacturer of the particular instrument. Sensitivity, instrumental detection limit, precision, linear dynamic range, and interference effects must be investigated and established for each individual analyte line on that particular instrument.

6. Reagents and standards.

6.1 Acids used in the preparation of standards and for sample processing must be ultra-high purity grade or equivalent. Redistilled acids are acceptable.

6.1.1 *Acetic acid,* conc. (sp gr 1.06).

6.1.2 *Aqua regia:* Mix cautiously 3 parts conc. HCl (sp gr 1.19) and 1 part conc. HNO_3 (sp gr 1.41) just before use.

6.1.3 *Hydrochloric acid,* conc. (sp gr 1.19).

6.1.4 *Hydrochloric acid,* (1+1): Add 500 ml conc. HCl (sp gr 1.19) to 400 ml deionized, distilled water and dilute to 1 liter.

6.1.5 *Nitric acid,* conc. (sp gr 1.41).

6.1.6 *Nitric acid,* (1+1): Add 500 ml conc. HNO_3 (sp gr 1.41) to 400 ml deionized, distilled water and dilute to 1 liter.

6.2 *Deionized, distilled water:* Prepare by passing distilled water through a mixed bed of cation and anion exchange resins. Use deionized, distilled water for the preparation of all reagents, calibration standards and as dilution water.

6.3 *Standard stock solutions* may be purchased or prepared from ultra high purity grade chemicals or metals

(Caution: See Note 2). All salts must be dried for 1 h at 105° C unless otherwise specified.

Note 2.—Many metal salts are extremely toxic and may be fatal if swallowed. Wash hands thoroughly after handling.

Typical stock solution preparation procedures follow:

6.3.1 *Aluminum solution, stock,* 1 ml=100 μg Al: Dissolve 0.100 g of aluminum metal in an acid mixture of 4 ml of (1+1) HCl and 1 ml of conc. HNO_3 in a beaker. Warm gently to effect solution. When solution is complete, transfer quantitatively to a liter flask, add an additional 10 ml of (1+1) HCl and dilute to 1,000 ml with deionized, distilled water.

6.3.2 *Arsenic solution, stock,* 1 ml=100 μg As: Dissolve 0.1320 g of As_2O_3 in 100 ml of deionized, distilled water containing 0.4 g NaOH. Acidify the solution with 2 ml conc. NHO_3 and dilute to 1,000 ml with deionized, distilled water.

6.3.3 *Barium solution, stock,* 1 ml=100 μg Ba: Dissolve 0.1516 g $BaCl_2$ in 10 ml deionized, distilled water with 1 ml (1+1) HCl. Add 10.0 ml (1+1) HCl and dilute to 1,000 ml with deionized, distilled water.

6.3.4 *Beryllium solution, stock,* 1 ml=100 μg Be: Dissolve 1.127 g $Be_4O(C_2H_3O_2)_6$, beryllium acetate basic, in a minimum amount of conc. acetic acid. Add 10.0 ml conc. HNO_3 and dilute to 1,000 ml with deionized, distilled water.

6.3.5 *Boron solution, stock,* 1 ml=100 μg B: Dissolve 0.5716 g anhydrous H_3BO_3 in deionized, distilled water and dilute to 1,000 ml. Because H_3BO_3 loses weight on drying at 105° C, use a reagent meeting ACS specifications and keep the bottle tightly stoppered to prevent the entrance of atmospheric moisture.

6.3.6 *Cadmium solution, stock,* 1 ml=100 μg Cd: Dissolve 0.1142 g CdO in a minimum amount of (1+1) HNO_3. Heat to increase rate of dissolution. Add 10.0 ml conc. HNO_3 and dilute to 1,000 ml with deionized, distilled water.

6.3.7 *Calcium solution, stock,* 1 ml=100 μg Ca: Suspend 0.2498 g $CaCO_3$ dried at 180° C for 1 h before weighing in deionized, distilled water and dissolve cautiously with a minimum amount of (1+1) HNO_3. Add 10.0 ml conc. HNO_3 and dilute to 1,000 ml with deionized, distilled water.

6.3.8 *Chromium solution, stock,* 1 ml=100 μg Cr: Dissolve 0.1923 g of CrO_3 in deionized, distilled water. When solution is complete, acidify with 10 ml conc. HNO_3 and dilute to 1,000 ml with deionized, distilled water.

6.3.9 *Cobalt solution, stock,* 1 ml=100 μg Co: Dissolve 0.1407 g Co_2O_3 in a minimum amount of (1+1) HNO_3. Add 10.0 ml conc. HNO_3 and dilute to 1,000 ml with deionized, distilled water.

6.3.10 *Copper solution, stock,* 1 ml=100 μg Cu: Dissolve 0.1252 g CuO in a minimum amount of (1+1) HNO_3. Add 10.0 ml conc. HNO_3 and dilute to 1,000 ml with deionized, distilled water.

6.3.11 *Iron solution, stock,* 1 ml=100 μg Fe: Dissolve 0.1430 g Fe_2O_3 in 10 ml deionized, distilled water with 1 ml (1+1) HCl. Add 10.0 ml conc. HNO_3 and dilute to 1,000 ml with deionized, distilled water.

6.3.12 *Lead solution, stock,* 1 ml=100 μg Pb: Dissolve 0.1599 g $Pb(NO_3)_2$ in a minimum amount of (1+1) HNO_3. Add 10.0 ml conc. HNO_3 and dilute to 1,000 ml with deionized, distilled water.

6.3.13 *Lithium solution, stock,* 1 ml=100 μg Li: Dissolve 0.5323 g Li_2CO_3, slowly in a minimum amount of (1+1) HNO_3. Add 10.0 ml conc. HNO_3 and dilute to 1,000 ml with deionized, distilled water.

6.3.14 *Magnesium solution, stock,* 1 ml=100 μg Mg: Dissolve 0.1658 g MgO in a minimum amount of (1+1) HNO_3. Add 10.0 ml conc. HNO_3 and dilute to 1,000 ml with deionized, distilled water.

6.3.15 *Manganese solution, stock,* 1 ml=100 μg Mn: Dissolve 0.5225 g $Mn(NO_3)_2 \leqslant 6H_2O$ (do not dry) in deionized, distilled water. Add 10.0 ml conc. HNO_3 and dilute to 1,000 ml with deionized, distilled water.

6.3.16 *Molybdenum solution, stock,* 1 ml = 100 μg Mo: Dissolve 0.2043 g $(NH_4)_2MoO_4$ in deionized, distilled water and dilute to 1,000 ml.

6.3.17 *Nickel solution, stock,* 1 ml = 100 μg Ni: Dissolve 0.4953 g $Ni(NO_3)_2 \leqslant 6H_2O$ in deionized, distilled water. Add 10 ml of conc. HNO_3 and dilute to 1,000 ml with deionized, distilled water.

6.3.18 *Potassium solution, stock,* 1 ml = 100 μg K: Dissolve 0.1907 g KCl, dried at 110° C, in deionized, distilled water dilute to 1,000 ml.

6.3.19 *Selenium solution, stock,* 1 ml = 100 μg Se: Dissolve 0.1727 g H_2SeO_3 in deionized, distilled water and dilute to 1,000 ml.

6.3.20 *Silica solution, stock,* 1 ml = 100 μg SiO_2: *Do not dry.* Dissolve 0.4730 g $Na_2SiO_3 \leqslant 9H_2O$ in deionized, distilled water. Add 10.0 ml conc. HNO_3 and dilute to 1,000 ml with deionized, distilled water.

6.3.21 *Silver solution, stock,* 1 ml = 1 μg Ag: Dissolve 0.1575 g $AgNO_3$ in 100 ml of deionized, distilled water and 10 ml conc. HNO_3. Dilute to 1,000 ml with deionized, distilled water.

6.3.22 *Sodium solution, stock,* 1 ml = 100 μg Na: Dissolve 0.2542 g NaCl in deionized, distilled water. Add 10.0 ml conc. HNO_3 and dilute to 1,000 ml with deionized, distilled water.

6.3.23 *Strontium solution, stock,* 1 ml = 100 μg Sr: Dissolve 0.2416 g $Sr(NO_3)_2$ in deionized, distilled water. Add 10.0 ml conc. HNO_3 and dilute to 1,000 ml with deionized, distilled water.

6.3.24 *Vanadium solution, stock,* 1 ml = 100 μg V: Dissolve 0.2297 NH_4VO_3 in a minimum amount of conc. HNO_3. Heat to increase rate of dissolution. Add 10.0 ml conc. HNO_3 and dilute to 1,000 ml with deionized, distilled water.

6.3.25 *Zinc solution, stock,* 1 ml = 100 μg Zn: Dissolve 0.1245 g ZnO in a minimum amount of dilute HNO_3. Add 10.0 ml conc. HNO_3 and dilute to 1,000 ml with deionized, distilled water.

6.4 *Mixed calibration standard solutions*—Prepared mixed calibration standard solutions by combining appropriate volumes of the stock solutions in volumetric flasks. (See 6.4.1 thru 6.4.6) Add 2 ml of (1+1) HNO_3 and 2 ml of (1+1) HCl and dilute to 100 ml with deionized, distilled water. Prior to preparing the mixed standards, each stock solution should be analyzed separately to determine possible spectral interference. Care should be taken when preparing the mixed standards that the elements are compatible and stable. Transfer the mixed standard solutions to a TFE fluorocarbon bottle for storage. Fresh mixed standards should be prepared weekly. Some typical combinations follow:

6.4.1 *Mixed standard solution I*—Iron, manganese, cadmium, lead, and zinc.

6.4.2 *Mixed standard solution II*—Beryllium, copper, strontium, vanadium, and cobalt.

6.4.3 *Mixed standard solution III*—Molybdenum, silica, lithium, and barium.

6.4.4 *Mixed standard solution IV*—Calcium, magnesium, sodium, and potassium.

6.4.5 *Mixed standard solution V*—Aluminum, arsenic, boron, chromium, nickel, and selenium.

6.4.6 *Mixed standard solution Vi*—Silver.

6.5 Two types of blanks are required for the analysis. The calibration blank (3.12) is used in establishing the analytical curve while the reagent blank (3.11) is used to correct for possible contamination resulting from varying amounts of the acids used in the sample processing.

6.5.1 *The calibration blank* is prepared by diluting 2 ml of (1+1) HNO_3 and 2 ml of (1+1) HCl to 100 ml with deionized, distilled water. Prepare a sufficient quantity to be used to flush the system between standards and samples.

6.5.2 *The reagent blank* must contain all the reagents and in the same volumes as used in the processing of the samples. The reagent blank must be carried through the complete procedure and contain the same acid concentration in the final solution as the sample solution used for analysis.

6.6 In addition to the calibration standards, an instrument check standard (3.7) and a reference standard (3.8) are also required for the analyses.

6.6.1 *The instrument check standard* is prepared by the analyst by combining compatible elements at a concentration equivalent to the midpoint of their respective calibration curves. This standard should be included in the analytical scheme with a frequency of 10%.

6.6.2 *The reference standard* should be prepared according to the instructions provided by the supplier. Following initial verification of the calibration standards, analyze weekly.

7. Sample handling and preservation.

7.1 For the determination of trace elements, contamination and loss are of prime concern. Dust in the laboratory environment, impurities in reagents and impurities on laboratory apparatus which the sample contacts are all sources of potential contamination. Sample containers can introduce either positive or negative errors in the measurement of trace elements by (a) contributing contaminants through leaching or surface desorption and (b) by depleting concentrations through adsorption. Thus the collection and treatment of the sample prior to analysis requires particular attention. Laboratory glassware including the sample bottle (whether linear polyethylene, polyproplyene or TFE-fluorocarbon) should be thoroughly washed with detergent and tap water; rinsed with (1+1) nitric acid, tap water, (1+1) hydrochloric acid, tap and finally deionized, distilled water in that order. (See Notes 3 and 4).

Note 3.—*Chromic acid may be useful to remove organic deposits from glassware; however, the analyst should be cautioned that the glassware must be thoroughly rinsed with water to remove the last traces of chromium. This is especially important if chromium is to be included in the analytical scheme. A commercial product, NOCHROMIX, available from Godax Laboratories, 6 Varick St., New York, NY 10013, may be used in place of chromic acid. Chromic acid should not be used with plastic bottles.*

Note 4.—If it can be documented through an active analytical quality control program using spiked samples and reagent blanks, that certain steps in the cleaning procedure are not required for routine samples, those steps may be eliminated from the procedure.

7.2 Before collection of the sample a decision must be made as to the type of data desired, that is dissolved, suspended or total, so that the appropriate preservation and pretreatment steps may be accomplished. Filtration, acid preservation, etc., are to be performed at the time the sample is collected or as soon as possible thereafter.

7.2.1 For the determination of dissolved elements the sample must be filtered through a 0.45-μm membrane filter as soon as practical after collection. (Glass or plastic filtering apparatus is recommended to avoid possible contamination.) Use the first 50–100 ml to rinse the filter flask. Discard this portion and collect the required volume of filtrate. Acidify the filtrate with (1+1) HNO_3 to a pH of 2 or less. Normally, 3 ml of (1+1) acid per liter should be sufficient to preserve the sample.

7.2.2 For the determination of suspended elements a measured volume of unpreserved sample must be filtered through a 0.45-μm membrane filter as soon as practical after collection. The filter plus suspended material should be transferred to a suitable container for storage and/or shipment. No preservative is required.

7.2.3 For the determinaion of total or total recoverable elements, the sample is acidified with 5 ml conc. HNO_3 per liter (pH 2) as soon as possible, preferably at the time of collection. The sample is not filtered before processing.

8. Sample Preparation.

8.1 For the determinations of dissolved elements, the filtered, preserved sample may often be analyzed as received. The acid matrix and concentration of the samples and calibration standards must be the same. If a precipitate formed upon acidification of the sample or during transit or storage, it must be redissolved before the analysis by adding additional acid and/or by heat as described in 8.3.

8.2 For the determinaton of suspended elements, transfer the membrane filter containing the insoluble material to a 250-ml Griffin beaker and add 3 ml conc. HNO_3. Cover the beaker with a watch glass and heat gently. The warm acid will soon dissolve the membrane. Increase the temperature of the hot plate and digest the material. When the acid has nearly evaporated, cool the beaker and watch glass and add another 3 ml of conc. HNO_3. Cover and continue heating until the digestion is complete, generally indicated by a light colored digestate. Evaporate to near dryness (DO NOT BAKE), cool, add 2 ml of (1+1) HNO_3 and 2 ml HCl (1+1) per 100 ml dilution and warm the beaker gently to dissolve any soluble material. Wash down the watch glass and beaker walls with deionized distilled water and filter the sample to remove insoluble material that could clog the nebulizer. Adjust the volume based on the expected concentrations of elements present. This volume will vary depending on the elements to be determined. The sample is now ready for analysis. Concentrations so determined shall be reported as "suspended."

8.3 For the determination of total elements, choose a measured, volume of the well mixed acid preserved sample appropriate for the expected level of elements and transfer to a Griffin beaker. (See Note 5.) Add 3 ml of conc. HNO_3. Place the beaker on a hot plate and evaporate to near dryness cautiously, making certain that the sample does not boil. (DO NOT BAKE.) Cool the beaker and add another 3 ml portion of conc. HNO_3. Cover the beaker with a watch glass and return to the hot plate. Increase the temperature of the hot plate so that a gentle reflux action occurs. Continue heating, adding additional acid as necessary, until the digestion is complete (generally indicated when the digestate is light in color or does not change in appearance with continued refluxing.) Again, evaporate to near dryness and cool the beaker. Add 2 ml of 1+1 HNO_3 and 2 ml of 1+1 HCl per 100 ml of final solution and warm the beaker to dissolve any precipitate or residue resulting from evaporation. Wash down the beaker walls and watch glass with deionized distilled water and filter the sample to remove insoluble material that could clog the nebulizer. Adjust the volume based on the expected concentrations of elements present. The sample is now ready for analysis. Concentrations so determined shall be reported as "total."

Note 5.—If low determinations of boron are critical, quartz glassware should be used.

8.4 For the determination of total recoverable elements, choose a measured volume of a well mixed, acid preserved sample appropriate for the expected level of elements and transfer to a Griffin beaker. (See Note 5.) Add 1 ml of HNO_3 (1+1) and 2 ml of HCl (1+1) to the sample and heat on a steam bath or hot plate until the volume has been reduced to 15–20 ml making certain the sample does not boil. After this treatment the sample is filtered to remove insoluble material that could clog the nebulizer, and the volume adjusted to 100 ml. The sample is then ready for analysis. Concentrations so determined shall be reported as "total."

9. Procedure.

9.1 Set up instrument with proper operating parameters established in Section 5.2. Instrument must be allowed to stabilize for at least 30 min prior to operations.

9.2 Initiate appropriaate operating configuration of computer.

9.3 Profile and calibrate instrument according to instrument manufacturer's recommended procedures, using the typical mixed calibration standard solutions described in Section 6.4. Flush the system with the calibration blank (6.5.1) between each standard. (See note 6.) (The use of the average intensity of multiple exposures for both standardization and sample analysis has been found to reduce random error.)

NOTE 6.—For boron concentrations greater than 500 μg/l extended flush times of 1 to 2 minutes may be required.

9.4 Before beginning the sample run, reanalyze the highest mixed calibration standard as if it were a sample. Concentration values obtained should not deviate from the actual values by more than 2 percent (or the established control limits). If they do, follow the recommendations of the instrument manufacturer to correct for this condition.

9.5 Begin the sample run flushing the system with the calibration blank (6.5.1) between each sample. (See Note 6.) Analyze an instrument check standard (6.6.1) each 10 samples.

9.6 If it has been found that methods of standard addition are required, the following procedure is recommended.

9.6.1 The standard addition technique (13.2) involves preparing new standards in the sample matrix by adding known amounts of standard to one or more aliquots of the processed sample solution. This technique compensates for a sample constituent that enhances or depresses the analyte signal thus producing a different slope from that of the calibration standards. It will not correct for additive intererence which causes a baseline shift. The simplest version of this technique is the single-addition method. The procedure is as follows. Two identical aliquots of the sample solution, each of volume V_x, are taken. To the first (labeled A) is added a small volume V_s of a standared analyte solution of concentration c_s.. To the second (labeled B) is added the same volume V_s of the solvent. The analytical signals of A and B are measured and corrected for nonanalyte signals. The unknown sample concentration c_x is calculated:

$$C_x = \frac{S_B V_s c_s}{(S_A - S_B) V_x}$$

where S_A and S_B are the analytical signals (corrected for the blank) of solutions A and B, respectively. V_s and c_s should be chosen so that S_A is roughly twice S_B on the average. It is best if V_s is made much less than V_x, and thus c_s is much greater than c_x, to avoid excess dilution of the sample matrix. If a separation or concentration step is used, the additions are best made first and carried through the entire procedure. For the results from this technique to be valid, the following limitations must be taken into consideration:

1. The analytical curve must be linear.
2. The chemical form of the analyte added must respond the same as the analyte in the sample.
3. The interference effect must be constant over the working range of concern.
4. The signal must be corrected for any additive interference.

10. Calculation.

10.1 Reagent blanks (6.5.2) should be subtracted from all samples. This is particularly important for digested samples requiring large quantities of acids to complete the digestion.

10.2 If dilutions were performed, the appropriate factor must be applied to sample values.

10.3 Results should be reported to the nearest μg/l, up to three significant figures, except calcium, magnesium, sodium, and potassium which are reported to the nearest 0.1 mg/l.

11. Quality Control (Instrumental).

11.1 Check the instrument standardization by analyzing appropriate quality control check standards as follow:

11.1.1 Analyze the instrument check standard (6.6.1) made up of all the elements of interest at a frequency of 10%. This check standard is used to determine instrument drift. If agreement is not within ± 2% of the expected values or within the established control limits, the analysis is out of control.

11.1.2 For the purpose of verifying interelement and/or background correction factors, analyze a second check standard, prepared in the following manner. Select a representative sample which contains minimal concentrations of the elements of interest. Spike this sample with the analytes of interest at or near 100 μg/l. (For effluent samples of expected high concentrations, spike at an appropriate level.) Values should fall within the established control levels of 1.5 times the standard deviation of the mean value of the check standard. If not, repeat the standardization.

11.1.3 A reference standard (6.6.2) from an outside source, but having known concentration values, should be analyzed as a blind sample on a weekly frequency. Values should be within the established quality control limits. If not, prepare new stock standards.

12. *Precision and Accuracy.*

12.1 In an EPA round phase 1 study, seven laboratories applied the ICP technique to acid-distilled water matrices that had been dosed with various metal concentrates. Table II lists the true value, the mean reported value and the mean % relative standard deviation.

Table II.—*ICP Precision and Accuracy Data*

Element	Sample No. 1			Sample No. 2			Sample No. 3		
	True value μg/l	Mean reported value μg/l	Mean percent RSD	True value μg/l	Mean reported value μg/l	Mean percent RSD	True value μg/l	Mean reported value μg/l	Mean percent RSD
Be	750	733	0.2	20	20	9.8	180	176	5.2
Mn	350	345	2.7	15	15	6.7	100	99	3.3
V	750	749	1.8	70	69	2.9	170	169	1.1
As	200	208	7.5	22	19	23	60	63	17
Cr	150	149	3.8	10	10	18	50	50	3.3
Cu	250	235	5.1	11	11	40	70	67	7.9
Fe	600	594	3.0	20	19	15	180	178	6.0
Al	700	696	5.6	60	62	33	160	161	13
Cd	50	48	12	2.5	2.9	16	14	13	16
Co	500	512	10	20	20	4.1	120	108	21
Ni	250	245	5.8	30	28	11	60	55	14
Pb	250	236	16	24	30	32	80	80	14
Zn	200	201	5.6	16	19	45	80	82	9.4
Se	40	32	21.9	6	8.5	42	10	8.5	8.3

Not all elements were analyzed by all laboratories.

13. References.

13.1 Winge, R. K., V. J. Peterson, and V. A. Fassel, "Inductively Coupled Plasma-Optical Emission Spectroscopy: Prominent Lines, EPA-600/4-79-017.

13.2 Winefordner, J. D., "Trace Analysis: Spectroscopic Methods for Elements," *Chemical Analysis*, Vol. *46*, pp. 41-42.

13.3 Handbook for Analytical Quality Control in Water and Wastewater Laboratories, EPA-600/4-79-019.

13.4 Garbarino, J. R. and Taylor, H. E., "An Inductively-Coupled Plasma Optical Emission Spectrometric Method for Routine Water Quality Testing," Applied Spectroscopy *33*, No. 3 (1979).

13.5 "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020.

Appendix V—Biological Oxygen Demand, Carbonaceous Method 405.1 (5 Days, 20° C)

Biochemical Oxygen Demand—Method 405.1 (5 Days, 20° C)

STORET No. 00310, Carbonaceous 80082

1. Scope and Application.

1.1 The biochemical oxygen demand (BOD) test is used for determining the relative oxygen requirements of municipal and industrial wastewaters. Application of the test to organic waste discharges allows calculation of the effect of the discharges on the oxygen resources of the receiving water. Data from BOD tests are used for the development of engineering criteria for the design of wastewater treatment plants.

1.2 The BOD test is an empirical bioassay-type procedure which measures the dissolved oxygen consumed by microbial life while assimilating and oxidizing the organic matter present. The standard test conditions include dark incubation at 20° C for a specified time period (often 5 days). The actual environmental conditions of temperature, biological population, water movement, sunlight, and oxygen concentration cannot be accurately reproduced in the laboratory. Results obtained must take into account the above factors when relating BOD results to stream oxygen demands.

1.3 To obtain values for only carbonaceous BOD, the procedure (2.2) for inhibiting the nitrogeneous oxygen demand using 2-chloro-6(trichloromethyl) pyridine should be used.

2. Summary of Method.

2.1 The sampe of waste, or an appropriate dilution, is incubated for 5 days at 20° C in the dark. The reduction in dissolved oxygen concentration during the incubation period yields a measure of the biochemical oxygen demand.

2.2 Nitrogenous oxygen demand is inhibited by adding approximately 10 mg of 2-chloro-6(trichloromethyl) pyridine to each BOD bottle prior to adding the sample (or diluted sample) for incubation. Results of samples treated with inhibitor are to be reported as Biochemical Oxygen Demand, Carbonaceous, Storet No. 80082.

3. Comments.

3.1 Determination of dissolved oxygen in the BOD test may be made by use of either the Modified Winkler with Full-Bottle Technique or the Probe Method in this manual.

3.2 Additional information relating to oxygen demanding characteristics of wastewaters can be gained by applying the Total Organic Carbon and Chemical Oxygen Demand tests (also found in this manual).

3.3 The use of 60 ml incubation bottles in place of the usual 300 ml incubation bottles, in conjunction with the probe, is often convenient.

4. Precision and Accuracy.

4.1 Eighty-six analysts in fifty-eight laboratories analyzed natural water samples plus an exact increment of biodegradable organic compounds. At a mean value of 2.1 and 175 mg/l BOD, the standard deviation was ±0.7 and ± 26 mg/l, respectively (EPA Method Research Study 3).

4.2 There is no acceptable procedure for determining the accuracy of the BOD test.

5. References

5.1 The procedure to be used for this determination is found in: "Standard Methods for the Examination of Water and Wastewater, 14th edition," p. 543, Method 507 (1975).

5.2 Young, J. C., "Chemical Methods for Nitrification Control," J. Water Poll. Control Fed., *45*, p. 637 (1973).

507 Oxygen Demand (Biochemical)

1. Discussion

The biochemical oxygen demand (BOD) determination is an empirical test in which standardized laboratory procedures are used to determine the relative oxygen requirements of wastewaters, effluents, and polluted waters. The test measures the oxygen required for the biochemical degradation of organic material (carbonaceous demand) and the oxygen used to oxidize inorganic material such as sulfides and ferrous iron. It also may measure the oxygen used to oxidize reduced forms of nitrogen (nitrogenous demand) unless oxidation of nitrogenous compounds is prevented by an inhibitor.

The method consists of placing a sample in a full, air-tight bottle and incubating the bottle under specified conditions for a specific time. Dissolved Oxygen (DO) is measured initially and after incubation. The difference in DO is the oxygen used and from it the BOD can be computed.

The bottle size, incubation temperature, and incubation period are all specified. Because most wastewaters contain more oxygen-demanding materials than the quantity of DO in oxygen-saturated water, it is necessary to dilute the sample before incubation to bring the oxygen required and oxygen supply into appropriate balance. Because bacterial growth requires such nutrients as nitrogen, phosphorus, and trace metals, these are added to the dilution water which is buffered to ensure that the pH of the incubated bottle remains in a range suitable for bacterial growth. Complete stabilization of a sample may require a period of incubation too long for practical purposes; therefore, the 5-day period has been accepted as standard.

Measurements of BOD that include both carbonaceous oxygen demand and nitrogenous oxygen demand generally are not useful; therefore, where appropriate, may be an inhibiting chemical used to prevent nitrogenous oxidation. Carbonaceous and nitrogenous demands are measured separately for predicting oxygen suppression in receiving streams and oxygen requirements for treatment plant design and operation.

The inclusion of ammonia in the citation water demonstrates that there is no intent to include the oxygen demand of reduced forms of nitrogen in the BOD test. If this ammonia were oxidized, errors would result because the oxygen use would not be due exclusively to pollutants in the sample.

The extent of oxidation of nitrogenous compounds during the 5-day incubation period depends on the presence of micro-organisms capable of carrying out this oxidation. Such organisms usually are not present in raw sewage or primary effluent in sufficient numbers to oxidize significant quantities of reduced nitrogen forms in the 5-day BOD test. Currently any biological treatment plant effluents contain a significant population of nitrifying organisms. Consequently, oxidation of nitrogenous compounds can occur within such samples and inhibition of nitrification is recommended for all samples of secondary effluent, for samples seeded with secondary effluent, and for samples of polluted waters.

Samples for BOD analysis may undergo significant degradation during storage between collection and analysis. This results in a low BOD value. Minimize reduction of BOD by promptly analyzing the sample or by cooling it to

near-freezing temperature during storage. However, even at low temperature, holding time should be limited to a minimum.

If analysis is initiated within 2 hr of collection sample cooling is unnecessary. If analysis of a grab sample is not started within 2 hr of collection, keep sample at or below 4 C from time of collection; if the laboratory is on the site or in the vicinity of the sample collection site, begin analysis within 6 hr of collection; if the laboratory is more remote begin analysis within 24 hr of collection.

Keep composite samples at or below 4 C during compositing and any holding period; limit the compositing period to 24 hr; if the laboratory is on site or nearby, begin analysis not more than 6 hr after the end of the compositing period; if the laboratory is distant, begin incubation not more than 24 hr after the end of the compositing period.

The method outlined here contains both a dilution water check (4*i*), and a dilution water blank (4*g*). In the dilution water check, the candidate dilution water is lightly seeded. An oxygen up take in 5 days of less than 0.2 mg/L is acceptable. If the oxygen depletion of a candidate water exceeds this value store the water at room temperature (or 20 C) until the BOD of the dilution water is reduced sufficiently. Optimally, test and store dilution water so that water of assured quality always is on hand.

The procedure for determining immediate oxygen demand (IDOD) has been eliminated because: (1) It was not clear whether IDOD should be reposted in 5-day BOD data; (2) the measurement was inaccurate because of the small differences between initial DO and DO after 15 min; (3) arbitrary selection of 15 min for measuring IDOD did not necessarily include all short term oxygen-consuming chemical oxidations; and (4) the IDOD is in some cases, an iodine demand (during the DO determination) rather than true DO demand. The methods outlined here require determining initial DO 15 min after making the dilution.

Although only the 5-day BOD is described here, many variations of oxygen demand measurements exist. These include using shorter and longer incubation periods, tests to determine rates of oxygen use, continuous oxygen measurements by respirometric technique, etc.

2. Apparatus

a. Incubation bottles, 250 to 300 mL capacity, with ground-glass stoppers. Clean bottles with a detergent, rinse thoroughly, and drain before use. As a precaution against drawing air into the dilution bottle during incubation, use *a* water seal. Obtain satisfactory water seals by inverting the bottles in a water bath or adding water to the flared mouth of special BOD bottles. Place a paper or plastic cup or foil cap over the flared mouth of the bottle to reduce evaporation of the water seal during incubation.

b. Air incubator or water bath, thermostatically controlled at 20±1 C. Exclude all light to prevent formation of DO by algae in the sample.

3. Reagents

a. Phosphate buffer solution: Dissolve 8.5 g KH_2PO_4, 21.75 g K_2HPO_4, 33.4 g $Na_2HPO_4 \cdot 7H_2O$, and 1.7 g NH_4Cl in about 500 mL distilled water and dilute to 1 L. The pH should be 7.2 without further adjustment. Discard reagent (or any of the following reagents) if there is any sign of biological growth in the stock bottle.

b. Magnesium sulfate solution: Dissolve 22.5 g $M_gSO_4 \cdot 7H_2O$ in distilled water and dilute to 1 L.

c. Calcium chloride solution: Dissolve 27.5 g $CaCl_2$ in distilled water and dilute to 1 L.

d. Ferric chloride solution: Dissolve 0.25 g $FeCl_3 \cdot 6H_2O$ in distilled water and dilute to 1 L.

e. Acid and alkali solutions, 1N: for neutralization of caustic or acidic waste samples.

f. Sodium sulfite solution, 0.025N: Dissolve 1.575 g Na_2SO_3 in 1,000 mL distilled water. This solution is not stable; prepare daily.

g. Nitrification inhibitor: Reagent grade 2-chloro-6 (trichloro methyl) pyridine.[1]

4. Procedure

a. Preparation of dilution water: Use water for diluting samples that meets the dilution water check (4*i*) and the glucose-glutamic acid check (4*j*). If necessary purify by storing long enough to degrade organic contaminants or by other methods. If storage for biological degradation is used, seed the water as described in the dilution water check (4*h*) before storage. Store dilution water in the dark or cover it to exclude light to control algal growth. Use dilution water at 20±1 C. Protect water quality by using clean glassware, tubing, and bottles.

Before use, saturate the water with DO by shaking it in a partially-filled bottle or by aerating with filtered air. Alternatively, store in cotton-plugged bottles long enough for the water to become saturated with DO.

Place the desired volume of distilled water in a suitable bottle and add 1 mL each of phosphate buffer, $MgSO_4$, $CaCl_2$, and $FeCl_3$ solutions/L of water.

b. Seeding: A population of microorganisms capable of oxidizing the sample biodegradable organic matter is necessary. Domestic wastewater, unchlorinated, or otherwise-undisinfected effluents of biological treatment plants, and surface waters contain satisfactory microbial populations. When the sample is unlikely to contain enough desired micro-organisms, for example, in some untreated industrial wastes, disinfected wastes, high-temperature wastes, or wastes with extreme pH values, add a population of appropriate microorganisms to the dilution water. This procedure is called *seeding.* The preferred seed is effluent from a biological treatment system processing the waste. Where this is not available, use supernatant from domestic wastewater after settling at 20 C for at least 1 hr but no longer than 36 hr.

Some samples may contain materials not degraded at normal rates by a microorganism in settled domestic wastewater. Seed such samples with an adapted microbial population obtained from the undisinfected effluent of a biological treatment process receiving the waste. In the absence of such a facility, obtain seed from the receiving water below (preferably 3 to 8 km) the point of discharge. When such seed sources also are not available, develop a seed in the laboratory by continuously aerating a sample of settled domestic sewage and adding small daily increments of waste. Optionally add soil or activated sludge to obtain the initial microbial population. Determine the existence of a satisfactory population by testing the seed response in BOD tests of the sample. BOD values increasing with time of adaption to a steady high value indicate successful seed adaption.

In making tests, use enough seed to assure satisfactory numbers of microorganisms but not so mush that the oxygen demand of the seed itself is a major part of the oxygen used during incubation. The oxygen used by the seed should be at least 0.6 mg/L, but not more than 1.0 mg/L. Subtract the oxygen used by the seed material from the total oxygen used to obtain the oxygen used by the sample (see 507.5). Determine oxygen depletion of the seed by measuring its BOD as for any other sample. This is called the seed control.

The addition of seed to dilution water is described for each of the two dilution technics in #4*d*.

c. Pretreatment:

(1) Samples containing caustic alkalinity or acidity-Neutralize samples to pH 6.5 to 7.5 with H_2SO_4 or NaOH

[1] N-Serve, Dow Chemical Co. as equivalent

solutions of such strengths that the quantity of reagent does not dilute the sample by more than 0.5%. The pH of seeded dilution water should not be changed by preparation of the lowest dilution of sample.

(2) Samples containing residual chlorine compounds—If possible avoid samples containing residual chlorine by sampling before chlorination. If residual chlorine is present, dechlorinate and seed the sample (#4*b*). Do not test chlorinated/dechlorinated samples without seeding. In some samples chlorine will dissipate within 1 to 2 hr of standing in the light. This often occurs during sample transport and handling. For samples in which the chlorine residual does not dissipate on standing in a reasonably short time, destroy the chlorine residual by adding Na_2SO_3 solution. Determine required volume of Na_2SO_3 solution on a 100 to 1,000 mL portion of neutralized sample by adding 10 mL of 1+1 acetic acid or 1+50 H_2SO_4, 10 mL KI solution (10 g/100 mL), and titrating with 0.025*N* Na_2SO_3 solution to the starch—iodide end point. Add to sample the volume of Na_2SO_3 solution determined by the above test, mix, and after 10 to 20 min check sample for residual chlorine.

(3) Samples containing other toxic substances—Samples such as those from certain industrial wastes-for example, toxic metals derived from plating wastes—frequently require special study and treatment.

(4) Samples supersaturated with DO-Samples containing more than 9 mg DO/L at 20 C may be encountered during winter months or where algae are growing actively. To prevent loss of oxygen during incubation of these samples, reduce DO to saturation by bringing sample to about 20 C in a partly filled bottle and agitating it by vigorous shaking or by aerating with compressed air.

(5) Sample temperature adjustment—Bring samples to 20±1 C before making dilutions.

(6) Nitrification inhibition—To inhibit nitrification where sample or seed way contain sufficient nitrifying organisms to result in significant oxidation of reduced nitrogen forms and nitrogenous BOD is not desired; add 10 mg 2-chloro-6 (trichloro methyl) pyridine/L. Such samples include, but are not limited to, biologically treated effluents, samples seeded with biologically treated effluents, and river waters.

d. Dilution technic: Make several dilutions of prepared sample to obtain required DO depletions. Dilutions that result in a residual DO of at least 1 mg/L and a DO depletion of at least 2 mg/L after 5 days incubation produce the most reliable results. The sample oxygen demand governs dilution needed. Experience with a particular sample will permit using a smaller number of dilutions. A more rapid analysis, such as COD may be correlated approximately with BOD and serve to guide dilution. In the absence of prior knowledge, use the following dilutions: 0.0 to 1.0% for strong industrial wastes, 1 to 5% for raw and settled sewage, 5 to 25% for oxidized effluent, and 25 to 100% for polluted river waters. Prepare dilutions either in graduated cylinders and then transfer to BOD bottles or prepare dirtectly in BOD bottles. Either method of preparation can be combined with any of the DO measurement technics. The number of bottles to be prepared depends on the method of determining DO and the number of replicates desired.

(1) Dilutions prepared in graduated cylinders—

If the azide modification of the iodometric method (titration) see section (421B) is used, carefully siphon dilution water, seeded if necessary, into a graduated cylinder of 1,000 to 2,000 mL capacity, filling the cylinder half full without entrainment of air. Add quantity of carefully mixed sample to make desired dilution and dilute to appropriate level with dilution water. Mix well with a plunger-type mixing rod, avoiding entrainment of air. Siphon mixed dilution into two BOD bottles, one for incubation and the other for determining initial DO in the mixture; stopper tightly and incubate for 5 days at 20 C.

If the membrane electrode method is used, siphon dilution mixture into only one BOD bottle.

Prepare succeeding dilutions of lower concentration in the same manner or add dilution water to unused portion of preceding dilution. If seeding is necessary, either add seed directly to dilution water or to individual cylinders before dilution. Seeding individual cylinders avoids a declining ratio of seed to sample as increasing dilutions are made.

(2) Dilutions prepared directly in BOD bottles—

Pipet required volume of sample, using a wide-tip volumetric pipet, into individual BOD bottles of known capacity. Fill bottles with enough dilution water, seeded if necessary, so that insertion of stopper will displace all air, leaving no bubble. For dilutions greater than 1:100 make a primary dilution in a graduated cylinder before making final dilution in the bottle.

e. Determination of initial DO: Determine initial DO 15 min after preparing dilution if materials are present in the sample that react rapidly with DO. If the oxygen used by such materials is insignificant, the time period between preparing dilution and measuring initial DO is not critical.

Use the azide modification of the iodometric method (see section 421B) or the membrane electrode method (see section 421F) to determine initial DO on bottles containing all sample dilutions, dilution water blanks, and where appropriate, seed controls.

For activated sludge samples use either the membrane electrode method or the $CuSO_4$-sulfamic acid modification of the iodometric method (see section 421E). For muds use either the membrane electrode method or the alum-flocculation modification of the iodometric method (see section 421D). If the membrane electrode is used to determine initial and final DO values on the same bottle, replace with dilution water any small volume of bottle contents lost by overflowing when membrane electrode is inserted. Alternatively add a small marble or glass beads to the bottle so that water in the bottle is raised to such a level that the stopper can be inserted without entrapping any air bubbles.

f. Incubation: Incubate prepared BOD bottles of samples and dilution water for 5 days in the dark at 20 ± 1 C. Make a water-seal on BOD bottles by inverting them in a tray of water in the incubator or by using a special water-seal bottle.

g. Dilution water blank: For each batch of samples and for each container of dilution water fill 2 BOD bottles with unseeded dilution water. Use dilution water which has been found satisfactory by the dilution water check (#4*i*) and the glucose-glutamic acid check (4*j*). Stopper water-seal, incubate, and after 5 days, measure DO in one of these. Determine DO before incubation in the other bottle. Use these DO results as a rough check on the quality of dilution water and cleanliness of incubation bottles. The difference in DO should not be more than 0.2 mg/L and preferably not more than 0.1 mg/L.

h. Determination of final DO: After incubation determine DO in incubated samples and blank as in #4*e* above.

i. Dilution water check: Seed dilution water with a quantity of seed sufficient to cause an oxygen use of 0.05 to 0.1 mg/L during the 5-day incubation. If dilution water has been seeded and stored for degradation, omit seeding specified above in any subsequent dilution water check. Fill two BOD bottles, stoppers, water-seal and determine DO immediately in one of these. Incubate the second bottle at 20 C for 5 days and then determine DO. Use DO results on these two bottles as a rough check on quality of unseeded dilution water and

cleanliness of incubation bottles. The difference in DO should not be more than 0.2 mg/L and preferably not more than 0.1 mg/L. If more DO is consumed, reject results obtained using this dilution water.

j. Glucose-glutomic acid check: The BOD test is a bioassay procedure; consequently, results are influenced greatly by toxic substances or use of a poor seeding material. Even distilled waters frequently are contaminated with toxic substances—most often copper—and some sewage seeds are relatively inactive. The results obtained using such waters are always low. Check quality of dilution water effectiveness of seed, and analytical technic periodically by using pure organic compounds. Alternatively, if a known organic compound is a major component of a particular waste it may be used in place of glucose-glutamic acid for this check. For general BOD work on samples not requiring an adapted seed, use a mixture of glucose and glutamic acid containing 150 mg of each/L. Glucose has an exceptionally high and variable oxidation rate but when used with glutamic acid, the oxidation rate is stabilized and is similar to that obtained with many municipal wastes.

Prepare a solution containing 150 mg/L each of reagent-grade glucose and glutamic acid that have been dried at 103 C for 1 hr. Determine the BOD of this mixture using a 2% dilution in the incubation bottles and seeding according to #4*b*. Make a dilution water check, #4*i*, and a seed control determination, #4*b*. The glucose-glutamic acid solution is subject to biological degradation and should not be stored more than a few hr.

The precision and accuracy of the test is discussed in P 6 below. If the BOD value of the check is outside the range of 200 ± 37 mg/L, reject any BOD value obtained using the seed and dilution water and seek cause of problem.

5. Calculation

a. Definitions

D_1 = DO of diluted sample 15 min after preparation, mg/L

D_2 = DO of diluted sample after incubation, mg/L

P = decimal fraction of sample used

B_1 = DO of dilution of seed control before incubation, mg/L

B_2 = DO of dilution of seed control after incubation, mg/L

f = ratio of seed in sample to seed in control

$$= \frac{\%\text{ seed in } D_1}{\%\text{ seed in } B_1}$$

b. Biochemical oxygen demand

When sample dilution is not seeded

$$\text{BOD, mg/L} = \frac{D_1 - D_2}{P}$$

When sample dilution is seeded

$$\text{BOD, mg/L} = \frac{(D_1 - D_2) - (B_1 - B_2)f}{P}$$

If more than one dilution of a sample meets the criterion of a residual DO of at least 2 mg/L and there is no evidence of a toxic effect at the higher concentration or an obvious anomaly, average results.

In these calculations, corrections are not made for use of DO in the dilution water blank during incubation. If the dilution water does not meet the dilution water blank criteria, proper corrections are difficult and results are questionable.

6. Precision and Accuracy

In a series of interlaboratory studies, each involving 86 to 102 laboratories (and as many river water and sewage seeds), 5-day BOD analyses were performed on synthetic water samples containing 50/50 mixtures of glucose and glutamic acid in the range of 5 to 340 mg/L. The regression equations for mean value *X, and standard deviation, S,* from these studies were as follows:

$X = 0.665$ (added level, mg/L) $- 0.149$
$S = 0.120$ (added level, mg/L) $+ 1.04$

At the 300 mg/L level of the mixed primary standard, the average 5-day BOD was 199.4 mg/L with a standard deviation of 37.0 mg/L2.

7. References

1. *Young, J. C.* 1979. Chemical methods for nitrification control *J. Water Pollute Control Fed.* 45:637.

2. United States Environmental Protection Agency, Office of Research & Development, Environmental Monitoring & Support Laboratory, Cincinnati, Ohio.

In consideration of the preceding, it is proposed to amend chapter I, Subchapter D of Title 40, Code of Federal Regulations, as follows:

§ 136.3 [Amended]

1. Table I of § 136.3(a) is amended by:

(a) Addition of a new subsection entitled "Organic Compounds" which includes 114 specific organic parameters and approved methods by which they are to be analyzed,

(b) By redesignating parameter #9 (Benzidine) and #95 (Pentachlorophenol) as organic compounds and including them in proper alphabetical order within the organic compound subsection,

(c) By including the pesticides Aldrin, d-BHC, g-BHC, Chlordane, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, Dieldrin, Endosulfan, Endrin, Heptachlor as specific organic compounds and retaining all other pesticides within the general parametric designation, "Pesticides", and revising footnote 12,

(d) By addition of the Inductively Coupled Plasma Optical Emission Spectrometric Method (ICP) as an approved alternate method for the following metals Aluminum, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silica, Silver, Sodium, Vanadium and Zinc,

(e) By addition of a new parameter entitled BOD 5 Carbonaceous, and,

(f) By deleting footnote 1 due to new table II prescribing mandatory preservation techniques and maximum holding times, and,

(g) By changing the chronological numbering of parameters and footnotes to accommodate the new parameters to read as follows:

* * * * *

Table 1.—*List of Approved Test Procedures*

Parameter and units	Method	Reference (Page Nos.) 1974 EPA Methods	14th edition standard methods	Part 31 1975 ASTM	USGS methods [1]	Other approved methods
1. Acidity, as $CaCO_3$, milligrams per liter	Electrometric end point (pH of 8.2) or phenolphthalein end point.	1	273(4d)	116	40	[7](607)
2. Alkanlinity, as $CaCO_3$milligrams per liter	Electrometric titration (only to pH 4.5) manual or automated, or equivalent atomoated methods.	3 5	276	111	41	[7](607)
3. Ammonia (as N), milligrams per liter	Manual distillation [3] (at pH 9.5) followed by nesslerization, titration, electrode, automated phenolate.	159 165 168	410 412 237 616		116	[7](614)
Bacteria						
4. Coliform (fecal) [4] number per 100 ml	MPN; [5] membrane filter		922		[7](45)	[8](132)
5. Coliform (fecal) [4] in presence of chlorine, number per 100 ml.	MPN; [5] membrane filter [6, 7]		937 922 928, 937			[8](124)
6. Coliform (total), [4] number per 100 ml	MPN;[5] membrane filter		916 928		[7](35)	[8](117) [9](108)
7. Coliform (total) [4] in presence of chlorine, number per 100 ml.	MPN; [5] membrane filter with enrichment		916 933			
8. Fecal streptococci, [4] number per 100 ml	MPN; [5] membrane filter; plate count		943 944 947		[7](50)	[8](136) [9](143)
9. Biochemical oxygen demand, 5-day (BOD_5) milligrams per liter.	Winkler (Azide Modification) or electrode method.		543		[7](50)	[7](17)
10. BOD_5, Carbonaceous						[20](507)
11. Bromide, milligrams per liter	Titrimetric, iodine-iodate	14		323	58	
12. Chemical oxygen demand (COD), milligrams per liter.	Dichromate reflux	20	550	472	125	[7](610) [7](17)
13. Chloride, milligrams per liter	Silver nitrate		303	267		
	Mercuric nitrate; or	29	304	265		[2](615)
	Automated colorimetric-ferricyanide	31	613		[10](46)	
14. Chlorinated organic compounds (except pesticides), milligrams per liter.	Gas chromatography [11]					
15. Chlorine-total residual, milligrams per liter.	Iodometric titration amperometric or		318			
	Starch-iodine end-point	35	322	278		
	DPD colorimetric or		332			
	Titrimetric methods (These last two are interim methods pending laboratory testing.).		329			
16. Color, platinum cobalt units or dominant wave length, hue, luminance, purity.	Colorimetric	36	64		82	
	Spectrophotometric; or	39	66			
	ADMI procedure [12]					
17 Cyanide, total [13]milligrams per liter	Distillation followed by silver nitrate titration or pyridine pyrazolone (or barbituric acid) colorimetric.	40	361	503	85	[7](22)
18. Cyanide amenable to chlorination, milligrams per liter.	Distillation followed by silver nitrate titration or pyridine pyrazolone (or barbituric acid) colorimetric.	49	376	503		
19. Dissolved oxygen, milligrams per liter	Winkler (Azide modification) or electrode method.	51 56	553 450	368	126	[7](609)
20. Fluoride, milligrams per liter	Distillation [3] followed by	65	389	307	93	
	ion electrode	59	391	305		
	SPADNS; or	61	393			
	automated complexane		614			
21. Hardness—total, as $CaCo_3$, milligrams per liter.	EDTA titration	68	202	161	94	[7](617)
	Automated colorimetric; or atomic absorption (sum of Ca and Mg as their respective carbonates).	70				
22. Hydrogen ion (pH), pH units	Electrometric measurement	239	460	178	129	[7](606)
23. Kjeldahl nitrogen (as N), milligrams per liter.	Digestion, an distillation, followed by nesslerization, titration, or electrode; automated digestion automated phenolate.	175 165 182	437		122	[7](612)
METALS						
24. Aluminum—total, milligrams per liter	Digestion [14] followed by atomic absorption [15] or by colorimetric (Eriochrome Cyanide R) or by ICP [21].	92	152 171		[7](19)	
25. Aluminum—dissolved, milligrams per liter	0.45 mcron filtratoifollowed by referenced methods for total aluminum					
26. Antimony—total, milligrams per liter	Digestion [4] followed by atomic absorption [16]					[*]
27. Antimony—dissolved, milligrams per liter	0.45 micron filtration [16] followed by referenced method for total antimony.					
28. Arsenic—total, milligrams per liter	Digestion followed by silver diethyldithiciocarbamate; or atomic absorption [15, 17] or by ICP [22].	9 95	285 283 159		[18][19] [18][19]	
29. Arsenic—dissolved, milligrams per liter	0.45 micron filtration [16] followed by referenced method for total arsenic.					
30. Barium—total, milligrams per liter	Digestion [14] followed by atomic absorption [15] or by ICP [21].					

Table 1.—*List of Approved Test Procedures*—Continued

Parameter and units	Method	Reference (Page Nos.) 1974 EPA Methods	14th edition standard methods	Part 31 1975 ASTM	USGS methods [1]	Other approved methods
31. Barium—dissolved, milligrams per liter	0.45 micron filtration [16] followed by referenced method for total barium.					
32. Beryllium]total, milligrams per liter	Digestion [14] followed by atomic absorption [15] or by colorimetric (Aluminan) or by ICP [27].	99	152 177			
33. Beryllium—dissolved, miligram per liter	0.45 micron filtration [16] followed by referenced method for total beryllium.					
34. Boron—total, milligrams per liter	Colorimetric (Curcumin), or by ICP [27]	13	287			
35. Boron—dissolved, milligrams per liter	0.45 micron filtration [16] followed by referenced method for total boron.					
36. Cadmium—total milligrams per liter	Digestion [14] followed by atomic absorption [15] or by colorimetric (Dithizone) or by ICP [27].	101	148 182	345	62	(619) [3] (37) [9]
37. Cadmium—dissolved, milligrams per liter	0.45 micron filtration [16] followed by referenced method for total cadmium.					
38. Calcium—total, milligrams per liter	Digestion [14] followed by atomic absorption; or EDTA titration or by ICP [27].	103	148 189	345	66	
39. Calcium—dissolved, milligrams per liter	0.45 micron filtration [16] followed by referenced method for total calcium.		9			
40. Chromium VI, milligrams per liter	Extraction and atomic absorption; colorimetric (Diphenylcarbazide).	89 105	192		76 75	
41. Chromium VI—dissolved, milligram per liter.	0.45 micron filtration [16] followed by referenced method for chromium VI.					
42. Chromium—total, milligrams per liter	Digestion [14] followed by atomic absorption [15] or by colorimetric (Diphenylcarbazide) or by ICP [27].	105	148 192	345 286	78 77	(619) [3]
43. Chromium—dissolved, milligrams per liter	0.45 micron filtration [16] followed by referenced method for total chromium.					
44. Cobalt—total, milligrams per liter	Digestion [14] followed by atomic absorption [15] or by ICP [27].	107	148	345	80	(37) [9]
45. Cobalt—dissolved, milligrams per liter	0.45 micron filtration [16] followed by referenced method for total cobalt.					
46. Copper—total, milligrams per liter	Digestion [14] followed by atomic aborption [15] or by colorimetric (Neocuproine) or by ICP [27].	108	148 196	345 293	83	(619) [3] (37) [9]
47. Copper—dissolved	0.45 micron filtration [16] followed by referenced method for total copper.					
48. Gold—total, milligrams per liter	Digestion [14] followed by atomic absorption [18]					
49. Iridium—total, milligrams per liter	Digestion [14] followed by atomic absorption [18]					
50. Iron—total, milligrams per liter	Digestion [14] followed by atomic aborption [15] or by colorimetric (Phenanthroline) or by ICP [27].	110	148 208	345 326	102	[2](619)
51. Iron—dissolved, milligrams per liter	0.45 micron filtration [16] followed by referenced method for total iron.					
52. Lead—total, milligrams per liter	digestion [14] followed by atomic absorption [15] or by colorimetric (Dithizone) or by ICP [27].	112	148 215	345	105	[2](619)
53. Lead—dissolved, milligrams per liter	0.45 micron filtration [16] followed by referenced method for total lead.					
54. Magnesium—total, milligrams per liter	Digestion [14] followed by atomic absorption; or gravimetic or by ICP [27].	114	148 221	345	109	[2](619)
55. Magnesium-dissolved, milligrams per liter	0.45 micron filtration [16] followed by referenced method for total magnesium.					
56. Manganese—total, milligrams per liter	Digestion [14] followed by atomic absorption [15] or by colorimetric (persulfate or periodate) or by ICP [27].	116	148 225 227	345	111	[2](619)
57. Manganese—dissolved, milligrams per liter.	0.45 micron filtration [16] followed by referenced method for total manganese.					
58. Mercury—total, milligrams per liter	Flameless atomic absorption	118	156	338	[10](51)	
59. Mercury—dissolved, milligrams per liter	0.45 micron filtration [16] followed by referenced method for total mercury.					
60. Molybdenum—total milligrams per liter	Digestion [14] followed by atomic absorption [15] or by ICP [27].	139		350		
61. Molybdenum—dissolved, milligrams per liter.	0.45 micron filtration [16] followed by referenced method for total molybdenum.					
62. Nickel—total milligrams per liter	Digestion [14] followed by atomic absorption [15] or by colorimetric (Heptoxime) or by ICP [27].	141	148 232	345	115	
63. Nickel—dissolved, milligrams per liter	0.45 micron filtration [16] followed by referenced method for total nickel.					
64. Osmium—total milligrams per liter	Digestion [14] followed by atomic absorption [18]					
65. Palladium—total, milligrams per liter	Digestion [14] followed by atomic absorption [18]					
66. Platinum—total, milligrams per liter	Digestion [14] followed by atomic absorption [18]					
67. Potassium—total, milligrams per liter	Digestion [14] followed by atomic absorption, colorimetric (Cobaltinitrite), or by flame photometric or by ICP [27].	143	235 234	403	134	[2](620)
68. Potassium—dissolved, milligrams per liter.	0.45 micron filtration [16] followed by referenced method for total potassium.					
69. Rhodium—total, milligrams per liter	Digestion [14]followed by atomic absroption [18]					
70. Ruthenium—total, milligrams per liter	Digestion [14]followed by atomic absorption [18]					
71. Selenium—total, miligrams per liter	Digestion [14]followed by atomic absorption [12, 13]or by ICP [27].	145	159			
72. Selenium—dissolved, milligrams per liter	0.45 micron filtration [16]followed by reference method for total selenium.					
73. Silica—dissolved, milligrams per liter	0.45 micron filtration [16]followed by colorimetric (Molybdosilicate) or by ICP [27].	274	487	398	139	
74. Silver-total [19], milligrams pr liter	Digestion [14]followed by atomic absorption [15] or by colorimetric (Dithizone) or by ICP [27].	146	148		142	(619) [3] (37) [9]
75. Silver-dissolved [19], milligrams per liter	0.45 micron filtration [16]followed by referenced method for total silver.					
76. Sodium—total, milligrams per liter	Digestion [14] followed by atomic absorption or by flame photometric or by ICP [27].	147	250	403	143	(621) [3]
77. Sodium—dissolved, milligrams per liter	0.45 micron filtration [16] followed by referenced method for total sodium.					

Table 1.—*List of Approved Test Procedures* —Continued

Parameter and units	Method	Reference (Page Nos.) 1974 EPA Methods	14th edition standard methods	Part 31 1975 ASTM	USGS methods [1]	Other approved methods
78. Thallium—total, milligrams per liter	Digestion [14] followed by atomic absorption [15]	149				
79. Thallium—dissolved, milligrams per liter	0.45 micron filtration [16] followed by referenced method for total thallium.					
80. Tin—dissolved, milligrams per liter	filtration [14] followed by atomic absorption [15]	150			[19](65)	
81. Tin—dissolved, milligrams per liter	0.45 filtration [16] followed by referenced method for total tin.					
82. Titanium—total, milligrams per liter	Digestion [14]followed by atomic absorption [15]	151				
83. Titanium—dissolved, milligrams per liter	0.45 filtration [16] followed by referenced method for total titanium.					
84. Vanadium—dissolved, milligrams per liter	Digestion [14] followed by atomic absorption [15]or by colorimetric (Gallic acid) or by ICP [27].	153	152 260	441	[19](67)	
85. Vanadium—dissolved milligrams per liter	0.45 micron filtration [16] followed by referenced method for total vanadium.					
86. Zinc—total, milligrams per liter	Digestion [14] followed by atmoic absorption [15] or by colorimetric (Dithizone) or by ICP [17].	155	148 265	345	159	[2](619) [8](37)
87. Zince—dissolved, milligrams per liter	0.45 micro filtration [16] followed by referenced method for total zinc.					
88. Nitrate (as N), milligrams per liter	Cadmium reduction brucine sulfate; automated cadmium or hydrazine reduction [20].	201 197 207	423 427 620	358	119	[2](614) [5](28)
89. Nitrate (as N), milligrams per liter	Manual or automated colorimetric (Diazotization)	215	434		121	
90. Oil and grease, milligrams per liter	Liquid-liquid extraction with trichlorotrifluoroethane-gravimetric.	229	515			
91. Organic carton; total (TOC), milligrams per liter.	Combustion—infrared method [2]	236	532	467	[22](4)	
92. Organic nitrogen (as N), milligrams per liter.	Kjeldahl nitrogen minus ammonia nitrogen	175,159	437		122	[2](612,614)
ORGANIC COMPOUNDS						
93. Acenaphthene, micrograms per liter	GC or HPLC method (610) [35]; GC/MS method (625) [36].					
94. Ancenaphthylene micrograms per liter	GC or HPLC method (610) [35]; GC/MS method (625) [36].					
95. Acrolein, micrograms per liter	GC or HPLC method (603) [31]; GC/MS method (624) [36].					
96. Acrylonitrile, micrograms per liter	GC or HPLC method (603) [31]; GC/MS method (624) [36].					
97. Aldrin, micrograms per liter	GC or HPLC method (608) [30]; GC/MS method (625) [36].					
98. Anthracene, micrograms per liter	GC or HPLC method (610) [35]; GC/MS method (625) [36].					
99. Benzene, micrograms per liter	GC or HPLC method (602) [30]; GC/MS method (624) [36].					
100. Benzidine milligrams per liter, micrograms per liter.	HPLC method (605) [33]; Oxidation-colormetric [9]; GC/MS method (625) [36].					
101. Benzo(a)anthracene, micrograms per liter.	GC or HPLC method (610) [35]; GC/MS method (625) [36].					
102. Benzo(a)pyrene, micrograms per liter	GC or HPLC method (610) [35]; GC/MS method (625) [36].					
103. Benzo(b)fluroanthene, micrograms per liter.	GC or HPLC method (610) [35]; GC/MS method (625) [36].					
104. Benzo(g,h,i)perylene, micrograms per liter.	GC or HPLC method (610) [35]; GC/MS method (625) [36].					
105. Benzo (k) fluoranthene, micrograms per liter.	GC or HPLC method (610) [35]; GC/MS method, (625) [36].					
106. a-BHC, microgram per liter	GC method (608) [30].					
107. b-BHC, micrograms per liter	GC method (608) [30]; GC/MS method (625) [36].					
108. d-BHC, microgram per liter	GC method (608) [30]; GC/MS method (625) [36].					
109. g-BHC; micrograms per liter	GC method (608) [30]; GC/MS method (625) [36].					
110. Bis(2-chloroethyl) either, micrograms per liter.	GC method (611) [39]; GC/MS method (625) [36].					
111. Bis(2-chloroethoxy) methane, micrograms per liter.	GC method (611) [39]; GC/MS method (625) [36].					
112. Bis(2-chloroisopropyl) ether, micrograms per liter.	GC method (611) [39]; GC/MS method (625) [36].					
113. Bis(2-ethylhexyl)phthalate, micrograms per liter.	GC method (606) [34]; GC/MS method (625) [36].					
114. Bromodichloromethane, micrograms per liter.	GC method (601) [29]; GC/MS method (624) [36].					
115. Bromoform, micrograms per liter	GC method (601) [29].					
116. Bromomethane, micrograms per liter	GC method (601) [29]; GC/MS method (624) [36].					
117. 4-Bromophenylphenyl ether, micrograms per liter, cicrograms per liter.	GC method (611) [39]; GC/MS method (625) [36].					
118. Burylbenzyul phthalate, micrograms per liter.	GC method (606) [34]; GC/MS method (625) [36].					
119. Carbon tetrachloride, micrograms per liter.	GC method (601) [29]; GC/MS method (624) [36].					
120. Chlordane, micrograms per liter	GC method (608) [30]; GC/MS method (625) [36].					
121. 4-Chloro-3-methylphenol, micrograms per liter.	GC method (604) [32]; GC/MS method (625) [36].					
122. Chlorobenzene, micrograms per liter	GC methods (601) [29] (602) [30]; GC/MS, method (624) [36].					
123. Chloroethane, micrograms per liter	GC method (601) [29]; GC/MS, method (624) [36].					
124. 2-Chloroethylvinyl either, micrograms per liter.	GC method (601) [29]; GC/MS, method (624) [36].					
125. Chloroform, micrograms per liter	GC method (601) [29]; GC/MS, method (624)26					

Table 1.—*List of Approved Test Procedures*—Continued

Parameter and units	Method	Reference (Page Nos.) 1974 EPA Methods	14th edition standard methods	Part 31 1975 ASTM	USGS methods [1]	Other aporoved methods
126. Chloromethane, micrograms per liter	GC method (601)[29]; GC/MS method (624)[30]					
127. Chloromethane, micrograms per liter	GC method (612)[40]; GC/MS method (625)[36]					
128. 1–Chlorophenol, microgram per liter	GC method (604)[33]; GC/MS, method (625)[36]					
129. 4-Chlorophenylphenyl ether, micrograms per liter.	GC method (611) [39]; GC/MS, method (625) [36]					
130. Chrysene, micrograms per liter	GC or HPLC method (610) [34]; GC/MS method (625) [36]					
131. 4,4'-DDD, micrograms per liter	GC method (608) [36]; GC/MS method (625) [36]					
132. 4,4'-DDE, micrograms per liter	GC method (608) [36]; GC/MS method (626) [36]					
133. 4,4'-DDT, micrograms per liter	GC method (608) [36]; GC/MS method (625) [36]					
134. Dibenzo(a,h) anthracene, micrograms per liter.	GC or HPIC method (610) [34]; GC/MS method (625) [36].					
135. Dibromochloramethane, micrograms per liter.	GC method (610) [29]; GC/MS method (624) [30]					
136. 1,2-Dichlorobenzene, micrograms per liter.	GC metdhods (601) [29] (602) [30] (612) [40]; GC/MS method (626) [36].					
137. 1,3-Dichlorobenzene, micrograms per liter.	GC methods (601) [29] (602) [30] (612) [40]; GC/MS method (625) [36].					
138. 2,4-Dichlorobenzene, micrograms per liter.	GC methods (601) [29] (602) [30] (612) [40]; GC/MS method (625) [36].					
139. 3,3'-Dichlorobenzidine, micrograms per liter.	HPIC method (605) [33]; GC/MS method (625) [36]					
140. Dichlorodifluoromethane, micrograms per liter.	GC method (601) [29]					
141. 1,1-Dichloroethane, micrograms per liter.	GC method (601 [29]; GC/MS method (624) [30]					
142. 1,2-Dichlorethane, micrograms per liter	GC method (601) [29]; GC/MS method (624) [30]					
143. 1,2-Dichloromethane, micrograms per liter.	GC method (601) [29]; GC/MS method (624) [30]					
144. trans-1,2-Dichloromethane, micrograms per liter.	GC method (601) [29]; GC/MS method (624) [30]					
145. 2,4-Dichlorophenol, micrograms per liter.	GC method (604) [33]; GC/MS method (625) [36]					
146. 1,2-Dichlorpropane, micrograms per liter.	GC method (601) [29]; GC/MS method (624) [30]					
147. cis-1,3-Dichloropropene, micrograms per liter.	GCC method (601) 29; GC/MS method (624) [30]					
148. trans-1,3-Dichlorpropene, micrograms per liter.	GC method (601) [29]; GC/MS method (624) [30]					
149. Dieldrin, micrograms per liter	GC method (608) [36]; GC/MS method (625) [36]					
150. Diethyl phthalate, micrograms per liter	GCC method (606) [34]; GC/MS method (625) [36]					
151. 2,4-Dimethylphenol, micrograms per liter	GC method (604) [33]; GC/MS method (625) [36]					
152. Dimethyl phthalamate, micrograms per liter.	GC method (606) [34]; GC/MS method (625) [36]					
153. Di-n-butyl phthalate,	GC method (606) [34]; GC/MS method (625) [36]					
154. Di-n-octyl phthalate, micrograms per liter	GC method (606) [34]; GC/MS method (625) [36]					
155. 4,6-Dinitro-2-methylphenol, micrograms per liter.	GC method (604) [33]; GC/MS method (625) [36]					
156. 2,4-Dinitrophenol, micrograms per liter	GC method (604) [33]; GC/MS method (625) [36]					
157. 2,4-Dinitrotoluene, micrograns per liter	GC method (609) [37]; GC/MS method (625) [36]					
158. 2,6-Dinitrotoluene, micrograms per liter	GC method (609) [37]; GC/MS method (625) [36]					
159. 1,2-Diphenylhydrazine, micrograms per liter.	GC/MS method (625) [36]					
160. Endosulfan I, micrograms per liter	GC method (608) [36]; GC/MS method (625) [36]					
161. Endosulfan II, micrograms per liter	GC method (608) [36]; GC/MS method (625) [36]					
162. Endosolfan sulfate, micrograms per liter	GC method (608) [36]; GC/MS method (625) [36]					
163. Endrin, micrograms per liter	GC method (608) [36]; GC/MS method (625) [36]					
164. Endrin aldehyde, micrograms per liter	GC method (608) [36]; GC/MS method (625) [36]					
165. Ethylbenzene, micrograms per liter	GC method (602) [30]; GC/MS method (624) [30]					
166. Fluoranthene, micrograms per liter	GC or HPLC method (610) [34]; GC/MS method (625) [36].					
167. Fluorene, micrograms per liter	GC or HPLC method (610) [34]; GC/MS method (625) [36].					
168. Heptachlor, micrograms per liter	GC method (608) [36]; GC/MS method (625) [36]					
169. Heptachlor epoxide, micrograms per liter	GC method (608) [36]; GC/MS method (625) [36]					
170. Hexachlorobenzene, micrograms per liter.	GC method (612) [40]; GC/MS method (625) [36]					
171. Hexachlorobutadiene, micrograms per liter.	Gc method (612) [40]; GC/MS method (625) [36]					
172. Hexachlorocyclopentadiene, micrograms per liter.	GC method (612) [40]; GC/MS method (625) [36]					
173. Hexachloroethane, micrograms per liter	GC method (612) [40]; GC/MS method (625) [36]					
174. Indeno (a,3,3-od) pyrene, micrograms per liter.	GC or HPLC method (610) [34]; GC/MS method (625) [36].					
175. Isophorone, micrograms per liter	GC method (609) [37]; GC/MS method (625) [36]					
176. Methylene chloride, Micrograms per liter.	GC method (601) [29]; GC/MS method (624) [30]					
177. Naphthalene, micrograms per liter	GC or HPLC method (610) [34]; GC/MS method (625) [36]					
178. Nitrobenzene, micrograms per liter	GC method (609) [37]; GC/MS method (625) [36]					
179. 2-Nitrophenol, micrograms per liter	GC method (604) [33]; GC/MS method (625) [36]					
180. 4–Nitrophenol, micrograms per liter	GC method (604) [33]; GC/MS method (625) [36]					
181. N-Nitrosodimethylamine, micrograms per liter.	GC method (607) [35]; GC/MS method (625) [36]					
182. N-Nitrosodipropylamine, micrograms per liter.	GC method (607) [35]; GC/MS method (625) [36]					
183. N-Nitrosodiphenylamine, micrograms per liter.	GC method (607) [35]; GC/MS method (625) [36]					
184. PCB–1016, micrograms per liter	GC method (608) [36]; GC/MS method (625) [36]					

Table 1.—*List of Approved Test Procedures*—Continued

Parameter and units	Method	Reference (Page Nos.) 1974 EPA Methods	14th edition standard methods	Part 31 1975 ASTM	USGS methods [1]	Other approved methods
185. PCB–1221, micrograms per liter [7]	GC method (608) [34]; GC/MS method (625) [36]					
186. PCB–1232, micrograms per liter	GC method (608) [34]; GC/MS method (625) [36]					
187. PCB–1242, micrograms per liter	GC method (608) [34]; GC/MS method (625) [36]					
188. PCB–1248, micrograms per liter	GC method (608) [34]; GC/MS method (625) [36]					
189. PCB–1254, micrograms per liter	GC method (608) [34]; GC/MS method (625) [36]					
190. PCB–1260, micrograms per liter	GC method (608) [34]; GC/MS method (625) [36]					
191. Phenanthrene, micrograms per liter	GC method (608) [34]; GC/MS method (625) [36]					
192. Phenanthrene, micrograms per liter	GC method (608) [34]; GC/MS method (625) [36]					
193. Phenol, micrograms per liter	GC method (604) [33]; GC/MS method (625) [36]					
194. Pyrene, micrograms per liter	GC or HPLC method (610) [35]; GC/MS method (625) [36].					
195. 2,3,7,8–Tetrachlorodibenzo-p-dioxin micrograms per liter.	GC/MS methods (613) [41], (625) [36]					
196. 1,1,2,2–Tetrachloroethane, micrograms per liter.	GC method (601) [29]; GC/MS method (624) [35]					
197. Tetrachloroethene, micrograms per liter	GC method (601) [29]; GC/MS method (624) [35]					
198. Toluene, micrograms per liter	GC method (602) [30]; GC/MS method (624) [35]					
199. Toxaphene, micrograms per liter	GC method (608) [34]; GC/MS method (625) [36]					
200. 1,2,4-Trichlorobenzene, micrograms per liter.	GC method (612) [40]; GC/MS method (625) [36]					
201. 1,1,1-Trichloroethane, micrograms per liter.	GC method (601) [29]; GC/MS method (624) [35]					
202. 1,1,2-Trichloroethane, micrograms per liter.	GC method (601) [29]; GC/MS method (624) [35]					
203. Trichloroethene, micrograms per liter	GC method (601) [29]; GC/MS method (624) [35]					
204. Trichlorofluromethane, micrograms per liter.	GC method (601) [29]; GC/MS method (624) [35]					
205. 2,4,6,-Trichlorophenol, micrograms per liter.	GC method (601) [29]; GC/MS method (625) [36]					
206. Vinyl Chloride, micrograms per liter	GC method (601) [29]; GC/MS method (624) [35]					
207. Orthophosphate (as P), milligrams per liter.	Manual or automated ascorbic acid reduction	249 256	481 624	384	131	[16] (621)
208. Pesticides, milligrams per liter	Gas chromatography [10]		555	529	[11] (24)	
209. Phenols, milligram per liter	Colorimetric, (4AAP)	241	582	545		
210. Phosphorus (elemental), milligrams per liter.	Gas chromatography [23]					
211. Phosphorus; total (as P), milligrams per	Persulfate digestion followed by manual or automated ascorbic acid reduction.	249 256	476 481 624	384	133	[7] (621)
RADIOLOGICAL						
212. Alphas—total, pCi per liter	Proportional or scintillation		648	59	[16] (75) [24] (78)	
213. Alpha—counting error, pCi per liter	Proportional or scintillation counter		648	594	[10] (79)	
214. Beta—total, Pci per liter	Proportional counter		648	601	[10] (75) [24] (78)	
215. Beta—counting error, pCi per liter	Proportional counter		648	606	[10] (79)	
216. (a) Radium—total, pCi per liter	Proportional counter		661	661		
(b) ^{226}Ra, pCi per liter	Scintillation counter		667		[10] (81)	
RESIDUE						
217. Total, milligrams per liter	Gravimetric, 103 to 105°C	270	91			
218. Total dissolved (filterable), milligrams per liter.	Glass fiber filtration, 180°C	266	92			
219. Total suspended (non-filterable), milligrams per liter.	Glass fiber filtration, 103 to 105°C	268	94			(537) [38]
220. Settleable, milliliters per liter or milligrams per liter.	Volumetric or gravimetric		95			
221. Total volatile, milligrams per liter	Gravimetric, 550°C	272	95			
222. Specific conductuance, micromhos per centimeter at 25°C.	Wheatstone bridge conductimetry	275	71	120	148	(606) [3]
223. Sulfate (as SO_4) milligrams per liter	Gravimetric;		493	424		(624) [3]
	Turbidimetric; or	277	496	425		(623) [3]
	Automated colorimetric (barium chloranilate)	279				
224. Sulfide (as S), milligrams per liter	Titrametric-iodine for levels greater than 1 mg per liter;.	284	505		154	
	Methylene blue photometric		503			
225. Sulfite (as SO_3), milligrams per liter	Titrimetric, iodine-iodate	285	508	435		
226. Surfactants, milligrams per liter	Colorimetric (Methylene blue)	157	600	494	(11) [22]	
227. Temperature, degrees C	Calibrated glass or electrometric thermometer	266	125		(131) [39]	
228. Turbidity, NIU	Nephelometric	295	132	223	156	

[1] All page references for USGS methods unless otherwise noted are to Brown, E., Skougstad, N.W., and Fishman, M.J., "Methods for Collection and Analysis of Water Samples for Dissolved Minerals and Gases, "U.S. Geological Survey Techniques of Water-Resources Inv., book 5 ch. Al, (1970)."

[2] EPA comparable method may be found on indicate page of "Official Methods of Analysis of the Association of Official Analytical Chemists" methods manual, 12th ed. (1975).

[3] Manual distillation is not required if comparability data on representative effluent samples are on company file to show that this preliminary distillation step is not necessary; however, manual distillation will be required to resolve any controversies.

[4] The method used must be specified.

[5] The tube MPN is used.

[6] Slack, K.V. and others, "Methods for Collection and Analysis of Aquatic Biological and Microbiological Samples "U.S. Geological Survey Techniques of Water-Resource Inv., book 5, ch A4 (1973)."

[7] Since the membrane filter technique usually yields low and variable recovery from chlorinated wastewaters, the MPN method will be required to resolve any controversies.

[8] The chloromine-T oxidation-colometric procedure for benzedrine is available from the Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268.

[9] American National Standard on Photographic Processing Effluents, Apr. 2, 1975. Available from ANSI, 1430 Broadway, N.Y. 10018.

[19] Fishman, M. J. and Brown, Eugene, "Selected Methods of the U.S. Geological Survey for Analysis of Wastewaters," (1976) open-file report 76–177.

[11] Procedures for pentachlorophenol, chlorinated organic compounds, and pesticides can be obtained from the Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, Concinnati, Ohio 45268.

[12] Color method (ADMI procedure) available from Envirnomental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268.

[13] For samples suspected of having thiocyanate interference, magnesium chloride is used as the digestion catalyst. In the approved test procedure for cyanides, the recommended catalysts are replaced with 20 ml of a solution of 510 g/l magnesium chloride ($MgCl_2$ $6H_2O$). This substitution
will eliminate
thiocyanate interference
for both total cyanide
amenable to
chloorination
measurements.

[14] For the determination of total metals the sample is not filtered before processing. Because vigorous digestion procedures may result in a loss of certain metals through precipitation, a less vigorous treatment is recommended as given on p. 83 (4.1.4) of "Methods for Chemical Analysis of Water and Wastes" (1974). In those instances where a more vigorous digestion is desired the procedure on p. 82 (4.1.3) should be followed. For the measurement of the noble metal series (gold, iridium osmium, palladium, platinum, rhodium and guthenium), and aqua regia digestion is to be substituted as follows: Transfer a representative aliquot of the well-mixed sample to a Griffin beaker and add 3 ml of concentrated redistilled HNO_3. Place the beaker on a steam bath and evaporate to dryness. Cool the beaker and cautiously add a 5 ml portion of aqua regia. (Aqua regia is prepared immediately before use by carefully adding 3 volumes of concentrated HC1 to one volume of concentrated HNO_3.) Cover the beaker with a watch glass and return to the steam bath. Continue heating the covered beaker for 50 min. Remove cover and evaporate to dryness. Cool and take up the residue in a small, quantity of 1:1 HC1. Wash down the beaker walls and watch glass with distilled water and filter the sample to remove silicates and other insoluble material that could clog the atomizer. Adjust the volume to same predetermined value based on the expected metal concentration. The sample is now ready for analysis.

[15] As the various furnace devices (flameless AA) are essentially atomic absorption techniques, they are considered to be approved test methods. Methods of standard addition are to be followed as noted in p. 78 of "Methods for Chemical Analysis of Water and Wastes" 1974.

[16] Dissolved metals are defined as those constituents which pass through a 0.45 μm membrane filter. A prefiltration is permissible to free the sample from larger suspended solids. Filter the sample as soon as practical after collection using the first 50 to 100 ml to rinse the filter flask. (Glass or plastic filtering apparatus are recommended to avoid possible contamination.) Discard the portion used to rinse the flask and collect the required volume of filtrate. Acidify the filtrate with 1:1 redistilled HNO_3 to a pH or 2. Normally, 3 ml of (1:1) acid per liter should be sufficient to preserve the samples.

[17] See "Atomic Absorption Newsletter," vol. 13, 75 (1974). Available from Perkin-Elmer Corp., Main Ave., Norwalk, Conn. 06852.

[18] Method available from Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268.

[19] Recommended methods for the analysis of silver in industrial wastewaters at concentrations of 1 mg/l and above are inadequate where silver exists as an inorganic halide. Silver halides such as the bromide and chloride are relatively insoluble in reagents such as nitric acid but are readily soluble in an aqueous buffer of sodium thiosulfate and sodium hydroxide to a pH of 12. Therefore, for levels of silver above 1 mg/1 20 ml of sample should be diluted to 100 ml by adding 40 each of 2M $Na_2S_2O_3$ and 2M NaOH. Standards should be prepared in the same manner. For levels of silver below I mg/1 the recommended method is satisfactory.

[20] An automated hydrazine reduction method is available from the Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268.

[21] A number of such systems manufactured by various companies are considered to be comparable in their performance. In addition, another technique, based on combustion-methane detection is also acceptable.

[22] Goerlitz, D., Brown, E., "Methods for Analysis or Organic Substances in Water": U.S. Geological Survey Techniques of Water-Resources Inb., book 5, A3 (1972).

[23] R. F. Addison and R. G. Ackman, "Direct Determination of Elemental Phosphorous by Gas-Liquid Chromotography," "Journal of Chromatography," vol. 47, No. 3, pp. 421–426, 1970.

[24] The method found on p. 75 measures only the dissolved portion while the method on p. 78 measures only suspended. Therefore, the 2 results must be added together to obtain "total".

[25] Stevens, H. H., Fick, J. F., and Smoot, G. F., "Water Temperature—Influential Factors, Field Measurement and Data Presentation: U.S. Geological Survey Techniques of Water Resources Inv., book 1 (1975)."

[26] EPA interim methods for analysis of organics in municipal and industrial wastewater by GC/MS purge and trap (Method 624 and methylene chloride extraction (Method 625) procedures are available from the Environmental Monitoring and Support Laboratory, U.S.E.P.A., Cincinnati, Ohio, 45268. Direct Aqueous injection is to be used in these GC/MS procedures for all compounds that exceed 1000 micrograms per liter. Dichlorodifluoramethane should be analysed by the interim gas chromatographic methoc 601. For differentiation between isomeric pairs anthracene and phenanthrene, chrysene and benzo (a) anthracene, and benzo (b) fluoranthene and benzo (k) fluoranthene use method 610 polynuclear aromatic hydrocarbons. "Interim Method for Benzidine and its Salts in Wastewater" is available from the Environmental Monitoring and Support Laboratory, U.S.E.P.A., Cincinnati, Ohio, 45268 (EMSL–CI).

[27] The Inductively Coupled Plasma Optical Emission Specornetric Method (ICP) is available from the Environmental Monitoring and Support Laboratory, U.SE.P.A. Cincinnati, Ohio 45268 (EMSL–CI).

[28] Method 507 for Carbonaceous Biochemical Oxygen Demand (BOD carbonaceous) is available from the Environmental Monitoring and Support Laboratory, U.S.E.P.A. Cincinnati, Ohio 45268 (EMSL–CI).

[29] Inert gas purge, followed by gas chromatography with halide specific detection (interim method 601), available from EMSL–CI.

[30] nert gas purge followed by gas chromatography and photoionization detection (interim method 602), available from EMSL–CI.

[31] Inert gas purge followed by gas chromatographic separation and detection with flame ionization detector (interim method 603), available from EMSL–CI.

[32] Methylene chloride extraction, followed by gas chromatography with flame ionization or electron capture detection (interim method 604), available from EMSL–CI.

[33] Chloroform extraction followed by concentration and high performance liquid chromatography (HPLC) with electrochemical detection (interim method 604), available from EMSL–CI.

[34] Methylene chloride extraction followed by gas chromatography with flame ionization or electron capture detection followed by gas chromatography with nitrogen-phosphorous or reductive Hall detectors (interim method 607), available from EMSL–CI.

[35] Methylene chloride extraction followed by gas chromatography with electron capture or halogen specific detection (interim method 608), available from EMSL–CI.

[37] Methylene chloride extraction followed by exchange to toluene, gas chromotography with flame ionization detection (interim method 609), available from EMSL–CI.

[38] Methylene chloride extraction followed by HPLC with fluoresence or UV detection; or gas chromatography (interim method 610), available from EMSL–CI.

[39] Methylene chloride extraction followed by gas chromatography with halogen-specific detector (inerim method 611), available from EMSL–CI.

[40] Methylene chloride extraction followed by concentration, gas chromatography with electron capture detection (interim method 612), available from EMSL–CI.

[41] Methylene chloride extraction followed by transfer to hexane and capillary column gas chromatography/mass spectometry with electron impact ionization (interim method 613), available from EMSL–CI.

[42] Microbiological Methods for Monitoring the Environment (Decembver 1978) available for the Environmental Monitoring and Support Laboratory U.S.E.P.A. Cincinnati, Ohio 45268.

2. A new § 136.3(d) is added together with a new Table entitled, "Table II—Containers, Preservation and Holding Times", to read as follows:

§ 136.3 Identification of test procedures.

* * * * * * *

(d) Sample preservation procedures, container materials, and maximum allowable holding times for parameters cited in Table I are prescribed in Table II. Any person may apply for a variance from the prescribed preservation techniques, container materials, and maximum holding times applicable to samples taken from a specific discharge. Applications for variances may be made by letters in triplicate to the Regional Administrator in the Region in which the discharge will occur. Sufficient data should be provided to assure such variance does not adversely affect the integrity of the sample. Such data will be forwarded by the Regional Administrator to the Director of the Environmental Monitoring and Support Laboratory in Cincinnati, Ohio for technical review and recommendations for action on the variance application. Upon receipt of the recommendations from the Director of the Environmental Monitoring and Support Laboratory, the Regional Administrator may grant a variance, applicable to the specific discharge, to the applicant. A decision to approve or deny a variance will be made within 90 days of receipt of the application by the regional Administrator.

Table II.—*Containers, Preservation, and Holding Times*

Measurement[a]	Container[b]	Preservative[c]	Maximum holding time[d]
1 Acidity	P,G	Cool, 4°C	14 days.
2 Alkalinity	P,G	Cool, 4°C	14 days.
3 Ammonia	P,G	Cool, 4°C., H_2SO_4 to pH<2	28 days.
BACTERIA			
4–7 Coliform, fecal and total	P,G	Cool, 4°C., 0.008% $Na_2S_2O_3$[h].	6 hours.
8 Fecal streptococci	P,G	Cool, 4°C., 0.008% $Na_2S_2O_3$[h].	6 hours.
9 Biochemical oxygen demand	P,G	Cool, 4°C	48 hours.
10 Biochemical oxygen demand carbonaceous.	P,G	Cool, 4°C	48 hours.
11 Bromide	P,G	None required	28 days.
12 Chemical oxygen demand	P,G	Cool, 4°C., H_2SO_4 to pH<2	28 days.
13 Chloride	P,G	None required	28 days
14 Chlorinated organic compounds.	G, teflon-lined cap	Cool, 4°C., 0.008% $Na_2S_2O_3$[h].	7 days (until extraction). 30 days (after extraction).
15 Chlorine, total residual	P,G	Determined on-site	2 hours.
16 Color	P,G	Cool, 4°C	48 hours.
17–18 Cyanide, total and amenable to chlorination.	P,G P,G	Cool, 4°C NaOH to pH>12 0.008% $Na_2S_2O_3$[h]	14 days.
19 Dissolved oxygen			
Probe	G bottle and top	Determine on site	1 hour.
Winkler	G bottle and top	Fix on site	8 hours.
20 Fluoride	P	None required	28 days.
21 Hardness	P,G	HNO_3 to pH<2	6 months.
22 Hydrogen ion (pH)	P,G	Determine on site	2 hours.
23 and 92 Kjeldahl and organic nitrogen.	P,G	Cool, 4°C., H_2SO_4 to pH<2	28 days.
METALS[e]			
40–41 Chromium VI	P,G	Cool, 4°C	48 hours.
58–59 Mercury	P,G	HNO_3 to pH<2, 0.05% $K_2Cr_2O_7$.	28 days.
24–87 Metals except above	P,G	HNO_3 to pH<2	6 months.
88 Nitrate	P,G	Cool, 4°C	48 hours.
88(a)[1] Nitrate-Nitrite	P,G	Cool, 4°C., H_2SO_4 to pH<2	28 days.
89 Nitrite	P,G	Cool, 4°C	48 hours.
90 Oil and Grease	G	Cool, 4°C., H_2SO_4 to pH<2	28 days.
91 Organic Carbon	P,G	Cool, 4°C., H_2SO_4 to pH<2	28 days.
ORGANIC COMPOUNDS[f]			
93–206 Extractables (including phthalates, nitrosamines organochlorine pesticides, PCB's nitroaromatics, isophorone, polynuclear aromatic hydrocarbons, haloethers, chlorinated hydrocarbons and TCDD).	G, teflon-lined cap	Cool, 4°C 0.008% $Na_2S_2O_3$[h]	7 days (until extraction). 30 days (after extraction).
Extractables (phenols)	G, teflon-lined cap	Cool, 4°C H_2SO_4 to pH<2 0.008% $Na_2S_2O_3$[h]	7 days (until extraction). 30 days (after extraction).
Purgeables (halocarbons and aromatics).	G, teflon-lined septum	Cool, 4°C., 0.008% $Na_2S_2O_3$[h].	14 days.
Purgeables (acrolein and acrylonitrite).	G, teflon-lined septum	Cool, 4°C., 0.008% $Na_2S_2O_3$[h].	3 days.
207 Orthophosphate	P,G	Filter on site, cool, 4°C	48 hours.
208 Pesticides	G, teflon-lined cap	Cool, 4°C 0.008% $Na_2S_2O_3$[h]	7 days (until extraction). 30 days (after extraction).
209 Phenols	P,G	Cool, 4°C., H_2SO_4 to pH<2	28 days.
210 Phosphorus (elemental)	G	Cool, 4°C	48 hours.
211 Phosphorus, total	P,G	Cool, 4°C., H_2SO_4 to pH<2	28 days.
RADIOLOGICAL			
212–216 Alpha, Beta and radium	P,G	HNO_3 to pH<2	6 months.
217 Residue, total	P,G	Cool, 4°C	14 days.
218 Residue, filterable	P,G	Cool, 4°C	14 days.
219 Residue, nonfilterable	P,G	Cool, 4°C	7 days.
220 Residue, settleable	P,G	Cool, 4°C	7 days.
221 Residue, volatile	P,G	Cool, 4°C	7 days.
73 Silica	P	Cool, 4°C	28 days.
222 Specific conductance	P,G	Cool, 4°C	28 days.

Table II.—*Containers, Preservation, and Holding Times—Continued*

	Measurement[a]	Container[b]	Preservative[c]	Maximum holding time[d]
223	Sulfate	P,G	Cool, 4°C	28 days.
224	Sulfide	P,G	Cool, 4°C. zinc acetate	28 days.
225	Sulfite	P,G	Cool, 4°C	48 hours.
226	Surfactants	P,G	Cool, 4°C	48 hours.
227	Temperature	P,G	Determine on site	Immediately.
228	Turbidity	P,G	Cool, 4°C	48 hours.

[a] Parameter numbers refer to Table I.

[b] Polyethylene (P) or Glass (G).

[c] Sample preservation should be performed immediately upon sample collection. For composite samples each aliquot should be preserved at the time of collection. When use of an automatic sampler makes impossible to preserve each aliquot, then samples may be preserved by maintaining at 4°C. until compositing and sample splitting is completed.

[d] Samples should be analyzed as soon as possible after collection. The times listed are the maximum times that samples may be held before analysis and still considered valid. Samples may be held for longer periods only if the permittee, or monitoring laboratory, has data on file to show that the specific types of samples under study are stable for the longer time.

Some samples may not be stable for the maximum time period given in the table. A permittee, or monitoring laboratory, is obligated to hold the sample for a shorter time if knowledge exists to show this is necessary to maintain sample stability.

[e] Samples should be filtered immediately on-site before adding preservative for dissolved metals.

[f] Guidance applies to samples to be analyzed by GC, LC, or GC/MS for specific organic compounds.

[g] This parameter not listed in Table I.

[h] Should only be used in the presence of residual chlorine.

[i] Not available in Table I.

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Part IV

Consumer Product Safety Commission

Public Hearing Concerning Safety and Health Problems That May Be Associated With Release of Formaldehyde Gas From Urea Formaldehyde (UF) Foam Insulation

CONSUMER PRODUCT SAFETY COMMISSION

Urea-Formaldehyde Foam Insulation; Public Hearings

AGENCY: Consumer Product Safety Commission.

ACTION: Notice of public hearings.

SUMMARY: The Commission will hold public hearings concerning safety of formaldehyde gas from urea formaldehyde (UF) foam insulation. The hearings will be held in Portland, Oregon on December 13, 1979; in Atlanta, Georgia, on January 10, 1980; in Minneapolis, Minnesota, on February 5, 1980; and in Hartford, Connecticut, on February 26, 1980. The primary purpose of the hearings is to obtain additional information concerning health and safety problems that may be associated with UF foam insulation. The Commission will also consider information presented about safety and health problems that may be associated with the release of formaldehyde from other consumer products. The specific times and places for the hearings will be announced in the Commission's Public Calendar, available from the Office of the Secretary of the Commission, or may be obtained by calling the Commission's area offices in Seattle, Atlanta, Minneapolis or Boston. The Commission will make available funding for public participation in these hearings.

Dates and Addresses: (1) *Portland, Oregon Hearing.* Persons who wish to participate in the December 13 hearing in Portland should, by December 7, 1979, contact Joan L. Bergy, Director, CPSC Seattle Area Office, Federal Building, Room 3240, 915 Second Avenue, Seattle, Washington 98174 (206) 442–5276. The Portland hearing will be from 1:30 to 6:00 p.m., and from 7:00 to 10:00 p.m. (if necessary), at the Bonneville Power Administration Auditorium, 1002 NE. Holladay, Lloyd Center, Portland, Oregon.

(2) *Atlanta, Georgia Hearing.* Persons who wish to participate in the January 10 hearing in Atlanta should, by January 3, 1980, contact Leslie Pounds, Director, CPSC Atlanta Area Office, 1330 West Peachtree Street, Atlanta, Georgia 30309 (404) 881–2231.

(3) *Minneapolis, Minnesota Hearing.* Persons who wish to participate in the February 5 hearing in Minneapolis should, by January 29, contact John Rabusch, Director, CPSC Twin Cities Area Office, Metro Square, Suite 580, 7th and Robert, Saint Paul, Minnesota 55101 (612) 725–7781.

(4) *Hartford, Connecticut Hearing.* Persons who wish to participate in the February 26 hearing in Hartford should, by February 19, contact Jerome Donovan, Director, CPSC Boston Area Office, 100 Summer Street, Room 1607, Boston, Massachusetts 02110 (617) 223–5576.

(5) *Copies of Testimony.* Persons participating at the Portland hearing should provide a copy or outline of their testimony to the CPSC Seattle Area Office, Federal Building Rm. 3240, 915 Second Avenue, Seattle Washington 98174 by December 10, 1979. Persons participating at the other hearings should provide a copy or outline of their testimony to the Office of the Secretary, CPSC, 1111 18th Street, NW, Washington, D.C. 20207 at least five days in advance of the hearing.

(6) *Requests for Funding.* Persons seeking funding to enable them to participate in these hearings should complete the application attached to this notice, in accordance with the Commission's regulations, and send it to Catherine Bolger, Office of the Secretary, CPSC, Washington, D.C. 20207 (202) 634–7700 by December 10, 1979, for funding for the Portland, hearing, and by January 4, 1980, for funding for the other hearings.

(7) *Written Comments.* Persons who are unable to participate in the hearings or who want to supplement their testimony may do so by sending written comments to the Office of the Secretary, CPSC, Washington, D.C. 20207 by March 12, 1980.

FOR FURTHER INFORMATION CONTACT: Harry Cohen, Program Manager, or Nick Marchica, Project Manager, Office of Program Management, CPSC (301) 492–6453. For questions concerning funding for public participation contact Ms. Catherine Bolger, Office of the Secretary, CPSC, (202) 634–7700.

SUPPLEMENTARY INFORMATION:

I. Background

A. Potential Adverse Safety and Health Effects

The Commission is conducting these public hearings because it is concerned about adverse safety and health effects that may be associated with urea-formaldehyde (UF) foam insulation. As of October 17, 1979, the Commission has received 484 incident reports about adverse health effects that may be associated with the release of formaldehyde gas from UF foam insulation. (This type of home insulation, which is also referred to as urea-based foam insulation or foamed in-place insulation, is installed into existing wall cavities by drilling holes and pumping in the foam insulation through pressurized hoses.) The Commission has conducted approximately 100 in-depth injury investigations of the incident reports. Approximately 40% of the in-depth investigations involved either a temporary or permanent period of dislocation of consumers from their homes. Presently available information suggests that consumers exposed to formaldehyde gas released from UF foam insulation may experience: (1) Eye, nose, and throat irritation and other upper respiratory tract problems; (2) lower respiratory tract problems such as coughing, asthma-like symptoms, and shortness of breath; (3) severe skin irritation and eczema-like rashes; (4) swelling of the face and neck; (5) headaches and dizziness; (6) nausea and vomiting and (7) severe nose bleeds.

In addition to the above effects, presently available information indicates that formaldehyde is a strong sensitizer, so that exposed individuals may experience increasingly severe reactions to formaldehyde at increasingly low levels of exposure. After prolonged exposure to formaldehyde, sensitized individuals may suffer adverse safety and health effects for longer and longer durations. Sensitized individuals may find it increasingly difficult to stay in their homes. In some cases, the individual's sensitization to formaldehyde is so severe that after leaving the home, the consumer may be adversely affected by exposure to even very low levels of formaldehyde from other sources. Since there are many sources of formaldehyde exposure, complete avoidance of formaldehyde exposure may be nearly impossible.

Although some consumers' reactions to formaldehyde may be so severe that the consumer seeks medical attention, many other consumers may experience a more non-specific but in some cases persistent discomfort that may be mistaken for a cold, allergy, or general run-down feeling. Infants, elderly persons, and persons with allergies and other respiratory problems may be particularly sensitive to formaldehyde gas inhalation.

Apart from the potential adverse safety and health effects described above based on the acute toxicity of formaldehyde, interested persons should be aware that on October 16, 1979 representatives of the Formaldehyde Institute, an industry trade association, informed the Commission that preliminary test results from the Chemical Industry Institute for Toxicology (CIIT), a scientific

organization supported by 36 U.S. chemical corporations, indicate that formaldehyde has caused cancer in some laboratory animals. The CIIT study is still in progress. The human health implications of these findings have yet to be assessed.

B. Possible Remedies

The Commission staff estimates that as many as 150,000 homes may be insulated with UF foam insulation in 1979. UF foam insulation is pumped into the walls of a home in a shaving-cream like foam and hardens in place, once inside the wall. This insulation has been primarily used to retrofit existing homes, since the insulation can be pumped through relatively small holes in the walls of standing structures. The Commission staff believes that there are substitutes for most, but not all, uses of UF foam insulation. Although the Commission does not believe that consumers in all UF foam insulated homes will experience adverse safety and health effects that may be associated with the release of formaldehyde gas from UF foam insulation, each home presents a potential source of formaldehyde exposure. Where a problem arises with the release of formaldehyde gas from UF foam insulation, the Commission is not aware of a practical solution that has been demonstrated to be effective in most instances. Some of the remedial measures that have been suggested by industry representatives include ventilation by opening windows and doors and turning on air conditioners; the use of ammonia or other chemicals to neutralize formaldehyde gas; painting interior walls with an oil-base paint to prevent the migration of formaldehyde gas into the living areas of the home; and the use of chemically-treated air filters to absorb formaldehyde gas. In some cases persons have been successful in eliminating problems by removing the UF foam insulation after it has hardened. However, since this remedy requires removal of the interior walls of the home, it is potentially a very expensive solution. The Commission has also received reports that in some instances formaldehyde gas problems have continued even after the UF foam insulation has been removed.

C. Potential Causes for Formaldehyde Release

Information presently available to the Commission indicates that the potential for releasing formaldehyde from UF foam insulation may be dependent on the following factors: (a) Quality of ingredients; (b) age or shelf life of ingredients; (c) viscosities of ingredients; (d) ratios of ingredients; (e) temperatures at which foaming occurs; and (f) mixing of ingredients. The following factors may increase the likelihood of liberating formaldehyde: (a) excess formaldehyde in the resin; (b) excess catalyst in the foaming agent; (c) excess foaming agent; (d) improper ratio of resin to foaming agent; (e) foaming at high humidities; (f) foaming with cold chemicals; (g) dry density of foam exceeding the manufacturer's specifications; (h) application against recommended practice; and (i) improper use or lack of vapor barriers. After the UF foam insulation is in place it may begin to release formaldehyde, either immediately or after a delay, and may continue to release formaldehyde indefinitely. Presently available information indicates that heat and humidity may increase formaldehyde emissions. Because of these factors, the Commission believes that some consumers may insulate in the winter months and not experience adverse health and safety effects until the summer months.

D. Actions by State and Other Federal Agencies Concerning UF Foam Insulation

The Commission is aware of the following actions taken by state and federal agencies concerning UF foam insulation;

(1) The State of Massachusetts has recently declared UF foam insulation to be a banned hazardous substance and has required the removal of UF foam insulation from commerce in that state (105 CMR: Department of Public Health 650.020). The Massachusetts ban became effective November 14, 1979.

(2) The Attorney General's office of the State of Connecticut has entered an agreement with nine members of the UF foam insulation industry to resolve complaints concerning adverse physical effects associated with UF foam insulation. The Connecticut agreement also requires manufacturers to provide prospective purchasers with a notice concerning possible adverse health effects associated with UF foam insulation.

(3) The Office of the Attorney General of the State of Colorado has issued a warning about potential health hazards to consumers who have purchased UF foam insulation.

(4) The Joint Legislative Audit Committee of the State of California has recently (November 8, 1979) held hearings concerning UF foam insulation.

(5) The Department of Housing and Urban Development (HUD) has issued a use of materials bulletin (UMB #74) for UF foam insulation. UMB #74 explains the conditions under which HUD will accept UF foam insulation and stipulates certain limitations for its use.

(6) On March 19, 1979, the Department of Energy (DOE) published a proposed regulation under the residential conservation program that included an interim standard for UF foam insulation, identical to a Canadian Standard (51–GP–24M) for UF foam insulation (44 FR 16546). In the November 7, 1979, **Federal Register**, DOE determined that the proposed standard would not adequately address safety and effectiveness and that a much greater departure from the Canadian Standard was necessary. DOE indicated that a new standard would be proposed (44 FR 64602). DOE is currently sponsoring research with the Commission to help determine the causes for release of formaldehyde gas from UF foam insulation.

E. Actions by the CPSC Concerning UF Foam Insulation

At the present time the Commission is continuing to gather and assess epidemiological, technical, and economic information concerning UF foam insulation.

On October 20, 1976 the Metropolitan Denver District Attorneys' Consumer Office filed a petition under section 10 of the Consumer Product Safety Act (CPSA), 15 U.S.C. 2059, requesting the Commission to develop a safety standard under section 7 of the CPSA, 15 U.S.C. 2065, for certain types of home insulation products, including UF foam insulation. The petitioner claimed that there is an unreasonable risk of injury of irritation and poisoning associated with UF foam insulation. After considering information compiled by the Commission staff, on March 5, 1979 the Commission decided to defer a decision on the remaining part of the petition for UF foam insulation and instructed the Commission staff to evaluate additional information on possible means of addressing this alleged unreasonable risk of injury (44 FR 12080).

The Commission has requested the National Academy of Sciences (NAS) to evaluate available information on the toxicity of formaldehyde and recommend a "tolerable" level, if one exists, for formaldehyde in the home environment. The NAS report is due in December, 1979.

The Commission is also conducting research with DOE to help determine why formaldehyde gas is released from UF foam insulation and whether there are means of preventing such release. In addition, the Commission has recommended that formaldehyde be tested for carcinogenicity.

teratogenicity, and mutagenicity under the National Toxicology Program. The Commission has also received a completed economic study, conducted by a contractor, concerning the major uses of formaldehyde in consumer products, including UF foam insulation. The study also provide and overview of the production of, and market for, formaldehyde.

F. Possible Future Regulatory Actions by CPSC Concernig UF Foam Insulation

The Commission has the authority to take the following regulatory actions, where appropriate, concerning adverse safety and health problems that may be associated with UF foam insulation:

(1) Under sections 7 and 9 of the CPSA (15 U.S.C. 2056, 2058) the Commission could issue a consumer product safety standard for UF foam insulation. Such a standard could include requirements concerning the performance, composition, contents, design, construction, finish or packaging of the product; or requirements that the product be marked with or accompanied by clear and adequate warnings or instructions. Before issuing such a standard, the Commission must find that the rule is reasonably necessary to eliminate or reduce an unreasonable risk of injury and that issuance of the rule is in the public interest.

(2) Under sections 8 and 9 of the CPSA (15 U.S.C. 2057), the Commission could issue a ban of UF foam insulation. In addition to finding that the ban is reasonably necessary to eliminate or reduce an unreasonable risk of injury and is in the public interest, the Commission must also find that no feasible standard would adequately protect the public.

(3) Under section 15 of the CPSA (15 U.S.C. 2064) the Commission could determine that UF foam insulation presents a substantial product hazard. After making such a determination, the Commission could order manufacturers, distributors, or retailers of the product to either repair the defect, to replace the product with a product that does not contain the defect, or to refund the purchase price of the product.

(4) Under section 27(e) of the CPSA (15 U.S.C. 2076(e)), the Commission could require manufacturers of UF foam insulation to provide purchasers and prospective purchasers of the product with performance and technical information related to performance and safety to help carry out the purposes of the act.

(5) Under section 2(q)(1)(B) of the Federal Hazardous Substances Act (FHSA) (15 U.S.C. 1261 et seq.) the Commission could classify UF foam insulation as a banned hazardous substance. Such a classification would be based on a finding that, notwithstanding cautionary labeling that may be required for the product, the degree or nature of the hazard involved in the presence or use of the product in households is such that the objective of the protection of the public health and safety can be adequately served only by keeping the product out of the channels of interstate commerce.

II. Purpose of the Hearings

The primary purpose of the hearings is to obtain additional information concerning adverse safety and health effects that may be associated with the release of formaldehyde from UF foam insulation, as well as technical and economic information about UF foam insulation. The Commission will also consider information presented about safety and health problems that may be associated with the release of formaldehyde from other consumer products. By holding hearings in different parts of the country, the Commission intends to obtain different perspectives on the problem. The Commission is interested in obtaining information from the following participants:

(1) Consumers and consumer groups, especially consumers who have experienced adverse reactions to UF foam insulation.

(2) Industry representatives, including UF foam insulation trade associations, manufacturers, and distributors of component materials used in UF foam insulation, and persons installing UF foam insulation.

(3) State and local government representatives, including officials from health departments, building code organizations, energy conservation offices, consumer affairs offices, and offices of the Attorney General.

(4) Members of the scientific and health community, and

(5) Representatives of utility companies.

III. Issues To Be Discussed at the Hearings

At the hearings, the Commission intends to focus on the following issues associated with UF foam insulation:

(1) The types and severity of adverse safety and health problems.

(2) The frequency of adverse safety and health problems.

(3) The cause of the adverse safety and health problems.

(4) The proper means of installing UF foam insulation.

(5) Possible means of preventing or controlling the release of formaldehyde gas before or during installation.

(6) Possible remedies or means of reducing or eliminating formaldehyde gas problems after installation.

(7) The availability and suitability of substitute forms of home insulation.

(8) Possible means of notifying prospective consumers of adverse safety and health problems.

(9) Possible actions by industry members to address adverse safety and health problems.

(10) Possible actions by state and local governments to address adverse safety and health problems.

(11) Possible action by the Federal government to address adverse safety and health problems.

Although the primary focus of the hearings will be on problems that may be associated with the release of formaldehyde gas from UF foam insulation, the Commission will also receive testimony presented concerning problems that may be associated with the release of formaldehyde from other consumer products. If there is insufficient time at the hearings to receive testimony about other consumer products containing formaldehyde, interested persons may submit such information, in writing, to the Commission.

IV. Procedures at the Hearings

The hearings will be informal, non-adversary, legislativetype hearings under sections 10(c) and 27(a) of the CPSA (15 U.S.C. 2059(c), 2076(a)) at which there will be no formal pleadings or adverse parties. The hearings will be transcribed.

The hearings wil be conducted in accordance with the Commission's procedural regulations for oral presentations (16 CFR Part 1109, 40 FR 49122, October 14, 1975). Persons who wish to participate in the hearings must contact the Commission area office director, as specified in the *Dates and Addresses* section of this notice, in advance of the hearing. Persons participating in the hearings should send the Commission a copy or outline of their testimony in advance of the hearing, as specified in the *Dates and Addresses* section of this notice. If time permits, the presiding officer will allow other persons attending the hearing an opportunity to participate, even if these persons have not requested such an opportunity in advance of the hearing.

Because of the potentially large number of persons who may wish to participate in the hearings, it may be necessary for the presiding officer to apportion in an equitable manner the

time provided to participants in order to complete the hearings within the alloted time. As provided by the regulations concerning oral presentations, the presiding officer may terminate or shorten the presentation of any person when the presentation is repetitive or is not relevant to the purpose of the hearing. Also, where a number of persons have the same or similar interest, the presiding officer may require a single representative to present the views of these persons. The presiding officer and the Commission representatives at the hearing will have the right to question persons participating in the hearing as to their testimony and any other matter relevant to the issues in the hearings. There will be no questioning of participants by other participants or other non-commission persons at the hearings.

Persons who are unable to participate in the hearings or who wish to supplement their testimony may do so by submitting written comments, preferably in five copies, to the Office of the Secretary, CPSC, 1111 18th Street, NW., Washington, D.C. 20207 by March 12, 1980. Requests for confidentiality of documentation will be handled in accordance with the Freedom of Information Act as amended (5 U.S.C. 552) the Commission's regulations under that act (16 CFR Part 1015, February 22, 1977) and the provisions of section 6(a)(2) of the CPSA (15 U.S.C. 2055(a)(2).

A copy of the transcript of the hearings, as well as any written comments on this matter, will be made available in the Office of the Secretary of the Commission.

IV. Funding for Public Participation

During these hearings the Commission hopes to receive the views of consumers, public interest groups, industry representatives, state and local government representatives, and other interested groups on all relevant issues. In order to ensure effective representation of diverse viewpoints from groups and individuals who might not otherwise have the means to participate in these hearings or furnish written comments, the Commission will make available funding for reasonable expenses incurred in participating in these hearings and furnishing written comments. The Commission will make funding available for transportation to and from the hearings, for other travel related expenses, including lodging and meals, and for other reasonable costs incurred, such as baby-sitting. The Commission will also make funding available for preparing written comments.

Eligibility for financial compensation will be determined in accordance with the Commission's interim policies and procedures concerning Financial Compensation of Participants in Informal Rulemaking Proceedings (16 CFR Part 1050). Persons who wish to apply for financial compensation should complete the attached funding application and return it to: Catherine Bolger, Office of the Secretary, CPSC, 111 18th Street, N.W., Washington, D.C. 20207, by December 10, 1979 for the Portland, Oregon hearing and by January 4, 1980, for the other hearings.

(Sec. 10(c), 27(a); Pub. L. 92–573; 86 Stat. 1217, 1227; (15 U.S.C. 2059(c), 2076(a)).)

Dated: November 28, 1979.

Sadye E. Dunn,

Secretary, Consumer Product Safety Commission.

BILLING CODE 6355-01-M

CONSUMER PRODUCT SAFETY COMMISSION

FINANCIAL COMPENSATION APPLICATION FORM

UREA-FORMALDEHYDE (U.F.)

FOAM INSULATION

PUBLIC HEARINGS

SECTION I. APPLICANT INFORMATION (Complete Applicable Section)

Applying as an Individual

Name	Address	
Telephone Number (daytime)	Occupation	Social Security Number

Applying as an Organization or Group

Name of Organization or Group	Address
Telephone Number (daytime)	Name of Contact Person

Description of organization. Summarize the purpose and activities of the organization.

SECTION II. APPLICANT'S REPRESENTATION

1. Describe the point of view you intend to represent and your qualifications for such representation. Include such factors as your experience or activities contributing to your knowledge of the subject and past participation in similar proceedings, etc.

2. Discuss why the presentation of your views will contribute to a full and fair resolution of the issues involved in the proceeding.

SECTION III. STATEMENT OF FINANCIAL STATUS

1. Explain your economic interest, if any, in any Commission determination related to this proceeding. For example, indicate if you are a manufacturer or retailer of a product affected by this proceeding.

2. Specify any available financial resources enabling you to participate in this proceeding. Organizations are strongly encouraged to submit a copy of their operating budgets for the current year with an explanation of any funds allotted for participating in government proceedings.

SECTION IV. ITEMIZED BUDGET FOR REQUESTED FUNDS (Attach additional pages, if necessary)

General Operating/Travel Costs

Item of Expense	Explanation	Requested Amount	For CPSC Use: Approved	For CPSC Use: Issued

Personnel Costs

Name & Title	Work Description	Hourly Rate	Estimated Hours	Requested Amount	For CPSC Use: Approved	For CPSC Use: Issued

Applicant Signature	Date

Applications should be submitted to the below address by December 10, 1979 for the Portland, Oregon hearing; and January 4, 1980 for the other hearings.

Office of the Secretary
Consumer Product Safety Commission
1111 18th Street, NW
Washington, DC 20207

Attention: Office of Public Participation

Applications received after the due date will be considered to the extent practicable.

[FR Doc. 79-36981 Filed 11-30-79; 8:45 am]
BILLING CODE 6355-01-C

federal register

Monday
December 3, 1979

Part V

Department of Transportation

Federal Highway Administration

Maximum Weight of Trucks on Interstate System Highways: Variable Load Suspension Axles: Dummy Axles: Interpretation and Application of the Bridge Formula

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

23 CFR Part 657

[FHWA Docket No. 79-34]

Maximum Weight of Trucks on Interstate System Highways: Variable Load Suspension Axles: Dummy Axles: Interpretation and Application of the Bridge Formula

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Advance notice of proposed rulemaking.

SUMMARY: The Federal-Aid Highway Amendments of 1974, section 106(b), amended 23 U.S.C. 127 pertaining to the maximum weight of motor vehicles that may lawfully be permitted to use Interstate System highways. The amendment provided for a permissible increase in the maximum gross weight of a vehicle using the Interstate System from 73,280 pounds to 80,000 pounds gross weight, but conditioned that weight upon the application of the so-called "bridge formula," which is dependent on the number and spacing of the axles. The FHWA has interpreted the congressional intent in imposing the bridge formula application as requiring that all axles used in the formula must be capable of and in fact must be load-bearing axles. Thus, a "dummy" or "cheater" axle, one incapable of bearing a load, cannot be included in the bridge formula determination.

In response to an inquiry from the trucking industry, the FHWA also determined that a variable load suspension (VLS) axle provided the potential to serve as a dummy axle and, therefore, such axles also could not be counted under the bridge formula. A VLS axle is an axle upon which a load may be varied voluntarily while the vehicle is en route, whether by air, hydraulic, mechanical, or any combination of these means.

The National Truck Equipment Association has requested that this interpretation be modified in recognition of the true load-bearing capacity of the VLS axle.

The FHWA solicits comments on the Interpretation of the Statute as it relates to the use of the VLS axles.

DATES: Comments must be received on or before March 3, 1980.

ADDRESS: Submit written comments, preferably in triplicate, to FHWA Docket No. 79-34, Federal Highway Administration, Room 4205, HCC-10, 400 Seventh Street, SW., Washington, D.C. 20590. All comments received will be available for examination at the above address between 7:45 a.m. and 4:15 p.m., ET, Monday through Friday. These desiring notification of receipt of comments must include a self-addressed stamped postcard.

FOR FURTHER INFORMATION CONTACT: Mr. David C. Oliver, Attorney-Advisor, Motor Carrier and Highway Safety Law Division, (202) 426-0825. Office hours are 7:15 a.m. to 3:45 p.m. ET, Monday through Friday.

SUPPLEMENTARY INFORMATION: It has come to the attention of the Federal Highway Administration that there is a substantial amount of confusion as to the correct meaning of the amendments made to 23 U.S.C. 127 by section 106(b) of the Federal-Aid Highway Amendments of 1974, Pub. L. 93-643, 88 Stat. 2281. As amended, the statute provides in pertinent part, as follows:

> No (Interstate) funds * * * shall be apportioned to any State within the boundaries of which the Interstate System may lawfully be used by vehicles with weight in excess of (single axle, 20,000 pounds; tandem axle, 34,000 pounds; gross weight 80,000 pounds) * * * an overall gross weight on a group of two or more consecutive axles produced by application of the following formula:

$$W = 500\frac{LN}{N-1} + 12N + 36$$

> where W = overall gross weight on any group of two or more consecutive axles to the nearest 500 pounds, L = distance in feet between the extreme of any group of two or more consecutive axles, and N = number of axles in group under consideration, except that two consecutive sets of tandem axles may carry a gross load of 34,000 pounds each providing the overall distance between the first and last axles of such consecutive sets of tandem axles is thirty-six feet or more * * *.

The bridge formula requirement was inserted in order to ensure the distribution of weight over the truck configuration. This is particularly important as the ability of the road network to accommodate vehicular traffic is limited by the ability of its bridges to safely carry the sizes and weights operating over that network. Bridge investment has been estimated by the American Association of State Highway and Transportation Officials (AASHTO) to represent one-quarter of total highway investment and continued overstress or overstress in the unacceptable range will accelerate bridge deterioration and potential for collapse. Application of the bridge formula produces gross weight figures for all of the various configurations of trucks which would be safe on all existing Interstate bridges. Under the formula, greater weight can be achieved only by adding axles or adding length.

FHWA Interpretation—In response to an inquiry on the question of whether, for purposes of the bridge formula, an axle capable of carrying varying loads could be counted as one of the number of axles (N) in determining the weight of a group of axles, the FHWA interpreted section 127 as implying that all axles in which the load could be voluntarily varied en route, without regard to the suspension medium whether air, hydraulic, mechanical, or any combination thereof are analogous to dummy axles and could not be counted.

The bridge formula of 23 U.S.C. 127 is recognized in the AASHTO *Recommended Policy on Maximum Dimensions and Weights of Motor Vehicles To Be Operated Over the Highways of the United States,** which references dummy axles (Section 2.09.04) as follows: "Dummy axles shall not be considered in the determination of allowable loads." The dummy axle is defined as "A single axle attached independently to the frame of a vehicle and so designed and placed as to indicate the appearance of a normal tandem axle."

While the Congress in enacting the bridge formula of section 127 did not specifically refer to the AASHTO recommended policy, the policy does provide guidance in interpreting the application of the bridge formula among the States. In accordance with the AASHTO proscription it has been and continues to be the FHWA interpretation that an axle incapable of bearing a load cannot be counted in the bridge formula application.

However, it was the FHWA interpretation at that time that VLS axles while they possessed the capability of serving as true load-bearing axles, could serve with equal facility as dummy axles and as such could not be counted under the bridge formula. It appeared at the time that the potential for abuse was of sufficient magnitude to proscribe such axles. For example, a three-axle trailer group meeting the formula requirements could bear a weight of 42,500 pounds. If the front axle of the group is a VLS axle under the control of the driver in the cab, the load on the axle could be reduced to a nominal amount. This

*American Association of State Highway and Transportation Officials, 444 North Capitol Street, NW., Washington, D.C.

would increase the weight upon the remaining two axles in the group. For discussion purposes, assume the weight on the variable axle is reduced to 2,500 pounds. The remaining axles in the group would bear 40,000 pounds which exceeds the amount applicable under the formula. The interpretation was issued to discourage this type of excessively concentrated loading. While section 127 contains no express requirement that axles within a group must be articulated or substantially equalized as to weight in order to be counted, there is an implication that no axle can be manipulated in such a way as to make the remaining axles in the group bear more weight than the formula allows. This position is founded in both the spirit and the letter of 23 U.S.C. 127. In summary, the FHWA believes that any device which may be operated or activated by a truck operator, and which may be potentially damaging to highway structures and pavement, should be prohibited or not be counted in the computation of allowable loads.

Trade Association Position—The National Truck Equipment Association (NTEA), a trade association composed of "approximately 750 truck equipment manufacturers and distributors," through its standing committee, the Variable Load Suspension Axle Manufacturer's Committee, has taken issue with the FHWA position. The NTEA believes that confusion has developed because of an erroneous assumption that dummy or cheater axles are a type of VLS. The NTEA correctly characterizes the dummy axle as an axle attached to a vehicle frame to give the appearance of a load carrying axle, when it is not. Such suspensions are not adjustable and there is no way to equalize the load. A VLS is used to equalize the load when required and to transfer the load to the drive axle when the vehicle is not fully loaded or when advantageous under adverse conditions for vehicle safety to improve traction and directional control. In other words, a VLS is an actual load carrying axle. The NTEA acknowledges that a VLS can be unequalized or lifted when running loaded, and that this is misuse, but maintains that the known economic deterioration and loss of ride comfort from such misuse are significant self-enforcers of proper use.

NTEA contends that VLS axles can add materially to vehicle safety. Traction, braking, driver fatigue, equalization, maneuverability and control, cargo protection, and safety equipment are all enhanced. More importantly, the NTEA's position is that VLS are less destructive to road and bridge surfaces than alternative design. For example:

- Independent axle movement with VLS allows the axle to react to major surface irregularities without transferring load to another axle causing a severe overload when the following axle encounters the problem area.
- The VLS can be mounted in any position that allows the load to be distributed for better equalization and offers design flexibility that allows conformance to the bridge formula.

The VLS is lighter than dual drive which lightens the highway loading when the truck is loaded to any point lower than Gross Vehicle Weight Rating (GVWR).

- Road surface compliance and a softer ride allow the VLS vehicle to develop less tire squirm which results in less friction at the tire road interface, substantially reducing highway surface wear.

There are also benefits claimed with respect to resource conservation, particularly the ability to reduce consumption of petroleum and petroleum products. These include fuel savings and reduced tire wear.

The GAO Report—On July 16, 1979, the General Accounting Office issued a report, entitled "Excessive Truck Weight: An Expensive Burden We Can No Longer Support" (GAO report). That report chronicles the increasing problem we face as a result of highway deterioration. The report characterizes excessive truck weight as a major factor leading to highway deterioration and concludes that eliminating excessively heavy trucks from the highways will help preserve the Federal investment at relatively little cost compared to funding needs if truck weights are not controlled. The report detailed the excessive weight problem with respect to trucks hauling steel products, agricultural products, petroleum products, natural resource haulers, and urban hauling.

The discussion of natural resource haulers is pertinent to the issue at hand. The GAO report states that the damage caused by overweight trucks is most apparent in those areas where trucks hauling natural resources are making numerous short trips on the same roads. The report states: "Natural resource firms are often dominant economic forces and can exert considerable economic and political pressure to continue unrestricted operations. Such pressure can reduce weight enforcement or severely limit its effectiveness" (p. 15).

The report then specifies problems in the Appalachian coal haul area, where coal hauling has severely impacted the Federal-aid systems. It is of particular interest that the GAO found that much of the coal is hauled by large three and four-axle dump trucks and five-axle tractor-trailers. Logging operations, sand and gravel hauling, and urban trucking were also addressed. In the urban areas truck traffic was found to be concentrated at such locations as port facilities, gravel pits, construction sites, dumps, and incinerators. Single-unit trucks including dump trucks, concrete mixers, and trash haulers, hauling sand, gravel, and excavation materials often exceed weight limits.

Discussion—Both the NTEA and the GAO comments relate to the fundamental dilemma in which the FHWA finds itself. The FHWA has the mandate to ensure that Federal-aid highways are preserved for the use of the traveling public in accordance with service-life expectations. However, enforcement is a State prerogative. It is acknowledged by both sources that misuse of an otherwise technologically beneficial tool will result in faster deterioration of the highways than is desirable. Thus, the ultimate problem may be one of enforcement. If this is the situation, the short-term solutions may not be acceptable. There are approximately 50,000 or more VLS axles produced every year with heavy usage among the specialized haulers detailed in the GAO report. Dump trucks, concrete mixers, and dump trailers all can utilize the VLS. Insofar as these vehicles operate off the Interstate System, which appears a fair assumption to make in light of the GAO report, continuation of the FHWA ruling against including the axle in the bridge formula computation will not severely inhibit the industry's expansion. This would not, however, address the problem with respect to the non-Interstate Federal-aid systems.

The NTEA has indicated that if misuse is occurring, appropriate action should be taken to stop it. The NTEA has offered its assistance in ascertaining the incidence of misuse and in exploring possible solutions. The NTEA is concerned over the application of the FHWA interpretation because one State, Georgia, has recently enacted a law following this interpretation. In this respect, we would like information from Georgia on this issue. We are also interested in hearing from enforcement officials in areas where the VLS is heavily used. The States of Louisiana, Kentucky, West Virginia, Wisconsin, and Ohio may have experience which is helpful in resolving this issue.

At the same time, the FHWA will institute research into the nature and incidence of the problem.

While it is our belief that the potential damage caused by the abuse of the VLS justifies the original interpretation, the FHWA is willing to suspend the application of that interpretation until various alternatives are explored in order to ensure that no unnecessary hardships are created by its application. The alternatives under consideration include the following:

1. No change in the interpretation—the VLS will continue to be proscribed from the bridge formula computation necessary to establish the maximum weight on the Interstate System.

2. Abrogate the interpretation. This will leave it up to the individual States to take the initiative with respect to the VLS.

3. Abrogate the interpretation and require all States to permit VLS axles to be counted in the bridge formula.

4. Modify the interpretation to permit the inclusion of VLS axles which cannot be operated from the cab while the vehicle is en route.

5. Abrogate the interpretation and issue a regulation requiring those States which permit inclusion of VLS axles in the bridge formula to impose stiff penalties on violators sufficient to deter violations.

6. Abrogate the interpretation and issue a regulation requiring those States which permit inclusion of VLS axles in the bridge formula to require the posting of a bond sufficient to compensate for pavement and bridge damage.

The FHWA is also willing to consider any other alternative not included above. Comments will be welcome on the possible benefits of permitting the VLS axles to be included in the bridge formula including fuel efficiency and inflationary impacts, as well as enforcement problems and adverse impacts resulting from misuse of the VLS axle.

As only one State to our knowledge specifically prohibits by law the inclusion of the VLS axle in the bridge formula formulation, the FHWA is suspending the mandatory application of the interpretation until all alternatives have been explored. During this interim period, the States may take whatever action they feel necessary to address VLS axle usage.

This advance notice of proposed rulemaking is issued under the authority of 23 U.S.C. 127, 141, 315, and the delegation of authority by the Secretary of Transportation at 49 CFR 1.48(b).

Note.—The Federal Highway Administration has determined that this document does not contain a significant proposal according to the criteria established by the Department of Transportation pursuant to E.O. 12044. The impact of this rule is indeterminate at this time and does not warrant the preparation of a regulatory evaluation. Once the alternatives have been examined and a final decision has been made on the need for a regulation, a regulatory evaluation will be prepared and placed in the docket.

Issued on: November 20, 1979.

Karl S. Bowers,

Federal Highway Administrator.

[FR Doc. 79-38996 Filed 11-30-79; 8:45 am]

BILLING CODE 4910-22-M

federal register

Monday
December 3, 1979

Part VI

Office of Management and Budget

Audit of Federal Operations and Programs; Revision

OFFICE OF MANAGEMENT AND BUDGET

[Circular No. A-73; Revised Transmittal Memorandum No. 1]

Audit of Federal Operations and Programs

November 27, 1979.

This Transmittal Memorandum revises OMB Circular A-73, "Audit of Federal Operations and Programs," by replacing paragraph 7.h. with a new paragraph 8 (attached).

The revision requires semiannual reports to the head of an agency, procedures for resolving major disagreements between audit and program offices, a maximum of six months to determine agency action on audit recommendations, and a requirement for periodic evaluations of an agency's system.

James T. McIntyre, Jr.,
Director.

Circular A-73, "Audit of Federal Operations and Programs"

Circular A-73 is revised by replacing paragraph 7.h. with a new paragraph 8. Other paragraphs are renumbered accordingly.

"8. *Followup.* a. Each agency will establish policies for prompt and proper resolution of audit recommendations. Timely action on recommendations by responsible management officials is an integral part of an agency audit system, and is the key to its effectiveness.

b. Agency followup systems must provide for a complete record of action taken on audit findings and associated disallowed, suspended, or questioned costs. Such systems must provide for the following:

(1) Designate officials responsible for audit followup.

(2) Maintain accurate records of all audit reports or significant findings until final resolution. Records will be maintained to insure appropriate accounting and collection controls over amounts determined to be due the Government.

(3) Make written determinations promptly on all audit findings, and initiate action to assure that these determinations are carried out. Such determinations shall be made within a maximum of six months after issuance of the report. Final resolution should proceed as rapidly as possible.

(4) Assure that resolution actions are consistent with law and regulation, including written justification and the legal basis for decisions not to seek recovery of amounts due as a result of audit reports.

(5) Forward to the head of the agency or to a designee for resolution, all major disagreements between the audit office and officials responsible for acting on recommendations, and all reports or recommendations on which responsible officials have failed to provide a written determination within six months.

(6) Provide semiannual reports to the agency head on the status of all audit reports over six months old, the number of reports or findings resolved during the period, collections, or offsets made, and demands for payment made.

(7) Provide for an evaluation of whether the audit followup system is adequate and results in timely and proper resolution of audit findings and recommendations. The first evaluation will be made within one year of implementation of the system, and evaluations will be made every two years thereafter.

c. When audit recommendations requiring corrective action involve more than one program, agency, or level of government, the agency making the audit must coordinate its corrective action with that of other affected organizations."

Circular A-73, "Audit of Federal Operations and Programs"

AGENCY: Office of Management and Budget.

ACTION: Final Policy.

SUMMARY: This notice advises that OMB Circular A-73 has been revised by replacing paragraph 7.h. with a new paragraph 8. Previously, Circular A-73 provided that agencies were to have adequate followup systems for resolving audit recommendations and findings. Based upon our assessment of agency's followup systems, including recommendations in a GAO report on this matter, and subsequent Congressional hearings, we are specifying in the Circular the key elements each agency's system must contain.

The revision requires semiannual reports to the head of an agency, procedures for resolving major disagreements between audit and program offices, a maximum of six months to determine agency action on audit recommendations, and a requirement for periodic evaluations of an agency's system.

EFFECTIVE DATE: This revision becomes effective upon issuance.

FOR FURTHER INFORMATION CONTACT: John J. Lordan, Chief, Financial Management Branch, Office of Management and Budget, Washington, D.C. 20503 (202) 395-6823.

SUPPLEMENTARY INFORMATION: On July 10, 1979, a notice was published in the **Federal Register** (44 FR 40461) to amend Circular A-73. Interested persons were invited to submit written comments by August 10, 1979. About 15 comments were received from Federal and State agencies. The comments were considered in developing these final regulations. Although all commenters agreed with our objective of stregthening agency followup systems, some raised questions or made suggestions for clarifying changes. The more significant comments received, and OMB's responses to them are discussed below.

Changes in Final Regulation:

Set forth below are changes that have been adopted in the final regulations. The paragraphs are keyed to the proposed regulations published on July 10, 1979.

1. Subparagraph (2) has been amended to clarify that records must be kept on audit recommendations until they are resolved.

2. Subparagraph (3) was revised to make it clear that resolution of audit findings should be accomplished as quickly as possible.

3. Subparagraph (4). A clause was added to make it clear that the legal basis for decisions not to seek recovery of amounts determined to be due the Government must be included in the written justification for such decision.

Suggested Changes Not Considered Necessary:

Comment: One commenter pointed out that reports on proposal evaluations may contain opinions on contractor estimates of future costs which are not true "questioned costs." As such, they need not be included in the same system of records that accounts for questioned incurred costs.

Response: We agree the inclusion of these costs would be misleading. However, these reports are subject to most of the other elements of the audit followup system. Specifically, they must be recorded as open reports until a written determination is made, and they are subject to top management review as provided in paragraph 8.b(5).

Comment: Several commenters felt contract audits should be excluded from some of the audit followup requirements.

Response: Our review of agency's followup systems indicated no need for such an exemption, except as noted above.

Comment: One commenter suggested that we qualify the wording in subparagraph (5) to provide that when a "designee" is assigned to resolve a disagreement arising between the audit organization and a program office that the designee be independent of the program office.

Response: We believe this is understood.

John J. Lordan,

Chief, Financial Management Branch,

[FR Doc. 79-37016 Filed 11-30-79; 8:45 am]

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Federal Register

Monday
December 3, 1979

Part VII

Department of Energy

Economic Regulatory Administration

Unleaded Gasoline Production Incentives; Final Rule, Request For Comments, and Notice of Continued Rulemaking

DEPARTMENT OF ENERGY

Economic Regulatory Administration

10 CFR Part 212

[Docket No. ERA-R-79-30]

Mandatory Petroleum Price Regulations; Unleaded Gasoline Production Incentives

AGENCY: Economic Regulatory Administration, Department of Energy.

ACTION: Final rule and request for comments.

SUMMARY: The Economic Regulatory Administration (ERA) of the Department of Energy (DOE) hereby adopts the following two amendments to the refiner price rules.

1. Refiners are permitted a production incentive to reflect increased production of unleaded gasoline.

2. Increased cost of additives attributable to gasoline shall be recouped on sales of gasoline. Under this rule, the cost of alcohol used in the production of gasohol will be recovered in prices charged for gasoline.

ERA is continuing this rulemaking with respect to its proposal to delete the provision in § 212.112(b)(1) which requires that a refiner that did not produce unleaded gasoline on May 15, 1973, shall impute to it the May 15, 1973, selling price of the grade of leaded gasoline having the nearest octane number plus one cent per gallon. ERA requests further comments on alternative methods to impute May 15, 1973, selling prices for the various types and grades of unleaded gasoline.

EFFECTIVE DATE: December 1, 1979.

Other dates: Comments by December 31, 1979, 4:30 p.m.

ADDRESSES: All comments to Public Hearing Management, Docket No. ERA-R-79-30, Department of Energy, Room 2313, 2000 M Street NW., Washington, D.C. 20461.

FOR FURTHER INFORMATION CONTACT:

Robert C. Gillette (Comment Procedures), Economic Regulatory Administration, Room 2222-A, 2000 M Street NW., Washington, D.C. 20461, (202) 254-5201

William Webb (Office of Public Information), Economic Regulatory Administration, Room B-110, 2000 M Street NW., Washington, D.C. 20461, (202) 634-2170

Chuck Boehl or Ed Mampe (Office of Regulations and Emergency Planning), Economic Regulatory Administration, Room 2314, 2000 M Street NW., Washington, D.C. 20461, (202) 254-7200

William Mayo Lee (Office of General Counsel), Department of Energy, Room 6A-127, 1000 Independence Avenue SW., Washington, D.C. 20585, (202) 252-6754.

SUPPLEMENTARY INFORMATION:

I. Background
II. Comments Received
III. Amendments.
A. Production Incentive
B. Increased Additive Costs
C. Effective Date
IV. Continued Rulemaking
V. Regulatory Analysis
VI. Procedural Matters

I. Background

On June 4, 1979, DOE issued a notice of proposed rulemaking and public hearing (44 FR 32622, June 6, 1979) regarding the price rules for unleaded gasoline. DOE held hearings on the proposed amendments in Los Angeles, California, on June 28, 1979, and in Washington, D.C., on June 26, 1979. DOE received comments concerning the proposed amendments from more than 30 interested parties.

In the notice of proposed rulemaking DOE proposed three amendments to the refiner price rules to provide incentives for refiners to increase production of unleaded gasoline. First, DOE proposed to permit refiners a production incentive to reflect increased production of unleaded gasoline. Second, it was proposed to permit additive costs attributable to the production of gasoline to be allocated entirely to gasoline. Third, changes in the method for imputing the May 15, 1973, selling price for unleaded gasoline by refiners which did not sell unleaded gasoline on May 15, 1973, were proposed.

II. Comments Received

Generally the comments favored DOE's proposal to permit refiners a production incentive for increased production of unleaded gasoline. In response to a specific comment request, most commenters requested that the unleaded production incentive be allocated to all gasoline refined by the refiner and not only to unleaded gasoline refined and sold by the refiner as DOE had proposed. In response to the comments, we have decided to permit the dollar amount of the production incentive to be included in increased cost passthroughs to all grades of gasoline and not only in the computation of the base selling price of unleaded gasoline.

We also requested comments as to whether the proposed production incentive will provide sufficient economic incentives to increase the production of unleaded gasoline, especially in light of the recently adopted "tilt" rule. Most refiners stated that the production incentive would encourage the increased production of unleaded gasoline in the short term from existing facilities. However, they stated that additional incentives would be required to encourage them to make capital investments to expand facilities to increase unleaded gasoline production. A number of methods were suggested by which the incentive can be increased and made more effective. On the other hand, one commenter suggested that ERA has inadequate data upon which to demonstrate that the production incentive will increase unleaded production. Upon evaluating all of the comments and information available to ERA, we believe that the rule will further the production of unleaded gasoline.

In the proposal we invited comments on whether refiners which opt to calculate maximum lawful selling prices using actual prices charged for unleaded gasoline on May 15, 1973, should be permitted to increase these prices to reflect the production incentive. Most commenters favored permitting all refiners to be allowed to include the production incentive in their gasoline prices regardless of whether actual May 15, 1973, prices are used in computing the maximum lawful selling price for unleaded gasoline. The principal rationale was that the incentive is needed to increase the production of unleaded gasoline from all refiners and not just from those firms which impute a May 15, 1973, selling price. One commenter stated that refiners that sold unleaded gasoline on May 15, 1973, should be required to use those prices unless they could show unusual circumstances or irreparable harm. The final rule will permit all refiners to include the production incentive in their computations.

We invited comments on whether the rule should be made effective on June 1, 1979. Approximately one half of the comments favored making the rules effective June 1, 1979, and the remaining comments opposed making the rules effective retroactively. As discussed *infra*, the rule will become effective on December 1, 1979.

Generally the commenters supported the proposal to allocate increased additive costs incurred in the production of gasoline directly and entirely to gasoline. The commenters stressed that such a rule change would permit more of the increased costs associated with producing gasoline to be recouped in prices charged for gasoline and thereby encourage gasoline production.

Comments were solicited on the proposed deletion of the provision in § 212.112(b)(1) which requires that a refiner that did not produce unleaded gasoline on May 15, 1973, shall impute to it the May 15, 1973, selling price of the grade of leaded gasoline having the

nearest octane number, plus one cent per gallon. We invited comments regarding alternative methods of imputing the May 15, 1973, selling price for unleaded gasoline, such as by the use of a fixed graduated octane rating pricing scale. We expressed our concern that the current rule may distort the production of types of unleaded gasoline with different octance ratings.

The commenters supported the intent of the proposal to amend the current method of imputing May 15, 1973, selling prices for different types of unleaded gasoline. However, most commenters believed the method proposed by DOE would not accomplish the purpose of the amendment as stated by DOE in the notice of proposed rulemaking. Various other alternatives were suggested. Accordingly, DOE is continuing the rulemaking with respect to this issue.

We also invited comments from environmental and consumer groups regarding the economic and environmental effects of the proposed amendments, particularly on the effect that increased availability of unleaded gasoline will have on retail prices of unleaded gasoline and its subsequent effect on reducing misfueling. One commenter, representing a consumer group, stated that ERA is mistaken in asserting that the retail price differential between leaded and unleaded gasoline will not increase as a result of the unleaded gasoline production incentive. He stated further that unless a rule is issued that places a cap on this differential, these rules would require the preparation of an environmental impact statement. This commenter recognized that rises in price at the refinery gate may be passed on to customers at the retail level, but provided no reason to show that refiners would, as a result of this rule, likely raise prices more on one grade of gasoline than another. For the reasons stated *infra*, we have concluded that this commenter's premise is incorrect and that the price differential will not increase as a result of the adoption of this rule.

III. Amendments

A. Production Incentive

The first amendment adopted today permits refiners a production incentive to reflect increased production of unleaded gasoline. Under the new rule refiners may increase the amount of "increased costs" which may be recouped on gasoline to reflect increased unleaded gasoline production over either 1978 levels or 33 percent, the 1978 national average production ratio of unleaded gasoline to total gasoline. The production incentive is a new cost factor in the computation of maximum allowable selling prices for gasoline.

Refiners shall calculate the production incentive as follows:

Option 1. Number of gallons of unleaded gasoline refined in the month of measurement, less the number of gallons of unleaded gasoline refined in the corresponding month in 1978, and multiplied by 2 cents per gallon, or;

Option 2. Number of gallons of unleaded gasoline refined in the month of measurement, less the product of the total amount of gasoline (both leaded and unleaded) refined in the month of measurement multiplied by 33% (the Environmental Protection Agency's estimate of the national monthly average production ratio of unleaded gasoline to total gasoline refined in 1978) and multiplied by 2 cents per gallon.

To illustrate the new rule, assume Refiner X refined the following amounts of gasoline in the month of measurement and in the corresponding month in 1978.

	Total	Unleaded	Leaded
1978	1,000,000	250,000	750,000
1979	1,000,000	400,000	600,000

Under Option 1 Refiner X would compute the production incentive as follows:

400,000 gals. − 250,000 gals. = 150,000 gals.
150,000 gals. × 2¢ per gal. = $3,000.

Under Option 2 Refiner X's production incentive would equal:

400,000 gals. − (33% × 1,000,000 gals.) = 70,000 gals.
70,000 gals. × 2¢ per gal. = $1,400.

Accordingly, Refiner X would elect to calculate the production incentive using Option 1.

Refiner Y, however, which refined a higher percentage of unleaded gasoline than the 1978 national average monthly production ratio, would elect to use Option 2. Assume Refiner Y refined the following amounts of gasoline in the month of measurement and in the corresponding month in 1978.

	Total	Unleaded	Leaded
1978	1,000,000	800,000	200,000
1979	1,000,000	850,000	150,000

Under Option 1, Refiner Y's production incentive would be $1,000 (850,000 gals. − 800,000 gals. × 2¢). However, under Option 2, Refiner Y's production incentive would equal $10,400.

850,000 − (33% × 1,000,000) = 520,000
520,000 × 2¢ = $10,400.00.

In calculating the maximum allowable price from gasoline, ("d_i^u") Refiners X and Y may allocate the total dollar amount attributable to the production incentive (as computed in the new subparagraph (j) and included in the "H" factor) to all gasoline refined in the month of measurement. Accordingly, Refiner X may add $3,000 and Refiner Y $10,400 to the amounts currently permitted under the regulations to be recouped in sales of gasoline.

B. Increased Additive Cost

ERA amends its refiner price rules to permit refiners to allocate the total cost increases attributable to additives, including process chemicals and alcohol, used in the production of gasoline to prices charged for gasoline.

Specifically, additives, defined as materials and compounds, including catalyst and process chemicals, which are attributable to refining gasoline shall be included in the "B" factor (§ 212.83(c)(2)(iii)(D)) and recouped in prices charged for gasoline. Additives attributable to refining products other than gasoline will continue to be included in the "N" factor (§ 212.83(c)(2)(iii)(E)(III)) and allocated to all petroleum products. Alcohol used in the production of gasohol is an additive, and its costs shall be recouped in prices charged for gasoline.

C. Effective Date

This rule will become effective on December 1, 1979. We are not persuaded that the rule should be made retroactive to June 1, 1979, the possibility of which was suggested in the proposal. The additional increased costs available to be passed through in gasoline prices prospectively should adequately reflect the incentive required to increase the production of unleaded gasoline.

The provisions of 5 U.S.C. section 553(d), generally requiring that a substantive rule may not be made effective less than 30 days following publication of the rule, do not apply to rules that grant an exemption, relieve a restriction, are interpretive or if the agency finds good cause for the rule's earlier effectiveness. In this instance, the rule partially relieves the restriction as to the prices refiners can charge for gasoline. Furthermore, while we are not convinced that the production incentive should be made retroactive, the incentive should be made effective as soon as possible to spur the production of unleaded gasoline.

IV. Continued Rulemaking

In the notice of proposed rulemaking DOE proposed (1) to delete the provisions in § 212.112(b)(1) which require that a refiner that did not produce a grade of unleaded gasoline on May 15, 1973, impute to it a May 15,

1973, selling price equal to the selling price of the grade of leaded gasoline having the nearest octane number plus one cent per gallon, and; (2) require the May 15, 1973, selling price be imputed using the weighted average price charged for all types and grades of gasoline.

Generally, DOE believes some change to the "nearest octane number" provision is desirable. Thus, DOE is continuing the rulemaking with respect to this provision and invites further comments regarding appropriate changes to the rule. In particular, comments are invited on the following alternative methods of imputing the May 15, 1973, selling price for unleaded gasoline.

1. Using the average price charged for all types and grades of gasoline;

2. Using a fixed graduated octane rating scale (for example, one cent per octane rating), or;

3. Using a sliding octane rating scale (for example, a proportionally higher cents per gallon for gasoline with a higher octane rating).

V. Regulatory Analysis

Under Executive Order No. 12044, *Improving Government Regulations*, the Department of Energy has prepared a regulatory analysis of this final rule which analyzes the economic impact on the general economy, individual industries, geographical regions, and levels of government. The analysis deals with two aspects of the rule adopted:

(1) The production incentive, and;

(2) The attribution to gasoline of the increased cost of additives used to make gasoline.

A. Unleaded Production Incentives

In analyzing the disincentive to produce unleaded gasoline created by the previous price rules, two cases were reviewed:

(1) The refining industry has no excess reforming capacity and can make increased volumes of unleaded gasoline only by diverting low octane components to refinery fuel; or alternatively,

(2) There is some spare reforming capacity so that added volumes of unleaded gasoline can be made at lower costs than in (1) above.

The analysis of increasing refinery production of unleaded gasoline shows that the prior "one-cent" rule does not encourage an increase in unleaded gasoline production in either of the above cases. However, an additional two-cent-per-gallon production incentive would create an incentive to utilize fully existing octane generating facilities to maximize supplies of unleaded gasoline. The added revenue would also encourage refiners to invest in the new processing equipment necessary to increase the output of unleaded gasoline as required by changes in the automobile fleet.

(a) *Costs of the Rule.* The rule provides for two pricing options: Under the first option refiners may add two cents per gallon to those gallons of unleaded gasoline made by them which exceeds the gallons made in the corresponding 1978 period. The second option allows them to add two cents per gallon to those gallons of unleaded produced in excess of the 1978 national average ratio of unleaded gasoline to total gasoline production, which was 33 percent.

Under the first option, the increased unleaded volume that would be made over the next few years is substantial. By the end of 1980, we anticipate refiners using this option will have installed new manufacturing facilities with a capacity of about 450 thousand barrels per day of unleaded gasoline. By the end of 1980, then, the maximum cost of the first option will be $125 million per year.

Under the second pricing option, public data on unleaded production percentages were available for seven refiners, which account for a third of the total market and include a wide range of unleaded percentages. These data were used as the base for estimating total industry volume under the second option, which is estimated to have a maximum cost annually of about $155 million by 1980.

By the end of 1980, the maximum cost for both the first and second options will be about $280 million per year. This is equivalent to about one-half cent per gallon of unleaded gasoline (if all of the costs were passed through solely on unleaded gasoline), or about one-quarter cent per gallon of all gasoline sold.

Consumers of unleaded gasoline may pay a part of this increased cost by paying a slightly higher retail price for the unleaded they buy. However, they are not expected to pay all of the increased cost, and may pay none of it. Two other groups could share the increased cost. Depending on the intensity of competition, it is possible that gasoline wholesalers and retailers may not be able to pass through to consumers the full amount of the refinery gate price increase. Therefore, these groups may be forced to absorb a portion of the cost. It also appears that the largest part of the cost increase could be paid by consumers of leaded regular gasoline. This could occur if the increased supply of unleaded that becomes available as a result of the incentive is partially at the expense of leaded gasoline production.

(b) *Benefits of the Proposed Rule.* The benefits of the rule lie in the industry's ability to manufacture increased percentages of unleaded gasoline. Based on the industry's installed capital equipment, one can roughly estimate that processing capability exists to increase unleaded gasoline output by approximately 500,000 barrels per day by the end of 1980.

It is estimated that the U.S. motor gasoline pool consists of approximately 40 percent of the combination of catalytic cracked and alkylated stocks. These two conversion processes usually operate concurrently. The gasoline components thus manufactured are generally suitable for blending directly into unleaded gasoline without the need for octane improvements produced from processing chemicals or additives.

It is also estimated that catalytic reformate comprises another 30 percent of the U.S. motor gasoline pool. It is assumed that at least half of the U.S. reformate manufacture is of suitable quality for direct blending to unleaded grades.

When U.S. cracking, alkylation and high octane reformate stocks are totaled and supplemented with butane for vapor pressure control, it is estimated that the existing U.S. refining industry could in aggregate supply in excess of 50 percent of its gasoline output as unleaded, under the available economic incentives provided by the rule. Longer-term incentives may be created for refiners to install additional octane improvement facilities which will be needed to supply the volumes of unleaded gasolines that will be demanded in the mid to late 1980's.

Increased unleaded gasoline supply should benefit consumers. Service station "run outs" of unleaded will be essentially eliminated as the percentage of unleaded gasoline available to consumers will be in line with the percentage of this product demanded by automobiles equipped with catalytic converters. Of course, to the extent that gasoline price controls effectively inhibit total gasoline supply to a quantity less than demanded at the controlled price, shortages of both grades will continue. However, these shortages will not, as in the recent past, be more severe for unleaded grades.

As a result of increased supplies of unleaded gasoline, a lower fraction of vehicles equipped with catalytic converters is expected to be misfueled. This will have substantial environmental benefits and will help safeguard consumers' already large and growing investments in catalytic

converters (estimated at about $7 billion in the aggregate). Each catalytic converter costs about $200–300 to replace. Only two tankfuls of leaded gasoline can render some catalysts ineffective. As a result, there can be an eight-fold increase in emissions of hydrocarbons and carbon monoxide from such vehicles, which will delay many parts of the country in achieving attainment of acceptable air quality. Misfueling also causes lead buildup on spark plugs and valves, with consequent detuning and loss of fuel efficiency.

(c) *Effect on the Leaded/Unleaded Price Differential.* For the past 2 or 3 years, unleaded supply has been short relative to leaded supply. The U.S. average retail price differential between these grades until recently had been larger than the refinery gate price differential. The refiner differential, about four cents a gallon greater for unleaded gasoline, represented the refiners' concept of the higher cost of unleaded production or market demand or both, while the larger differential at the pump was caused by reduced margins for the leaded product. Under present conditions, with supply of all gasoline types and grades more closely in balance, the retail price differential more closely approximates the refiner price differential. Increased unleaded production could possibly change the supply balance in favor of that grade and result in more increased costs being assigned to leaded gasoline to balance demand for that grade.

In March of this year, DOE adopted the gasoline "tilt" regulation (44 FR 15600, March 14, 1979). Since that time, crude oil prices have also increased substantially. Both the tilt and increased crude prices have caused refiners to have large volumes of increased costs which they are permitted to allocate to the prices of any grade of gasoline. Thus the current regulations have not prevented the price differential between grades from increasing. However, since March, the refiner price differential between grades has not increased, but has decreased slightly. Thus, since refiners have not used the opportunity presented them as a result of increased costs from higher crude oil prices and the additional increased costs recoverable under the "tilt" regulation to increase the price differential, we do not expect the relatively small additional volume of increased costs available as a result of the adoption of the unleaded gasoline production incentive to increase the retail price differential between leaded and unleaded gasoline.

B. The Allocation of the Increased Cost of Additives Used in Gasoline to Gasoline

Under current rules, refiners are required to allocate increases (above the base level) in expenditures for additives on a volumetrically proportional basis to all the petroleum products which they produce. (The recent gasoline "tilt" regulation allows somewhat more than a strict volumetric portion to be allocated to gasoline, but a portion must continue to be allocated to other products.) However, some additives serve purely to enhance the quality or quantity of one product. This is particularly true of the chemicals such as lead, and MMT which are used to increase the octane quality of gasoline. The effect of not allowing the full cost of producing gasoline to be passed through in the prices charged for gasoline is that refiners have less incentive to produce more gasoline, particularly unleaded gasoline, than they do to produce greater volumes of other products.

a. *Cost of the Change in the Allocation of Increased Additive Costs.* Currently the cost of lead in gasoline averages about 0.8 cents per gallon of total gasoline. Of this, about 0.3 cents is fully allocable to gasoline and about 0.5 cents is allocable approximately equally to gasoline and other products. Consequently, prior to the adoption of the "tilt," about 0.55 cents was allocated to gasoline. Since the adoption of the "tilt," about 0.65 to 0.7 cents per gallon can be allocated to gasoline. The new additive rule will permit the passthrough on gasoline prices of the balance—0.1 to 0.15 cents per gallon, or $115 million to $175 million per year. As other anti-knock additives, catalysts and chemicals are used to produce gasoline, including ethyl alcohol (ethanol) to produce "gasohol," these costs will rise.

b. *Benefits of the Change in the Allocation of Increased Additive Costs.* The benefits are both a more equitable allocation of costs and an economic incentive to produce added volumes of gasoline. Under a mixed system of controlled and uncontrolled prices, careful attention must be given to ensure equitable allocation of incurred costs. In a multi-product industry, such as petroleum refining, cost allocations tend to become complex, and there may be a tendency for them to be arbitrary. But there is no reason to allocate the cost of gasoline additives and of other chemicals used in the manufacture of gasoline to products other than gasoline or to have the users of such products (such as consumers of home heating oil) in effect subsidize the cost of producing gasoline. In addition, the rule change will, as noted above, remove an existing regulatory disincentive to increased gasoline manufacture.

VI. Procedural Matters

A. Written Comments.

DOE will accept written comments on the final rules adopted today and the continued rulemaking through December 31, 1979. DOE is permitting this extended period to allow interested parties to submit additional comments on appropriate changes or amendments to the rules once they are in effect.

B. FERC Review

Under section 404(a) of the Department of Energy Organization Act, Pub. L. 95–91 (DOE Act), the proposed rule was referred to the Federal Energy Regulatory Commission (FERC) for a determination as to whether it may significantly affect any function within the jurisdiction of the FERC under sections 402(a)(1), (b) and (c)(1) of the DOE Act. The FERC has notified ERA that it has declined to make such a determination.

C. NEPA Review

Under DOE's Proposed Guidelines for Compliance with the National Environmental Policy Act (44 FR 42136, July 18, 1978), the DOE has determined that the adoption of this rule is not a major Federal action significantly affecting the quality of the environment. Thus the preparation of an environmental impact statement is not required.

(Emergency Petroleum Allocation Act of 1973, 15 U.S.C. 751 *et seq.*, Pub. L. 93–159, as amended, Pub. L. 93–511, Pub. L. 94–99, Pub. L. 94–133, Pub. L. 94–163, and Pub. L. 94–385; Federal Energy Administration Act of 1974, 15 U.S.C. 787 *et seq.*, Pub. L. 93–275, as amended, Pub. L. 94–332, Pub. L. 94–385, Pub. L. 95–70, and Pub. L. 95–91; Energy Policy and Conservation Act, 42 U.S.C. 6201 *et seq.*, Pub. L. 94–163, as amended, Pub. L. 94–385, and Pub. L. 95–70; Department of Energy Organization Act, 42 U.S.C. 7101 *et seq.*, Pub. L. 95–91; E.O. 11790, 39 FR 23185; E.O. 12009, 42 FR 46267)

In consideration of the foregoing, Part 212 of Chapter II of Title 10 of the Code of Federal Regulations is amended as set forth below effective December 1, 1979.

Issued in Washington, D.C., November 14, 1979.

David J. Bardin,

Administrator, Economic Regulatory Administration.

1. Section 212.83(c)(2)(iii)(D), the "B" factor, is amended by revising the following sentence in the definition of "B_j^t:"

§ 212.83 Price rule.

* * * * *

(c) *Allocation of increased costs.* * * *

(2) *Formulae*—* * *

(iii) *Definitions.* * * *

(D) *The "B" Factor* * * *

"B_i^t" is the total increased cost of the specific covered product or products of the type "i" purchased or landed in the period "t," provided such cost is not included in computing "A_t." The cost of a specific covered product or products of the type "i" shall include the cost of a product or products not of the type "i" which was a covered product as of May 31, 1976, and is purchased and refined or blended, that is attributable to the production of the covered product or products of the type "i." Beginning December 1, 1979, with respect to category "i"=3, the cost of gasoline shall include materials and compounds, including catalyst, alcohol, and process chemicals, that are purchased and refined or blended and are attributable to the production of gasoline. The cost and quantity of covered products purchased or landed that are consumed as refinery fuel shall be excluded from this amount.

Where:

* * * * *

2. Section 212.83(c)(2)(iii)(E)(III), *additive cost increase,* is revised to read as follows:

§ 212.83 Price rule.

* * * * *

(c) *Allocation of increased costs.* * * *

(2) *Formulae*—* * *

(iii) *Definitions.* * * *

(E) *The "N" Factor* * * *

(III) *Additive cost increase.* Additive cost increase is computed by applying the formula for "E_n^t" above. For purposes of this computation "C" refers to the total dollar amount of costs incurred for materials and compounds, including catalyst and process chemicals which were not covered products as of May 31, 1976, and which are added to, use for, or blended with crude oil or covered products during or in conjunction with the refining process to produce products other than gasoline.

* * * * *

3. Section 212.83(c)(2)(iii)(G) is amended by revising the definition of "H_i^u" to read as follows:

§ 212.83 Price rule.

* * * * *

(c) *Allocation of increased costs.* * * *

(2) *Formulae*—

(iii) *Definitions.* * * *

(G) *The "H" Factor.*

H_i^u = For i = 1, i = 2, and i = 4, the portion, if any, of the total dollar amount available in the period "u" for inclusion in price adjustments to the product of the type "i" that pursuant to paragraphs (d) or (e) of this section the refiner elects to include in prices of gasoline for the period "u" (in which case "H_i^u" shall be subtracted); for i = 3, the portion, if any, of the total dollar amount available in the period "u" for inclusion in price adjustments to No. 2 oils aviation jet fuel, or general refinery products that pursuant to paragraphs (d) or (e) of this section the refiner elects to include in the price of gasoline for the period "u" (in which case "H_i^u" shall be added), plus the unleaded gasoline production incentive as defined in § 212.83(j).

* * * * *

4. Section 212.83 is amended to add a new paragraph (j) to read as follows:

§ 212.83 Price rule.

* * * * *

(j) *Unleaded gasoline production incentive.* Beginning December 1, 1979, a refiner may include in the calculation of "d_i^u" for "i" = 3 (gasoline) a dollar amount equal to either: (1) The number of gallons of unleaded gasoline refined in the month of measurement, minus the number of gallons of unleaded gasoline refined in the month in 1978 corresponding to the month of measurement multiplied by two (2) cents per gallon; or, (2) the number of gallons of unleaded gasoline refined in the month of measurement minus the product of the total number of gallons of gasoline refined in the month of measurement multiplied by 33 percent and further multiplied by two (2) cents per gallon.

[FR Doc. 79-35856 Filed 11-30-79; 8:45 am]

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DEPARTMENT OF ENERGY

Economic Regulatory Administration

10 CFR Part 212

[Docket No. ERA-R-79-30]

Unleaded Gasoline Production Incentives; Continued Rulemaking

AGENCY: Economic Regulatory Administration, Department of Energy.

ACTION: Notice of Continued Rulemaking.

SUMMARY: The Economic Regulatory Administration (ERA) of the Department of Energy (DOE) hereby gives notice of a continued rulemaking regarding a portion of the Notice of Proposed Rulemaking entitled Unleaded Gasoline Production Incentives (44 FR 32622, June 6, 1979). Specifically, DOE is continuing the rulemaking with respect to its proposal to delete the provision in § 212.112(b)(1) which sets forth the rules that a refiner that did not produce unleaded gasoline on May 15, 1973, shall use to impute a May 15, 1973, selling price for unleaded gasoline.

A discussion of the continued rulemaking and the comment procedure is found in the final rules issued November 14, 1979, entitled Unleaded Gasoline Production Incentives. (See FR Doc. 79-35656, in this issue of the Federal Register).

FOR FURTHER INFORMATION CONTACT:
Mr. William Mayo Lee, Office of the General Counsel, (202) 252-6754.

Issued in Washington, November 27, 1979.

F. Scott Bush,

Assistant Administrator, Regulations and Emergency Planning, Economic Regulatory Administration.

[FR Doc. 79-37117 Filed 11-30-79; 8:45 am]

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Part VIII

Department of Energy

Economic Regulatory Administration

Resellers' and Reseller-Retailers' Price Rules for Gasoline; Proposed Rulemaking and Public Hearing

DEPARTMENT OF ENERGY

Economic Regulatory Administration

10 CFR Part 212

[Docket No. ERA-R-79-32E]

Resellers' and Reseller-Retailers' Price Rules for Gasoline

AGENCY: Economic Regulatory Administration, Department of Energy.

ACTION: Notice of Proposed Rulemaking and Public Hearing.

SUMMARY: The Economic Regulatory Administration (ERA) of the Department of Energy (DOE) hereby gives notice of a proposed rulemaking and public hearing regarding the resellers' and reseller-retailers' price rules for gasoline.

First, DOE proposes to amend its price rules to increase the cents per gallon ceilings currently imposed on reseller and reseller-retailer non-product cost increases on resales of gasoline and to make the reseller-retailer rules for retail sales consistent with rules adopted last July regarding independent retailers. In the alternative DOE proposes to adopt fixed cents per gallon markups for reseller sales, comparable to the rules adopted last July.

In addition, DOE proposes the following: (1) To eliminate the carry forward of unrecouped costs ("banks"); retailers; (2) to add provisions to prevent the unnecessary resale of gasoline; and (3) to permit refiners to pass through increases in commissions paid to consignee-agents in addition to marketing cost increases currently allowed. DOE proposes to make the rules effective February 1, 1980.

Second, DOE proposes to adopt an interim rule to increase the ceilings on the cents per gallon non-product cost increases resellers and reseller-retailers may recover on reseller sales of gasoline which are actually delivered. Refiners would also be permitted to pass through increased commissions paid to consignee-agents. The interim rule would be effective in approximately 30 days.

DATES: Written comments: on proposed interim rule by December 31, 1979; on proposed amendments by February 1, 1980. Hearing dates: on interim rule: Washington hearing, December 12, and 13, 1979; On proposed amendments: San Francisco hearing, January 8, 1980; Atlanta hearing, January 15, 1980; Washington hearing, January 22, 1980. Requests to speak: Washington, D.C. hearing on interim rule by December 7, 1979, 4:30 p.m.; hearings on proposed rule by January 3, 1980, 4:30 p.m.

ADDRESSES: All comments to Public Hearing Management; Docket No. ERA-R-79-*32E*, Department of Energy, Room 2313, 2000 "M" Street NW., Washington, D.C. 20461. Requests to speak at San Francisco Hearing to Department of Energy, 111 Pine St., 3rd floor, San Francisco, CA 94111, attn: Terry Osborne, (415) 556-4953; Atlanta Hearing to Department of Energy, 1655 Peachtree St. NE., Atlanta, GA 30309, attn: Betty Camp, (404) 257-2692.

Hearing locations: Washington hearings: December 12 and 13, 1979: Room 3000A, Federal Building, 12th and Pennsylvania Avenue, N.W.; January 22, 1980: Room 2105, 2000 M Street, N.W., Washington, D.C. 20461; Atlanta hearings: Atlanta Civic Center, 395 Piedmont Avenue NE., Atlanta, Ga. 30308; and San Francisco hearings: Hyatt at Union Square Hotel, Deloris Room, 345 Stockton Street, San Francisco, California 94109.

FOR FURTHER INFORMATION CONTACT:

Robert C. Gillette (Comment Procedures), Economic Regulatory Administration, Room 2222-A, 2000 M Street NW., Washington, D.C. 20461, (202) 254-5201.
William Webb (Office of Public Information), Economic Regulatory Administration, Room B-110, 2000 M Street NW., Washington D.C. 20461, (202) 634-2170.
Chuck Boehl or Ed Mampe (Office of Regulations and Emergency Planning), Economic Regulatory Administration, Room 2314, 2000 M Street NW., Washington, D.C. 20461, (202) 254-7200.
William Mayo Lee (Office of General Counsel), Department of Energy, Room 6A-127, 1000 Independence Avenue SW., Washington, D.C. 20585, (202) 252-6754.

SUPPLEMENTARY INFORMATION:

I. Proposed Amendments.
A. Resellers.
B. Reseller-Retailers.
C. Unrecouped Increased Costs.
D. "Layering."
E. Consignee-agents.
II. Proposed Interim Rule.
III. Requests for Comment.
IV. Written Comments and Public Hearing Procedures.
V. Regulatory Analysis.
VI. Other Matters.

I. Proposed Amendments

On July 16, 1979 (44 FR 42541, July 19, 1979), DOE issued final rules regarding price regulations for retailers of motor gasoline. In effect, the maximum lawful selling price for each type or grade of gasoline under the new retailer rules is the most recent acquisition cost, plus 15.4 cents per gallon, plus applicable taxes. Accordingly, a totally different and much simplified method for computing maximum lawful selling prices has been adopted for retailers of gasoline.

The July, 1979 rulemaking proceeding did not result in DOE adopting amendments to the reseller and reseller-retailer price rules for resales. However, DOE did receive comments regarding the reseller and reseller-retailer price rules and will consider those comments as part of the record of this rulemaking proceeding. Commenters should note, however, that the information submitted regarding reseller and reseller-retailer margins would, in most part, be inadequate to support a major change in the current price rules for gasoline.

With respect to resales of gasoline, DOE is proposing to amend its pricing regulations to increase the ceilings on the cents per gallon increased non-product cost pass throughs currently permitted in reseller sales. The last time the ceiling was increased was in 1974. The amount of the proposed increase would depend on the type of sale made by the reseller or reseller-retailer and would be based on inflation, measured by the GNP deflator since the first quarter of 1974.

The proposed amendments with respect to retail sales by reseller-retailers are similar to the rules adopted for retailers in July. The maximum lawful selling price for retail sales by reseller-retailers would be the reseller-retailer's dealer tank wagon (DTW) price to independent retailers, plus 15.4 cents per gallon, plus tax cost increases.

We invite comments on alternative regulatory systems which could be adopted in lieu of the amendments proposed today. Specifically, DOE requests commenters' opinions on the alternative proposal of a cents per gallon pricing scheme for reseller and reseller-retailer resales similar to the July retailer rules and the rules proposed today for reseller-retailer retail sales.

A. *Resales.* The proposed amendments to the price rules would increase the cents per gallon ceilings on the pass through of non-product cost increases currently permitted for reseller sales of gasoline. The ceilings on the amount of non-product cost increases which could be recovered in a resale would depend on the category of sale. We propose to increase the ceiling on the non-product cost increase pass through in each category to reflect the increased costs associated with each such category. For example, the proposed increase in the cents per gallon ceilings reflects DOE's belief that costs associated with truck deliveries have increased more than costs associated with large volume deliveries by barge or rail.

The proposed increases in the cents per gallon ceilings on the pass through of increased non-product costs is based

on the 1974 margins for gasoline sales including non-product cost increases granted in early 1974, adjusted to reflect inflation of approximately 50 percent as measured by the GNP deflator from 1974 through the third quarter of 1979. This methodology is consistent with that used in calculating the 15.4¢ maximum fixed cents per gallon markup for retail sales adopted in the July 1979 retailer price rules for gasoline.

In resales the ceilings on the pass through of nonproduct cost increases would be increased as follows:

Type of resale	Proposed
Delivery of 20,000 gals. or less	2.6¢
Delivery of more than 20,000 gals.	1.0¢

DOE estimates that the first quarter 1974 average margin (including the pass through of the maximum permissible non-product cost) for dealer tankwagon (DTW) deliveries of 20,000 gallons or less was approximately 5.1¢ per gallon and the average margin for deliveries of more than 20,000 gallons was approximately 2¢ per gallon. Adjusting these numbers to reflect the 50 percent inflation since 1974 results in an increase in the average margins of 2.6¢ and 1.0¢ per gallon, respectively. These amounts would be adjusted every 6 months to reflect inflation, as measured by the GNP deflator.

We propose that the increase in the ceilings be contingent upon the actual number of gallons of gasoline in the particular physical delivery. In other words, each actual physical delivery would be considered a separate and distinct sale for purposes of calculating the maximum lawful selling price.

We request comments on whether resellers which provide storage but do not deliver gasoline, such as terminal operators, should be permitted an increase in the nonproduct cost pass through ceilings for various types of sales. The proposed amendments do not provide for such an increase. However, DOE will consider such an increase as part of this rulemaking proceeding and will consider permitting such resellers an increase provided sufficient evidence to justify the need and an amount for such an increase is presented during this rulemaking proceeding.

We request comments on whether the 20,000 gallons per delivery threshold is appropriate and includes all DTW sales. DOE recognizes that most dealer tank wagon capacities are less than 9,000 gallons. However, DOE wants to ensure that in all instance where a reseller performs the traditional functions of delivery to retail outlets the higher increased ceiling is permitted. Also, we request comments on the proposal that each physical delivery be considered a separate sale for purposes of computing the maximum lawful selling price.

We also request comments on whether firms will alter the quantity of gasoline in each delivery in order to take advantage of the higher ceiling proposed for smaller deliveries and thus frustrate the purpose of the price rules. For example, DOE proposes that a firm which normally delivers gasoline in quantities in excess of 20,000 gallons would not receive the higher ceiling if it begins to make deliveries of less than 20,000 gallons in order to obtain greater revenues.

To facilitate our analysis of this proposed rule, we request specific information on current and first quarter 1974 margins on gasoline sales to other resellers, refiners, and reseller-retailers and on the appropriateness of using the GNP deflator as the index upon which to base the increase in the ceilings on the non-product cost increase pass throughs.

We invite comments on the appropriateness of having a separate rule for purchasers of large quantities of gasoline on an annual basis. For example, should there be an additional limitation on the amount of increased marketing cost permitted a firm which sells or purchases large quantities of gasoline? If so, we solicit comments on what additional categories of sales should be included and on the appropriate cents per gallon increase in the non-product cost increase pass through ceiling.

Finally, we request comments on an alternative proposal similar to that adopted for independent retailers last July. Resellers' and reseller-retailers' maximum lawful selling price in resales would be the acquisition cost, plus a fixed cents per gallon markup, plus applicable taxes. DOE proposes the fixed cents per gallon markup be 7.7 cents per gallon for deliveries of less than 20,000 gallons and 3 cents per gallon for deliveries of 20,000 gallons or more without regard to May 15, 1973 markups and without further cost justification. We reserve the right to adopt the alternative rule as proposed or with modifications in light of any comments we receive. DOE realizes that the fixed cents per gallon markups which DOE proposes are based on national average markups and therefore may not be adequate in certain geographic areas or for certain types of resellers. Accordingly, DOE requests comments on which types of resellers or reseller-retailers should receive larger fixed cents per gallon markups than those proposed today and on the criteria which could be specified for the granting of any exceptions relief if this alternative were adopted. In particular, DOE request comments on the need to have different fixed cents per gallon markups for different geographic areas.

As described above, the 7.7 cents and 3 cents fixed cents markups are derived by escalating the first quarter 1974 average margins by inflation as measured by the GNP deflator from 1974 through the third quarter 1979. These fixed cents per gallon markups would be adjusted every six months, consistent with the July 1979 rules for independent retailers and those proposed for retail sales by reseller-retailers described in Section B, below. We also invite comments on the appropriateness of the fixed cents per gallon margins proposed and on what additional categories of sales might be appropriate.

B. *Retail sales.* With respect to retail sales by reseller-retailers, DOE proposes adopting rules similar to the current retailer price rule. For example, in retail sales of gasoline by reseller-retailers, DOE proposes that the maximum lawful selling price a reseller-retailer may charge for each type or grade of gasoline is the most recent dealer tank wagon price the reseller-retailer charged to the independent retailer nearest to its retail outlet, plus 15.4 cents per gallon, (plus the adjustment to reflect inflation which will be made for independent retailers effective December 15, 1979) plus tax costs. DOE proposes to adjust the fixed cents per gallon mark-up every six months, consistent with the July 1979 rules for independent retailers.

DOE proposes that "nearest" be defined as the nearest outlet in location, type of service, and quantity of gasoline sold. In the alternative, DOE proposes that "nearest" mean the nearest comparable outlet. We request comment on the desirability of using the proposed criteria, the alternative definition, and additional ways to determine a fair acquisition cost for reseller-retailers selling gasoline at retail.

In instances when a reseller-retailer has no DTW sales to an independent retailer, the reseller-retailer may not charge a price which exceeds its acquisition cost plus 15.4 cents per gallon (as adjusted), plus applicable taxes. In the alternative DOE proposes that such reseller-retailers be permitted an additional 7.7¢ to reflect their reseller margins which would not be reflected in their acquisition cost.

In instances where a reseller-retailer purchases gasoline from an independent seller, which delivers the product to the reseller-retailer's retail outlet, the maximum lawful selling price would be the acquisition cost, plus 15.4 cents per gallon (as adjusted), plus tax costs.

With respect to all sales other than retail sales by reseller-retailers, the maximum lawful selling price would be computed in the same manner as it is calculated for resellers in either alternative proposal discussed in Part A above.

We reserve the authority to adopt any of the alternative rules as proposed or with modifications in light of comments received by us during this proceeding.

C. *Unrecouped Increased Cost.* DOE proposes to eliminate the carry forward of unrecouped increased cost provisions ("banks") for both resellers and reseller-retailers sales of gasoline. Many small firms have not made the calculations necessary to substantiate banked costs while generally more sophisticated firms have used the banking provisions to their advantage. Thus, to eliminate this apparent inequity, DOE is proposing to eliminate the banks. The increase in the cents per gallon non-product cost pass through ceiling provided by the proposed rules, DOE believes, is sufficient to compensate firms for currently existing banks. We request comments on this proposal, and specifically invite commenters to identify types of sales where increased costs are not currently being recovered and to justify the need, if any, for continuing the banking provisions with respect to such sales.

D. *"Layering".* DOE proposes to adopt a "layering" provision which would prohibit unnecessary resales of gasoline for the purpose of artificially increasing retail selling prices. The proposed rule would provide that no cost increases could be added to the acquisition cost to calculate the maximum lawful selling price when the seller does not take actual physical possession of the gasoline or the gasoline remained in the same physical location. DOE believes this proposed rule would prevent inflationary and unnecessary price increases at the reseller and retailer levels.

DOE requests comments on whether under certain circumstances (in addition to those enumerated in proposed § 212.93(b)(7)) when gasoline is not received by the purchaser, a pass-through of cost increases may be justified.

E. *Consignee-agent.* Under the current rules refiners may pass through, in price increases, increased commissions paid to consignee-agents. However, the cost pass-through shall not exceed the non-product cost increase which would be permitted the consignee-agent if the consignee-agent took title to the product and were a seller subject to the reseller and retailer price rules. Accordingly, the amount of increased commissions refiners may recoup is limited depending on the level of distribution of the consignee-agent. In addition, the ceiling on the amount of increased marketing costs refiners may pass through to all customers may prevent refiners selling through consigness from recouping a portion of the increased commissions which DOE permits to be passed through.

DOE proposes to amend the refiner regulations to eliminate any restrictions on the amount of increased commissions refiners may pass through to commission agents in addition to the permitted marketing cost increase pass through. In the alternative, we propose to restrict the amount of increased commissions refiners may pass through in price increases and request comments on the need for such restriction and the amounts thereof.

II. Proposed Interim Rule

We propose to amend the current price rules for resales of gasoline to grant resellers, reseller-retailers and refiners selling through consignee-agents interim relief to the nonproduct cost increase ceilings found in § 212.93(b). The proposed interim rule would remain in effect until the proposed amendments, if any, are adopted. We propose to make the interim rule effective in approximately 30 days.

This proposed interim relief is intended to compensate resellers of gasoline for a portion of the increased costs they have actually incurred. Resellers have not been allowed an increase in non-product costs pass through ceilings since early 1974. Since that time inflation has increased by approximately 50 percent. Accordingly, to maintain the economic viability of the reseller sector of the market, DOE deems it appropriate to grant interim relief to resellers and reseller-retailers by raising the ceilings on the pass-through of increased non-product cost.

DOE proposes to increase the cents per gallon non-product cost increase ceilings on the increased non-product costs allowed for resales *when gasoline is physically delivered* as follows:

	Current (cost justified) +	Additional proposed (cost justified and delivered)
A. Resellers Delivered Sales		
1. 1973 total sales volume of less than 100 million gallons.	1¢ +	1¢
2. 1973 total sales volumes of 100 million gallons or more.	¾¢ +	½¢
B. Reseller-Retailers Delivered Sales		
1. Retail sales	3¢ +	0¢
2. Other than retail sales:		
a. 1973 total sales volumes of less than 100 million gallons.	1¢ +	1¢
b. 1973 total sales volume of 100 million gallons or more.	¾¢ +	½¢

Accordingly, the proposed interim rule would permit resellers to recoup, in other than retail sales, additional nonproduct cost increases incurred by the firms where they actually deliver gasoline for resale. If the seller does not deliver the gasoline, this interim relief would not apply.

The current rules require that nonproduct cost increases be cost justified. DOE proposes that increased amounts of cost passed through in price increases under the interim rule also be cost justified, as described in Ruling 1975–14.

DOE requests comments on the following: Should the 1973 base period for measuring total sales be updated, and if so, to what period?

Should the 100 million gallon criterion apply? If so, to sales of all covered products or to total gasoline sales? DOE proposes to amend the refiner price rules with respect to commissioned agents (as described in Part E above) in the interim rule.

III. Specific Comments Requested

To facilitate DOE's verification of the cost justification of the proposed amendments, we request the following information by January 1, 1980.

A. Questions for Trade Associations and Industry Representatives

1. What are the national annual sales of gasoline at the various levels of distribution by each category of reseller and reseller-retailer, including independent terminal operators jobbers with bulk storage, jobbers without storage, jobbers with retail operations, brokers, and commission agents?

2. What portion of the total 1978 annual sales of all resellers and reseller-retailers are:

a. DTW sales to non-affiliated gasoline retailers;

b. CTW sales to end-users (commercial and agricultural accounts);

c. Sales to end-users through jobber owned retail outlets, and;

d. Sales to other resellers?

3. What portion of the 1978 total national resales by resellers to other resellers was delivered by the seller? by the purchaser? What portion was delivered by truck? barge? pipeline? or other method of transportation?

B. Questions for Resellers, Reseller-Retailers, Consignee-Agents, and Trade Associations

1. Please describe your business operation. For example, would your business most accurately be categorized as an independent terminal operator, jobber with bulk storage, jobber without storage, jobber with retail operations, broker, commission agent or other type of operation?

2. In 1978 what amount of gasoline did you sell in at each of level of distribution? What was the average quantity of gasoline in a sale at each of the various levels of distribution?

3. What were your increased costs at each level of distribution between 1974 and 1978?

4. Describe your increased costs between 1974 and 1978 in each of the following categories.

a. Wages and salaries, other than salaries of the firm's owners, including increases in payroll taxes and pension benefits.

b. Insurance.

c. Interest.

d. Utilities.

e. Real estate taxes.

f. Depreciation expense, (describe how you computed the increase).

g. Bad debts.

h. Trucking and automobile expense.

i. Lease costs of bulk plant and offices.

j. Other expenses, (describe in detail).

5. Of the increased costs described above, what portion is attributable to: a) sales of gasoline, b) sales of other petroleum products, and c) non-petroleum business activities. Of the increased costs attributable to gasoline, what portion of each of the cost increase categories described above were incurred at each of your various levels of distribution?

IV. Written Comment and Public Hearing Procedures

A. *Written Comments.* You are invited to participate in this notice of rulemaking by submitting data, views or arguments with respect to the issues set forth in this Notice. Comments should be identified on the outside envelope and on documents submitted with the designation "Reseller and Reseller-Retailer Price Rules for Gasoline," Docket No. ERA–R–79–32E. Ten copies should be submitted. All comments received will be available for public inspection in the DOE Freedom of Information Office, Room GA–145, James Forrestal Building, 1000 Independence Avenue, S.W., Washington, D.C., between the hours of 8:00 a.m. and 4:30 p.m., Monday through Friday. Comments regarding the proposed amendments should be received by February 1, 1980, 4:30 p.m., in order to insure consideration. Comments regarding the proposed interim rule should be received by December 31, 1979, 4:30 p.m. in order to ensure consideration.

B. *Public Hearing.* 1. *Procedure for Requesting Participation.* The times and places for the hearings are indicated in the "DATES" and "ADDRESSES" section of this Notice. If necessary to present all testimony, hearings will be continued at 9:30 a.m., on the next business day following the first day of the hearing.

Persons wishing to testify regarding the proposed interim rule should present their testimony at the Washington, D.C. hearing on Wednesday, December 12, 1979. Persons wishing to testify regarding the proposed amendments should present their testimony at one of the regional hearings or the Washington, D.C. hearing in January 1980.

You may make a written request for an opportunity to make an oral presentation at the hearings. The requests should contain a phone number where you may be contacted through the day before the hearing.

We will notify each person selected to be heard at the Washington, D.C. hearing on the interim rule before 4:30 p.m., December 10, 1979, and at the regional hearings and Washington, D.C. hearing in January 1980 on the proposed rule prior to the day before the specific hearing. Persons scheduled to speak at the hearings are requested to bring 100 copies of their statement to San Francisco and Atlanta on the date of the hearing and to Room 300A, Federal Building, 12th and Pennsylvania Avenue, N.W., Washington, D.C. 20461, by 4:30 p.m., December 11, 1979, for the Washington hearing.

2. *Conduct of the Hearing.* We reserve the right to select the persons to be heard at the hearing, to schedule their respective presentations, and to establish the procedures governing the conduct of the hearing. The length of each presentation may be limited, based on the number of persons requesting to be heard.

A DOE official will be designated to preside at the hearings, which will not be judicial in nature. Questions may be asked only by those conducting the hearing. At the conclusion of all initial oral statements, each person who has made an oral statement will be given the opportunity to make a rebuttal statement. The rebuttal statements will be given in the order in which the initial statements were made and will be subject to time limitations.

You may submit questions to be asked by the presiding officer of any person making a statement at the hearings. Such questions should be submitted to the address indicated above for requests to speak, for the location concerned, before 4:30 p.m., on the day prior to the hearing. If at the hearing you decide that you would like to ask a question of a witness, you may submit the question, in writing, to the presiding officer. In either case the presiding officer will determine whether the time limitations permit it to be presented for a response.

Any further procedural rules needed for the proper conduct of a hearing will be announced by the presiding officer.

Transcripts of the hearing will be made, and the entire record of the hearings, including the transcripts, will be retained by the DOE and made available for inspection at the Freedom of Information Office, Room GA–145, James Forrestal Building, 1000 Independence Avenue, S.W., Washington, D.C., between the hours of 8:00 a.m. and 4:30 p.m., Monday through Friday. Any person may purchase a copy of the transcript from the reporter.

In the event that it becomes necessary for us to cancel a hearing, we will make every effort to publish advance notice in the **Federal Register** of such cancellation. Moreover, we will give actual notice to all persons scheduled to testify at the hearings. However, it is not possible to give actual notice of cancellations or changes to persons not identified to us as participants. Accordingly, persons desiring to attend a hearing are advised to contact DOE on the last working day preceding the date of the hearing to confirm that it will be held as scheduled.

IV. Regulatory Analysis

In accordance with Executive Order No. 12044, on Improving Government Regulations (43 FR 12661, March 24, 1978) and the DOE Order 2030.1, Procedures for the Development and Analysis of Regulations, Standards, and Guidelines (44 FR 1032, January 3, 1979), we have prepared a draft regulatory analysis on the proposed interim rule which examines the potential economic impact of those proposed regulations. Copies of the draft regulatory analysis on the interim rule may be obtained from ERA's Office of Public Information, Room B–210, 2000 M Street, N.W., Washington, D.C. The draft regulatory analysis on the proposed amendments

will be available prior to the date of the regional hearings on the proposals.

You are invited to provide comment on the preliminary regulatory analysis on the interim rule at the same time you submit comments on the proposed interim rule. Such comments will be taken into account before the preparation of a final regulatory analysis on any final rule that may be adopted.

The draft regulatory analysis makes the following conclusions with respect to the economic impact associated with the proposed interim rule.

Resellers have not received any increase since early 1974 in the amount of non-product costs increases which may be passed through in price increases. Inflation generally has increased costs by 50 percent during the same period. Data from actual trucking operations for a limited time period corroborates this assumption. Between 1974 and 1978 reports filed with the Interstate Commerce Commission by liquid petroleum carriers showed, after adjusting for volume changes, that expenses increased by 36.6 percent. Moreover, most refiners are selling less gasoline this year than in 1978, so resellers' costs have increased.

The maximum one cent interim increase proposed represents only about a 20 percent increase in margins and the one-half cent increase is less than 10 percent increase of the estimated 5.1 cents average margin some resellers now charge for delivered sales.

Although data is insufficient to reach definitive conclusions, the interim proposal would at most result in increased costs of gasoline to retailers of between $194 and $269 million per year (based on the worst case assumption). It is not expected, however, that the interim rule will be in effect for more than a few months, nor is there any certainty that retailers will be able to pass all the increased costs through to the public. To the extent that the market does not allow all of the increases to be recovered, the cost to the public will be reduced.

A draft of the proposed rule's regulatory analysis will be prepared and issued for comment prior to the public hearings on the proposed amendments. We request that the specific comments solicited in the preamble of the proposed rule be submitted in advance of the public hearings in order to be available to DOE in completing the draft regulatory analysis on the proposed amendments.

V. Other Matters

As required by Section 7(a) of the Federal Energy Administration Act of 1974, Pub. L. 93–275, a copy of this notice has been submitted to the Administrator of the Environmental Protection Agency for his comments concerning the impact of this proposal on the quality of the environment. The Administrator commented that he does not foresee these actions having an unfavorable impact on the quality of the environment as related to the duties and responsibilities of the EPA.

Pursuant to the requirements of Section 404(a) of the Department of Energy Organization Act (Pub. L. 95–91), we have referred this proposed rule, concurrently with the issuance hereof, to the Federal Energy Regulatory Commission for a determination whether the proposed rule would significantly affect any matter within the Commission's jurisdiction. The Commission will have until December 28, 1979 to make the determination.

Executive Order 12044 generally requires that agencies provide a minimum of 60 days of comments with respect to proposed significant rules. Section 6(a) of the Order, however, states that closely related sets of regulations should be considered together. The retailer price rule adopted earlier this year is closely related to the present proposed rulemaking and comments on jobber margins were specifically requested. A large number of comments on jobber margins were received. Accordingly, considering the retailer price rule and the proposed interim rule together, more than 60 days of comment will have been provided. Moreover, Section 2(c) of the Order explicitly permits agencies to provide for less than 60 days of comment where they determine the full period is not possible. It is our determination that providing a full 60 day comment on the interim rule is not possible if expeditious relief to jobbers is to be provided.

(Emergency Petroleum Allocation Act of 1973, 15 U.S.C. § 751 *et seq.*, Pub. L. 93–159, as amended, Pub. L. 93–511, Pub. L. 94–99, Pub. L. 94–133, Pub. L. 94–163, and Pub. L. 94–385; Federal Administration Act of 1974, 15 U.S.C. § 787 *et seq.*, Pub. L. 93–275, as amended, Pub. L. 94–332, Pub. L. 94–385, Pub. L. 95–70, and Pub. L. 95–91; Energy Policy and Conservation Act, 42 U.S.C. § 6201 *et seq.*, Pub. L. 94–163, as amended, Pub. L. 94–385, and Pub. L. 95–70; Department of Energy Organization Act, 42 U.S.C. § 7101 *et seq.*, Pub. L. 95–91; E.O. 11790, 39 FR 23185; E.O. 12009, 42 FR 46267.)

In consideration of the foregoing, Part 212 of Chapter II, Title 10 of the Code of Federal Regulations, are proposed to be amended as set forth below.

Issued in Washington, D.C., November 28, 1979.

David J. Bardin,

Administrator, Economic Regulatory Administration.

1. Section 212.83(c)(2)(iii)(E) is amended in the definition of "F_it" to read as follows:

§ 212.83 Price rule.

* * * * *

(c) *Allocation of increased costs.*

* * * * *

(2) *Formulae—*

* * * * *

(iii) *Definitions.*

* * * * *

(E) *The "N" factor.*

* * * * *

"F_it" = * * *

(VII) in addition to the increases permitted in subparagraphs II and III of this paragraph, reflect the total dollar amount of non-product costs attributable to includable amounts of commissions incurred during the period "t" beginning with January 1, 1976 with respect to sales through consignee-agents of the covered product or products of the type "i." The includable amount of commissions incurred with respect to each item sold through each consignee-agent is the dollar amount per unit of volume by which the commission in the period "t" exceeds the commission in effect on May 15, 1973, provided that the includable amount shall be an amount reasonably intended to cover increased non-product costs of the consignee-agent. **(Alternative proposal:** and further provided that it shall not exceed the amount of the non-product cost increase that would be permitted if the consignee-agent took title to the product it distributes and were a seller subject to § 212.93(b)). The provisions in this subparagraph shall not be subject to the equal application rule set forth in § 212.83(h).

* * * * *

2. Section 212.92 is amended in the definition of "Acquisition cost" to read as follows and the definitions of "Increased rental cost" and "Vapor recovery system cost" are deleted.

§ 212.92 Definitions.

For purposes of this Subpart—

"Acquisition cost" means: (a) For sellers which make three (3) consecutive purchases from the same supplier, the actual purchase price paid for the most recent purchase of a product, or;

(b) For all other sellers, the weighted average purchase price paid for the three (3) most recent purchases.

(c) Notwithstanding the provisions in paragraphs (a) and (b) of this section,

for any seller which historically makes more than three (3) purchases in a twenty-four (24) hour period, the acquisition cost is the weighted average purchase price paid in the immediately preceding three (3) day period.

(d) The purchase price shall: (1) Be computed on a cents per gallon basis;

(2) Be substantiated by written evidence of delivered product; and

(3) Include transportation costs of bringing the product into inventory.

(e) DOE may disallow any purchases which have the effect of frustrating the purpose of the price regulations.

* * * * *

"Increased rental cost" [Deleted]

* * * * *

"Vapor recovery system cost" [Deleted]

3. Section 212.93 is amended in paragraph (a) to read as follows:

§ 212.93 Price rule.

(a)(1) Except for retail sales of gasoline (**Alternative proposal:** All gasoline sales), a seller may not charge a price for an item subject to this subpart which exceeds the weighted average price at which the item was lawfully priced by the seller in transactions with the class of purchaser concerned on May 15, 1973, plus an amount which reflects, on a dollar-for-dollar basis, the increased product costs concerned. Each seller shall maintain records sufficient to justify prices charged which demonstrate that the seller qualifies to determine increased product costs according to separate inventories.

(2) With respect to ratail sales of gasoline by reseller-retailers and retailers:

(i) A retailer may not charge a price in a sale of any type or grade of gasoline which exceeds the most recent acquisition cost, as defined in § 212.92, plus 15.4 cents per gallon, plus tax costs attributable to sales of that type or grade of gasoline. Beginning December 15, 1979, DOE shall adjust semi-annually the fixed cents per gallon markup to reflect the GNP deflator.

(ii) Notwithstanding the provisions of this chapter, a reseller-retailer may not charge a price in a retail sale of any type or grade of gasoline which exceeds the price which may be charged by an independent retailer for that type or grade of gasoline. For purposes of this subparagraph (ii) acquisition cost means:

(A) The most recent dealer tank wagon price the reseller-retailer charged to the nearest (in location, type of outlet, and volumes of sales) (**Alternative proposal:** comparable) independent retailer to its retail outlet; or,

(B) If a reseller-retailer has no dealer tank wagon sales to an independent retailer in the most recently preceding 30 day period, the reseller-retailers acquisition cost, as defined in § 212.92. (**Alternative proposal:** plus 7.7 cents per gallon adjusted reseller margin.)

(3)(i) Upon ten (10) days prior notice to the Administrator, the Governor of a State may increase the fixed cents per gallon markups as described in subparagraph (a)(2) for all or some of the retailers in the State by an amount not to exceed ten (10) cents per gallon provided the increase is cost justified and achieves the objectives of the Emergency Petroleum Allocation Act of 1973, as amended. Upon prior approval from the Administrator the Governor may grant additional increases to the fixed cents per gallon markups.

(ii) Any adjustments to the fixed cents per gallon markups made by the Governor pursuant to this section may be disallowed by the Administrator at any time.

(iii) For purposes of this section, the term "Governor" includes the Governors of the 50 States, and the Chief Executive Officers of the District of Columbia, Puerto Rico, and the territories and possessions of the United States, other than the Panama Canal Zone.

(4)(i) Notwithstanding the provisions of this paragraph, if between the time of purchase and the time of resale of gasoline by a seller (A) the gasoline remained in the same physical location or (B) such seller did not take actual physical possession of the gasoline, the seller may not charge a price for that gasoline which exceeds the acquisition cost of that gasoline; provided however, if the seller was the importer of record of the gasoline, purchased the gasoline from the refiner which refined the gasoline, or sells the gasoline to an independent retailer, the seller may not charge a price for that gasoline which exceeds the acquisition cost, plus one cent per gallon, plus tax cost attributable to that sale.

(ii) The price for gasoline charged by a seller which in the sale performs no service or other function traditionally and historically associated with the resale of gasoline shall not exceed the actual price paid by the seller for the gasoline less any amount received in an exchange and any amount received in excess of the amount paid in a matching purchase and sale transaction having the same effect as an exchange, plus any amount paid in an exchange and any amount paid in excess of the amount received in a matching purchase and sale transaction having the same effect as an exchange.

* * * * *

[**Alternative proposal:** add the following subparagraph (5) to § 212.93(a) and delete § 212.93(b)(1).]

(5) Notwithstanding § 212.93(a) with respect to reseller sales of gasoline by resellers and reseller-retailers, sellers may not charge a price in a sale of any type or grade of gasoline which exceeds:

(i) In each sale of less than 20,000 gallons, the acquisition cost, plus 7.7 cents per gallon, plus tax cost attributable to that sale, or;

(ii) In each sale of more than 20,000 gallons, the acquisition cost, plus 3 cents per gallon, plus tax cost attributable to that sale.

(iii) The Administrator shall adjust semi-annually the fixed cents per gallon markup to reflect the GNP deflator.]

4. Section 212.93(b)(1)(i) is amended to read as follows; and (b)(1)(ii) is deleted.

§ 212.93 Price rule.

* * * * *

(b)

* * * * *

(1)

* * * * *

(i) In all sales other than retail sales, a seller may charge one-half cent per gallon in excess of the amount otherwise permitted to be charged for that item pursuant to the provisions of this section to reflect non-product cost increases that the seller incurred after May 15, 1973.

(ii) [Deleted]

* * * * *

5. Section 212.93(b)(1) is amended to add a new subparagraph (iv) to read as follows:

§ 212.93 Price rule.

* * * * *

(b)

* * * * *

(1)

* * * * *

(iv) Beginning February 1, 1980, with respect to all sales of gasoline other than retail sales, in each delivered resale of 20,000 gallons or less of a particular type or grade of gasoline, a seller may charge 2.6 cents per gallon for the type or grade of gasoline in excess of the amount otherwise permitted to be charged for that item pursuant to the provisions of this section including paragraph (b)(1) (i) and (iii) of this section and a seller in each delivered resale of more than 20,000 gallons of a particular type or grade of gasoline may charge an additional one cent per gallon for gasoline in excess of the amount otherwise permitted to be charged for

that item pursuant to the provisions of this section, including paragraph (b)(1)(i) and (iii) of this section. The Administrator shall adjust semi-annually this non-product cost increase to reflect the GNP deflator.

§ 212.93 [Amended]

6. Section 212.93(e) (1) and (4) are deleted.

[**Alternative proposal:** amend the first clause of § 212.93(e) to read as follows:

§ 212.93 Price rule.

* * * * *

(e) Notwithstanding the provisions of paragraph (a) of this section and except for retail sales of gasoline:]

Proposed Interim Rule

1. Section 212.83(c)(2)(iii)(E) is amended in the definition of "$F_i t$" to read as follows:

§ 212.83 Price rule.

* * * * *

(c) *Allocation of increased costs.*

* * * * *

(2) *Formulae—*

* * * * *

(iii) *Definitions.*

* * * * *

(E) *The "N" factor.*

* * * * *

"$F_i t$"=

* * * * *

(VII) in addition to the increases permitted in subparagraphs II and III of this paragraph, reflect the total dollar amount of non-product costs attributable to includable amounts of commissions incurred during the period "t" beginning with January 1, 1976 with respect to sales through consignee-agents of the covered product or products of the type "i." The includable amount of commissions incurred with respect to each item sold through each consignee-agent is the dollar amount per unit of volume by which the commission in the period "t" exceeds the commission in effect on May 15, 1973, provided that the includable amount shall be an amount reasonably intended to cover increased nonproduct costs of the consignee-agent. (**Alternative proposal:** and further provided that it shall not exceed the amount of the non-product cost price increase that would be permitted if the consignee-agent took title to the product it distributes and were a seller subject to § 212.93(b)). The provisions of this subparagraph (vii) shall not be subject to the equal application rule in section 212.83(h).

* * * * *

2. Section 212.93(b)(1) is amended to add a new subparagraph (iv) to read as follows:

§ 212.93 Price rule.

* * * * *

(b)

* * * * *

(1)

* * * * *

(iv) Beginning ——— 1979, with respect to all sales of gasoline, other than retail sales, which are delivered by the seller, a seller that had a total sales volume of covered products in calendar year 1973 of less than 100 million gallons may charge an additional 1 cent per gallon for gasoline (which is delivered by the seller) in excess of the amount otherwise permitted to be charged for that gasoline, pursuant to the provisions of this section including paragraph (b)(1)(i) and (iii), to reflect non-product cost increases and a seller that had a total sales volume of covered products in calendar year 1973 of 100 million gallons or more may charge an additional ½ cent per gallon for gasoline (which is delivered by the seller) in excess of the amount otherwise permitted to be charged for that gasoline pursuant to the provisions of this section including paragraph (b)(1)(i) and (iii), to reflect non-product cost increases.

3. Section 212.93(e) is amended in the first clause to read as follows:

§ 212.93 Price rule.

* * * * *

(e) Notwithstanding the provisions of paragraph (a) of this section and except for retail sales of gasoline by retailers:

(1) If a seller charges prices for a particular product that result in the recoupment of less total revenues than the total amount of increased product costs of that product incurred during that month, the amount of product incurred during that month, the amount of increased product cost not recouped by a price adjustment in the subsequent month pursuant to paragraph (a) of this section may also be added to the May 15, 1973, selling prices of that product in a subsequent month at the time the selling prices are computed pursuant to paragraph (a). A seller shall calculate its amount of increased product cost of a particular product not recouped, since the most recent price increase after November 1, 1973, to include the following: (i) any "increased product costs" not added to the May 15, 1973, selling price at the time of the most recent price increase implemented after November 1, 1973, multiplied by the volume sold since that price increase, plus (ii) increases in the weighted average unit cost above the weighted average unit cost which was used to calculate the most recent price increase implemented after November 1, 1973, multiplied by the volume of product purchased at each such increased product cost, less, (iii) any decrease in the weighted average unit cost from the weighted average unit cost which was used to calculate the most recent price increase implemented after November 1, 1973, multiplied by the volume of product purchased at each such lesser cost.

[FR Doc. 79-37291 Filed 11-30-79; 9:19 am]

BILLING CODE 6450-01-M

Reader Aids

Federal Register
Vol. 44, No. 233
Monday, December 3, 1979

INFORMATION AND ASSISTANCE

Questions and requests for specific information may be directed to the following numbers. General inquiries may be made by dialing 202-523-5240.

Federal Register, Daily Issue:

202-783-3238 Subscription orders (GPO)
202-275-3054 Subscription problems (GPO)

"Dial-a-Reg" (recorded summary of highlighted documents appearing in next day's issue):
202-523-5022 Washington, D.C.
312-663-0884 Chicago, Ill.
213-688-6694 Los Angeles, Calif.

202-523-3187 Scheduling of documents for publication
523-5240 Photo copies of documents appearing in the Federal Register
523-5237 Corrections
523-5215 Public Inspection Desk
523-5227 Finding Aids
523-5235 Public Briefings: "How To Use the Federal Register."

Code of Federal Regulations (CFR):

523-3419
523-3517
523-5227 Finding Aids

Presidential Documents:

523-5233 Executive Orders and Proclamations
523-5235 Public Papers of the Presidents, and Weekly Compilation of Presidential Documents

Public Laws:

523-5266 Public Law Numbers and Dates, Slip Laws, U.S.
-5282 Statutes at Large, and Index
275-3030 Slip Law Orders (GPO)

Other Publications and Services:

523-5239 TTY for the Deaf
523-5230 U.S. Government Manual
523-3408 Automation
523-4534 Special Projects
523-3517 Privacy Act Compilation

FEDERAL REGISTER PAGES AND DATES, DECEMBER

69271-00000.....3

AGENCY PUBLICATION ON ASSIGNED DAYS OF THE WEEK

The following agencies have agreed to publish all documents on two assigned days of the week (Monday/Thursday or Tuesday/Friday).

This is a voluntary program. (See OFR NOTICE FR 32914, August 6, 1976.)

Monday	Tuesday	Wednesday	Thursday	Friday
DOT/SECRETARY*	USDA/ASCS		DOT/SECRETARY*	USDA/ASCS
DOT/COAST GUARD	USDA/APHIS		DOT/COAST GUARD	USDA/APHIS
DOT/FAA	USDA/FNS		DOT/FAA	USDA/FNS
DOT/FHWA	USDA/FSQS		DOT/FHWA	USDA/FSQS
DOT/FRA	USDA/REA		DOT/FRA	USDA/REA
DOT/NHTSA	MSPB/OPM		DOT/NHTSA	MSPB/OPM
DOT/RSPA	LABOR		DOT/RSPA	LABOR
DOT/SLSDC	HEW/FDA		DOT/SLSDC	HEW/FDA
DOT/UMTA			DOT/UMTA	
CSA			CSA	

Documents normally scheduled for publication on a day that will be a Federal holiday will be published the next work day following the holiday.

Comments on this program are still invited. Comments should be submitted to the Day-of-the-Week Program Coordinator, Office of the Federal Register, National Archives and Records Service, General Services Administration, Washington, D.C. 20408

***NOTE: As of July 2, 1979, all agencies in the Department of Transportation, will publish on the Monday/Thursday schedule.**

TABLE OF EFFECTIVE DATES AND TIME PERIODS—DECEMBER 1979

This table is for use in computing dates certain in connection with documents which are published in the Federal Register subject to advance notice requirements or which impose time limits on public response.

Federal Agencies using this table in calculating time requirements for submissions must allow sufficient extra time for Federal Register scheduling procedures.

In computing dates certain, the day after publication counts as one. All succeeding days are counted except that when a date certain falls on a weekend or holiday, it is moved forward to the next Federal business day. (See 1 CFR 18.17)

A new table will be published in the first issue of each month. All January, February and March dates are in 1980.

Dates of FR publication	15 days after publication	30 days after publication	45 days after publication	60 days after publication	90 days after publication
December 3	December 18	January 2	January 17	February 1	March 3
December 4	December 19	January 3	January 18	February 4	March 3
December 5	December 20	January 4	January 21	February 4	March 4
December 6	December 21	January 7	January 21	February 4	March 5
December 7	December 24	January 7	January 21	February 5	March 6
December 10	December 26	January 9	January 24	February 8	March 10
December 11	December 26	January 10	January 25	February 11	March 10
December 12	December 27	January 11	January 28	February 11	March 11
December 13	December 28	January 14	January 28	February 11	March 12
December 14	December 31	January 14	January 28	February 12	March 13
December 17	January 2	January 16	January 31	February 15	March 17
December 18	January 2	January 17	February 1	February 19	March 17
December 19	January 3	January 18	February 4	February 19	March 18
December 20	January 4	January 21	February 4	February 19	March 19
December 21	January 7	January 21	February 4	February 19	March 20
December 24	January 8	January 23	February 7	February 22	March 24
December 26	January 10	January 25	February 11	February 25	March 25
December 27	January 11	January 28	February 11	February 25	March 26
December 28	January 14	January 28	February 11	February 26	March 27
December 31	January 15	January 30	February 12	February 29	March 31

CFR CHECKLIST; 1978/1979 ISSUANCES

This checklist, prepared by the Office of the Federal Register, is published in the first issue of each month. It is arranged in the order of CFR titles, and shows the revision date and price of the volumes of the Code of Federal Regulations issued to date for 1978/1979. New units issued during the month are announced on the back cover of the daily **Federal Register** as they become available.

For a checklist of current CFR volumes comprising a complete CFR set, see the latest issue of the LSA (List of CFR Sections Affected), which is revised monthly.

The annual rate for subscription service to all revised volumes is $450 domestic, $115 additional for foreign mailing.

Order from Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

CFR Unit (Rev. as of Jan. 1, 1979):

Title	Price
1	$3.00
2 [Reserved]	
3	6.00
4	5.50
5 (Rev. 7/1/79)	7.50
7 Parts:	
0-52	6.75
53-209	5.00
210-699	11.00
700-899	6.00
900-944	5.25
945-980	3.75
981-999	3.75
1000-1059	6.00
1060-1119	6.50
1120-1199	4.50
1200-1499	6.25
1500-2799	10.00
2852	6.00
2853-end	4.50
8	4.00
9	8.00
10 Parts:	
0-199	6.50
12 Parts:	
1-199	6.00
200-299	8.00
300-end	8.50
13	5.00
14 Parts:	
1-59	7.50
60-199	7.25
200-1199	7.00
1200-end	3.50
15	7.50
16 Parts:	
0-149	5.00
150-999	4.25
1000-end	5.00

CFR Unit (Rev. as of Apr. 1, 1979):

17	12.00
18 Parts:	
0-149	6.50
150-end	7.00
19	7.50
20 Parts:	
1-399	5.50
400-499	7.00
500-end	6.50
21 Parts:	
1-99	5.50
100-199	7.50
200-299	4.00
300-499	7.00
500-599	7.00
600-1299	6.00
1300-end	4.25
22	7.00
23	6.50
24 Parts:	
0-499	8.00
500-1699	7.50
1700-end	6.00
25	7.00
26 Parts:	
1 (§§ 1.0-1.169)	8.00
1 (§§ 1.170-1.300)	6.50
1 (§§ 1.301-1.400)	5.50
1 (§§ 1.401-1.500)	6.00
1 (§§ 1.501-1.640)	6.00
1 (§§ 1.641-1.850)	6.50
1 (§§ 1.851-1.1200)	7.50
1 (§§ 1.1201-end)	8.50
2-29	6.00
30-39	6.00
40-299	7.00
300-499	6.00
600-end	4.25
27	11.00

CFR Unit (Rev. as of July 1, 1979):

28	6.50
29 Parts:	
0-499	8.00
500-1899	9.00
1920-end	7.50
32 Parts:	
40-399	8.50
400-699	8.50
700-799	7.50
800-999	7.50
1000-end	6.00
32A	5.50
33 Parts:	
1-199	8.50
200-end	7.00
36	7.00
37	5.50
38	9.00
39	6.00
40 Parts:	
0-49	6.50
41 Chapters:	
3-6	7.50
7	4.00
8	4.00
9	7.00
10-17	6.50
19-100	6.00
CFR Index	8.50

CFR Unit (Rev. as of Oct. 1, 1978):

42 Parts:	
1-399	6.00
400-end	5.50
43 Parts:	
1-999	4.25
1000-end	6.50
44 [Reserved]	
45 Parts:	
1-99	4.75
100-149	5.75
150-199	5.25
200-499	3.50
500-end	8.25
46 Parts:	
1-29	3.25
30-40	3.25
41-69	4.50
70-89	3.50
90-109	3.25
110-139	3.25
140-155	3.50
156-165	4.25
166-199	4.00
200-end	6.50
47 Parts:	
0-19	5.00
20-69	5.75
70-79	5.25
80-end	7.00
48 [Reserved]	
49 Parts:	
1-99	3.25
100-199	9.25
200-999	12.00
1000-1199	5.00
1200-1299	6.50
1300-end	4.50
50	5.75

AGENCY ABBREVIATIONS
Used in Highlights and Reminders

(This List Will Be Published Monthly in First Issue of Month.)

USDA Agriculture Department

AMS Agricultural Marketing Service
APHIS Animal and Plant Health Inspection Service
ASCS Agricultural Stabilization and Conservation Service
CCC Commodity Credit Corporation
CEA Commodity Exchange Authority
EMS Export Marketing Service
EOA Energy Office, Agriculture Department
EQOA Environmental Quality Office, Agriculture Department
ESCS Economics, Statistics, and Cooperatives Service
FmHA Farmers Home Administration
FAS Foreign Agricultural Service
FCIC Federal Crop Insurance Corporation
FNS Food and Nutrition Service
FS Forest Service
FSQS Food Safety and Quality Service
RDS Rural Development Service
REA Rural Electrification Administration
RTB Rural Telephone Bank
SCS Soil Conservation Service
SEA Science and Education Administration
TOA Transportation Office, Agriculture Department

COMMERCE Commerce Department

BEA Bureau of Economic Analysis
Census Census Bureau
EDA Economic Development Administration
FTZB Foreign-Trade Zones Board
ITA Industry and Trade Administration
MA Maritime Administration
MBDA Minority Business Development Agency
NBS National Bureau of Standards
NOAA National Oceanic and Atmospheric Administration
NSA National Shipping Authority
NTIA National Telecommunications and Information Administration
NTIS National Technical Information Service
PTO Patent and Trademark Office
USTS United States Travel Service

DOD Defense Department

AF Air Force Department
Army Army Department
DCAA Defense Contract Audit Agency
DCPA Defense Civil Preparedness Agency
DIA Defense Intelligence Agency
DIS Defense Investigative Service
DLA Defense Logistics Agency
DMA Defense Mapping Agency
DNA Defense Nuclear Agency
EC Engineers Corps
Navy Navy Department

DOE Energy Department

APA Alaska Power Administration
BPA Bonneville Power Administration
EIA Energy Information Administration
ERA Economic Regulatory Administration
ERO Energy Research Office
ETO Energy Technology Office
FERC Federal Energy Regulatory Commission
OHADOE Hearings and Appeals Office, Energy Department
SEPA Southeastern Power Administration
SOLAR Conservation and Solar Energy Office
SWPA Southwestern Power Administration
WAPA Western Area Power Administration

HEW Health, Education, and Welfare Department

ADAMHA Alcohol, Drug Abuse, and Mental Health Administration
CDC Center for Disease Control
ESNC Educational Statistics National Center
FDA Food and Drug Administration
HCFA Health Care Financing Administration
HDSO Human Development Services Office
HRA Health Resources Administration
HSA Health Services Administration
MSI Museum Services Institute
NIH National Institutes of Health
NIOSH National Institute of Occupational Safety and Health
OE Office of Education
PHS Public Health Service
RSA Rehabilitation Services Administration
SSA Social Security Administration

HUD Housing and Urban Development Department

CARF Consumer Affairs and Regulatory Functions, Office of Assistant Secretary
CPD Community Planning and Development, Office of Assistant Secretary
EQO/HUD Environmental Quality Office, Housing and Urban Development Department
FDAA Federal Disaster Assistance Administration
FHC Federal Housing Commissioner, Office of Assistant Secretary for Housing
FHEO Fair Housing and Equal Opportunity, Office of Assistant Secretary
GNMA Government National Mortgage Association
ILSRO Interstate Land Sales Registration Office
NCA New Communities Administration
NCDC New Community Development Corporation
NVACP Neighborhoods Voluntary Associations and Consumer Protection, Office of Assistant Secretary

INTERIOR Interior Department

BIA Bureau of Indian Affairs
BLM Bureau of Land Management
FWS Fish and Wildlife Service
GS Geological Survey
HCRS Heritage Conservation and Recreation Service
Mines Mines Bureau
NPS National Park Service
OHA Office of Hearings and Appeals, Interior Department
SMO Surface Mining Office
WPRS Water and Power Resource Service

JUSTICE Justice Department

DEA Drug Enforcement Administration
INS Immigration and Naturalization Service
LEAA Law Enforcement Assistance Administration
NIC National Institute of Corrections

LABOR Labor Department

BLS Bureau of Labor Statistics
BRB Benefits Review Board
ESA Employment Standards Administration
ETA Employment and Training Administration
FCCPO Federal Contract Compliance Programs Office
LMSEO Labor Management Standards Enforcement Office
MSHA Mine Safety and Health Administration
OSHA Occupational Safety and Health Administration
P&WBP Pension and Welfare Benefit Programs
W&H Wage and Hour Division

STATE State Department

FSGB Foreign Service Grievance Board

DOT Transportation Department

CG Coast Guard
FAA Federal Aviation Administration
FHWA Federal Highway Administration
FRA Federal Railroad Administration
MTB Materials Transportation Bureau
NHTSA National Highway Traffic Safety Administration
OHMR Office of Hazardous Materials Regulations
OPSR Office of Pipeline Safety Regulations
RSPA Research and Special Programs Administration
SLSDC Saint Lawrence Seaway Development Corporation
UMTA Urban Mass Transportation Administration

TREASURY Treasury Department

ATF Alcohol, Tobacco and Firearms Bureau
Customs Customs Service
Comptroller Comptroller of the Currency
ESO Economic Stabilization Office (temporary)
FS Fiscal Service
IRS Internal Revenue Service
Mint Mint Bureau
PDB Public Debt Bureau
RSO Revenue Sharing Office
SS Secret Service

Independent Agencies

AC Aging, Federal Council
ATBCB Architectural and Transportation Barriers Compliance Board
CAB Civil Aeronautics Board
CASB Cost Accounting Standards Board
CEQ Council on Environmental Quality
CFTC Commodity Futures Trading Commission
CITA Textile Agreements Implementation Committee
CPSC Consumer Product Safety Commission
CRC Civil Rights Commission
CSA Community Services Administration
CWPS Wage and Price Stability Council
EEOC Equal Employment Opportunity Commission
EPA Environmental Protection Agency
ESC Endangered Species Committee
ESSA Endangered Species Scientific Authority
EXIMBANK Export-Import Bank of the U.S.
FCA Farm Credit Administration
FCC Federal Communications Commission
FCSC Foreign Claims Settlement Commission
FDIC Federal Deposit Insurance Corporation
FEC Federal Election Commission
FEMA Federal Emergency Management Agency
FEMA/USFA United States Fire Administration
FHLBB Federal Home Loan Bank Board
FHLMC Federal Home Loan Mortgage Corporation
FLRA Federal Labor Relations Authority
FMC Federal Maritime Commission
FRS Federal Reserve System
FTC Federal Trade Commission
GPO Government Printing Office
GSA General Services Administration
GSA/ADTS Automated Data and Telecommunications Service
GSA/FPA Federal Preparedness Agency
GSA/FPRS Federal Property Resources Service
GSA/FSS Federal Supply Service
GSA/NARS National Archives and Records Services
GSA/OFR Office of the Federal Register
GSA/PBS Public Buildings Service
ICA International Communication Agency
ICC Interstate Commerce Commission
ICP Interim Compliance Panel (Coal Mine Health and Safety)
IDCA International Development Cooperation Agency
ITC International Trade Commission
IRLG Interagency Regulatory Liaison Group
LSC Legal Services Corporation
MB Metric Board
MBDA Minority Business Development Agency
MSPB Merit System Protection Board
MWSC Minimum Wage Study Commission
NACEO National Advisory Council on Economic Opportunity
NASA National Aeronautics and Space Administration
NCUA National Credit Union Administration
NFAH National Foundation for the Arts and the Humanities
NLRB National Labor Relations Board
NRC Nuclear Regulatory Commission
NSF National Science Foundation
NTSB National Transportation Safety Board
OMB Office of Management and Budget
OMB/FPPO Federal Procurement Policy Office
OPIC Overseas Private Investment Corporation
OPM Office of Personnel Management
OPM/FPRAC Federal Prevailing Rate Advisory Committee
OSTP Office of Science and Technology Policy
PADC Pennsylvania Avenue Development Corporation
PBGC Pension Benefit Guaranty Corporation
PRC Postal Rate Commission
PS Postal Service
ROAP Reorganization Office of Assistant to President
RRB Railroad Retirement Board
SBA Small Business Administration
SEC Securities and Exchange Commission
TVA Tennessee Valley Authority
USIA United States Information Agency
VA Veterans Administration
WRC Water Resources Council

REMINDERS

The items in this list were editorially compiled as an aid to **Federal Register** users. Inclusion or exclusion from this list has no legal significance. Since this list is intended as a reminder, it does not include effective dates that occur within 14 days of publication.

Rules Going Into Effect Today

PERSONNEL MANAGEMENT OFFICE

63080 11–2–79 / Career and career-conditional employment

TRANSPORTATION DEPARTMENT

Coast Guard—

62891 11–1–79 / Implementation of section 2 of the Port and Tanker Safety Act of 1978

Listing of Public Laws

Last Listing November 30, 1979

This is a continuing listing of public bills from the current session of Congress which have become Federal laws. The text of laws is not published in the **Federal Register** but may be ordered in individual pamphlet form (referred to as "slip laws") from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (telephone 202–275–3030).

H.R. 2282 / Pub. L. 96–128 "Veterans' Disability Compensation and Survivors' Benefits Amendments of 1979". (Nov. 28, 1979; 93 Stat. 982) Price: $.75