

FEDERAL REGISTER

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PART I

(Part II begins on page 6747)

Agencies in this issue—

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Conservation Service
Agriculture Department
Civil Aeronautics Board
Coast Guard
Consumer and Marketing Service
Federal Aviation Agency
Federal Communications Commission
Federal Maritime Commission
Federal Power Commission
Federal Reserve System
Food and Drug Administration
Interior Department
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Announcing First 5-Year Cumulation

UNITED STATES STATUTES AT LARGE

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Title 7—AGRICULTURE

Chapter I—Consumer and Marketing Service (Standards, Inspections, Marketing Practices), Department of Agriculture

PART 51—FRESH FRUITS, VEGETABLES AND OTHER PRODUCTS (INSPECTION, CERTIFICATION AND STANDARDS)

Subpart—United States Standards for Grades of Strawberries¹

On January 27, 1965 a notice of proposed rule making was published in the FEDERAL REGISTER (30 F.R. 843) regarding a proposed revision of United States Standards for Grades of Strawberries (7 CFR 51.3115-51.3124).

Statement of considerations leading to the revision of the grade standards. The existing United States Standards for Strawberries have been in effect since March 23, 1942, and have not been codified in accordance with the Administrative Procedure Act of 1946.

In addition to codification, the revision makes the grades more applicable to current handling and marketing practices. The revision does not change the scoring of any specific defect, but will provide more uniform terminology in line with recently issued standards.

After consideration of all relevant matters presented, including the proposal set forth in the aforesaid notice, the following United States Standards for Grades of Strawberries are hereby promulgated pursuant to the Agricultural Marketing Act of 1946 (60 Stat. 1087, as amended; 7 U.S.C. 1621-1627).

Sec.	GRADES
51.3115	U.S. No. 1.
51.3116	U.S. Combination.
51.3117	U.S. No. 2.

UNCLASSIFIED	
51.3118	Unclassified.

APPLICATION OF TOLERANCES	
51.3119	Application of tolerances.

DEFINITIONS	
51.3120	Override.
51.3121	Undeveloped.
51.3122	Damage.
51.3123	Serious damage.
51.3124	Diameter.

AUTHORITY: The provision of this subpart issued under secs. 203, 205, 60 Stat. 1087, as amended, 1090 as amended; 7 U.S.C. 1622, 1624.

GRADES	
§ 51.3115	U.S. No. 1.

"U.S. No. 1" consists of strawberries of one variety or similar varietal character-

istics with the cap (calyx) attached, which are firm, not overripe or undeveloped, and which are free from mold or decay and free from damage caused by dirt, moisture, foreign matter, disease, insects, or mechanical or other means. Each strawberry has not less than three-fourths of its surface showing a pink or red color.

(a) *Size.* Unless otherwise specified, the minimum diameter of each strawberry is not less than three-fourths inch.

(b) *Tolerances.* In order to allow for variations incident to proper grading and handling the following tolerances, by volume, are provided as specified:

(1) *For defects.* Not more than 10 percent for strawberries in any lot which fail to meet the requirements of this grade, but not more than one-half of this tolerance, or 5 percent, shall be allowed for defects causing serious damage, including therein not more than two-fifths of this latter amount, or 2 percent, for strawberries affected by decay.

(2) *For off-size.* Not more than 5 percent for strawberries in any lot which are below the specified minimum size.

§ 51.3116 U.S. Combination.

"U.S. Combination" consists of a combination of U.S. No. 1 and U.S. No. 2 strawberries, except for size: *Provided*, That at least 80 percent, by volume, of the strawberries meet the requirements of U.S. No. 1 grade.

(a) *Size.* Unless otherwise specified, the minimum diameter of each strawberry is not less than three-fourths inch.

(b) *Tolerances.* In order to allow for variations incident to proper grading and handling the following tolerances, by volume, are provided as specified:

(1) *For defects.* Not more than 10 percent for strawberries in any lot which are seriously damaged, including therein not more than one-fifth of this tolerance, or 2 percent, for strawberries affected by decay. No part of any tolerance shall be allowed to reduce for the lot as a whole, the percentage of U.S. No. 1 strawberries required in the combination, and individual containers (cups or baskets) may have not less than 65 percent U.S. No. 1 strawberries: *Provided*, That the entire lot averages within the required percentage.

(2) *For off-size.* Not more than 5 percent of the strawberries in any lot may be below the specified minimum size.

§ 51.3117 U.S. No. 2.

"U.S. No. 2" consists of strawberries which are free from decay and free from serious damage caused by dirt, disease, insects, mechanical or other means. Each strawberry has not less than one-half of its surface showing a pink or red color.

(a) *Size.* Unless otherwise specified, the minimum diameter of each strawberry is not less than five-eighths inch.

(b) *Tolerances.* In order to allow for variations incident to proper grading and handling the following tolerances, by volume, are provided as specified:

(1) *For defects.* Not more than 10 percent for strawberries in any lot which are seriously damaged, including therein not more than three-tenths of this tolerance, or 3 percent, for strawberries affected by decay.

(2) *For off-size.* Not more than 5 percent for strawberries in any lot which are below the specified minimum size.

UNCLASSIFIED

§ 51.3118 Unclassified.

"Unclassified" consists of strawberries which have not been classified in accordance with any of the foregoing grades. The term "unclassified" is not a grade within the meaning of these standards but is provided as a designation to show that no grade has been applied to the lot.

APPLICATION OF TOLERANCES

§ 51.3119 Application of tolerances.

(a) The contents of individual packages (cups or baskets) in the lot, based on sample inspection, are subject to the following limitations:

(1) For a tolerance of 10 percent or more, individual packages (cups or baskets) in any lot shall have not more than one and one-half times the tolerance specified, except that when the package contains 25 specimens or less, individual packages shall have not more than double the tolerance specified: *Provided*, That the averages for the entire lot are within the tolerance specified for the grade.

(2) For a tolerance of less than 10 percent, individual packages (cups or baskets) in any lot shall have not more than double the tolerance specified, except that at least one defective and one off-size specimen may be permitted in any package: *Provided*, That the averages for the entire lot are within the tolerances specified for the grade.

DEFINITIONS

§ 51.3120 Override.

"Override" means dead ripe, becoming soft, a condition unfit for shipment and necessitating immediate consumption.

§ 51.3121 Undeveloped.

"Undeveloped" means that the berry has not attained a normal shape and development due to frost injury, lack of pollination, insect injury, or other causes. "Button" berries are the most common type of this condition.

§ 51.3122 Damage.

"Damage" means any defect or any combination of defects, which materially detracts from the appearance, or the edible or shipping quality of the strawberries.

§ 51.3123 Serious damage.

"Serious damage" means any specific defect described in this section; or an equally objectionable variation of any one of these defects, any other defect, or

¹ Packing of the product in conformity with the requirements of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act or with applicable State laws and regulations.

any combination of defects, which seriously detracts from the appearance, or the edible or shipping quality of the strawberries. The following specific defects shall be considered as serious damage:

- (a) Soft berries;
- (b) Badly deformed berries;
- (c) Badly bruised berries;
- (d) Decayed or leaky berries;
- (e) Berries badly caked with dirt; and,
- (f) Berries with less than one-half of surface showing pink or red color.

§ 51.3124 Diameter.

"Diameter" means the greatest dimension measured at right angles to a straight line running from the stem to the apex.

The United States Standards for Grades of Strawberries contained in this subpart shall become effective July 1, 1965, and will thereupon supersede the United States Standards for Strawberries which have been in effect since March 23, 1942.

Dated: May 12, 1965.

G. R. GRANGE,
Deputy Administrator,
Marketing Services.

[F.R. Doc. 65-5197; Filed, May 17, 1965;
8:46 a.m.]

Chapter VII—Agricultural Stabilization and Conservation Service (Agricultural Adjustment), Department of Agriculture

[Amdt. 17]

PART 722—COTTON

Subpart—Acreage Allotment Regulations for the 1964 and Succeeding Crops of Upland Cotton

ERRONEOUS NOTICES AND TRANSFER OF COTTON ACREAGE AFFECTED BY NATURAL DISASTER

This amendment is issued pursuant to the Agricultural Adjustment Act of 1938, as amended (52 Stat. 31, as amended; 7 U.S.C. 1281 et seq.).

(a) The purpose of this amendment is to designate States and counties that have been affected by a natural disaster within the meaning of section 344(n) of the Act for the 1965 crop and to delete the provisions relating to erroneous notices of planted acreage which are covered in the regulations in Part 718 of this chapter.

(b) In order that determinations with respect to transfers of acreage for the 1965 crop may be made prior to the end of the cotton planting season, it is essential that this amendment be made effective as soon as possible. Accordingly, it is hereby determined and found that compliance with the notice, public procedure requirements and the 30-day effective date requirements of section 4

of the Administrative Procedure Act (60 Stat. 238; 5 U.S.C. 1003) is impracticable and contrary to the public interest and this amendment shall be effective upon filing of this document with the Director, Office of the Federal Register.

The acreage allotment regulations for the 1964 and succeeding crops of upland cotton (28 F.R. 11041, as amended) are amended as follows:

§ 722.225 [Amended]

1. Section 722.225 of the regulations is amended by deleting paragraph (b) therefrom.

2. Section 722.226 of the regulations is amended by adding a new paragraph at the end thereof as follows:

§ 722.226 Transfer of farm cotton acreage affected by a natural disaster.

(i) *Designated States and counties affected by a natural disaster for 1965.* It is hereby determined that a natural disaster consisting of flood or excessive rainfall in 1965 has prevented timely planting or replanting of a portion of the 1965 farm cotton allotments on some farms in the following designated States and counties:

COUNTIES APPROVED FOR FLOODED FARM TRANSFERS

ARKANSAS	
Crittenden.	Lee.
Cross.	Monroe.
Deshu.	Phillips.
ILLINOIS	
Alexander.	Pulaski.
KENTUCKY	
Fulton.	Hickman.
MISSISSIPPI	
Bollivar.	Lafayette.
Calhoun.	Tunica.
Coahoma.	Warren.
De Soto.	Washington.
Grenada.	Yalobusha.
Issaquena.	
MISSOURI	
Butler.	Pemiscot.
Dunklin.	Ripley.
Mississippi.	Scott.
New Madrid.	Stoddard.
TENNESSEE	
Gibson.	Obion.
Lake.	Shelby.
Lauderdale.	Tipton.

(Secs. 344(n), 375; 78 Stat. 177, 52 Stat. 66, as amended, 7 U.S.C. 1344(n), 1375)

Effective date. Date of filing this document with the Director, Office of the Federal Register.

Signed at Washington, D.C., on May 13, 1965.

H. D. GODFREY,
Administrator, Agricultural Stabilization and Conservation Service.

[F.R. Doc. 65-5222; Filed, May 17, 1965;
8:48 a.m.]

Chapter IX—Consumer and Marketing Service (Marketing Agreements and Orders; Fruits, Vegetables, Tree Nuts), Department of Agriculture

[Lemon Reg. 160, Amdt. 1]

PART 910—LEMONS GROWN IN CALIFORNIA AND ARIZONA

Limitation of Handling

Findings. 1. Pursuant to the marketing agreement, as amended, and this part (Order No. 910), as amended, regulating the handling of lemons grown in California and Arizona, effective under the applicable provisions of the Agricultural Marketing Agreement Act of 1937, as amended (7 U.S.C. 601-674), and upon the basis of the recommendation and information submitted by the Lemon Administrative Committee, established under the said amended marketing agreement and order, and upon other available information, it is hereby found that the limitation of handling of such lemons, as hereinafter provided, will tend to effectuate the declared policy of the act.

2. It is hereby further found that it is impracticable and contrary to the public interest to give preliminary notice, engage in public rule-making procedure, and postpone the effective date of this amendment until 30 days after publication hereof in the FEDERAL REGISTER (5 U.S.C. 1001-1011) because the time intervening between the date when information upon which this amendment is based became available and the time when this amendment must become effective in order to effectuate the declared policy of the act is insufficient, and this amendment relieves restriction on the handling of lemons grown in California and Arizona.

Order, as amended. The provisions in paragraph (b) (1) (ii) of § 910.460 (Lemon Regulation 160, 30 F.R. 6430) are hereby amended to read as follows:

§ 910.460 Lemon Regulation 160.

- (b) Order. (1) * * *
- (ii) District 2: 385,950 cartons.

(Secs. 1-19, 48 Stat. 31, as amended; 7 U.S.C. 601-674)

Dated: May 13, 1965.

PAUL A. NICHOLSON,
Deputy Director, Fruit and Vegetable Division, Consumer and Marketing Service.

[F.R. Doc. 65-5198; Filed, May 17, 1965;
8:46 a.m.]

Title 46—SHIPPING

Chapter I—Coast Guard, Department of the Treasury

SUBCHAPTER K—MARINE INVESTIGATIONS AND SUSPENSION AND REVOCATION PROCEEDINGS

[CGFR 64-85]

PART 137—SUSPENSION AND REVOCATION PROCEEDINGS

Subpart 137.30—Appeals

TEMPORARY DOCUMENTS

The purpose for amending 46 CFR 137.30-15 regarding temporary documents is to revise procedures and to clarify issuance of temporary documents pending decisions on appeals by merchant mariners.

The revised procedures provide that a merchant mariner may file his request for a temporary document with the Examiner or any Officer in Charge, Marine Inspection, who will forward such request to the Examiner who conducted the hearing, rather than via the District Commander as in the past.

This amendment also clarifies the provision that an Examiner is authorized to grant a request for a temporary document, pending a decision on appeal, except when any one of two different situations exists; i.e., (1) the hearing transcript has been sent to the Commandant; or (2) the order of suspension or revocation rests on a finding of guilty for a serious offense, such as appears in § 137.03-5, or is otherwise of such a character that the presence of the person on board a vessel would be incompatible with the requirements of safety of life or property at sea. In either situation the request may be forwarded by the Examiner to the Commandant for action. There is no change with respect to the first situation. In the second situation an Examiner should not grant a request for a temporary document if he believes it would be incompatible with the requirements of safety of life or property at sea. Nevertheless, it is not considered inconsistent that the Commandant should consider such a request since opinions may differ as to whether or not it would be safe, in a particular case, to issue a temporary document pending a decision on appeal. In order to properly evaluate the circumstances in each case, the Commandant should have the hearing transcript available before ruling on the request and this will now be furnished to him in most cases.

As the amendment to 46 CFR 137.30-15 regarding temporary documents revises and clarifies Coast Guard procedures and delegated authority of Examiners, it is hereby found that it is exempt from compliance with the Administrative Procedure Act (respecting notice of proposed rule making, public rule making procedure thereon, and effective date requirements) by specific provisions in section 4 of this Act (5 U.S.C. 1003).

By virtue of the authority vested in me as Commandant, U.S. Coast Guard, by section 632 of Title 14, U.S. Code, and Treasury Department Order 120, July 31,

1950 (15 F.R. 6521), and others specifically listed with the regulation below, the following amendment to § 137.30-15 is prescribed and shall become effective on the date of publication of this document in the FEDERAL REGISTER:

§ 137.30-15 Temporary documents.

(a) Any person who has appealed from a decision suspending or revoking his document may file a written request for a temporary document with the Examiner who rendered the decision or with any Officer in Charge, Marine Inspection, for forwarding to such Examiner. The request will be granted by the Examiner except (1) when the hearing transcript has been forwarded to the Commandant, or (2) when, in the opinion of the Examiner, the order of suspension or revocation rests upon a finding of guilty for a serious offense of such a character that the presence of the person charged on board a vessel, either immediately or for the indefinite future, would be incompatible with the requirements of safety of life or property at sea, or for a serious offense found by the Examiner to have been committed willfully.

(b) If the transcript has been forwarded to the Commandant, or if the request is denied by the Examiner, the request shall be forwarded by the Examiner to the Commandant for final action. A temporary document may be issued in the discretion of the Commandant, except where such action, in the opinion of the Commandant, would be incompatible with the requirements of safety of life or property at sea.

(c) A temporary document shall be subject to such terms and conditions as the Commandant or Examiner may prescribe. However, all such documents shall provide that they expire not more than six months after issuance or upon service of the Commandant's decision on appeal, whichever occurs first. If a temporary document expires before the Commandant's decision is rendered, it may be renewed, after authorization by the Commandant, by the issuance of a new temporary document by an Officer in Charge, Marine Inspection.

(d) Copies of the temporary documents issued shall become a part of the record on appeal.

(R.S. 4405, as amended, 4462, as amended, and sec. 633, 63 Stat. 545; 46 U.S.C. 375, 416, 14 U.S.C. 633; Interpret or apply R.S. 4426, as amended, 4450, as amended, secs. 1, 2, 49 Stat. 1544, 1545, as amended, sec. 7, 54 Stat. 165, as amended, secs. 1 to 12, 60 Stat. 237-244, secs. 1, 2, 68 Stat. 484, sec. 3, 68 Stat. 675, sec. 3, 70 Stat. 675, sec. 3, 70 Stat. 152; 46 U.S.C. 239, 239a, 239b, 367, 390b, 404, 526f, 5 U.S.C. 1001-1011, 50 U.S.C. 198. Treasury Department Orders 120, July 31, 1950, 15 F.R. 6521; 167-9, Aug. 3, 1954, 19 F.R. 5195; 167-14, Nov. 26, 1954, 19 F.R. 8026; 167-15, Jan. 3, 1955, 20 F.R. 840; 167-14, June 29, 1955, 20 F.R. 4976; 167-20, June 18, 1956, 21 F.R. 4894)

Dated: May 7, 1965.

[SEAL] W. D. SHIELDS,
Vice Admiral, U.S. Coast Guard,
Acting Commandant.

[F.R. Doc. 65-5213; Filed, May 17, 1965; 8:47 a.m.]

Title 14—AERONAUTICS AND SPACE

Chapter I—Federal Aviation Agency

[Reg. Docket No. 6643; Amdt. 77-1]

PART 77—OBJECTS AFFECTING NAVIGABLE AIRSPACE

Miscellaneous Amendments

The purpose of this amendment is to make certain minor clarifying amendments to Part 77 of the Federal Aviation Regulations, which became effective on May 1, 1965.

Section 77.19, by reference to § 77.28 (b) in the last paragraph, provides for application of the dimensions of clear zones for runways at civil airports to runways at all military airports. This was not intended. As currently written, § 77.28(b)(1) states that the primary surface for military airports is "the same elevation as the centerline of the runway." The section is being revised to make it clear that the primary surface undulates with the underlying surface.

In the interest of timely correction of these discrepancies, in view of the May 1, 1965, effective date of revised Part 77, and since these amendments are clarifying in nature, I find that notice and public procedure are impracticable and contrary to the public interest and that this amendment may therefore be made effective immediately.

In consideration of the foregoing, Part 77 is amended, effective immediately, as follows:

(1) The flush paragraph at the end of § 77.19(c) is amended to read as follows:

For the purpose of this subpart, a runway clear zone for civil airports, and for each military airport on which the longest runway is no more than 5,000 feet in length, is an area at ground level which begins at the end of each primary surface defined in § 77.27(a) and extends with the width of each approach surface defined in § 77.27 (b) and (c), to terminate directly below each approach surface slope at the point, or points, where the slope reaches a height of 50 feet above the elevation of the runway or 50 feet above the terrain at the outer extremity of the clear zone, whichever distance is shorter. For military airports with at least one runway more than 5,000 feet in length, the runway clear zone is the surface defined in § 77.28(b)(2).

(2) The first sentence of § 77.28(b)(1) is amended to read as follows: "A surface located on the ground or water longitudinally centered on each runway with the same length as the runway."

(Secs. 307, 313, 1101, Federal Aviation Act of 1958; 49 U.S.C. 1348, 1354, 1510, E.O. 10854 (24 F.R. 9565))

Issued in Washington, D.C., on May 11, 1965.

N. E. HALABY,
Administrator.

[F.R. Doc. 65-5176; Filed, May 17, 1965; 8:45 a.m.]

RULES AND REGULATIONS

SUBCHAPTER F—AIR TRAFFIC AND GENERAL OPERATING RULES

[Reg. Docket No. 6599; Amdt. 426]

PART 97—STANDARD INSTRUMENT APPROACH PROCEDURES

Miscellaneous Amendments

The amendments to the standard instrument approach procedures contained herein are adopted to become effective when indicated in order to promote safety. The amended procedures supersede the existing procedures of the same classification now in effect for the airports specified therein. For the convenience of the users, the complete procedure is republished in this amendment indicating the changes to the existing procedures.

As a situation exists which demands immediate action in the interests of safety in air commerce, I find that compliance with the notice and procedure provisions of the Administrative Procedure Act is impracticable and that good cause exists for making this amendment effective within less than 30 days from publication.

In view of the foregoing and pursuant to the authority delegated to me by the Administrator (24 F.R. 5662), Part 97 (14 CFR Part 97) is amended as follows:

1. By amending the following automatic direction finding procedures prescribed in § 97.11(b) to read:

ADF STANDARD INSTRUMENT APPROACH PROCEDURE

Bearings, headings, courses and radials are magnetic. Elevations and altitudes are in feet MSL. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles.

If an instrument approach procedure of the above type is conducted at the below named airport, it shall be in accordance with the following instrument approach procedure, unless an approach is conducted in accordance with a different procedure for such airport authorized by the Administrator of the Federal Aviation Agency. Initial approaches shall be made over specified routes. Minimum altitudes shall correspond with those established for en route operation in the particular area or as set forth below.

Transition		Course and distance	Minimum altitude (feet)	Condition	Ceiling and visibility minimums		
From—	To—				2-engine or less		More than 2-engine, more than 65 knots
					65 knots or less	More than 65 knots	
				T-dn.....	300-1	300-1	200-1/2
				C-dn.....	700-1	700-1	700-1/2
				A-dn.....	800-2	800-2	800-2
				If Terry fan marker received, minimums become:			
				C-dn.....	600-1	600-1	600-1/2

Radar transitions and vectoring authorized in accordance with approved patterns.

No procedure turn. Radar control will not descend aircraft below 3000' until passing Wade Int, Inbnd.

Minimum altitude over Margaret Int on final approach crs, 2600'; over Terry FM, 1500'.

Crs and distance, Wade Int to RBN, 095°—7.6 miles; Margaret Int to RBN, 095°—5.7 miles; breakoff point to runway, 078°—0.4 mile.

Crs and distance, Terry FM to airport, 095°—1.5 miles; to RBN, 2.1 miles.

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 0.6 mile after passing FTY RBN, make left turn, climb to 3000' and return to Wade Int via 275° bearing from FTY RBN, or follow radar vector after being reidentified.

NOTE: ATL approach control radar must be in operation for vector to final approach crs. Night air carrier operations not authorized.

CAUTION: Water tank, 1218°—1.8 miles WNW and tower, 1375°—2.7 miles NW of airport.

MSA within 25 miles of facility: 000°—180°—4000'; 180°—270°—3700'; 270°—360°—3800'.

City, Atlanta; State, Ga.; Airport name, Fulton County; Elev., 834'; Fac. Class., MH; Ident., FTY; Procedure No. 1, Amdt. 1; Eff. date, 22 May 65; Sup. Amdt. No. Orig.; Dated, 2 Jan. 65

Erie VOR.....	ERI RBN.....	061°—10.8 miles....	2800	T-dn.....	300-1	300-1	200-1/2
Harborscreek Int.....	ERI RBN.....	Direct.....	2800	C-dn.....	500-1	500-1	500-1/2
Hammitt Int.....	ERI RBN.....	Direct.....	2900	S-dn-24.....	500-1	500-1	500-1
Wattsburg Int.....	ERI RBN.....	Direct.....	3300	A-dn.....	800-2	800-2	800-2
Lawrence Int.....	ERI RBN.....	Direct.....	3400				

Procedure turn N side of crs, 059° Outbnd, 239° Inbnd, 2800' within 10 miles.

Minimum altitude over facility on final approach crs, 1800'.

Crs and distance, facility to airport, 239°—3.6 miles.

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 3.6 miles after passing ERI RBN, make a right-climbing turn to 3000' and return to ERI RBN. Hold NE on 069° bearing of ERI RBN, 1-minute right turns, 239° Inbnd.

AIR CARRIER NOTE: 300-1 required for takeoff on all runways except 6-24. Sliding scale authorized Runways 6-24.

MSA within 25 miles of facility: 060°—150°—2900'; 180°—240°—3100'; 240°—330°—2000'; 330°—090°—1600'.

City, Erie; State, Pa.; Airport name, Port Erie; Elev., 732'; Fac. Class., MHW; Ident., ERI; Procedure No. 1, Amdt. 5; Eff. Date, 22 May 65; Sup. Amdt. No. 4; Dated, 12 Oct. 63

Erie VOR.....	ER LOM (final).....	Direct.....	2000	T-dn.....	300-1	300-1	200-1/2
				C-dn.....	500-1	500-1	500-1/2
				S-dn-6.....	500-1	500-1	500-1
				A-dn.....	800-2	800-2	800-2

Procedure turn S side of crs, 239° Outbnd, 069° Inbnd, 2300' within 10 miles.

Minimum altitude over facility on final approach crs, 2000'.

Crs and distance, facility to airport, 069°—3.9 miles.

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 3.9 miles after passing ER LOM, climb to 2000' and 069° heading, make left turn, proceed to ER LOM, hold SW, ER LOM, right turns, 1 minute, 069° Inbnd.

AIR CARRIER NOTE: 300-1 required for takeoff on all runways except 6-24. Sliding scale authorized Runways 6-24.

MSA within 25 miles of facility: 050°—140°—3100'; 140°—230°—2900'; 230°—320°—2000'; 320°—050°—1600'.

City, Erie; State, Pa.; Airport name, Port Erie; Elev., 732'; Fac. Class., LOM; Ident., ER; Procedure No. 2; Amdt. 1; Eff. date, 22 May 65; Sup. Amdt. No. Orig.; Dated, 29 Feb. 64

ADF STANDARD INSTRUMENT APPROACH PROCEDURE—Continued

Transition		Ceiling and visibility minimums					
From—	To—	Course and distance	Minimum altitude (feet)	Condition	2-engine or less		More than 2-engine, more than 65 knots
					65 knots or less	More than 65 knots	
FAT VOR	FAT RBN	Direct	2000	T-dn	300-1	300-1	NA
FAT LOM	FAT RBN	Direct	2000	C-d	800-1	800-1	NA
				C-u	800-2	800-2	NA
				A-dn	NA	NA	NA

Radar vectoring authorized in accordance with approved patterns.
 Procedure turn S side of crs, 215° Outbnd, 035° Inbnd, 3000' within 10 miles.
 Minimum altitude over facility on final approach crs, 1100'.
 Crs and distance, facility to airport, 853°—0.9 mile.
 If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 0.0 mile of FAT RBN, climb to 2000' on crs 135° from FAT RBN within 15 miles.
 MSA within 25 miles of facility: 000°-090°—4500'; 090°-180°—2100'; 180°-270°—1900'; 270°-360°—3000'.
 City, Fresno; State, Calif.; Airport name, Fresno-Chandler Municipal; Elev., 283'; Fac. Class., II-SAB; Ident., FAT; Procedure No. 1, Amdt. 1; Eff. date, 22 May 65; Sup. Amdt. No. Orig.; Dated, 21 Dec. 63

GLS VOR	GLS RBN	Direct	1600	T-dn	300-1	300-1	200-1½
				C-dn	300-1	500-1	500-1½
				S-dn-13	400-1	400-1	400-1
				A-dn	800-2	800-2	800-2

Radar vectoring by Houston approach control may be used to position aircraft on final approach within 10 miles of Galveston RBN with elimination of procedure turn.
 Procedure turn S side of crs, 308° Outbnd, 123° Inbnd, 1600' within 10 miles.
 Minimum altitude over facility on final approach crs, 1100'.
 Crs and distance, facility to airport, 123°—4.3 miles.
 If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 4.3 miles after passing GLS RBN, turn right, climb to 2000' direct to GLS RBN.
 Caution: 231' radio tower, 7000' NE of airport. 157' water tank ESE side of airport.
 MSA within 25 miles of facility: 000°-270°—1400'; 270°-360°—2300'.
 City, Galveston; State, Tex.; Airport name, Scholes Field; Elev., 7'; Fac. Class., BHH; Ident., GLS; Procedure No. 1, Amdt. 6; Eff. date, 22 May 65; Sup. Amdt. No. 5; Dated, 11 Apr. 64

HOV VOR	AAP MH	Direct	1800	T-dn	300-1	300-1	200-1½
Fairbanks Int.	AAP MH	Direct	1800	C-dn	600-1	600-1	600-1
Arols Int.	AAP MH	Direct	2500	A-dn	NA	NA	NA
Rosenberg Int.	AAP MH	Direct	1600				
Cypress Int.	AAP MH	Direct	1700				
HOV RBN	AAP MH	Direct	1500				

Radar vectoring authorized in accordance with approved patterns.
 Procedure turn W side of crs, 344° Outbnd, 164° Inbnd, 1600' within 10 miles.
 Minimum altitude over facility on final approach crs, 800'.
 Crs and distance, facility to airport, 165°—0.4 mile.
 If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 0.4 mile after passing AAP RBN, turn right, climb to 2000' on crs of 270° from the AAP RBN within 10 miles.
 Notes: (1) Air carrier use not authorized. (2) No weather at airport. (3) Austin altimeter setting will be used for this approach. (4) REIL serves Runway 35.
 Caution: Procedure not wholly within controlled airspace.
 MSA within 25 miles of facility: 000°-090°—3200'; 090°-180°—2500'; 180°-270°—3300'; 270°-360°—3300'.
 City, Houston; State, Tex.; Airport name, Andrau Airpark; Elev., 80'; Fac. Class., MHW; Ident., AAP; Procedure No. 1, Amdt. 6; Eff. date, 22 May 65; Sup. Amdt. No. 5; Dated, 27 June 64

Johnson City Int.	JCY RBN	Direct	3100	T-dn	300-1	300-1	200-1½
Fredericksburg Int.	JCY RBN	Direct	3100	C-dn	500-1	600-1	600-1½
				A-dn	NA	NA	NA

Procedure turn E side of crs, 166° Outbnd, 346° Inbnd, 3000' within 10 miles.
 Minimum altitude over facility on final approach crs, 2500'.
 Crs and distance, facility to airport, 346°—2.0 miles.
 If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 2.0 miles after passing JCY RBN, turn right, climb to 4000' on 350° crs from JCY RBN. Then proceed to SAT VOR R-353 via the Austin, Tex., VOR R-260, thence to Johnson City Int via SAT VOR R-353, maintain 4000' hold N of Johnson City Int, in 1-minute right hand pattern. Contact ATC for further clearance.
 Notes: (1) Air carrier use not authorized. (2) No weather at airport. (3) Austin altimeter setting will be used for this approach. (4) REIL serves Runway 35.
 Caution: Procedure not wholly within controlled airspace.
 MSA within 25 miles of facility: 000°-090°—3200'; 090°-180°—2500'; 180°-270°—3300'; 270°-360°—3300'.
 City, Johnson City; State, Tex.; Airport name, Johnson City; Elev., 1512'; Fac. Class., MH; Ident., JCY; Procedure No. 1, Amdt. 5; Eff. date, 22 May 65; Sup. Amdt. No. 4; Dated, 26 Dec. 64

Leroy Int.	AZ LOM	Direct	2800	T-dn	300-1	300-1	200-1½
AZO VOR	AZ LOM	Direct	2800	C-dn	400-1	500-1	500-1½
BTL VOR	AZ LOM	Direct	2800	S-dn-35	400-1	400-1	400-1
Centerville Int.	Barton Int.	Via AZO	2800	A-dn	800-2	800-2	800-2
		R-192 and BTL R-218.					
Barton Int.	AZ LOM (final)	Direct	2500				
Lawton Int.	AZ LOM	Direct	2800				
Cooper Int.	AZ LOM	Direct	2800				
Hickory Int.	AZ VOR	Direct	2800				
GRR VOR	AZ LOM	Direct	2900				

Procedure turn E side of crs, 172° Outbnd, 352° Inbnd, 2800' within 10 miles.
 Minimum altitude over facility on final approach crs, 2500'.
 Crs and distance, facility to airport, 352°—5.8 miles.
 If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 5.8 miles after passing AZ LOM, climb to 3000', proceed to Cooper Int via AZO VOR R-321, or when directed by ATC, climb to 2800', turn left, and return to AZ LOM.
 Caution: This procedure authorized only when tower operates.
 MSA within 25 miles of facility: 000°-360°—2400'.
 City, Kalamazoo; State, Mich.; Airport name, Kalamazoo Municipal; Elev., 874'; Fac. Class., LOM; Ident., AZ; Procedure No. 1, Amdt. 5; Eff. date, 22 May 65; Sup. Amdt. No. 4; Dated, 25 Jan. 64

PROCEDURE CANCELLED, EFFECTIVE 15 MAY 1965.

City, Kwajalein Island, Marshall Islands; Airport name, PMFR Kwajalein; Elev., 7'; Fac. Class., II; Ident., NDJ; Procedure No. 1, Amdt. Orig.; Eff. date, 5 May 62 No. 95—Pt. I—2

ADF STANDARD INSTRUMENT APPROACH PROCEDURE—Continued

Transition				Ceiling and visibility minimums			
From—	To—	Course and distance	Minimum altitude (feet)	Condition	2-engine or less		More than 2-engine, more than 65 knots
					65 knots or less	More than 65 knots	
SUX VOR.....	LOM.....	Direct.....	2600	T-dn..... C-dn..... S-dn-31..... A-dn.....	300-1 500-1 400-1 800-2	300-1 600-1 400-1 800-2	*20-1/2 60-1 1/2 40-1 80-2

Procedure turn E side of crs, 127° Outbd, 307° Inbd, 2600' within 10 miles.
 Minimum altitude over facility on final approach crs, 2600'.
 Crs and distance, facility to airport, 307°—5.3 miles.
 If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 5.3 miles after passing LOM, climb to 2600' on 207° magnetic bearing from LOM within 15 miles or, when directed by ATC, turn left and climb to 3700' on R-266 of SUX VOR within 20 miles.
 NOTE: For aircraft departing northeastbound when weather is below 2400-2, flight below 3600' beyond 7 miles from airport is prohibited between the 347° and 025° radials of the SUX VORTAC due to a 3360' tower, 12 miles NE of the airport.
 *300-1 required for all takeoffs on Runway 4, due to 1318' terrain, 1.4 miles ENE of airport.
 MSA within 25 miles of facility: 000°-090°—4400'; 090°-270°—2700'; 270°-360°—3600'.

City, Sioux City; State, Iowa; Airport name, Sioux City Municipal; Elev., 1097'; Fac. Class., LOM; Ident., SU; Procedure No. 1, Amdt. 11; Eff. date, 22 May 65; Sup. Amdt. No. 10; Dated, 10 Apr. 65

SUX VOR.....	JKN RBN.....	Direct.....	2600	T-dn.....	300-1	300-1	*20-1/2
Jefferson Int.....	JKN RBN.....	Direct.....	2600	C-dn.....	600-1	600-1	60-1 1/2
Hubbard Int.....	JKN RBN.....	Direct.....	2800	S-dn-13..... A-dn.....	600-1 800-2	600-1 800-2	60-1 80-2

Procedure turn W side of crs, 307° Outbd, 127° Inbd, 2600' within 10 miles.
 Minimum altitude over facility on final approach crs, 2600'.
 Crs and distance, facility to airport, 127°—4.1 miles.
 If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 4.1 miles after passing JKN RBN, climb to 2800' on 127° magnetic bearing from JKN RBN within 20 miles.
 NOTE: For aircraft departing northeastbound when weather is below 2400-2, flight below 3600' beyond 7 miles from airport is prohibited between the 347° and 025° radials of the SUX VORTAC due to a 3360' tower, 12 miles NE of the airport.
 *300-1 required for all takeoffs on Runway 4, due to 1318' terrain, 1.4 miles ENE of airport.
 MSA within 25 miles of facility: 000°-090°—4400'; 090°-360°—2700'.

City, Sioux City; State Iowa; Airport name, Sioux City Municipal; Elev., 1097'; Fac. Class., MHW; Ident., JKN; Procedure No. 2, Amdt. 5; Eff. date, 22 May 65; Sup. Amdt. No. 4; Dated, 10 Apr. 65

McClure Int.....	LOM.....	Direct.....	2300	T-dn.....	300-1	300-1	20-1/2
Waterville VOR.....	LOM.....	Direct.....	2300	C-dn.....	600-1	600-1	60-1 1/2
Harbor View Int.....	LOM.....	Direct.....	2300	S-dn-7.....	600-1	300-1	60-1
Gerald Int.....	LOM.....	Direct.....	2300	A-dn.....	800-2	800-2	80-2

Radar vectoring authorized in accordance with approved patterns.
 Procedure turn S side of crs, 249° Outbd, 069° Inbd, 2100' within 10 miles.
 Minimum altitude over facility on final approach crs, 1500'.
 Crs and distance, facility to airport, 069°—4.7 miles.
 If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 4.7 miles after passing LOM, make right-climbing turn to 2200', proceed to Waterville VOR, hold SE Waterville VOR on R-140, right turns, 1 minute, 320° Inbd, or when directed by ATC, within 4.7 miles after passing LOM, make climbing left turn to 2100', proceed to Toledo LOM, hold SW Toledo LOM, right turns, 1 minute, 069° Inbd.
 CAUTION: Tower 869'—1 1/4 miles S of LMM.
 MSA within 25 miles of facility: 000°-090°—2600'; 090°-180°—2000'; 180°-270°—2100'; 270°-360°—2500'.

City, Toledo; State, Ohio; Airport name, Toledo Express; Elev., 684'; Fac. Class., LOM; Ident., TO; Procedure No. 1, Amdt. 9; Eff. date, 22 May 65; Sup. Amdt. No. 8; Dated, 2 Jan. 65

2. By amending the following very high frequency omnirange (VOR) procedures prescribed in § 97.11(c) to read:

VOR STANDARD INSTRUMENT APPROACH PROCEDURE

Bearings, headings, courses and radials are magnetic. Elevations and altitudes are in feet MSL. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles.
 If an instrument approach procedure of the above type is conducted at the below named airport, it shall be in accordance with the following instrument approach procedure, unless an approach is conducted in accordance with a different procedure for such airport authorized by the Administrator of the Federal Aviation Agency. Initial approaches shall be made over specified routes. Minimum altitudes shall correspond with those established for en route operation in the particular area or as set forth below.

Transition				Ceiling and visibility minimums			
From—	To—	Course and distance	Minimum altitude (feet)	Condition	2-engine or less		More than 2-engine, more than 65 knots
					65 knots or less	More than 65 knots	
AEX VOR.....	ESF VOR.....	Direct.....	1700	T-dn.....	300-1	300-1	20-1/2
AEX RBN.....	ESF VOR.....	Direct.....	1700	C-dn.....	400-1	500-1	50-1 1/2
Boyce Int.....	ESF VOR.....	Direct.....	1700	S-dn-14.....	400-1	400-1	40-1
Larto Int.....	ESF VOR.....	Direct.....	2000	A-dn.....	800-2	800-2	80-2
V-114, V-114N.....	ESF VOR.....	ESF-148.....	1700				
Van Int.....	ESF VOR (final).....	Direct.....	1000				

Radar terminal area transition altitude: 1600' within 20 miles. Radar control must provide 1000' clearance when within 3 miles of radio tower, 1760'—16 miles S of radar site at England AFB.
 Procedure turn E side of crs, 331° Outbd, 151° Inbd, 1700' within 10 miles.
 Minimum altitude over facility on final approach crs, 1000'.
 Crs and distance, facility to airport, 151°—3.0 miles.
 If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 3.0 miles after passing ESF VOR, climb to 1700' on ESF VOR R-151, turn left and return to ESF VOR.
 MSA within 25 miles of facility: 000°-090°—1400'; 090°-180°—1400'; 180°-270°—1700'; 270°-360°—1500'.

City, Alexandria; State, La.; Airport name, Esler Field; Elev., 108'; Fac. Class., L-BVOR; Ident., ESF; Procedure No. 1, Amdt. 4; Eff. date, 22 May 65; Sup. Amdt. No. 4; Dated, 26 Sept. 64

VOR STANDARD INSTRUMENT APPROACH PROCEDURE—Continued

Transition		Ceiling and visibility minimums					
From—	To—	Course and distance	Minimum altitude (feet)	Condition	2-engine or less		More than 2-engine, more than 65 knots
					65 knots or less	More than 65 knots	
AEX VOR	ESF VOR	Direct	1700	T-dn	300-1	300-1	300-1 $\frac{1}{2}$
AEX RBN	ESF VOR	Direct	1700	C-dn	400-1	500-1	500-1 $\frac{1}{2}$
Boys Int.	ESF VOR	Direct	1700	S-dn-32	400-1	400-1	400-1
Lerts Int.	ESF VOR	Direct	2000	A-dn	500-2	800-2	800-2
V-14	Marks Int.	AEX 119/ESF-148	1700				
Marks Int.	Cox Int (final)	Direct	1300				

Radar vectoring authorized in accordance with approved patterns.

Procedure turn E side of crs, 148° Outbd, 328° Inbd, 1600' within 10 miles of Cox Int. Beyond 10 miles not authorized.

Minimum altitude over Cox Int on final approach crs, 1300'.

Crs and distance, Cox Int to airport, 328°—4.0 miles.

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 4.0 miles after passing *Cox Int, climb to 2000' and proceed to ESF VOR. Hold NW on ESF R-331 (RT).

MSA within 25 miles of the facility: 000°-090°—1400'; 090°-180°—1400'; 180°-270°—1700'; 270°-360°—1500'.

City, Alexandria; State, La.; Airport name, Esler Field; Elev., 108'; Fac. Class., L-BVOR; Ident., ESF; Procedure No. 2, Amdt. 2; Eff. date, 22 May 65; Sup. Amdt. No. 1; Dated, 7 Nov. 64

T-d	300-1	300-1	300-1
C-d	400-2	800-2	800-2
A-d	NA	NA	NA

Procedure turn S side of crs, 274° Outbd, 094° Inbd, 2600' within 10 miles. Beyond 10 miles not authorized.

Minimum altitude over facility on final approach crs, 2100'.

Crs and distance, facility to airport, 094°—6 miles.

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 6.0 miles after passing STW VOR, make a left-climbing turn to 2600' and return to STW VOR. Hold W, 1-minute right turns, 094° Inbd.

Note: UNICOM available on 122.8.

MSA within 25 miles of facility: 000°-090°—3100'; 090°-180°—2000'; 180°-270°—3100'; 270°-360°—3200'.

City, Andover; State, N.J.; Airport name, Aeroflex-Andover; Elev., 383'; Fac. Class., LBVORTAC; Ident., STW; Procedure No. 1, Amdt. 2; Eff. date, 22 May 65; Sup. Amdt. No. 1; Dated, 11 July 64

T-dn	300-1	300-1	200-1 $\frac{1}{2}$
C-dn	500-1	500-1	500-1 $\frac{1}{2}$
S-dn-6	500-1	500-1	500-1
A-dn	800-2	800-2	800-2

Procedure turn S side crs, 230° Outbd, 059° Inbd, 2300' within 10 miles.

Minimum altitude over facility on final approach crs, 1900'.

Crs and distance, facility to airport, 059°—6.0 miles.

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 6.0 miles after passing ERI VOR, climb to 3000' on crs 059° from ERI VOR within 10 miles, return to ERI VOR, hold SW, 1-minute right turns, 059° Inbd.

Air Carrier Note: 300-1 required for takeoff on all Runways except 6-24. Sliding scale authorized Runways 6-24.

MSA within 25 miles of the facility: 050°-140°—3100'; 140°-230°—2900'; 230°-320°—2300'; 320°-050°—1600'.

City, Erie; State, Pa.; Airport name, Port Erie; Elev., 732'; Fac. Class., BVORTAC; Ident., ERI; Procedure No. 1, Amdt. 5; Eff. date, 22 May 65; Sup. Amdt. No. 4; Dated, 6 July 63

T-dn	300-1	300-1	NA
C-d	500-1	500-1	NA
C-n	900-2	900-2	NA
A-dn	NA	NA	NA
If aircraft equipped to receive DME and the 6-mile DME Fix R-108 received, the following minimums apply:			
C-d	700-1	700-1	NA
C-n	700-2	700-2	NA

Radar vectoring authorized in accordance with approved patterns.

Procedure turn W side of crs, 313° Outbd, 133° Inbd, 2300' within 10 miles.

Minimum altitude over facility on final approach crs, 1900'.

Crs and distance, facility to airport, 168°—9.2 miles.

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 9.2 miles after passing FAT VOR, turn right, proceed direct to FAT VOR, climbing to 2300' on R-305 within 20 miles.

MSA within 25 miles of facility: 360°-090°—7500'; 090°-180°—5000'; 180°-270°—1900'; 270°-360°—6000'.

City, Fresno; State, Calif.; Airport name, Fresno-Chandler Municipal; Elev., 283'; Fac. Class., BVORTAC; Ident., FAT; Procedure No. 1, Amdt. 3; Eff. date, 22 May 65; Sup. Amdt. No. 2; Dated, 12 Sept. 64

T-dn	300-1	300-1	200-1 $\frac{1}{2}$
C-dn	500-1	500-1	500-1 $\frac{1}{2}$
S-dn-13	400-1	400-1	400-1
A-dn	800-2	800-2	800-2

Radar vectoring by Houston approach control may be used to position aircraft on final approach within 10 miles NW of Galveston VOR with elimination of procedure turn.

Procedure turn S side crs, 291° Outbd, 111° Inbd, 2300' within 10 miles.

Minimum altitude over facility on final approach crs, 1100'; minimum altitude abeam GLS RBN on final approach crs, 600'.

Crs and distance, facility to airport, 111°—7.5 miles; abeam GLS RBN, 111°—4.3 miles.

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 7.5 miles after passing GLS VOR, turn right, climb to 1300' direct to GLS VOR.

CAUTION: 231' radio tower, 7000' NE of airport. 157' water tank, ESE of airport.

*Descent below 600' not authorized until position abeam GLS RBN (021° bearing to GLS RBN) identified.

MSA within 25 miles of facility: 000°-270°—1400'; 270°-360°—2300'.

City, Galveston; State, Tex.; Airport name, Scholes Field; Elev., 7'; Fac. Class., BVORTAC; Ident., GLS; Procedure No. 1, Amdt. 6; Eff. date, 22 May 65; Sup. Amdt. No. 8; Dated, 11 Apr. 64

VOR STANDARD INSTRUMENT APPROACH PROCEDURE—Continued

Transition		Course and distance	Minimum altitude (feet)	Ceiling and visibility minimums			
From—	To—			Condition	2-engine or less		More than 2-engines, more than 65 knots
					65 knots or less	More than 65 knots	
				T-dn.....	300-1	300-1	300-1 ^{1/2}
				C-dn.....	500-1	600-1	600-1 ^{1/2}
				A-dn.....	800-2	800-2	800-2

Procedure turn N side of crs, 118° Outbd, 298° Inbd, 2000' within 10 miles.
Minimum altitude over facility on final approach crs, 1700'.
Crs and distance, facility to airport, 298°—5.3 miles.
If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 5.3 miles after passing MSS VOR, make right-climbing turn to 2000'; return to Massena VOR. Hold SE of MSS VOR, 1-minute right turns, 298° Inbd crs.
CAUTION: 598' tower, 2.0 miles SW of airport.
MSA within 25 miles of facility: 000°-090°—2000'; 090°-180°—3500'; 180°-270°—3000'; 270°-360°—2000'.

City, Massena; State, N. Y.; Airport name, Richards Field; Elev., 215'; Fac. Class., H-BVORTAC; Ident., MSS; Procedure No. 1, Amdt. 7; Eff. date, 22 May 65; Sup. Amdt. No. 6; Dated, 14 Mar. 64

				T-d.....	800-1	800-1	800-1
				T-n.....	NA	NA	NA
				C-d.....	1400-2	1400-2	1400-2
				C-n.....	NA	NA	NA
				A-dn.....	NA	NA	NA

Procedure turn N side of crs, 112° Outbd, 292° Inbd, 3500' within 10 miles.
Minimum altitude over facility on final approach crs, 3500'.
Crs and distance, facility to airport, 292°—9.9 miles.
If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 9.9 miles after passing GDM VOR, make left-climbing turn to 3500' direct to GDM VOR. Hold E of GDM VOR, 1-minute, right turns, 292° Inbd.
*Alternate weather minimums of 3000-3 is authorized only for those who have an approved arrangement for weather service at the airport.
MSA within 25 miles of facility: 000°-090°—4500'; 090°-180°—3500'; 180°-270°—2500'; 270°-360°—3500'.

City, Orange; State, Mass; Airport name, Orange Municipal; Elev., 555'; Fac. Class., BVORTAC; Ident., GDM; Procedure No. 1, Amdt. 1; Eff. date, 22 May 65; Sup. Amdt. No. Orig.; Dated, 8 Aug. 64

				T-d.....	300-1	300-1	*300-1 ^{1/2}
				C-d.....	500-1	600-1	600-1 ^{1/2}
				S-dn-31.....	400-1	400-1	400-1
				A-dn.....	800-2	800-2	800-2

Procedure turn E side of crs, 132° Outbd, 312° Inbd, 2400' within 10 miles.
Minimum altitude over facility on final approach crs, 2100'.
Crs and distance, facility to airport, 312°—3.6 miles.
If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 3.6 miles after passing SUX VOR, climb to 3000' on R-331 within 20 miles.

NOTES: (1) When authorized by ATC, DME may be used to position aircraft for straight-in approach at 3000' between R-090 clockwise to R-250 via 10-mile DME arc with the elimination of procedure turn. (2) For aircraft departing northeastbound when weather is below 2400-2, flight below 3900' beyond 7 miles from airport is prohibited between the 347° and 025° radials of the SUX VORTAC due to a 3368' tower, 12 miles northeast of the airport.
*300-1 required for all takeoffs on Runway 4, due to 1315' terrain 1.4 miles ENE of airport.
MSA within 25 miles of facility: 000°-090°—4400'; 090°-270°—2700'; 270°-360°—3700'.

City, Sioux City; State, Iowa; Airport name, Sioux City Municipal; Elev., 1097'; Fac. Class., BVORTAC; Ident., SUX; Procedure No. 1, Amdt. 11; Eff. date, 22 May 65; Sup. Amdt. No. 10; Dated, 10 Apr. 65

Dinuba Int.....	VIS VOR.....	Direct.....	2000	T-dn.....	300-1	300-1	300-1 ^{1/2}
Laton Int.....	VIS VOR.....	Direct.....	2000	C-dn.....	400-1	500-1	500-1 ^{1/2}
Pfaley Int.....	VIS VOR.....	Direct.....	2000	S-dn-12#.....	400-1	400-1	400-1
Exeter Int.....	VIS VOR.....	Direct.....	2000	A-dn*.....	NA	NA	NA

Radar vectoring authorized in accordance with approved patterns.
Procedure turn N side of crs, 287° Outbd, 197° Inbd, 2000' within 10 miles.
Minimum altitude over facility on final approach crs, 1300'.
Crs and distance, facility to airport 197°—4.7 miles.
If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 4.7 miles after passing VIS VOR, climb to 2300' on VIS VOR R-197 within 15 miles.

NOTE: Final approach from holding pattern at VIS VOR not authorized. Procedure turn required.
#Control zone effective 0700 to 2100 local time daily. 700' minimums required during periods control zone not in effect.
*Alternate minimums of 800-2 authorized for air carriers with weather reporting service available at the airport.
MSA within 25 miles of facility: 000°-090°—3000'; 090°-180°—3400'; 180°-270°—2000'; 270°-360°—4100'.

City, Visalia; State, Calif.; Airport name, Visalia Municipal; Elev., 292'; Fac. Class., TVOR; Ident., VIS; Procedure No. 1, Amdt. 1; Eff. date, 22 May 65; Sup. Amdt. No. Orig.; Dated, 6 Feb. 65

GSH VOR.....	Green Int.....	Direct.....	2300	T-dn.....	300-1	300-1	300-1 ^{1/2}
OXI VOR.....	Green Int.....	Direct.....	2300	C-dn.....	700-1	700-1 ^{1/2}	700-1 ^{1/2}
MOI VOR.....	Green Int.....	Direct.....	2300	A-dn.....	NA	NA	NA
OLK VOR.....	Canoe Int.....	Direct.....	2300				
Green Int.....	Canoe Int (final).....	Direct.....	2300				

Procedure turn S side of crs, 278° Outbd, 098° Inbd, 2300' within 10 miles of Canoe Int.
Minimum altitude over Canoe Int on final approach crs, 2300'.
Crs and distance, Canoe Int to airport, 098°—5.2 miles.
If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 5.2 miles after passing Canoe Int, make left turn, climb to 2300', return to Canoe Int.

NOTES: (1) No weather reporting service, obtain SBN and FWA weather and altimeter settings before making IFR approach. (2) Radar vectoring to final approach crs to eliminate procedure turn authorized by Chicago Center radar. Minimum radar vectoring altitude within 15 miles of Canoe Int, 2300'; from 15-20 miles, 2900'. (3) Dual VOR required for IFR approach.
MSA within 25 miles of facility: 090°-180°—2700'; 180°-090°—2300'.

City, Warsaw; State, Ind.; Airport name, Warsaw Municipal; Elev., 840'; Fac. Class., I-BVOR; Ident., OLK; Procedure No. 1, Amdt. Orig.; Eff. date, 22 May 65

3. By amending the following terminal very high frequency omnirange (TerVOR) procedures prescribed in § 97.13 to read:

TERMINAL VOR STANDARD INSTRUMENT APPROACH PROCEDURE

Bearings, headings, courses and radials are magnetic. Elevations and altitudes are in feet MSL. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles.

If an instrument approach procedure of the above type is conducted at the below named airport, it shall be in accordance with the following instrument approach procedure, unless an approach is conducted in accordance with a different procedure for such airport authorized by the Administrator of the Federal Aviation Agency. Initial approaches shall be made over specified routes. Minimum altitudes shall correspond with those established for en route operation in the particular area or as set forth below.

Transition				Ceiling and visibility minimums			
From—	To—	Course and distance	Minimum altitude (feet)	Condition	2-engine or less		More than 2-engine, more than 65 knots
					65 knots or less	More than 65 knots	
				T-dn.....	300-1	300-1	200-1½
				C-dn.....	700-1	700-1	700-1½
				A-dn.....	800-2	800-2	800-2
				When Terry fan marker received minimums become:			
				C-dn.....	600-1	600-1	600-1½

Radar transitions and vectoring authorized in accordance with approved patterns. No procedure turn. Radar control will not descend aircraft below 3000' until passing Wade Int Inbnd. Minimum altitude over Margaret Int on final approach crs, 2900'; over Terry FM, 1500'. Crs and distance, Wade Int to VOR, 095°—8.0 miles; Margaret Int to VOR, 095°—6.0 miles; breakoff point to Runway, 078°—0.4 mile. Crs and distance, Terry fan marker to airport, 095°—1.5 miles; to VOR, 2.1 miles. If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 0.6 mile after passing FTY VOR, make left turn, climb to 3000' and return to Wade Int via FTY R-275 or follow radar vector after being reidentified. NOTES: (1) ATL approach control radar must be in operation for vector to final approach crs. (2) Night air carrier operations not authorized. CAUTION: Water tank, 1218°—1.8 miles WNW of airport. Tower, 1375°—2.7 miles NW of airport. MSA within 25 miles of facility: 000°-180°—4000'; 180°-270°—3700'; 270°-360°—3800'.

City, Atlanta; State, Ga.; Airport name, Fulton County; Elev., 834'; Fac. Class., L-BVOR; Ident., FTY; Procedure No. TerVOR (R-275), Amdt. 7; Eff. date, 22 May 65; Sup. Amdt. No. 6; Dated, 21 Nov, 64

Papd Int.....	Glencoe Int.....	Via ORK R-076 and ORD R-093.	2300	T-dn.....	300-1	300-1	200-1½
				C-dn.....	400-1	400-1	500-1½
				S-dn-22.....	400-1	400-1	400-1
				A-dn.....	800-2	800-2	800-2
Glencoe Int.....	Rand Int (final).....	Direct.....	1400				
ORK VOR.....	Glencoe Int.....	Direct.....	2000				
Niles Int.....	ORD VORTAC.....	Direct.....	2500				
Warren Int.....	ORD VORTAC.....	Direct.....	2500				
ORK VOR.....	ORD VORTAC.....	Direct.....	2500				

Radar transition to final approach crs, authorized. Aircraft will be released for final approach without procedure turn 3 miles from Rand Int. Procedure turn N side of crs, 033° Outbnd, 213° Inbnd, 2500' within 10 miles of VORTAC. Minimum altitude over Rand Int on final approach crs, 1400'. Crs and distance, Rand Int to Runway 22, 213°—2.6 miles; Rand Int to VOR, 3.3 miles. Crs and distance, breakoff point to approach end of Runway 22, 218°—0.27 mile. If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 0.6 mile of ORD VOR, climb to 3500' and proceed to DPA VOR via ORD R-213 and DPA R-085, or as directed by ATC, climb to 1500' on ORD R-213, then make right-climbing turn to 2500' and proceed to Elgin Int ORD R-275.

NOTES: (1) Dual VOR or VOR and DME receivers or radar fix required in lieu of Rand Int. (2) Aircraft executing missed approach may after being reidentified be radar controlled.

CAUTION: Takeoffs on Runway 27 when weather is below 2000-3 will intercept ORD VOR R-250 and climb to 2000' before proceeding westbound. Takeoffs on Runway 2L when weather is below 2000-3 will intercept ORD VOR R-306 and climb to 2000' before proceeding westbound. MSA within 25 miles of facility: 000°-090°—2000'; 090°-180°—2600'; 180°-270°—2600'; 270°-360°—2500'.

City, Chicago; State, Ill.; Airport name, O'Hare International; Elev., 667'; Fac. Class., L-BVORTAC; Ident., ORD; Procedure No. TerVOR-22, Amdt. 4; Eff. date, 22 May 65; Sup. Amdt. No. 3; Dated, 18 Jan. 64

MSB VOR.....	Mt Pleasant VOR.....	Direct.....	2300	T-dn.....	300-1	300-1	200-1½
				C-dn.....	600-1	600-1	600-1½
				A-dn.....	NA	NA	NA

Procedure turn, N side final approach crs, 095° Outbnd, 275° Inbnd, 2300' within 10 miles. Minimum altitude over facility on final approach crs, 1400'. If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 0.6 mile of VOR, make right-climbing turn to 2300' on Mt. Pleasant VOR R-360 and then return to the VOR.

NOTES: (1) No weather available. (2) Private facility operated by the State of Michigan. MSA within 25 miles of facility: 000°-090°—2100'; 090°-180°—2000'; 180°-270°—2400'; 270°-360°—2400'.

City, Mount Pleasant; State, Mich.; Airport name, Mount Pleasant; Elev., 755'; Fac. Class., T-BVOR; Ident., MOP; Procedure No. TerVOR-27, Amdt. Orig.; Eff. date, 22 May 65

Moneta Int.....	VOR.....	Direct.....	7500	T-dn.....	300-1	300-1	300-1
Sweetwater Int.....	VOR.....	Direct.....	9000	C-dn.....	600-1	600-1	600-1½
				S-dn.....	600-1	600-1	600-1
				A-dn.....	NA	NA	NA

Procedure turn S side of crs, 275° Outbnd, 095° Inbnd, 7000' within 10 miles. Minimum altitude over facility on final approach crs, 6100'. Facility on airport. Breakoff point to runway, 095°—0.5 mile. If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 0.6 mile of RIW VOR, climb to 7500' on R-103 within 10 miles.

NOTE: Departure procedures not required. Alternate minimums of 800-2 authorized for air carrier with weather reporting service available at airport. MSA within 25 miles of facility: 000°-090°—10,100'; 090°-180°—9400'; 180°-270°—13,100'; 270°-360°—10,300'.

City, Riverton; State, Wyo.; Airport name, Riverton Municipal; Elev., 5498'; Fac. Class., BVOR; Ident., RIW; Procedure No. TerVOR-10, Amdt. 2; Eff. date, 22 May 65; Sup. Amdt. No. 1; Dated, 1 Aug. 64

RULES AND REGULATIONS

TERMINAL VOR STANDARD INSTRUMENT APPROACH PROCEDURE—Continued

Transition				Ceiling and visibility minimums			
From—	To—	Course and distance	Minimum altitude (feet)	Condition	2-engine or less		More than 2-engine, more than 65 knots
					65 knots or less	More than 65 knots	
Moneta Int.	VOR	Direct	7500	T-dn	300-1	300-1	300-1
Sweetwater Int.	VOR	Direct	9000	C-dn	400-1	500-1	500-1 ^{1/2}
				S-dn	400-1	400-1	400-1
				A-dn*	NA	NA	NA

Procedure turn N side of crs, 103° Outbd, 283° Inbd, 7000' within 10 miles.

Minimum altitude over facility on final approach crs, 5900'.

Facility on airport; breakoff point to runway, 279°—0.5 mile.

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 0.6 mile of RIW VOR, climb to 7500' on R-284 within 15 miles.

NOTE: Departure procedures not required.

*Alternate minimums of 800-2 authorized for air carriers with weather reporting service available at airport.

MSA within 25 miles of facility: 000°-090°—10,150'; 090°-180°—9450'; 180°-270°—13,100'; 270°-360°—10,300'.

City, Riverton; State, Wyo.; Airport name, Riverton Municipal; Elev., 5495'; Fac. Class., BVOR; Ident., RIW; Procedure No. TerVOR-28, Amdt. 2; Eff. date, 21 May 65; Sup. Amdt. No. 1; Dated, 1 Aug. 64

				T-dn	300-1	300-1	300-1 ^{1/2}
				C-dn	700-1	700-1	700-1 ^{1/2}
				A-dn	800-2	800-2	800-2
				If 5-mile Radar fix is received the following minimums apply:			
				C-dn	600-1	600-1	600-1 ^{1/2}

Radar transitions and vectoring authorized in accordance with approved patterns.

Procedure turn W side of crs, 635° Outbd, 215° Inbd, 2200' within 10 miles.

Minimum altitude over facility on final approach crs, 1300'; if 5-mile Radar Fix received, 1200'.

Facility on airport; breakoff point to runway, 229°—0.8 mile.

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 0.6 mile of Rochester VOR, make right-climbing turn to 3000', intercept R-298 of Rochester VOR, proceed to Spencerport Int. Hold W, 1-minute left turns, 118° Inbd.

CAUTION: Tower, 897°—2.3 miles north of airport. Tower, 946°—2.5 miles SW of airport.

Air Carrier Note: Takeoff on Runway 12 and landing on Runway 30 not authorized.

MSA within 25 miles of facility: 000°-090°—2100'; 090°-180°—3800'; 180°-270°—3100'; 270°-360°—2000'.

City, Rochester; State, N.Y.; Airport name, Rochester-Monroe County; Elev., 590'; Fac. Class., BVOR; Ident., ROC; Procedure No. TerVOR-22, Amdt. 1; Eff. date, 22 May 65; Sup. Amdt. No. Orig.; Dated, 13 Mar. 65

4. By amending the following very high frequency omnirange-distance measuring equipment (VOR/DME) procedures prescribed in § 97.15 to read:

VOR/DME STANDARD INSTRUMENT APPROACH PROCEDURE

Bearings, headings, courses and radials are magnetic. Elevations and altitudes are in feet MSL. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles.

If an instrument approach procedure of the above type is conducted at the below named airport, it shall be in accordance with the following instrument approach procedure, unless an approach is conducted in accordance with a different procedure for such airport authorized by the Administrator of the Federal Aviation Agency. Initial approaches shall be made over specified routes. Minimum altitudes shall correspond with those established for en route operation in the particular area or as set forth below.

Transition				Ceiling and visibility minimums			
From—	To—	Course and distance	Minimum altitude (feet)	Condition	2-engine or less		More than 2-engine, more than 65 knots
					65 knots or less	More than 65 knots	
10-mile DME Fix R-017	5-mile DME Fix R-017	Direct	1500	T-dn	300-1	300-1	300-1 ^{1/2}
5-mile DME Fix R-017	Houston VOR (final)	Direct	500	C-dn	400-1	500-1	500-1 ^{1/2}
				S-dn-21**	400-1	400-1	400-1
				A-dn	800-2	800-2	800-2

Radar vectoring authorized in accordance with approved patterns.

Radar Fix may be used in lieu of DME Fix.

Procedure turn W side of crs, 017° Outbd, 197° Inbd, 1600' within 10 miles.

Minimum altitude over facility on final approach crs, 600'.

Crs and distance breakoff point to approach end Runway 21, 216°—0.7 mile.

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 0.6 mile of HOU VOR, climb to 2500' on R-215 within 20 miles.

CAUTION: 1540' tower, approximately 12 miles SW of HOU VOR. 1235' tower, approximately 11 miles SSE of HOU VOR.

*Descent below 1500' not authorized until passing 5-mile DME Fix on final approach.

**400-3^{1/2} authorized, except for 4-engine turbojet aircraft, with operative high-intensity runway lights.

MSA within 25 miles of facility: 000°-090°—1600'; 090°-180°—2300'; 180°-270°—2600'; 270°-360°—1800'.

City, Houston; State, Tex.; Airport name, William P. Hobby; Elev., 50'; Fac. Class., H-BVORTAC; Ident., HOU; Procedure No. VOR/DME-2, Amdt. 5; Eff. date, 22 May 65; Sup. Amdt. No. 4; Dated, 17 Apr. 65

20-mile DME Fix LCH R-265	20-mile DME Fix LCH R-252	Via 20-mile DME arc	1500	T-dn	300-1	300-1	300-1 ^{1/2}
20-mile DME Fix LCH R-269	20-mile DME Fix LCH R-252	Via 20-mile DME arc	1500	C-dn	400-1	500-1	500-1 ^{1/2}
				A-dn	800-2	800-2	800-2
20-mile DME Fix LCH R-252	11-mile DME Fix LCH R-252	Direct	1500				
11-mile DME Fix LCH R-252	8-mile DME Fix LCH R-252 (final)	Direct	600				

Procedure turn S side of crs, 252° Outbd, 072° Inbd, 1500' within 10 miles of 11-mile DME Fix.

Minimum altitude over 11-mile DME Fix on final approach crs, 1500'; over 8-mile DME Fix on final approach crs, 600'.

Crs and distance 11-mile DME Fix to airport 072°—4.7 miles; 8-mile DME Fix to airport 072°—1.7 miles.

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished upon reaching 6.3-mile DME Fix, climb to 1500' direct to LCH VOR.

NOTE: VOR and DME equipment required for the execution of this procedure.

MSA within 25 miles of facility: 000°-360°—1500'.

City, Lake Charles; State, La.; Airport name, Lake Charles Municipal; Elev., 16'; Fac. Class., H-BVORTAC; Ident., LCH; Procedure No. 1, Amdt. Orig.; Eff. date, 22 May 65

VOR/DME STANDARD INSTRUMENT APPROACH PROCEDURE—Continued

Transition				Ceiling and visibility minimums			
From—	To—	Course and distance	Minimum altitude (feet)	Condition	2-engine or less		More than 2-engine, more than 65 knots
					65 knots or less	More than 65 knots	
SUX VORTAC.....	8.5-mile DME Fix R-311.....	Direct.....	2800	T-dn.....	300-1	300-1	*300-1/2
				C-dn.....	600-1	600-1	600-1/2
				S-dn-13.....	600-1	600-1	600-1
				A-dn.....	800-2	800-2	800-2

Procedure turn W side of crs, 311° Outbd, 131° Inbd, 2600' between 8.5- and 18.5-mile DME Fix R-311.

Minimum altitude over 8.5-mile DME Fix R-311 on final approach crs, 2100'.

Crs and distance, 8.5-mile DME Fix R-311 to airport, 131°—3.4 miles.

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished at 8.5-mile DME Fix R-311, climb to 2800' on R-131 within 8 miles of VOR.

Notes: (1) When authorized by ATC, DME may be used to position aircraft for straight-in approach at 3100' between R-360 clockwise to 350° via 18 miles DME arc with the elimination of procedure turn. (2) Final approach from holding pattern at 8.5-mile DME Fix R-311 not authorized. Procedure turn required. (3) For aircraft departing northeastbound when weather is below 2400-2, flight below 3900' beyond 7 miles from airport is prohibited between the 347° and 023° radials of the SUX VORTAC due to a 330' tower, 12 miles NE of the airport.

*300-1/2 required for all takeoffs on Runway 4, due to 1315' terrain 1.4 miles ENE of airport.

MSA within 25 miles of facility: 000°-090°—4400'; 090°-270°—2700'; 270°-360°—3700'.

City, Sioux City; State, Iowa; Airport name, Sioux City Municipal; Elev., 1097'; Fac. Class., BVORTAC; Ident., SUX; Procedure No. VOR/DME No. 2, Amdt. 4; Eff. date, 22 May 65; Sup. Amdt. No. 3; Dated, 10 Apr. 65

5. By amending the following instrument landing system procedures prescribed in § 97.17 to read:

ILS STANDARD INSTRUMENT APPROACH PROCEDURE

Bearings, headings, courses and radials are magnetic. Elevations and altitudes are in feet MSL. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles.

If an instrument approach procedure of the above type is conducted at the below named airport, it shall be in accordance with the following instrument approach procedure, unless an approach is conducted in accordance with a different procedure for such airport authorized by the Administrator of the Federal Aviation Agency. Initial approaches shall be made over specified routes. Minimum altitudes shall correspond with those established for en route operation in the particular area or as set forth below.

Transition				Ceiling and visibility minimums			
From—	To—	Course and distance	Minimum altitude (feet)	Condition	2-engine or less		More than 2-engine, more than 65 knots
					65 knots or less	More than 65 knots	
ABI VOR.....	University Int.....	Direct.....	3300	T-dn.....	300-1	300-1	200-1/2
Dynn VOR.....	ABI LOM.....	Direct.....	3800	C-dn.....	400-1	500-1	500-1/2
ABI LOM.....	University Int.....	Direct.....	3300	S-dn-17°.....	400-1	400-1	400-1
Nagant Int.....	Port Int.....	Direct.....	3100	A-dn.....	800-2	800-2	800-2
Port Int.....	University (final).....	Direct.....	2600				

Radar vectoring authorized in accordance with approved patterns.

Procedure turn E side of crs, 350° Outbd, 170° Inbd, 3300' within 10 miles of University Int.

Minimum altitude over University Int on final approach crs, 2800'; over Port Int, 3000'.

Crs and distance, University Int to airport, 170°—5.5 miles.

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 3.5 miles after passing University Int, climb to 3900' on 5 crs of ILS within 30 miles or, when directed by ATC, turn left and climb to 3900' on R-110 of ABI VOR within 20 miles.

Radar may be used to position aircraft over Port Int at 3100', with elimination of procedure turn.

CAUTION: Towers, 2032'—2.6 miles WNW; 2115'—6.2 NW; 2667'—6.8 miles NW.

*300-1/2 authorized, except for 4-engine turbojet, with operative high-intensity runway lights.

City, Abilene; State, Tex.; Airport name, Abilene Municipal; Elev., 1778'; Fac. Class., ILS; Ident., I-ABI; Procedure No. ILS-17 (back crs), Amdt. 4; Eff. date, 22 May 65; Sup. Amdt. No. 3; Dated, 13 Mar. 65

Wrigley Int.....	AT LOM (final).....	Direct.....	2400	T-dn.....	300-1	300-1	200-1/2
				C-dn.....	NA	NA	NA
				S-dn-9L and 9R.....	200-1/2	200-1/2	200-1/2
				A-dn.....	600-2	600-2	600-2

Procedure turn not authorized. Radar vectoring to final approach crs required. Standard radar separation will be provided throughout these approaches.

Minimum altitude at glide slope interception Inbd, 9L—3500' at Wrigley Int (2500' when authorized by ATC); 9R—2500'.

Crs, AT LOM to Runway 9L and AL LOM to Runway 9R, 089°.

Altitude of glide slope and distance to approach end of runway at OM; 9L, 2234'—4.1 miles; 9R, 2500'—5.0 miles; at MM, 9L, 1236'—0.5 mile; 9R, 1236'—0.6 mile.

When advised by the controller, or if visual contact not established upon descent to authorized landing minimums, or if landing not accomplished: Runway 9L—climb to 300' proceed to Tucker Int via ATL VOR R-033. Runway 9R—make climbing right turn to 3000' and proceed direct to MDU VOR.

Aircraft executing missed approaches may, after being reidentified, be radar controlled.

Notes: (1) When advised by ATC, pilot shall monitor both control frequency and localizer voice continuously during the remainder of the approach.

City, Atlanta; State, Ga.; Airport name, Atlanta; Elev., 1024'; Fac. Class., ILS I-ATL; Ident., I-ALR; Procedure No. ILS-9L and 9R, Amdt. Orig.; Eff. date, 22 May 65

BIL VOR.....	LOM.....	Direct.....	5300	T-dn*.....	300-1	300-1	200-1/2
BIL RPs.....	LOM.....	Direct.....	5300	C-dn.....	500-1	500-1	500-1/2
Musshell Int.....	LOM.....	Direct.....	6000	S-dn-68°.....	200-1/2	200-1/2	200-1/2
Rapide DME Fix.....	LOM.....	Direct.....	5300	A-dn.....	600-2	600-2	600-2
Eyeate Int.....	LOM.....	Direct via R-284.....	5300				
15-mile DME Fix R-284 BIL VOR.....	W crs ILS (final).....	BIL-VOR.....	5000				

Procedure turn S side of crs, 273° Outbd, 095° Inbd, 5300' within 10 miles.

Minimum altitude at glide slope interception Inbd, 5000'.

Altitude of glide slope and distance to approach end of runway at OM 4894'—4.0 miles; at MM 3815'—0.6 mile.

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished, climb to 5300' on E crs of the ILS within 15 miles or, when directed by ATC, climb to 5300' on R-033 BIL VOR within 20 miles, or climb to 5300' on R-114 BIL VOR within 20 miles.

Notes: (1) Final approach from holding pattern at LOM not authorized. Procedure turn required. (2) When weather is below 600-2 and aircraft is southeastbound, flight below 4700' is prohibited SE of airport between BIL VOR radials 080° CW to 110° inclusive to 4249' tower, 3 miles SE of airport.

*Takeoff below 300-1 prohibited on all Runways except 9-27.

*400-1/2 required when glide slope not utilized.

*400-1/2 authorized, except for 4-engine turbojet aircraft, with operative high-intensity runway lights.

*400-1/2 authorized, except for 4-engine turbojet aircraft, with operative ALS.

City, Billings; State, Mont.; Airport name, Logan Field; Elev., 3669'; Fac. Class., ILS; Ident., I-BIL; Procedure No. ILS-9, Amdt. 12; Eff. date, 22 May 65; Sup. Amdt. No. 11; Dated, 24 Apr. 65

RULES AND REGULATIONS

ILS STANDARD INSTRUMENT APPROACH PROCEDURE—Continued

Transition				Ceiling and visibility minimums			
From—	To—	Course and distance	Minimum altitude (feet)	Condition	2-engine or less		More than 2-engine, more than 65 knots
					65 knots or less	More than 65 knots	
Erie VOR.....	LOM (final).....	Direct.....	2000	T-dn.....	300-1	300-1	200-1/4
				C-dn.....	500-1	500-1	300-1/4
				S-dn-6*.....	300-3/4	300-3/4	200-1/4
				A-dn.....	600-2	600-2	600-2

Procedure turn S side SW crs, 239° Outbnd, 059° Inbnd, 2300' within 10 miles.

Minimum altitude at glide slope interception Inbnd, 2000'.

Altitude of glide slope and distance to approach end of runway at OM, 1950'—3.9 miles; at MM, 1632'—0.5 mile.

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished climb to 2300' on 059° heading within 10 miles, make left turn and return to LOM. Hold SW right turns, 059° Inbnd.

AIR CARRIER NOTE: 300-1 required for takeoff on all Runways except 6-24. Sliding scale authorized Runways 6-24.

*400-1 required when glide slope not utilized; 400-3/4 authorized, except for 4-engine turbojet aircraft, with operative high-intensity runway lights; 400-1/4 authorized, except for 4-engine turbojet aircraft, with operative ALS.

City, Erie, Pa.; Airport name, Port Erie; Elev., 732'; Fac. Class., ILS; Ident., I-ERI; Procedure No. ILS-6, Amdt. 4; Eff. date, 22 May 65; Sup. Amdt. No. 3; Dated, 16 Nov. 63

Leroy Int.....	AZ LOM.....	Direct.....	2800	T-dn.....	300-1	300-1	200-1/4
AZO VOR.....	AZ LOM.....	Direct.....	2800	C-dn.....	400-1	500-1	300-1/4
BTL VOR.....	AZ LOM.....	Direct.....	2800	S-dn-35*.....	200-1/2	200-1/2	200-1/4
Centerville Int.....	Barton Int.....	Via BTL R-218 and AZO R-192.	2800	A-dnf.....	600-2	600-2	600-2
Barton Int.....	AZ LOM (final).....	Direct.....	2800				
Lawton Int.....	AZ LOM.....	Direct.....	2800				
Cooper Int.....	AZO VOR.....	Direct.....	2800				
Hickory Int.....	AZO VOR.....	Direct.....	2800				
GRR VOR.....	AZO VOR.....	Direct.....	2900				

Procedure turn E side of crs, 172° Outbnd, 352° Inbnd, 2800' within 10 miles.

Minimum altitude at glide slope interception Inbnd, 2800'.

Altitude of glide slope and distance to approach end of runway at OM, 2717'—5.8 miles; at MM, 1070'—0.5 mile.

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished, climb to 3000', proceed to Cooper Int via AZO VOR R-218 or, when directed by ATC, climb to 2800', turn left and return to AZ LOM.

AIR CARRIER NOTE: 300-3/4 authorized when tower not operating for air carrier with weather reporting service.

CAUTION: Glide slope not usable Inbnd from middle marker; satisfactory for authorized minimums.

*400-3/4 required when glide slope not utilized. 400-1 required when tower not operating.

†Alternate minimums authorized only when AZO tower operational or for air carrier with weather reporting service.

City, Kalamazoo, Mich.; Airport name, Kalamazoo Municipal; Elev., 874'; Fac. Class., ILS; Ident., I-AZO; Procedure No. ILS-35, Amdt. 5; Eff. date, 22 May 65; Sup. Amdt. No. 4; Dated, 25 Jan. 64

Greensburg Int.....	McKeesport RBn (final).....	Direct.....	3000	T-dn.....	300-1	300-1	200-1/4
Scottdale Int.....	McKeesport RBn.....	Direct.....	3000	C-dn.....	500-1	500-1	300-1/4
Allegheny VOR.....	McKeesport RBn.....	Direct.....	3000	S-dn-27%.....	200-1/2	200-1/2	200-1/4
GP LOM.....	McKeesport RBn.....	Direct.....	3000	A-dn.....	600-2	600-2	600-2
McKeesport RBn.....	ILS OM (final).....	Direct.....	2700				
Imperial VOR.....	McKeesport RBn.....	IRL R-117.....	3000				
McKeesport RBn.....	Jeannette Int.....	Direct.....	3000				
Jeannette Int.....	McKeesport RBn (final).....	Direct.....	3000				

Radar vectoring authorized in accordance with approved patterns.

Procedure turn S side of crs, 066° Outbnd, 275° Inbnd, 3000' within 10 miles of MKP RBn. Nonstandard due to traffic.

Minimum altitude at glide slope interception Inbnd, 2700'. Glide slope may be intercepted at 3000' over MKP RBn or 2700' between MKP RBn and the ILS OM.

Altitude of glide slope and distance to approach end of runway at OM, 2615—4.2; at MM, 1480—0.6

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished, climb to 3000', proceeding to AGC RBn. Hold W right turns, 1 minute 082° Inbnd.

*400-3/4 with glide slope inoperative.

†400-1/2 authorized, except for 4-engine turbojet aircraft, with operative ALS.

City, Pittsburgh; State, Pa.; Airport name, Allegheny County; Elev., 1252'; Fac. Class., ILS; Ident., I-AGC; Procedure No. ILS-27, Amdt. 14; Eff. date, 22 May 65; Sup. Amdt. No. 13; Dated, 23 Jan. 65

SUX VOR.....	JKN RBn.....	Direct.....	2600	T-dn.....	300-1	300-1	*200-1/4
Jefferson Int.....	JKN RBn.....	Direct.....	2600	C-dn.....	600-1	600-1	600-1/4
Hubbard Int.....	JKN RBn.....	Direct.....	2800	S-dn-13.....	600-1	600-1	600-1
				A-dn.....	800-2	800-2	800-2

Procedure turn W side of crs, 307° Outbnd, 127° Inbnd, 2600' within 10 miles.

Minimum altitude over JKN RBn on final approach, 2300'.

Crs and distance, JKN RBn to approach end of runway, 127°—4.1 miles.

If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 4.1 miles after passing JKN RBn, climb to 2800' on SE crs of ILS within 20 miles.

CAUTION NOTE: This procedure not premised on use of glide slope.

NOTES: (1) When authorized by ATC, SUX DME may be used to position aircraft for straight-in approach at 3100' between R-260 clockwise to 350° via 19-mile DME arc with the elimination of procedure turn. (2) For aircraft departing northeastbound when weather is below 2400-2, flight below 3900' beyond 7 miles from airport is prohibited between the 347° and 025° radials of the SUX VORTAC due to a 3360' tower, 12 miles northeast of the airport.

*300-1 required for all takeoffs on Runway 4, due to 1315' terrain 1.4 miles ENE of airport.

City, Sioux City; State, Iowa; Airport name, Sioux City Municipal; Elev., 1097'; Fac. Class., ILS; Ident., I-SUX; Procedure No. ILS-13 (back crs), Amdt. 5; Eff. date, 22 May 65; Sup. Amdt. No. 4; Dated, 10 Apr. 65

ILS STANDARD INSTRUMENT APPROACH PROCEDURE—Continued

Transition					Ceiling and visibility minimums		
From—	To—	Course and distance	Minimum altitude (feet)	Condition	2-engine or less		More than 2-engine, more than 65 knots
					65 knots or less	More than 65 knots	
SUX VOR	LOM	Direct	2600	T-dn C-dn S-dn-31 A-dn	300-1 500-1 200-1/2 600-2	300-1 600-1 200-1/2 600-2	*200-1/2 600-1 1/2 200-1/2 600-2

Procedure turn E side of crs, 127° Outbd, 307° Inbd, 2600' within 10 miles.
 Minimum altitude at glide slope interception Inbd, 2600'.
 Altitude of glide slope and distance to approach end of runway at OM, 2670'—5.3 miles; at MM, 1287'—0.5 mile.
 If visual contact not established upon descent to authorized landing minimums or if landing not accomplished, climb to 3000' on NW crs, ILS within 15 miles or, when directed by ATC, turn left and climb to 3000' on R-290 of SUX VOR within 20 miles.
 Notes: (1) When authorized by ATC, SUX DME may be used to position aircraft for straight-in approach at 3000' between R-060 clockwise to R-250 via 10-mile DME arc with the elimination of procedure turn. (2) For aircraft departing northeastbound when weather is below 3400-2, flight below 3500' beyond 7 miles from airport is prohibited between the 347° and 023° radials of the SUX VORTAC due to a 3350' tower, 12 miles NE of the airport.
 *300-1 required for all takeoffs on Runway 4, due to 1318' terrain 1.4 miles ENE of airport.

City, Sioux City; State, Iowa; Airport name, Sioux City Municipal; Elev., 1697'; Fac. Class., ILS; Ident., I-SUX; Procedure No. ILS-31, Amdt. 11; Eff. date, 22 May 65; Sup. Amdt. No. 16; Dated, 10 Apr. 65

McClure Int.	LOM	Direct	2200	T-dn	300-1	300-1	200-1/2
Waterville VOR	LOM	Direct	2200	C-dn	500-1	500-1	500-1 1/2
Harbor View Int.	LOM	Direct	2200	S-dn-25*	200-1/2	200-1/2	200-1/2
Oerold Int.	LOM	Direct	2300	A-dn	600-2	600-2	600-2

Radar vectoring authorized in accordance with approved patterns.
 Procedure turn S side of crs, 249° Outbd, 069° Inbd, 2100' within 10 miles.
 Minimum altitude at glide slope interception Inbd, 2000'.
 Altitude of glide slope and distance to approach end of runway at OM, 1983'—4.7 miles; at MM, 892'—0.6 mile.
 If visual contact not established upon descent to authorized landing minimums or if landing not accomplished, make climbing right turn to 2200', proceed to Waterville VOR. Hold SE Waterville VOR on R-140, right turns, 1 minute, 320° Inbd, or when directed by ATC, climb to 2600' on NE localizer crs to Harbor View Int, hold NE Harbor View Int, left turns, 1 minute, 249° Inbd.
 CAUTION: Tower, 869'—1 1/4 miles S of LMM.
 *300-1/2 required with glide slope inoperative. 400-1/2 authorized, except for 4-engine turbojet aircraft, with operative ALS.

City, Toledo; State, Ohio; Airport name, Toledo Express; Elev., 684'; Fac. Class., ILS; Ident., I-TUL; Procedure No. ILS-7, Amdt. 10; Eff. date, 22 May 65; Sup. Amdt. No. 9; Dated, 2 Jan. 65

Harbor View Int.	Holland Int (final)	Direct	2200	T-dn C-dn S-dn-25* A-dn	300-1 500-1 400-1 800-2	300-1 500-1 400-1 800-2	200-1/2 500-1 1/2 400-1 800-2
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Radar vectoring authorized in accordance with approved radar patterns.
 Procedure turn N side of crs, 069° Outbd, 249° Inbd, 2600' within 10 miles of Holland Int.
 No glide slope or markers. Descend to landing minimums after passing Holland Int. Minimum altitude over Holland Int, 2200'.
 Crs and distance, Holland Int to Runway 25, 249°—4.7 miles.
 If visual contact not established upon descent to authorized landing minimums or if landing not accomplished within 4.7 miles after passing Holland Int, climb straight ahead to 2100' on 249° crs to Toledo LOM. Hold SW Toledo LOM, right turns, 1 minute, 069° Inbd.
 CAUTION: Tower, 869' 1/4 miles S of middle marker.
 *300-1/2 authorized, except for 4-engine turbojet aircraft, with operative high-intensity runway lights.

City, Toledo; State, Ohio; Airport name, Toledo Express; Elev., 684'; Fac. Class., ILS; Ident., I-TOL; Procedure No. ILS-25 (back crs), Amdt. 7; Eff. date, 22 May 65; Sup. Amdt. No. 6; Dated, 27 Mar. 65

6. By amending the following radar procedures prescribed in § 97.19 to read:

RADAR STANDARD INSTRUMENT APPROACH PROCEDURE

Bearings, headings, courses and radials are magnetic. Elevations and altitudes are in feet, MSL. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles.

If a radar instrument approach is conducted at the below named airport, it shall be in accordance with the following instrument procedure, unless an approach is conducted in accordance with a different procedure for such airport authorized by the Administrator of the Federal Aviation Agency. Initial approaches shall be made over specified frequencies. Minimum altitude(s) shall correspond with those established for en route operation in the particular area or as set forth below. Positive identification must be established with the radar controller. From initial contact with radar to final authorized landing minimums, the instructions of the radar controller are mandatory except when (A) visual contact is established on final approach at or before descent to the authorized landing minimums, or (B) at pilot's discretion if it appears desirable to discontinue the approach, except when the radar controller may direct otherwise prior to final approach, a missed approach shall be executed as provided below when (A) communications on final approach is lost for more than 5 seconds during a precision approach, or for more than 30 seconds during a surveillance approach; (B) directed by radar controller; (C) visual contact is not established upon descent to authorized landing minimums; or (D) if landing is not accomplished.

Radar terminal area maneuvering sectors and altitudes														Ceiling and visibility minimums			
From	To	Dist.	Alt.	Dist.	Alt.	Dist.	Alt.	Dist.	Alt.	Dist.	Alt.	Dist.	Alt.	Condition	2-engine or less		More than 2-engine, more than 65 knots
															65 knots or less	More than 65 knots	
323	020	40	4500	30	3300	20	2500							Surveillance approach T-dn* C-dn S-dn 1 and 19 A-dn	300-1	300-1	200-1/2
020	050	40	3000	30	3000										500-1	500-1	500-1 1/2
050	120	40	5500					12	2500						500-1	500-1	500-1
120	180	40	4000	30	4000										500-1	500-1	500-1
180	205	40	2500	30	2500	20	2500								500-1	500-1	500-1
205	220	40	3500	30	3000	20	3000								500-1	500-1	500-1
220	298	40	5000			20	3500	12	3000						800-2	800-2	800-2
298	290	40	4000														
290	310	40	3000														
310	323	40	4000														
088	088			30	4900												
088	130			30	5500	20	4000										
230	250			30	4000												
290	333			30	3000												
020	088					20	3000										
130	123					20	3500										

RULES AND REGULATIONS

RADAR STANDARD INSTRUMENT APPROACH PROCEDURE—Continued

Radar terminal area maneuvering sectors and altitudes														Ceiling and visibility minimums			
From	To	Dist.	Alt.	Dist.	Alt.	Dist.	Alt.	Dist.	Alt.	Dist.	Alt.	Dist.	Alt.	Condition	2-engine or less		More than 2-engine, more than 65 knots
															65 knots or less	More than 65 knots	
153	180					20	3000										
208	333					20	3000	12	2000								
333	060							12	1800								
130	230							12	2000								
000	360									5	1500						

NOTE: Standard clearance of 1000' from 0-3 miles must be provided over: (1) 700' antenna, 2.5 miles W of airport. (2) 2176' antenna, 26.0 miles NW of airport. (3) 1117' antenna, 8.0 miles E of airport. (4) 1900' antenna, 10.7 miles SW of airport. (5) 560' antenna, 3.5 miles SE of airport. (6) 2300' antenna, 31.0 miles SW of airport.
 If visual contact not established upon descent to authorized landing minimums or if landing not accomplished, Runway 1: Climb to 1800' direct to AL LOM. Hold N of AL LOM, right turns 1 minute, 191° Inbnd. Runway 19: Climb to 2900' direct to Greenbush Int, right turns, 1 minute, 614° Inbnd.
 *300-1 required for all takeoffs on Runways 10, 28, 15, and 33.

City, Albany; State, N.Y.; Airport name, Albany County; Elev., 388'; Fac. Class. and Ident., Albany Radar; Procedure No. 1, Amdt. 1; Eff. date, 22 May 65; Sup. Amdt. No. Orig.; Dated, 23 June 62

Transition				Ceiling and visibility minimums			
From--	To--	Course and distance	Minimum altitude (feet)	Condition	2-engine or less		More than 3-engine, more than 65 knots
					65 knots or less	More than 65 knots	
060°	080°	Within: 20 miles..... 10 miles.....	1700 1500	Surveillance approach T-dn..... C-dn..... S-dn#*..... A-dn.....	300-1	300-1	300-1/2
All sectors					500-1	500-1	500-1/4
					500-1	500-1	500-1
					800-2	800-2	800-1
				Precision approach S-dn-13..... S-dn-4, 31..... A-dn-13, 4, 31.....	200-1/2	200-1/4	200-1/2
					300-1/4	300-1/4	300-1/4
					600-2	600-2	600-2

Radar terminal area transition altitudes—all bearings from the radar site with sector azimuths progressing clockwise.
 If visual contact not established upon descent to authorized landing minimums or if landing not accomplished, Runways 4, 8, 13, and 17: Make a left-climbing turn to 1500' on GYN VOR R-213 to Nesco Int, hold E, 1-minute, left turns, Inbnd crs, 284°. Runways 31, 35, 36, and 22: Make right-climbing turn to 1500' on CYN VOR R-213 to Nesco Int, hold E, 1-minute, left turns, Inbnd crs, 284°.

CAUTION: Radar tower, 229'—0.7 mile SW Runway 4.
 *400-1 authorized for Runways 13, 17, 22, 26, and 31.
 #400-1/4 authorized, except for 4-engine turbojet aircraft, with operative hi-intensity runway lights for runways 13 and 31.
 #400-1/2 authorized, except for 4-engine turbojet aircraft, with operative ALS Runway 13.

City, Atlantic City; State, N.J.; Airport name, NA FEC Atlantic City; Elev., 76'; Fac. Class. and Ident., Atlantic City Radar; Procedure No. 1, Amdt. 5; Eff. date, 22 May 65; Sup. Amdt. No. 4; Dated, 7 Dec. 63

		Within:		Surveillance approach			
				Condition	2-engine or less		More than 3-engine, more than 65 knots
					65 knots or less	More than 65 knots	
225° CW	265°	15 miles.....	2000	T-dn.....	300-1	300-1	300-1/2
225° CW	265°	15-20 miles.....	2300	C-dn.....	500-1	500-1	500-1/4
265° CW	350°	20 miles.....	2300	S-dn 16, 34, 25#.....	400-1	400-1	400-1
350° CW	225°	20 miles.....	2300	S-dn 7.....	500-1	500-1	500-1
000° CW	360°	20-30 miles.....	2500	A-dn.....	800-2	800-2	800-1

Radar vectoring authorized in accordance with approved radar patterns.
 Radar control will provide 1000' vertical clearance within a 3-mile radius of the 1629' and 1625' towers, 18 miles NE of airport.
 If visual contact not established upon descent to authorized landing minimums or if landing not accomplished, Runway 7: Make climbing right turn to 2300', proceed to Waterville VOR. Hold SE Waterville VOR R-140, right turns, 1 minute, 320° Inbnd. Runway 16: Make climbing left turn to 2300', proceed to Waterville VOR. Hold SE Waterville VOR R-140, right turns, 1 minute, 320° Inbnd. Runway 25: Climb straight ahead to 2100', proceed to Toledo LOM. Hold SW Toledo LOM, right turns, 1 minute, 069° Inbnd. Runway 34: Make climbing left turn to 2100', proceed to Toledo LOM. Hold SW Toledo LOM, right turns, 1 minute, 069° Inbnd.
 #400-1/4 authorized for Runway 25, except for 4-engine turbojet aircraft, with operative high-intensity runway lights.

City, Toledo; State, Ohio; Airport name, Toledo Express; Elev., 684'; Fac. Class. and Ident., Toledo Radar; Procedure No. 1, Amdt. 3; Eff. date, 22 May 65; Sup. Amdt. No. 2 Dated, 27 Mar. 65

		Within:		Surveillance approach			
				Condition	2-engine or less		More than 3-engine, more than 65 knots
					65 knots or less	More than 65 knots	
035°	290°	0-6 miles.....	2500	T-d#.....	300-1	300-1	NA
290°	035°	0-6 miles.....	2800		C-d#.....	700-1	700-1
165°	195°	6-8 miles.....	2500	S-d#.....	700-1	700-1	NA
195°	165°	6-25 miles.....	3000	A-d#.....	NA	NA	NA
165°	195°	8-10 miles.....	2800				
165°	195°	10-25 miles.....	3000				

All bearings and distances are from radar site.
 If visual contact not established upon descent to authorized landing minimums or if landing not accomplished, turn left, climbing to 3100' on R-002 IAB VOR, intercept R-051 ICT VOR, proceed to DeGraff Int.
 NOTE: Aircraft executing missed approach may be radar controlled after being reidentified.
 *3400' within 0-3 miles of 2444' tower located 15 miles WNW of Beech Airport.
 #Airport attended Monday through Friday, daylight hours only. No runway lights.

City, Wichita; State, Kans.; Airport name, Beech Factory; Elev., 1387'; Fac. Class. and Ident., Wichita Radar; Procedure No. 1, Amdt. 2; Eff. date, 22 May 65; Sup. Amdt. No. 1; Dated, 30 Apr. 64

These procedures shall become effective on the dates specified therein.
 (Secs. 307(c), 313(a), 601, Federal Aviation Act of 1958; 49 U.S.C. 1348 (c), 1354(a), 1421; 72 Stat. 749, 752, 775)
 Issued in Washington, D.C., April 15, 1965.

C. W. WALKER,
 Acting Director, Flight Standards Service.

[Docket Nos. 719, 873, 1093; Amdt. 121-7]

PART 121—CERTIFICATION AND OPERATIONS: DOMESTIC, FLAG, AND SUPPLEMENTAL AIR CARRIERS AND COMMERCIAL OPERATORS OF LARGE AIRCRAFT**Miscellaneous Amendments**

This amendment completely revises the crewmember and aircraft dispatcher training program requirements contained in Subpart N of Part 121 of the Federal Aviation Regulations.

In addition, amendments are made to certain requirements of Subpart O "Flight Crewmember Qualifications". One amendment concerns the use of approved aircraft simulator training courses in lieu of alternate required proficiency flight checks and also the use of aircraft simulators for certain proficiency flight check maneuvers. Another amendment to this subpart adds a requirement for an initial and annual proficiency check for pilots serving as other than pilot in command and second in command. Additional amendments to Subpart O are made to conform certain requirements with the amended training program requirements.

These amendments are based on three separate notices of proposed rule making issued by the Federal Aviation Agency. These notices were: (1) Draft Release 61-7, "Qualification and Training Requirements for Pilots Other Than Pilots in Command"; (2) Draft Release 61-17, "Use of Aircraft Simulators for Pilot Training and Proficiency Checks"; and (3) Draft Release 62-9, "Approval of Air Carrier Training Programs".

CAR Parts 40, 41, and 42 were recodified into FAR Part 121 effective April 1, 1963, and these amendments are therefore issued as amendments to Part 121. The term "certificate holder" is used in this preamble and in the amendments, as in Part 121, to include all air carriers and commercial operators certificated under Part 121.

The Agency has held several informal meetings since these notices were issued with the organizations representing the persons affected by the three proposals. The most recent of these meetings were held in June and July of 1964. Reports of these meetings are included in the Docket for Draft Release 62-9. This rule reflects the comments received by the Agency at these meetings in addition to the comments received in response to the original notices.

The major proposals from each of these notices and the amendments based thereon are hereinafter discussed separately.

Draft Release 61-7. As proposed in this notice, the recent experience provision is amended to require that those requirements be met by "all pilots who serve as required flight crewmembers, or who are utilized at the flight controls during takeoffs and landings." The present recent experience requirements (i.e., three takeoffs and three landings within preceding 90 days) apply only to pilots serving as pilot in command or second in command. The Air Transport Association of America objected to this

proposal on the ground that it was inconsistent with the Agency's policy with respect to pilot crewmembers not required by the regulations; that is, that the training requirements be consistent with the duties performed. The Agency does not agree that any inconsistency is created. As stated in Draft Release 61-7, the Agency believes that each "required" pilot flight crewmember should be qualified to relieve other pilots at the flight controls during any phase of flight, including takeoffs and landings.

As proposed in Draft Release 61-7, § 121.449 is amended to require that the second in command of a crew of three or more pilots be subject to the same semi-annual proficiency check requirement as a pilot in command and further to require an initial and annual pilot proficiency check for all pilots not covered by the pilot in command and second in command proficiency check requirements.

Draft Release 61-17. The majority of the proposals in this notice were related to minimum standards for the approval of airplane simulators. These standards were adopted as amendments to CAR Parts 40, 41, and 42 effective June 10, 1963. Those portions of Draft Release 61-17 that were not included in the 1963 amendments were related to the use of airplane simulators in conducting pilot proficiency checks. Basically, the proposal sought to incorporate in the rules the substance of CAMs 40.302-3 and -4 (and comparable CAMs to Parts 41 and 42).

As indicated in the notice, even before the 1967 amendment permitting the substitution of an approved course of training in an airplane simulator for every other required proficiency flight check, those certificate holders using approved simulators in their training programs were permitted to conduct all but four of their pilot in command proficiency check maneuvers in the simulator, instead of in an airplane in flight. However, specific approval by the Agency was required before a certificate holder could make such a substitution. The Agency feels that since this program has operated successfully for many years it should be set forth in the rules as proposed in Draft Release 61-17. Accordingly, a new § 121.442 incorporates the provisions proposed in Draft Release 61-17 and presently contained in CAMs 40.302-3 and -4.

Draft Release 62-9. This notice proposed to amend CARs 40, 41, and 42 to specify the procedures and minimum standards to be used in obtaining approval of a training program. As indicated in the draft release, while the CARs were amended effective January 1, 1961, to require "approval" of the training program established by each certificate holder, that amendment did not contain any procedures or minimum standards for obtaining such approval.

Draft Release 62-9 proposed to add an appendix that set forth in detail the curriculum requirements necessary to obtain approval of a training program. Many of the comments received on the notice were critical of the amount of detail included in the proposed rule. It was suggested, that by setting forth the

procedures and minimum requirements in such detail, the Agency would put too much emphasis on uniformity and thereby would discourage the efforts of individual certificate holders to use initiative to improve their training programs. Upon reviewing the proposal, the Agency agrees that the rules should contain only those minimum items that are necessary, in the interest of safety, in every training program. Accordingly, the rule as adopted does not contain the type of appendix originally proposed. Instead the Agency has included in the rules, in as broad terms as possible, those items felt to be essential to every training program. The appendix now being added is basically a table setting forth the programmed hours of training, for each trainee in each major category, that the Agency would consider to be a minimum in the absence of a showing by the certificate holder that circumstances justify a lesser amount. Those circumstances that would justify such a reduction are set forth in § 121.414. The table as adopted is basically the same as Chart 1 contained in the notice.

The rules as adopted make clear the basic requirements for initial and recurrent training for each crewmember and aircraft dispatcher. Provision is made for the revision of an approved training program at the initiative of either the certificate holder or the Administrator. The provisions for revision on the Administrator's initiative are comparable to those contained in the recently adopted continuous maintenance program and set forth in § 121.373.

The provision of § 121.421(a) authorizing the "initial training" of a flight engineer to be given in operations under Part 121 has been deleted. This change is consistent with the Agency's repeal of a comparable authorization in § 40.307 in amendment 40-43. Recurrent training and the annual flight check (except emergency procedures) may, however, be conducted in operations under Part 121 as long as the flight engineer remains qualified to serve in such operations. The basis for this distinction is the Agency's belief that operations under the Part should not be exposed to the hazards that might be created by the use of a flight engineer, whose qualifications have not been determined or have expired.

In view of the requirement that each pilot receive recurrent training each year in each type airplane in which he is to retain qualification, the Agency believes that the requirement that every other proficiency check must be performed in the largest type airplane flown is no longer needed. Accordingly, this requirement is deleted from §§ 121.441 and 121.449.

In view of the detailed crewmember emergency training requirement included in this amendment the training requirement contained in § 121.397(c) is deleted as obsolete.

After further deliberation and in consideration of all comments received in response to DR 62-9, it is not deemed necessary or appropriate at this time to set forth requirements for the minimum number of programmed hours of ground and flight training for training programs

applicable to airplanes with a maximum certificated takeoff weight of 12,500 pounds or less. Such requirements would only be applicable to a few scheduled certificate holders using small airplanes and located for the most part in Alaska. Such certificate holders' training programs vary considerably depending on the type of operation conducted. Accordingly, standardized programmed hours such as proposed in Chart 2 are not being adopted at this time for application to the approved training programs of certificate holders using small airplanes.

Interested persons have been afforded an opportunity to participate in the making of this amendment (26 F.R. 3438 (DR 61-7); 26 F.R. 8461 (DR 61-17); 27 F.R. 2319 (DR 62-9)), and due consideration has been given to all relevant matter presented.

In consideration of the foregoing, Chapter I of Title 14 of the Code of Federal Regulations is amended as hereinafter set forth effective August 16, 1965.

(Secs. 313(a), 601, 604, 605, Federal Aviation Act of 1958; 49 U.S.C. 1354, 1421, 1424, 1425)

Issued in Washington, D.C., on May 11, 1965.

N. E. HALABY,
Administrator.

§ 121.433 [Amended]

1. By amending § 121.433(a) by striking the reference to section "121.423" and inserting in place thereof "121.422, 121.425,".

2. By amending § 121.439 to read as follows:

§ 121.439 Pilot qualification: Recent experience.

Unless, within the preceding 90 days, the pilot has made at least three takeoffs and three landings in an airplane of the type in which he is to serve, no certificate holder may use a pilot—

- (a) As a pilot in command;
- (b) As a second in command;
- (c) As a pilot flight crewmember required by this part; or
- (d) At the flight controls of an airplane during takeoffs or landings.

3. By amending § 121.441 as follows:

a. By amending the second sentence of paragraph (b) by striking the word "a" after the words "Administrator or" and by inserting the words "an approved" in place thereof.

b. By striking the third sentence of paragraph (b) and by amending subparagraph (23) thereof to read as follows:

§ 121.441 Pilot checks.

(b) Proficiency check. * * *

(23) Flight maneuvers, except that weight and power combinations less than those specified may be used if the performance capabilities of the airplane under the specified conditions are simulated:

(i) At the authorized maximum take-off weight, takeoff using maximum take-off power with a simulated failure of the critical engine.

(ii) If a three-engine or four-engine airplane, flight, including maneuvering to a landing at the authorized maximum landing weight, with the most critical combination of two engines inoperative or operating at zero thrust using, where appropriate, applicable climb speeds set forth in the Airplane Flight Manual.

(iii) At the authorized maximum landing weight, simulated pull-out at a safe altitude from the approach configurations with the critical engine inoperative or operating at zero thrust and from the landing configuration with all engines operative.

c. By striking paragraph (d) and by redesignating paragraph (e) as (d).

4. By adding a new § 121.442 to read as follows:

§ 121.442 Use of flight simulator.

(a) *Substitution of approved airplane simulator training course for proficiency flight check.* After the first proficiency check, the satisfactory completion of an approved training course in an approved airplane simulator may be substituted at alternate six-month intervals for the proficiency check required by § 121.441 (b), if the simulator meets the requirements of Appendix B of this part and—

(1) The simulator is maintained at the same level as required for initial approval;

(2) A functional preflight check of the simulator is performed each day before beginning simulator flight training or proficiency checks;

(3) A daily discrepancy log is kept and an entry of each discrepancy is made by the simulator instructor or check airman before the end of each training or check flight; and

(4) If a modification is made to the airplane, a corresponding modification is made to the simulator if necessary for flight crew training or proficiency checks.

The simulator may be used with inoperative instruments or equipment if they are not applicable to the particular phase of training being given.

(b) *Airplane simulator training course requirements.* When a course of training in an approved airplane simulator is to be substituted for a required proficiency check as provided for in paragraph (a) of this section, the certificate holder must comply with at least the following in conducting the course of training:

(1) The course must be conducted in an approved simulator appropriate to the particular type of airplane and must include:

(i) Each flight maneuver required for a proficiency check as specified in § 121.441 (b), except maneuvering at minimum speed, landing under circling approach conditions, takeoffs, and landings with simulated engine failures, and the instrument approach procedures for which the lowest minimums are approved.

(ii) Appropriate maneuvers peculiar to the particular type of airplane (such as dutch roll);

(iii) At least four hours of simulator flight training time and instruction in all normal and emergency procedures ap-

propriate to the particular type of airplane;

(iv) At least two hours of briefing and debriefing on the maneuvers and procedures involved.

(2) A sufficient number of airplane simulator instructors must be provided. Each instructor must hold, or have held, a valid airline transport pilot certificate and have completed, to the satisfaction of an approved check airman or the Administrator, the approved pilot ground training course and a complete airplane simulator flight training course for the type airplane simulator on which he is to instruct.

(3) Satisfactory completion of the approved simulator course by each trainee must be certified to by an approved check airman or the Administrator.

(4) A record system must be established and maintained on each trainee indicating the kind, amount, and dates of training received and certification of satisfactory completion.

(c) *Use of approved airplane simulator as part of required proficiency check.*

In addition to the authorization contained in paragraph (a) of this section for the substitution of an approved airplane simulator training course for certain proficiency checks required by § 121.441 (b), an approved airplane simulator may be used in the conduct of such a proficiency check as follows:

(1) An approved airplane simulator may be used to conduct all required maneuvers except those excluded in paragraph (b) (1) (i) of this section.

(2) Except for the oral equipment examination and the maneuvers associated with orientation, beam bracketing, cone identification, loop orientation, and other such maneuvers authorized to be given in a synthetic trainer in subparagraph (24) of paragraph (b) of § 121.441, those parts of a required proficiency flight check given in an approved airplane simulator under subparagraph (1) of this paragraph must be satisfactorily demonstrated to an approved check airman or the Administrator.

§ 121.443 [Amended]

5. By amending § 121.443(a) by inserting the words "an approved" immediately after the words "appropriate instructor or".

6. By amending § 121.449 to read as follows:

§ 121.449 Proficiency checks: Second in command and other pilots.

(a) A certificate holder may not use a pilot as second in command or in any other capacity as a pilot crewmember (other than pilot in command) unless he has satisfactorily shown to the Administrator or an approved check pilot that he is able to pilot and navigate each airplane that he is to fly and to perform his assigned duties. Thereafter, he may not serve as second in command or in any other capacity as a pilot crewmember (other than pilot in command) unless each 12 calendar months he satisfactorily completes a similar pilot proficiency check.

(b) Except as provided in paragraphs (c) and (d) of this section, the profi-

ciency check must include at least an oral or written equipment test and the following procedures and flight maneuvers:

(1) Takeoffs and landings.
(2) The procedures and flight maneuvers set forth in §§ 121.418(a) (5) through (8) and 121.420(a).

(c) After the first proficiency check, the satisfactory completion of an approved training course in an approved airplane simulator that meets the requirements of § 121.442(a) may be substituted at alternate 12 calendar month intervals for the proficiency checks required by paragraph (a) of this section. Satisfactory completion of a proficiency check in accordance with § 121.441 or § 121.442 meets the requirements of this section.

(d) For pilots who are not to serve at the flight controls during takeoff or landing, the initial and annual proficiency checks need include only the assigned flight duties (including flight emergencies) and the maneuvers and procedures set forth in § 121.418(a) (5) through (9).

(e) For pilots who are to serve as second in command of an operation requiring three or more pilots, the proficiency check requirements are the same as those required for a pilot in command in § 121.441 and must be completed every 6 months.

(f) The provisions and limitations set forth in § 121.442 with respect to the use of approved airplane simulators in substitution for or in the conduct of proficiency checks, are also applicable to the proficiency check requirements of this section.

§ 121.397 [Amended]

7. By striking paragraph (c) of § 121.397.

§ 121.463 [Amended]

8. By striking the reference to section "121.425" in § 121.463(a) and by inserting in place thereof a reference to "121.423".

9. By amending Subpart N of Part 121 and by adding an Appendix E to Part 121 as hereinafter set forth.

Subpart N—Crewmember and Aircraft Dispatcher Training Program

Sec.	
121.410	Applicability.
121.411	Training program: General.
121.412	Training program: Approval and revision.
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121.420	Flight training: Second in command and certain other pilots.
121.421	Flight engineer training.
121.422	Flight navigator training.
121.423	Aircraft dispatcher training: Domestic and flag air carriers.
121.424	Flight attendant training.
121.425	Initial flight assignments on a particular type of airplane.

AUTHORITY: The provisions of this Subpart N issued under secs. 313(a), 601, 604, and 605, Federal Aviation Act of 1958; 49 U.S.C. 1354, 1421, 1424, and 1425.

Subpart N—Crewmember and Aircraft Dispatcher Training Program

§ 121.410 Applicability.

Except where otherwise stated, this subpart prescribes requirements applicable to each certificate holder for establishing and maintaining a training program for each crewmember and each required aircraft dispatcher.

§ 121.411 Training program: General.

(a) Each certificate holder shall—
(1) Establish, obtain approval of, and maintain a training program that meets the requirements of this subpart and that ensures that each crewmember and each aircraft dispatcher is adequately trained to perform his assigned duties;

(2) Provide adequate ground and flight training facilities and properly qualified instructors for the training required by this subpart;

(3) Provide and keep current, with respect to each airplane type it uses, appropriate course material, examinations, training forms, instructions, and procedures for use in conducting the checks required by this subpart; and

(4) Provide enough approved check airmen (who hold at least the same airman certificates and ratings that the airman being checked is required to hold) to conduct the flight checks required by this part.

(b) No certificate holder may use any crewmember or aircraft dispatcher in operations under this Part unless before serving in such operations the crewmember or dispatcher has—

(1) Satisfactorily completed the appropriate initial training phase of the certificate holder's approved training program; and

(2) Thereafter, at least once each 12 months, has satisfactorily completed the appropriate recurrent training phase and any required checks.

(c) Whenever a crewmember or aircraft dispatcher who is required to take recurrent training, a flight check, or a competence check, takes that check or completes that training in the calendar month before, or the calendar month after, the calendar month in which it becomes due, he is considered to have taken or completed it in the calendar month in which it became due.

§ 121.412 Training program: Approval and revision.

(a) To obtain initial approval of its training program or approval of any revision thereto, each certificate holder must submit to the Administrator—

(1) Three copies of the proposed curriculum; and

(2) Training forms, records, and any other relevant material requested by the Administrator.

(b) The Administrator approves a training program or revisions to an approved training program if he finds that the curriculum complies with this subpart and Appendix E of this part.

(c) Whenever the Administrator finds that revisions to an approved training program are necessary for the continued adequacy of the program, the certificate holder shall, after notification by the Administrator, make any changes in the

program found by the Administrator to be necessary. A certificate holder may petition the Administrator to reconsider the notice to make a change in a program. The petition must be filed with the FAA Air Carrier District Office charged with the overall inspection of the certificate holder's operations within 30 days after the certificate holder receives the notice. Except in the case of an emergency requiring immediate action in the interest of safety, the filing of the petition stays the notice pending a decision by the Administrator.

§ 121.413 Certification of completion of training.

Each instructor, supervisor, or approved check airman who is responsible for particular initial or recurrent training or a flight check shall certify as to the proficiency of the crewmember or dispatcher concerned after he completes that training or check. That certification shall be made a part of the crewmember's or dispatcher's record.

§ 121.414 Curriculum requirements.

(a) *General.* The training program for each crewmember and dispatcher must consist of appropriate ground and flight training as required in this subpart and except as provided in paragraph (b) or (c) of this section, must include the programmed hours of initial and recurrent training set forth in Appendix E of this part. The certificate holder shall standardize procedures for each flight crew function so that each flight crewmember knows the functions for which he is responsible and the relation of those functions to the functions of other flight crewmembers.

(b) *Reduction in programmed hours: General.* A certificate holder may apply to the Administrator for a reduction in the programmed hours of training for the following situations:

(1) When a crewmember's or dispatcher's training and experience in previous training courses, including approved training courses conducted by another certificate holder, ensure that an adequate level of ability and proficiency would result from a modified training course and the certificate holder's training record contains satisfactory evidence to substantiate the prior training and experience.

(2) When a modified training course will adequately ensure proficiency for crewmembers and dispatchers transitioning from one airplane type to a similar airplane type (differences training).

(3) When a crewmember is transitioning from one crewmember function on an airplane to another crewmember function, for which he holds an appropriate airman certificate, on the same or a similar type airplane.

(4) When a re-evaluation of an approved training program shows that improvements in methods, training aids, quality of instruction, or any combination thereof, have increased training effectiveness to warrant the reduction.

(c) *Reduction in programmed hours: Initial flight training and initial flight assignments.* A reduction in the programmed hours of initial flight training is permitted as follows:

(1) A flight crewmember who progresses successfully through the initial flight training in less than the programmed flight time for that phase may be flight checked at that stage of the training by an approved check airman or by the Administrator, if recommended by the certificate holder's instructor or approved check airman. Whenever more than 20 percent of the flight checks given under this paragraph are unsatisfactory, the Administrator rescinds this privilege until he finds that satisfactory means have been taken to improve the effectiveness of the training.

(2) Whenever the hours of training in an approved airplane simulator set forth in column III of Appendix E are included in the initial flight training curriculum, the number of hours of initial flight training required in column II may be reduced by 25 percent. The Administrator may after evaluation grant proportionate reductions based on the use of other procedural trainers.

(3) The hours of initial flight assignment set forth in column V of Appendix E may be reduced (not to exceed 50 percent) for pilots and flight engineers by substituting one takeoff and one landing for each required hour of flight.

(4) A pilot who has satisfactorily completed the required programmed hours of initial training for second in command on a particular airplane type may qualify as pilot in command of that type airplane by completing the programmed hours of upgrade training set forth in Appendix E, in place of the programmed hours of initial training for that position.

(d) *Reduction in programmed hours: Recurrent ground training.* A certificate holder may apply to the Administrator for a reduction (not to exceed 25 percent) in the programmed hours of recurrent ground school training when the certificate holder uses a directed study course as part of its recurrent ground training.

§ 121.415 Synthetic trainers.

(a) *Approved airplane simulator.* An approved airplane simulator, appropriate to the particular type airplane, may be used to accomplish any training required in this subpart, unless that training is required to be performed in actual flight.

(b) *Use of synthetic trainers other than approved simulators.* Procedures trainers, systems trainers, or other training devices that are shown to be adequate for a particular phase of training required in this subpart may be used for that training unless it is required to be performed in actual flight.

§ 121.416 Crewmember emergency training.

(a) Each certificate holder shall design its training emergency procedures to give each crewmember who is assigned emergency and evacuation functions instruction in the appropriate emergency procedures listed below, including assignments in an emergency and coordination among crewmembers, and individual instruction in the location and operation of all emergency equipment used in ditching and evacuation:

(1) Procedures for handling failure of an engine, engines, or other airplane components or systems.

(2) Procedures for handling—

- (i) Emergency decompression;
- (ii) Fire in the air or on the ground;
- (iii) Ditching; and
- (iv) Evacuation.

(3) The power setting for maximum endurance and maximum range.

(b) The certificate holder shall give each crewmember, at least once each 12 calendar months, recurrent training in the emergency procedures set forth in this section.

(c) Synthetic trainers approved to simulate flight operating emergency conditions, static airplanes, ground demonstrations, classroom lectures, films, or other training devices, as appropriate, may be used for training crewmembers in emergency procedures if the method used ensures that each crewmember is adequately trained in the operation or use of all equipment such as lifevests, oxygen, oxygen masks, escape ropes and chutes, and emergency exits.

(d) The certificate holder shall give instruction, by lectures and films (or other equivalent means approved after demonstration) to each crewmember performing duties on pressurized airplanes operated above 25,000 feet covering at least—

- (1) Respiration;
- (2) Hypoxia;
- (3) Duration of consciousness at altitudes without supplemental oxygen;
- (4) Gas expansion;
- (5) Gas bubble formation; and
- (6) Physical phenomena and incidents of decompression.

(e) Each certificate holder shall include in its emergency training program drills, as appropriate to each type airplane and its equipment, using established procedures for:

- (1) Ditching.
- (2) Evacuation.
- (3) Fire extinguishing.
- (4) Operation and use of emergency exits.
- (5) Use of evacuation chutes.
- (6) Placing of escape ropes.
- (7) Administration of crew and passenger oxygen.

(8) Removal of liferafts from airplane, inflation of rafts, and boarding of passengers and crew.

(9) Putting on and inflation of lifevests.

(10) Handling of passengers during emergencies.

In conducting drills, each certificate holder shall ensure that each trainee actually performs each function or action appropriate to his duties except those functions or actions that the Administrator finds can be adequately learned by the trainee through demonstration.

§ 121.417 Ground training: Pilots.

(a) The initial ground training that the certificate holder must provide for each pilot before he serves as a pilot flight crewmember must include at least instruction in—

(1) The appropriate provisions of the certificate holder's operations specifica-

tions and of the Federal Aviation Regulations, especially the operating and dispatch or flight release rules and airplane operating limitations;

(2) Dispatch procedures (domestic and flag air carriers) or flight release procedures (supplemental air carriers and commercial operators) and appropriate contents of the manuals;

(3) Duties and responsibilities of crewmembers;

(4) The type of airplane to be flown, including a study of the airplane, aircraft engines, major components and systems, performance limitations, cruise control, fuel consumption, flight planning, standard and emergency operating procedure, and appropriate contents of the approved Airplane Flight Manual;

(5) Principles and methods for determining weight and balance limitations for takeoff and landing;

(6) Navigation and the use of appropriate navigation aids, including instrument approach facilities and procedures that the certificate holder is authorized to use;

(7) Air traffic control systems and procedures, and pertinent ground control letdown procedures

(8) Enough meteorology to ensure a practical knowledge of the principles of icing, fog, thunderstorms, and frontal systems including, as appropriate, high altitude weather phenomena;

(9) Procedures for operating in turbulent air including, as appropriate, clear air turbulence, icing, hail, thunderstorm, and other potentially hazardous meteorological conditions; and

(10) Communications procedures and communications equipment failure procedures.

(b) Each certificate holder shall give each pilot—

(1) Any additional ground training necessary to ensure qualification in new equipment, procedures, or techniques; and

(2) Recurrent ground training every 12 calendar months to ensure his continued proficiency in procedures, techniques, and information essential to the satisfactory performance of his duties.

§ 121.418 Flight training: all pilots.

(a) The initial flight training that the certificate holder must provide for each pilot before he serves as a pilot flight crewmember must include at least the approved programmed hours of flight instruction and practice in the following:

(1) Assigned flight duties.

(2) Takeoffs and landings during day and night in each type of airplane in which he is to serve as a pilot.

(3) Normal and emergency flight maneuvers in each type of airplane in which he is to serve as pilot.

(4) Flight under simulated instrument conditions.

(5) Climbs and climbing turns.

(6) Maneuvers at minimum speeds.

(7) Engine shutdown and restart.

(8) Approaches to stalls.

(9) Flight under simulated IFR conditions using each kind of navigation facility used in normal operations.

(b) A pilot qualifying to serve as other than pilot in command or second in command shall show the Administrator or

an approved check pilot that he is able to take off and land each type of airplane in which he is to serve.

(c) Each certificate holder shall give each pilot—

(1) Any additional flight training necessary to ensure qualification in new equipment, procedures, or techniques; and

(2) Recurrent training each 12 calendar months consisting of at least the approved programmed hours of flight instruction and practice in the items set forth in paragraph (a) of this section and any required flight checks in each type airplane on which the pilot serves as a pilot and in which he is not required to receive a proficiency check or in substitution a simulator training course under § 121.441 or § 121.447.

(d) In addition to the initial and recurrent training required by this section, each certificate holder must provide any additional initial and recurrent training required in this subpart, as appropriate to the position in which the pilot is to serve.

§ 121.419 Flight training: Pilot in command and second in command in a crew requiring three or more pilots.

(a) *Initial.* The initial flight training that the certificate holder must provide for each pilot before he serves as a pilot in command or second in command of an operation that requires three or more pilots must include the approved programmed hours of flight instruction and practice in at least the maneuvers and procedures set forth in § 121.441(b) in each type airplane (in which he has not previously qualified) to be flown by him, and in addition the following:

- (1) Briefing session.
- (2) Preflight inspection of the airplane.
- (3) Pretakeoff checks.
- (4) Crosswind takeoffs.
- (5) Operation of systems controls at the flight engineer station.

(6) If appropriate to training in the particular type airplane, zero flap landings, dutch rolls, turns with and without spoilers, tuck and Mach buffet, procedures for runaway or jammed stabilizer, landing and go around with the horizontal stabilizer out of trim.

(7) In flight or in a static airplane, airplane simulator, procedures or systems trainer, or other appropriate training device—

(i) Normal operation as appropriate to the particular type airplane of the pressurization, pneumatic, air conditioning, fuel, oil, electronic, electrical, hydraulic, and flight control systems; and

(ii) In-flight emergency procedures, including, as appropriate to the particular type of airplane: powerplant, heater, cargo compartment, cabin, flight deck, wing, and electrical fires; smoke removal; electrical, hydraulic, flight control, and flight instrument system malfunction or failures; decompression; and fuel dumping.

In conducting a takeoff with a simulated failure of the critical engine under § 121.441(b)(23) in transport category airplanes, the engine failure must be simulated as close as possible to the critical engine failure speed V_1 and climb-out

must be made as close as possible to the takeoff safety speed V_2 , and the pilot shall determine the values for V_1 and V_2 .

(b) *Recurrent.* Each certificate holder shall give each pilot in command and second in command in an operation that requires three or more pilots at least two periods of recurrent flight training within each 12 calendar month period that together consist of at least the approved programmed hours and that include the maneuvers and procedures set forth in § 121.441(b). The recurrent training must be given in each type airplane in which the pilot is to retain qualification, except that where a pilot is qualified in more than one airplane type he need only be given one period of training in each type within each 12 calendar month period. Satisfactory completion of a required proficiency check in a particular type airplane under § 121.441 or § 121.442 is considered to satisfy the recurrent flight training or flight check required by this section in that type airplane.

§ 121.420 Flight training: Second in command and certain other pilots.

(a) *Initial.* The initial flight training that the certificate holder must provide for each pilot before he serves as second in command in an operation other than an operation requiring three or more pilots, before he serves at the flight controls during takeoff or landing, or before he serves as pilot (other than as pilot in command or second in command) in an operation requiring three or more pilots, must include the approved programmed hours of flight instruction and practice in at least the following maneuvers and procedures in each type airplane (in which he has not previously qualified) to be flown by him:

- (1) Assigned flight duties of second in command including flight emergencies.
- (2) Taxiing.
- (3) Takeoff and landing with simulated engine failure.
- (4) Flight under simulated IFR conditions including instrument approach at least down to circling approach minimums and a simulated missed approach using that kind of approach procedure for which the lowest minimums are approved.
- (5) Flight under simulated IFR conditions using each kind of navigational facility and letdown procedure that is used in normal operations. Except for those approach procedures for which the lowest minimums are approved, letdown procedures may be given in a synthetic trainer that has the radio equipment and instruments necessary to simulate other navigational and letdown procedures approved for the certificate holder.

(6) Except for zero flap landing, the training set forth in § 121.419(a) (6) and (7).

(b) *Recurrent.* Each certificate holder shall give each pilot subject to the requirements of this section, recurrent training at least once each 12 calendar months. The recurrent training must—

- (1) Consist of at least the approved programmed hours of training in the maneuvers and procedures set forth in subparagraphs (1) through (5) of paragraph (a) of this section and in emergency procedures.

(2) Be given in each type airplane in which the pilot is to retain qualification, except that satisfactory completion of a required proficiency check in a particular type airplane under § 121.441, § 121.442, or § 121.449 is considered to satisfy the recurrent flight training or flight check required by this section in that type airplane.

§ 121.421 Flight engineer training.

(a) The initial training that the certificate holder must provide for each flight engineer before he serves as flight engineer must include at least the approved programmed hours of ground and flight training in the following:

(1) Ground training in the subjects specified in subparagraphs (1) through (5) of § 121.417(a) and those parts of subparagraphs (8) through (10) of that paragraph relating to his duties, functions, and responsibilities;

(2) Enough flight training on each type airplane on which he is to serve to be proficient in the duties assigned to him and a flight check that includes the following:

- (i) A preflight inspection.
- (ii) Performance of assigned flight engineer duties accomplished from the flight engineer station during taxi, run-up, takeoff, climb, cruise, descent, approach, and landing.
- (iii) Normal and emergency or alternate operation of all airplane systems.
- (iv) Accomplishment of appropriate functions and computations, such as fuel management and fuel consumption records.

(b) Each certificate holder shall give each flight engineer—

(1) Any additional ground and flight training necessary to ensure his qualification in new equipment, procedures, and techniques; and

(2) At least once each 12 calendar months—

(i) A flight check (that conforms with the initial flight check) in each type airplane in which he is to retain qualification; and

(ii) Recurrent ground and flight training that includes at least the programmed hours set forth in the certificate holder's approved training program to ensure his continued proficiency with respect to procedures, techniques, and information essential to the satisfactory performance of his duties.

(c) Satisfactory completion of the flight check items set forth in subparagraph (2) of paragraph (a) of this section in each type airplane in which a flight engineer serves may be substituted for the programmed hours of recurrent flight training otherwise required in the approved training program for that type airplane.

(d) Except for emergency procedures and as prohibited in § 121.453, a recurrent flight check may be given in operations under this part or the entire check (excluding preflight inspection) may be given in a synthetic trainer that is representative of that type airplane.

§ 121.422 Flight navigator training.

(a) The initial training that the certificate holder must provide for each flight navigator before he serves as a flight navigator must include at least the

approved programmed hours of ground and flight training in the following:

(1) Ground training for each type airplane on which he is to serve, in at least the applicable parts of subparagraphs (1) through (4) and (6) through (8) of § 121.417(a) and in the following:

(i) Limitations on climb, cruise, and descent speeds.

(ii) Each item of navigational equipment installed, including relevant radio, radar, and other electronic equipment.

(iii) Relevant performance information in the certificate holder's manual.

(iv) Airspeed, temperature, and pressure indicating instruments or systems.

(v) Kinds of compasses, limitations, and methods of compensation.

(vi) Cruise control charts and data, including fuel consumption rates.

(2) Enough flight training to ensure his proficiency in the duties assigned to him.

(b) Each certificate holder shall give each flight navigator—

(1) Any additional ground and flight training necessary to ensure his qualification in new equipment, procedures, and techniques; and

(2) At least once each 12 calendar months, recurrent ground and flight training and a flight check to ensure his continued proficiency.

(c) The flight training required by this section may be given during flights under this part if given under the supervision of a qualified flight navigator. The flight checks required by this section may be given during flights under this part or in a synthetic trainer in place of a check in flight.

§ 121.423 Aircraft dispatcher training: Domestic and flag air carriers.

(a) The initial training each domestic and flag air carrier must provide for each aircraft dispatcher before he serves as a dispatcher must include at least the programmed hours of training set forth in the approved training program. In addition, each aircraft dispatcher shall, before performing duties as an aircraft dispatcher, satisfactorily demonstrate to the supervisor or ground instructor authorized to certify his proficiency, his knowledge of the following:

(1) Contents of the air carrier operating certificate.

(2) Appropriate provisions of the air carrier's operations specifications, manuals, and the Federal Aviation Regulations.

(3) Communications facilities used, including characteristics, limitations, and normal and emergency procedures.

(4) Navigational aids and publications.

(5) Meteorology, including types of meteorological information and forecasts, interpretation of weather data including forecasting of en route and terminal temperature and other weather conditions, frontal systems, wind conditions, and use of weather charts, actual and prognostic, for various altitudes.

(6) Flight operations procedures including the following:

(i) Duties and responsibilities of pilots and dispatchers.

(ii) Weight and balance computations.

(iii) Basic airplane performance dispatch requirements and procedures.

(iv) Notam system.

(v) Flight planning including track selection, flight time analyses, and fuel requirements.

(7) Airports used and the terrain en route.

(8) Prevailing weather phenomena.

(9) Sources of weather information available.

(10) Pertinent air traffic control procedures.

(11) Emergency procedures.

(12) Airplane performance information (applicable to each type airplane operated by the air carrier for which the dispatcher is responsible) including at least—

(i) Cruise control methods, procedures, and data;

(ii) Airplane limitations;

(iii) Airplane performance data;

(iv) Minimum equipment list; and

(v) Flight planning.

(b) The training program must emphasize emergency procedures, including the alerting of proper governmental, company, and private agencies to give the maximum help to an airplane in distress.

(c) Each air carrier shall give each dispatcher—

(1) Any additional training necessary to ensure his qualification for new equipment, procedures, and techniques; and

(2) At least once each 12 calendar months, recurrent ground training (consisting of the programmed hours set forth in the approved training program) and a competence check to ensure his continued competence with respect to the procedures, techniques, and information essential to his duties.

§ 121.424 Flight attendant training.

(a) The initial training that the certificate holder must provide for each flight attendant before he serves on a flight under this part must ensure that such crewmember is fully qualified to perform the duties assigned during flight time. This training must consist of at least the programmed hours of initial training set forth in the certificate holder's approved training program including at least the following, as appropriate to assigned duties and responsibilities:

(1) Authority of the pilot in command.

(2) Passenger handling, including procedures to be followed in the event of the presence of deranged persons or other persons whose conduct might jeopardize the safety of other passengers.

(3) With respect to each type of airplane on which a crewmember is to serve as a flight attendant in air transportation—

(i) A general description of the airplane;

(ii) A knowledge of all crewmember assignments, functions, and responsibilities during ditching and evacuation;

(iii) Briefing of passengers;

(iv) Use of public address system and means of communicating with cockpit;

(v) Location and operation of portable fire extinguishers, including a knowledge of the type of fires to be combated with each type of extinguisher;

(vi) Location and use of first-aid equipment;

(vii) Proper use of electrical galley equipment, cabin heat controls, if installed in cabin, and ventilation controls;

(viii) Location and operation of passenger oxygen equipment; and

(ix) Location and operation of all normal and emergency exits, including evacuation chutes and escape ropes.

(b) Each certificate holder shall give each flight attendant at least once each twelve calendar months recurrent training that includes at least the programmed hours set forth in the certificate holder's approved training program and a competence check to determine the attendant's ability to perform assigned duties and responsibilities.

§ 121.425 Initial flight assignments on a particular type of airplane.

(a) Except as provided in paragraph (b) of this section, in addition to the ground and flight training specified in the certificate holder's approved training program (Appendix E, columns I and II), no crewmember may serve on a type airplane on which he has not previously served, or in a crew position in which he has not previously served, unless he satisfactorily completes at least the number of programmed hours specified in the certificate holder's approved training program for initial flight assignment (Appendix E, column V). In conducting initial flight assignments in each type airplane—

(1) Each pilot in command must perform the duties of a pilot in command while being observed by an approved check airman.

(2) Each second in command must either perform the duties of second in command while being observed by an approved check airman, or act as observer on the flight deck.

(3) Each flight engineer must perform the duties of a flight engineer while being observed by a qualified flight engineer or an approved check airman.

(4) Each flight attendant must either perform the duties of a flight attendant while being observed by a supervisor or act as an observer.

(b) A flight attendant who is assigned to duty in more than one type aircraft and who has received sufficient ground school and practical training in each type aircraft, is required to comply with paragraph (a) (4) of this section only in the larger type aircraft to which assigned.

NOTE: The reporting and/or record-keeping requirements contained herein have been approved by the Bureau of the Budget in accordance with the Federal Reports Act of 1942.

APPENDIX E
PROGRAMMED HOURS OF TRAINING

	I Ground School					II Flight Training		III Approved Simulator		IV Procedural Trainer (a)		V Initial Flight Assignments (e)				
	PIC FE	2IC	NA	FA	DS	PIC	2IC FE	PIC	2IC FE	PIC	2IC	PIC	2IC	FE	FA DS	
Basic indoctrination (newly hired).....	40	40	40	40	40	x	x	x	x	x	x	x	x	x	x	x
DC-3 initial (I) and upgrade (U), C-46 recurrent (R).....	I 40 U x R 12 I 64	40 16 12 64	x x x x	x x 3 8	8 x 8 30	x x 2.5 8	x 4 1.0 5	x x x 10(b)	x x x 10(b)	x x x 10(b)	x 4 4 4	x 4 4 4	x 4 4 4	x 10 x 15	x 10 x 15	x x x x
M 202/404 and CV 240/440.....	I U R 64 I 16	32 16 64	x x 24	x 4 8	x 8 40	x x 8	x 5 1.5	x 10(c) 10(b)	x 10(d) 10(b)	x 10(d) 10(b)	x 4 4	x 4 4	x 4 4	x 10 15	x 10 7.5	x x x
DC-4, L-549 and L-749.....	I U R 16 I 80	32 16 80	x 12 24	x 4 10	x 10 40	x x 10	x 3 1.5	x 10(e) 15(b)	x 10(d) 15(b)	x 4 4	x 4 4	x 2 4	x 4 4	x x 20	x x 10	x x x
B-37, L-1049, 1949 and DC-6/7.....	I U R 20 I 80	40 20 80	x 12 x	x 5 8	x 10 40	x x 10	x 3 1.5	x 10(e) 10(d)	x 15(b) 10(d)	x 4 4	x 4 4	x 2 4	x 4 4	x x 20	x x x	x x x
F-37 and CV-549.....	I U R 20 I 80	40 20 80	x x x	x 4 10	x 10 40	x x 10	x 3 1.5	x 10(e) 10(b)	x 15(b) 10(b)	x 4 4	x 4 4	x 2 4	x 4 4	x x 25	x x 25	x x x
Viscount and Argosy.....	I U R 20 I 120	40 20 120	x x 32	x 5 10	x 20 40	x x 15	x 3 1.5	x 10(e) 15(b)	x 6(d) 15(b)	x 4 4	x 4 4	x 2 4	x 4 4	x x 25	x x 12.5	x x x
L-188, CL-44, BAC III, and Caravelle.....	I U R 20 I 120	40 20 120	x x 16	x 5 10	x 20 40	x x 15	x 3 1.5	x 10(e) 20(b)	x 10(d) 20(b)	x 4 4	x 4 4	x 2 4	x 4 4	x x 25	x x 12.5	x x x
B-37, B-720, B-727, DC-8 and CV-880, CV-990.....	I U R 25 I 60	40 20 120	x x 16	x 5 10	x 20 40	x x 10	x 3 1.5	x 10(e) 15(b)	x 15(b) 10(d)	x 4 4	x 4 4	x 2 4	x 4 4	x x 15	x x x	x x x

NOTES

(a) Programmed hours required to satisfy requirements of § 121.441(b)(24) when performed in other than an airplane in flight or an approved airplane simulator.

(b) Programmed hours required to reduce initial flight training by 25 percent as provided in § 121.414(c)(2).

(c) Programmed hours required when PIC proficiency checks required by § 121.441(b) are conducted in accordance with § 121.442.

(d) Programmed hours when 2IC proficiency checks are conducted in accordance with § 121.449(c). Minimum flight engineer recurrent flight training and check time to satisfy requirements of § 121.421(b).

(e) Programmed hours required to satisfy requirements of § 121.424.

[F.R. Doc. 65-5178; Filed, May 17, 1965; 8:45 a.m.]

Title 12—BANKS AND BANKING

Chapter II—Federal Reserve System

SUBCHAPTER A—BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM

[Reg. F]

PART 206—SECURITIES OF MEMBER STATE BANKS

Interpretation of Definition of "Officer"

§ 206.101 Interpretation of definition of "officer".

(a) Section 206.2(o) defines the term "officer" to mean any person who occupies one or more of certain enumerated positions in a member State bank "and any other person who participates in major policy-making functions of the

bank." Among the positions so enumerated is that of "Vice President", but it is also provided that a person bearing the title of "Vice President" who does not "participate in major policy-making functions of the bank" is not an officer for the purposes of this Part 206.

(b) When this Part 206 was adopted, an accompanying description in the FEDERAL REGISTER (30 F.R. 362; January 12, 1965), stated that "an 'officer' of a bank is defined to exclude persons who, regardless of title, do not participate in major policy-making functions." This statement has resulted in some confusion as to the scope of the definition of "officer". In order to clarify the matter, the Board of Governors has made the following interpretation.

(c) All persons holding any position enumerated in § 206.2(o), except those holding a position as "Vice President", are officers for purposes of this Part 206 regardless of whether they participate in major policy-making functions. The second sentence of § 206.2(o), which provides that certain persons are not officers if they do not participate in major policy-making functions, applies only to persons with the title of "Vice President".

(15 U.S.C. 78w; interprets or applies 15 U.S.C. 78l, 78m, 78n, and 78p)

Dated at Washington, D.C., this 10th day of May 1965.

BOARD OF GOVERNORS OF THE
FEDERAL RESERVE SYSTEM,

[SEAL] MERRITT SHERMAN,

Secretary.

[F.R. Doc. 65-5175; Filed, May 17, 1965; 8:45 a.m.]

Title 9—ANIMALS AND ANIMAL PRODUCTS

Chapter III—Consumer and Marketing Service—Meat Inspection, Department of Agriculture

SUBCHAPTER A—MEAT INSPECTION REGULATIONS

PART 318—REINSPECTION AND PREPARATION OF PRODUCTS

Gamma Radiation for Treatment of Product; Redesignation

On April 22, 1965, there was published in the FEDERAL REGISTER (30 F.R. 5702) a document containing an amendment of the Meat Inspection Regulations pursuant to the authority of the Meat Inspection Act, as amended and extended (21 U.S.C. 71-96), and subsections 306 (b) and (c) of the Tariff Act of 1930, as amended (19 U.S.C. 1306 (b) and (c)), which, among other things, adds a new section to such regulations that was designated as § 318.18. Since such designation has been previously assigned to another different regulation, the new regulation set forth at 30 F.R. 5702 designated as § 318.18 is hereby redesignated as § 318.19.

This redesignation is formal in nature and makes no substantive changes, but is necessary in order to avoid duplication in regulation numbering and should be made effective as soon as possible in order to avoid confusion.

Therefore, under section 4 of the Administrative Procedure Act (5 U.S.C. 1003), it is found upon good cause that

notice and other public procedure on this redesignation are unnecessary and impracticable, and good cause is found for making the redesignation effective less than 30 days after publication in the FEDERAL REGISTER.

This redesignation shall become effective upon publication in the FEDERAL REGISTER.

(Sec. 306, 46 Stat. 689, as amended, 19 U.S.C. 1306, 34 Stat. 1264, 21 U.S.C. 89; 29 F.R. 16210, 30 F.R. 1260, 2160)

Done at Washington, D.C., this 12th day of May 1965.

R. K. SOMERS,
Acting Deputy Administrator,
Consumer Protection, Consumer and Marketing Service.

[F.R. Doc. 65-5199; Filed, May 17, 1965; 8:46 a.m.]

Title 21—FOOD AND DRUGS

Chapter I—Food and Drug Administration, Department of Health, Education, and Welfare

SUBCHAPTER B—FOOD AND FOOD PRODUCTS

PART 121—FOOD ADDITIVES

Subpart C—Food Additives Permitted in Feed and Drinking Water of Animals or for the Treatment of Food Producing Animals

AMPROLIUM AND ADDITIONAL SECONDARY INGREDIENTS

The Commissioner of Food and Drugs, having evaluated the data submitted in a petition (FAP 5C1636) filed by Merck, Sharp & Dohme Research Laboratories, Division of Merck & Co., Inc., Rahway, N.J., and other relevant material, has concluded that the food additive regulations should be amended to provide for the safe use, in chicken feed, of amprolium combined with arsenilic acid and penicillin, with or without streptomycin. Therefore, pursuant to the provisions of the Federal Food, Drug, and Cosmetic Act (sec. 409(c)(1), 72 Stat. 1786; 21 U.S.C. 348(c)(1)), and under the authority delegated to the Commissioner by the Secretary of Health, Education, and Welfare (21 CFR 2.90), §§ 121.210 and 121.253 of the food additive regulations are amended as follows:

1. Section 121.210 is amended as follows:

a. Paragraph (c), is amended by adding to table 1 new items 3.2 and 3.3, by changing items 3.1 a and c as indicated, and by deleting present items 3.1 m and n and indicating them as reserved.

b. By adding thereto a new paragraph (e).

As amended, the affected portions read as follows:

§ 121.210 Amprolium.

(c) * * *

TABLE 1—AMPROLIUM IN COMPLETE CHICKEN AND TURKEY FEED

Principal ingredient	Grams per ton	Combined with—	Grams per ton	Limitations	Indications for use
3.1 Amprolium.....	***	***	***	***	***
3.2 Amprolium.....	36.3-113.5 (0.004%— 0.0125%)	Arsenilic acid.....	90 (0.01%)	For replacement chickens; as specified in item 3.1 of this table; not for laying chickens; withdraw 5 days before slaughter.	Development of active immunity to coccidiosis; growth promotion and feed efficiency; improving pigmentation.
3.3 Amprolium.....	36.3-113.5 (0.004%— 0.0125%)	Sodium arsenilate.	90 (0.01%)	For replacement chickens; as specified in item 3.1 of this table; not for laying chickens; withdraw 5 days before slaughter.	Development of active immunity to coccidiosis; growth promotion and feed efficiency; improving pigmentation.
a. 3.1 or 3.2.....	***	***	***	***	***
c. 3.1 or 3.2.....	***	***	***	***	***
m. [Reserved].....	***	***	***	As procaine penicillin plus streptomycin sulfate 14.4-50 gm. of combinations containing 16.7 percent of penicillin.	***
n. [Reserved].....	***	***	***	***	***

(e) Section 121.1022 establishes the limitation for residues of the additive in food for human consumption.

2. Section 121.253 is amended by changing item 1.3a in the table in paragraph (c) and by adding a new paragraph (e) thereto. As amended, the affected portions read as follows:

§ 121.253 Arsenilic acid.

(c) * * *

ARSENILIC ACID IN COMPLETE CHICKEN AND TURKEY FEED

Principal ingredient	Grams per ton	Combined with—	Grams per ton	Limitations	Indications for use
1.3 * * *	***	***	***	***	***
a. 1.1, 1.2, or 1.3..	***	***	***	***	***

(e) Section 121.1138 establishes the limitation for residues of the additive in food for human consumption.

Any person who will be adversely affected by the foregoing order may at any time within 30 days from the date of its publication in the FEDERAL REGISTER file with the Hearing Clerk, Department of Health, Education, and Welfare, Room 5440, 330 Independence Avenue SW., Washington, D.C., 20201, written objections thereto, preferably in quintuplicate. Objections shall show wherein the person filing will be adversely affected by the order and specify with particularity the provisions of the order deemed objectionable and the grounds for the objections.

If a hearing is requested, the objections must state the issues for the hearing. A hearing will be granted if the objections are supported by grounds legally sufficient to justify the relief sought. Objections may be accompanied by a memorandum or brief in support thereof.

Effective date. This order shall be effective on the date of its publication in the FEDERAL REGISTER.

(Sec. 409(c)(1), 72 Stat. 1786; 21 U.S.C. 348(c)(1))

Dated: May 11, 1965.

JOHN L. HARVEY,
Deputy Commissioner
of Food and Drugs.

[F.R. Doc. 65-5204; Filed, May 17, 1965; 8:47 a.m.]

Proposed Rule Making

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Food and Drug Administration

[21 CFR Part 8]

COLOR ADDITIVES

Paprika; Notice of Proposal To List for Food Use and Exempt From Certification¹

Notice is given that the Commissioner of Food and Drugs, on his own initiative, pursuant to the provisions of the Federal Food, Drug, and Cosmetic Act (sec. 706 (b) (1), (c) (2), (d), 74 Stat. 399, 402; 21 U.S.C. 376 (b) (1), (c) (2), (d)), and under the authority delegated to him by the Secretary of Health, Education, and Welfare (25 F.R. 8625), proposes the listing and exemption from certification of the color additive paprika for use in coloring foods. All interested persons are hereby invited to present written views, comments, or objections regarding this proposal, within 30 days from the date of publication of this notice in the FEDERAL REGISTER. Such comments should be submitted, preferably in quintuplicate, to the Hearing Clerk, Department of Health, Education, and Welfare, 330 Independence Avenue SW., Washington 25, D.C.

It is proposed to amend Part 8 by adding to Subpart D the following new section:

§ 8.307 Paprika.

(a) *Identity.* (1) The color additive paprika is the ground dried pod of mild capsicum (*Capsicum annuum* L.). The definition of paprika in this paragraph is for the purpose of identity as a color additive only and shall not be construed as setting forth an official standard for paprika.

(2) Color additive mixtures made with paprika may contain as diluents only those substances listed in this Subpart D as safe and suitable in color additive mixtures for coloring foods.

(b) *Specifications.* Paprika shall conform to the general specifications set forth in § 8.110 for color additives to be used in or on food.

(c) *Uses and restrictions.* Paprika may be safely used for the coloring of foods generally, in amounts consistent with good manufacturing practice, except that it may not be used to color foods for which standards of identity have been promulgated under section 401 of the act, unless the use of added color is authorized by such standards.

(d) *Labeling.* The color additive and any mixtures intended solely or in part

¹ Section 8.110 referred to in this document was published in the FEDERAL REGISTER of Apr. 24, 1965 (30 F.R. 5797), in proposed regulations for general specifications for color additives.

for coloring purposes prepared therefrom shall bear, in addition to the other information required by the act, labeling in accordance with the provisions of § 8.32.

(e) *Exemption from certification.* Certification of this color additive is not necessary for the protection of the public health, and therefore batches thereof are exempt from the certification requirements of section 706(c) of the act.

Dated: May 10, 1965.

JOHN L. HARVEY,
Deputy Commissioner
of Food and Drugs.

[F.R. Doc. 65-5206; Filed, May 17, 1965; 8:47 a.m.]

[21 CFR Part 8]

COLOR ADDITIVES

Paprika Oleoresin; Notice of Proposal To List for Food Use and Exempt From Certification¹

Notice is given that the Commissioner of Food and Drugs, on his own initiative, pursuant to the provisions of the Federal Food, Drug, and Cosmetic Act (sec. 706 (b) (1), (c) (2), (d), 74 Stat. 399, 402; 21 U.S.C. 376 (b) (1), (c) (2), (d)), and under the authority delegated to him by the Secretary of Health, Education, and Welfare (25 F.R. 8625), proposes the listing and exemption from certification of the color additive paprika oleoresin for use in coloring foods. All interested persons are hereby invited to present written views, comments, or objections regarding this proposal within 30 days from the date of publication of this notice in the FEDERAL REGISTER. Such comments should be submitted, preferably in quintuplicate, to the Hearing Clerk, Department of Health, Education, and Welfare, 330 Independence Avenue SW., Washington 25, D.C.

It is proposed to amend Part 8 by adding to Subpart D the following new section:

§ 8.308 Paprika oleoresin.

(a) *Identity.* (1) The color additive paprika oleoresin is the combination of flavor and color principles obtained from paprika (*Capsicum annuum* L.) by extraction, using any one or a combination of the following solvents:

Acetone.
Ethyl alcohol.
Ethylene dichloride.
Hexane.
Isopropyl alcohol.
Methyl alcohol.
Methylene chloride.
Trichloroethylene.

The definition of paprika oleoresin in this paragraph is for the purpose of identity as a color additive only, and shall not be construed as setting forth an official standard for paprika oleoresin under section 401 of the act.

(2) Color additive mixtures made with paprika oleoresin may contain as dilu-

ents only those substances listed in this Subpart D as safe and suitable in color additive mixtures for coloring foods.

(b) *Specifications.* (1) Paprika oleoresin shall conform to the general specifications set forth in § 8.110 for color additives to be used in or on food.

(2) Paprika oleoresin shall contain no more residue of the solvents listed in paragraph (a) (1) of this section than is permitted of the corresponding solvents in spice oleoresins under applicable food additive regulations in Part 121 of this chapter.

(c) *Uses and restrictions.* Paprika oleoresin may be safely used for the coloring of foods generally, in amounts consistent with good manufacturing practice, except that it may not be used to color foods for which standards of identity have been promulgated under section 401 of the act, unless the use of added color is authorized by such standards.

(d) *Labeling.* The color additive and any mixtures intended solely or in part for coloring purposes prepared therefrom shall bear, in addition to the other information required by the act, labeling in accordance with the provisions of § 8.32.

(e) *Exemption from certification.* Certification of this color additive is not necessary for the protection of the public health, and therefore batches thereof are exempt from the certification requirements of section 706(c) of the act.

Dated: May 10, 1965.

JOHN L. HARVEY,
Deputy Commissioner
of Food and Drugs.

[F.R. Doc. 65-5207; Filed, May 17, 1965; 8:47 a.m.]

[21 CFR Part 8]

COLOR ADDITIVES

Turmeric; Notice of Proposal To List for Food Use and Exempt From Certification¹

Notice is given that the Commissioner of Food and Drugs, on his own initiative, pursuant to the provisions of the Federal Food, Drug, and Cosmetic Act (secs. 706 (b) (1), (c) (2), (d), 74 Stat. 399, 402; 21 U.S.C. 376 (b) (1), (c) (2), (d)), and under the authority delegated to him by the Secretary of Health, Education, and Welfare (25 F.R. 8625), proposes the listing and exemption from certification of the color additive turmeric for use in coloring foods. All interested persons are hereby invited to present written views, comments, or objections regarding this proposal within 30 days from the date of publication of this notice in the FEDERAL REGISTER. Such comments should be submitted, preferably in quintuplicate, to the Hearing Clerk, Department of Health, Education, and Welfare,

330 Independence Avenue SW., Washington, D.C., 20201.

It is proposed to amend Part 8 by adding to Subpart D the following new section:

§ 8.309 Turmeric.

(a) *Identity.* (1) The color additive turmeric is the ground rhizome of *Curcuma longa* L. The definition of turmeric in this paragraph is for the purpose of identity as a color additive only, and shall not be construed as setting forth an official standard for turmeric.

(2) Color additive mixtures made with turmeric may contain as diluents only those substances listed in this Subpart D as safe and suitable in color additive mixtures for coloring foods.

(b) *Specifications.* Turmeric shall conform to the general specifications set forth in § 8.110 for color additives to be used in or on foods.

(c) *Uses and restrictions.* Turmeric may be safely used for the coloring of foods generally, in amounts consistent with good manufacturing practice, except that it may not be used to color foods for which standards of identity have been promulgated under section 401 of the act, unless the use of added color is authorized by such standards.

(d) *Labeling.* The color additive and any mixtures intended solely or in part for coloring purposes prepared therefrom shall bear, in addition to the other information required by the act, labeling in accordance with the provisions of § 8.32.

(e) *Exemption from certification.* Certification of this color additive is not necessary for the protection of the public health, and therefore batches thereof are exempt from the certification requirements of section 706(c) of the act.

Dated: May 10, 1965.

JOHN L. HARVEY,
Deputy Commissioner
of Food and Drugs.

[F.R. Doc. 65-5209; Filed, May 17, 1965;
8:47 a.m.]

[21 CFR Part 8]

COLOR ADDITIVES

Turmeric Oleoresin; Notice of Proposal To List for Food Use and Exempt From Certification¹

Notice is given that the Commissioner of Food and Drugs, on his own initiative, pursuant to the provisions of the Federal Food, Drug, and Cosmetic Act (sec. 706 (b) (1), (c) (2), (d), 74 Stat. 399, 402; 21 U.S.C. 376 (b) (1), (c) (2), (d)), and under the authority delegated to him by the Secretary of Health, Education, and Welfare (25 F.R. 8625), proposes the listing and exemption from certification of the color additive turmeric oleoresin for use in coloring foods. All interested persons are hereby invited to present written

¹ Section 8.110 referred to in this document was published in the FEDERAL REGISTER of Apr. 24, 1965 (30 F.R. 5797), in proposed regulations for general specifications for color additives.

views, comments, or objections regarding this proposal within 30 days from the date of publication of this notice in the FEDERAL REGISTER. Such comments should be submitted, preferably in quintuplicate, to the Hearing Clerk, Department of Health, Education, and Welfare, 330 Independence Avenue SW., Washington 25, D.C.

It is proposed to amend Part 8, by adding to Subpart D the following new section:

§ 8.310 Turmeric oleoresin.

(a) *Identity.* (1) The color additive turmeric oleoresin is the combination of flavor and color principles obtained from turmeric (*Curcuma longa* L.) by extraction using any one or a combination of the following solvents:

Acetone.
Ethyl alcohol.
Ethylene dichloride.
Hexane.
Isopropyl alcohol.
Methyl alcohol.
Methylene chloride.
Trichloroethylene.

The definition of turmeric oleoresin in this paragraph is for the purpose of identity as a color additive only, and shall not be construed as setting forth an official standard for turmeric oleoresin under section 401 of the act.

(2) Color additive mixtures made with turmeric oleoresin may contain as diluents only those substances listed in this Subpart D as safe and suitable in color additive mixtures for coloring foods.

(b) *Specifications.* (1) Turmeric oleoresin shall conform to the general specifications set forth in § 8.110 for color additives to be used in or on food.

(2) Turmeric oleoresin shall contain no more residue of the solvents listed under paragraph (a) (1) of this section than is permitted for the corresponding solvents in spice oleoresins under applicable food additive regulations in Part 121 of this chapter.

(c) *Uses and restrictions.* Turmeric oleoresin may be safely used for the coloring of foods generally, in amounts consistent with good manufacturing practice, except that it may not be used to color foods for which standards of identity have been promulgated under section 401 of the act, unless the use of added color is authorized by such standards.

(d) *Labeling.* The color additive and any mixtures intended solely or in part for coloring purposes prepared therefrom shall bear, in addition to the other information required by the act, labeling in accordance with the provisions of § 8.32.

(e) *Exemption from certification.* Certification of this color additive is not necessary for the protection of the public health, and therefore batches thereof are exempt from the certification requirements of section 706(c) of the act.

Dated: May 10, 1965.

JOHN L. HARVEY,
Deputy Commissioner
of Food and Drugs.

[F.R. Doc. 65-5210; Filed, May 17, 1965;
8:47 a.m.]

[21 CFR Part 8]

COLOR ADDITIVES

Saffron; Notice of Proposal To List for Food Use and Exempt From Certification¹

Notice is given that the Commissioner of Food and Drugs, on his own initiative, pursuant to the provisions of the Federal Food, Drug, and Cosmetic Act (sec. 706 (b) (1), (c) (2), (d), 74 Stat. 399, 402; 21 U.S.C. 376 (b) (1), (c) (2), (d)), and under the authority delegated to him by the Secretary of Health, Education, and Welfare (25 F.R. 8625), proposes the listing and exemption from certification of the color additive saffron for use in coloring foods. All interested persons are hereby invited to present written views, comments, or objections regarding this proposal within 30 days from the date of publication of this notice in the FEDERAL REGISTER. Such comments should be submitted, preferably in quintuplicate, to the Hearing Clerk, Department of Health, Education, and Welfare, 330 Independence Avenue SW., Washington 25, D.C.

It is proposed to amend Part 8 by adding to Subpart D the following new section:

§ 8.311 Saffron.

(a) *Identity.* (1) The color additive saffron is the dried stigma of *Crocus sativus* L. The definition of saffron in this paragraph is for the purpose of identity as a color additive only, and shall not be construed as setting forth an official standard for saffron.

(2) Color additive mixtures made with saffron may contain as diluents only those substances listed in this Subpart D as safe and suitable in color additive mixtures for coloring foods.

(b) *Specifications.* Saffron shall conform to the general specifications set forth in § 8.110 for color additives to be used in or on food.

(c) *Uses and restrictions.* Saffron may be safely used for the coloring of foods generally, in amounts consistent with good manufacturing practice, except that it may not be used to color foods for which standards of identity have been promulgated under section 401 of the act, unless the use of added color is authorized by such standards.

(d) *Labeling.* The color additive and any mixtures intended solely or in part for coloring purposes prepared therefrom shall bear, in addition to the other information required by the act, labeling in accordance with the provisions of § 8.32.

(e) *Exemption from certification.* Certification of this color additive is not necessary for the protection of the public health, and therefore batches thereof are exempt from the certification requirements of section 706(c) of the act.

Dated: May 10, 1965.

JOHN L. HARVEY,
Deputy Commissioner
of Food and Drugs.

[F.R. Doc. 65-5208; Filed, May 17, 1965;
8:47 a.m.]

[21 CFR Part 8]

COLOR ADDITIVES

Fruit Juice; Notice of Proposal To List for Food Use and Exempt From Certification¹

Notice is given that the Commissioner of Food and Drugs, on his own initiative, pursuant to the provisions of the Federal Food, Drug, and Cosmetic Act (sec. 706 (b) (1), (c) (2), (d), 74 Stat. 399, 402; 21 U.S.C. 376 (b) (1), (c) (2), (d)), and under the authority delegated to him by the Secretary of Health, Education, and Welfare (25 F.R. 8625), proposes the listing and exemption from certification of the color additive fruit juice for use in coloring foods. All interested persons are hereby invited to present written views, comments, or objections regarding this proposal, within 30 days from the date of publication of this notice in the FEDERAL REGISTER. Such comments should be submitted, preferably in quintuplicate, to the Hearing Clerk, Department of Health, Education, and Welfare, 330 Independence Avenue SW., Washington 25, D.C.

It is proposed to amend Part 8 by adding to Subpart D the following new section:

§ 8.313 Fruit juice.

(a) *Identity.* (1) The color additive fruit juice is the concentrated or unconcentrated liquid expressed from mature varieties of fresh, edible fruits, or is a water infusion of the dried fruit. The definition of fruit juice in this paragraph is for the purpose of identity as a color additive only and shall not be construed as a standard of identity under section 401 of the act. However, where a standard of identity for a particular fruit juice has been promulgated under section 401 of the act, it shall conform to such standard.

(2) Color additive mixtures made with fruit juice may contain as diluents only those substances listed in this Subpart D as safe and suitable in color additive mixtures for coloring foods.

(b) *Specifications.* Fruit juice shall conform to the general specifications set forth in § 8.110 for color additives to be used in or on food.

(c) *Uses and restrictions.* Fruit juice may be safely used for the coloring of foods generally, in amounts consistent with good manufacturing practice, except that it may not be used to color foods for which standards of identity have been promulgated under section 401 of the act, unless the use of added color is authorized by such standards.

(d) *Labeling.* The color additive and any mixtures intended solely or in part for coloring purposes prepared therefrom shall bear, in addition to the other information required by the act, labeling in accordance with the provisions of § 8.32.

(e) *Exemption from certification.* Certification of this color additive is not

necessary for the protection of the public health, and therefore batches thereof are exempt from the certification requirements of section 706(c) of the act.

Dated: May 10, 1965.

JOHN L. HARVEY,
Deputy Commissioner
of Food and Drugs.

[F.R. Doc. 65-5205; Filed, May 17, 1965;
8:47 a.m.]

[21 CFR Part 8]

COLOR ADDITIVES

Vegetable Juice; Notice of Proposal To List for Food Use and Exempt From Certification¹

Notice is given that the Commissioner of Food and Drugs, on his own initiative, pursuant to the provisions of the Federal Food, Drug, and Cosmetic Act (sec. 706 (b) (1), (c) (2), (d), 74 Stat. 399, 402; 21 U.S.C. 376 (b) (1), (c) (2), (d)), and under the authority delegated to him by the Secretary of Health, Education, and Welfare (25 F.R. 8625), proposes the listing and exemption from certification of the color additive vegetable juice for use in coloring foods. All interested persons are hereby invited to present written views, comments, or objections regarding this proposal within 30 days from the date of publication of this notice in the FEDERAL REGISTER. Such comments should be submitted, preferably in quintuplicate, to the Hearing Clerk, Department of Health, Education, and Welfare, 330 Independence Avenue SW., Washington 25, D.C.

It is proposed to amend Part 8 by adding to Subpart D the following new section:

§ 8.314 Vegetable juice.

(a) *Identity.* (1) The color additive vegetable juice is the concentrated or unconcentrated liquid expressed from mature varieties of fresh, edible vegetables. The definition of vegetable juice in this paragraph is for the purpose of identity as a color additive only, and shall not be construed as a standard of identity under section 401 of the act. However, where a standard of identity for a particular vegetable juice has been promulgated under section 401 of the act, it shall conform to such standard.

(2) Color additive mixtures made with vegetable juice may contain as diluents only those substances listed in this Subpart D as safe and suitable in color additive mixtures for coloring foods.

(b) *Specifications.* Vegetable juice shall conform to the general specifications set forth in § 8.110 for color additives to be used in or on food.

(c) *Uses and restrictions.* Vegetable juice may be safely used for the coloring of foods generally, in amounts consistent with good manufacturing practice, except that it may not be used to color foods for which standards of identity have been promulgated under section 401 of the act, unless the use of added color is authorized by such standards.

(d) *Labeling.* The color additive and any mixtures intended solely or in part for coloring purposes prepared therefrom

shall bear, in addition to the other information required by the act, labeling in accordance with the provisions of § 8.32.

(e) *Exemption from certification.* Certification of this color additive is not necessary for the protection of the public health, and therefore batches thereof are exempt from the certification requirements of section 706(c) of the act.

Dated: May 10, 1965.

JOHN L. HARVEY,
Deputy Commissioner
of Food and Drugs.

[F.R. Doc. 65-5211; Filed, May 17, 1965;
8:47 a.m.]

FEDERAL AVIATION AGENCY

[14 CFR Part 71]

[Airspace Docket No. 65-EA-26]

FEDERAL AIRWAYS

Proposed Alterations and Designation

The Federal Aviation Agency is considering amendments to Part 71 of the Federal Aviation Regulations that would alter segments of VOR Federal airways Nos. 20, 143, 156, 157, 222, 258 and designate a VOR Federal airway from Moorefield, W. Va., to Nottingham, Md.

Interested persons may participate in the proposed rule making by submitting such written data, views, or arguments as they may desire. Communications should identify the airspace docket number and be submitted in triplicate to the Director, Eastern Region, Attention: Chief, Air Traffic Division, Federal Aviation Agency, Federal Building, John F. Kennedy International Airport, Jamaica, N.Y., 11430. All communications received within 45 days after publication of this notice in the FEDERAL REGISTER will be considered before action is taken on the proposed amendments. The proposals contained in this notice may be changed in the light of comments received.

An official docket will be available for examination by interested persons at the Federal Aviation Agency, Office of the General Counsel, Attention: Rules Docket, 800 Independence Avenue SW., Washington, D.C., 20553. An informal docket also will be available for examination at the office of the Regional Air Traffic Division Chief.

The Federal Aviation Agency is considering the airspace actions hereinafter set forth.

1. The V-20 north alternate segment from South Boston, Va., via Flat Rock, Va., to Richmond, Va., would be revoked. The latest FAA peak day airway traffic survey shows a maximum of four aircraft movements on this north alternate segment of V-20. Therefore, retention of this airway segment is unjustified as a continued assignment of airspace.

2. The V-143 segment from Montebello, Va., to Nottingham, Md., would be revoked. The latest FAA IFR peak day traffic survey shows a maximum of two aircraft movements for the segment of V-143 between Montebello and Casanova. Therefore, retention of this air-

¹ Section 8.110 referred to in this document was published in the FEDERAL REGISTER of Apr. 24, 1965 (30 F.R. 5797), in proposed regulations for general specifications for color additives.

way segment is unjustified as a continued assignment of airspace. The segment of V-143 between Casanova and Nottingham would be replaced by the segment of V-308 between Moorefield, W. Va., and Nottingham, as proposed herein.

3. The V-156 north alternate segment from Elkins, W. Va., to Gordonsville, Va., would be revoked. The latest FAA IFR peak day airway traffic survey shows no aircraft movements on this portion of the segment of V-156N between Elkins and Kessel, W. Va.; five aircraft movements between Kessel and the intersection of VOR Federal airway No. 174; three aircraft movements between V-174 and the Luray, Va., Intersection; four aircraft movements between Luray Intersection and the intersection of VOR Federal airway No. 140; two aircraft movements between V-140 and Gordonsville. The portion of V-156N between Elkins and Kessel is a common segment with VOR Federal airway No. 4 between these points. Accordingly, retention of this segment of V-156N is unjustified as a continued assignment of airspace.

4. The V-157 west alternate segment from Richmond, Va., to Washington, D.C., would be revoked. The latest FAA IFR peak day airway traffic survey shows a maximum of six aircraft movements on this west alternate segment of V-157. This proposed revocation would not derogate service since en route traffic would be processed by the main airway segment between these two terminals. Therefore, retention of this west alternate airway segment is unjustified as a continued assignment of airspace.

5. The V-222 segment from Gordonsville to the intersection of the Gordonsville 076° and the Brooke, Va., 132° True radials (Grubbs Intersection) would be revoked. The latest IFR peak day airway traffic survey shows only one aircraft movement on V-222 between Gordonsville and the Grubbs Intersection. Therefore, retention of this airway segment is unjustified as a continued assignment of airspace.

6. The V-258 segment from Beckley, W. Va., to Roanoke, Va., would be realigned via the intersection of the Beckley 125° and the Roanoke 288° True radials. This realignment would provide for a common intersection at the centerlines of VOR Federal airway Nos. 37, 140 and 258 and would reduce the en route mileage on this segment of V-258 between Beckley and Roanoke.

7. VOR Federal airway No. 308 would be designated from the intersection of the Linden, Va., 273° and the Casanova 284° True radials (Moorefield, W. Va., Intersection), via Casanova; intersection of the Casanova 076° and the Nottingham 271° True radials; to Nottingham. This proposed airway would provide a departure route for aircraft westbound from the Washington Metropolitan Area. The segment of this proposed airway between Casanova and Nottingham would provide a replacement for the segment of V-143 proposed herein for revocation.

The above proposed airspace actions are designed to improve the airway route structure within the Washington Air Route Traffic Control Center Flight Advisory Area by eliminating multiple air-

way numbers, little used airway segments, and by providing a common intersection at a multiple airway crossing point.

These amendments are proposed under section 307(a) of the Federal Aviation Act of 1958 (49 U.S.C. 1348).

Issued in Washington, D.C., on May 11, 1965.

H. B. HELSTROM,
Acting Chief, Airspace Regulations
and Procedures Division.

[F.R. Doc. 65-5179; Filed, May 17, 1965;
8:45 a.m.]

[14 CFR Part 71]

[Airspace Docket No. 65-SW-18]

TRANSITION AREA

Proposed Alteration

The Federal Aviation Agency is considering an amendment to Part 71 of the Federal Aviation Regulations which would alter the controlled airspace in the Stillwater, Okla., terminal area.

The following controlled airspace is presently designated in this area:

1. The Stillwater, Okla., transition area is designated as that airspace extending upward from 700 feet above the surface within a 5-mile radius of Searcy Field, Stillwater, Okla., (latitude 36°09'30" N., longitude 97°05'05" W.), and within 5 miles E and 8 miles W of the 359° bearing from the airport, extending from the airport to 12 miles N.

2. The Oklahoma City, Okla., transition area, effective 0001 e.s.t., May 27, 1965, is designated as that airspace extending upward from 1,200 feet above the surface within a 57-mile radius of latitude 35°25'50" N., longitude 97°35'10" W., within 6 miles SE and 9 miles NW of the Oklahoma City VORTAC 242° radial, extending from the 57-mile radius area to 52 miles SW of the VORTAC, within 6 miles S and 9 miles N of the Oklahoma City VORTAC 282° radial, extending from the 57-mile radius area to 62 miles W of the VORTAC, and within the area bounded on the E by longitude 96°54'00" W., and on the W by longitude 97°18'20" W., extending N from the 57-mile radius area to latitude 36°26'00" N., excluding the portion N of a line extending from latitude 35°54'00" N., longitude 98°25'00" W., to latitude 35°48'00" N., longitude 98°18'00" W., to latitude 36°03'00" N., longitude 97°23'30" W., to latitude 36°13'25" N., longitude 97°18'20" W.

The Federal Aviation Agency proposes to alter the Stillwater transition area as follows: Redesignate the Stillwater transition area as that airspace extending upward from 700 feet above the surface within a 6-mile radius of Searcy Field, Stillwater, Okla., (latitude 36°09'30" N., longitude 97°05'05" W.); and within 2 miles each side of the Stillwater VOR 005° radial, extending from the 6-mile radius area to 8 miles N of the VOR; and that airspace extending upward from 1,200 feet above the surface within an area bounded on the W by the E boundary of V-77E; on the E by the SW boundary of V-74S; and on the S by latitude 36°26'00" N., extending the portion

within the Ponca City, Okla., transition area.

The proposed alteration described herein is required to provide protection for a new instrument approach procedure, and its associated transitions predicated on the Stillwater VOR which is scheduled to be commissioned on or about June 24, 1965, and to delete the portion of the existing 700-foot floor area required for ADF Special Procedure No. 1 which will be cancelled concurrent with the commissioning date of the VOR.

Interested persons may submit such written data, views or arguments as they may desire. Communications should be submitted in triplicate to the Chief, Air Traffic Division, Southwest Region, Federal Aviation Agency, Post Office Box 1689, Fort Worth, Tex., 76101. All communications received within 45 days after publication of this notice in the FEDERAL REGISTER will be considered before action is taken on the proposed amendment. No public hearing is contemplated at this time, but arrangements for informal conferences with Federal Aviation Agency officials may be made by contacting the Chief, Air Traffic Division. Any data, views or arguments presented during such conferences must also be submitted in writing in accordance with this notice in order to become part of the record for consideration. The proposal contained in this notice may be changed in the light of comments received.

The official Docket will be available for examination by interested persons at the Office of the Regional Counsel, Southwest Region, Federal Aviation Agency, Fort Worth, Tex. An informal Docket will also be available for examination at the Office of the Chief, Air Traffic Division.

This amendment is proposed under the authority of section 307(a) of the Federal Aviation Act of 1958 (49 U.S.C. 1348).

Issued in Fort Worth, Tex., on May 10, 1965.

A. L. COULTER,
Acting Director,
Southwest Region.

[F.R. Doc. 65-5180; Filed, May 17, 1965;
8:45 a.m.]

[14 CFR Parts 71, 73]

[Airspace Docket No. 65-WE-23]

TRANSITION AREA AND RESTRICTED AREA

Proposed Alteration and Designation

The Federal Aviation Agency is considering amendments to Parts 71 and 73 of the Federal Aviation Regulations that would designate the Yuma West, Ariz., restricted area, and that would delete references to restricted areas R-2301 and R-2307 from the Yuma transition area.

Interested persons may participate in the proposed rule making by submitting such written data, views, or arguments as they may desire. Communications should identify the airspace docket number and be submitted in triplicate to the Director, Western Region, Attention:

Chief, Air Traffic Division, Federal Aviation Agency, 5651 West Manchester Avenue, Post Office Box 90007, Airport Station, Los Angeles, Calif., 90009. All communications received within 45 days after publication of this notice in the FEDERAL REGISTER will be considered before action is taken on the proposed amendments. The proposals contained in this notice may be changed in the light of comments received.

An official docket will be available for examination by interested persons at the Federal Aviation Agency, Office of the General Counsel, Attention: Rules Docket, 800 Independence Avenue SW., Washington, D.C., 20553. An informal docket also will be available for examination at the office of the Regional Air Traffic Division Chief.

If the above proposals are adopted, the Yuma West, Ariz., restricted area would be designated as follows:

Boundaries. Beginning at latitude 33°00'00" N., longitude 114°30'00" W.; to latitude 33°02'48" N., longitude 114°30'00" W.; to latitude 33°02'48" N., longitude 114°34'00" W.; to latitude 33°15'00" N., longitude 114°34'37" W.; to latitude 33°15'00" N., longitude 114°30'00" W.; to latitude 33°26'00" N., longitude 114°30'00" W.; to latitude 33°28'00" N., longitude 114°28'00" W.; to latitude 33°28'00" N., longitude 114°13'00" W.; thence S along State Highway 95 to latitude

33°00'00" N., longitude 114°17'20" W.; to the point of beginning.

Altitudes. Surface to FL 240.

Time of use. Continuous.

Using agency. Commanding Officer, Yuma Proving Ground.

Controlling agency. Los Angeles Air Route Traffic Center.

The boundary area, described above, would be divided by a line at latitude 33°15'00" N. The portions south of the division would be identified as Yuma West "A" with the N portion identified as Yuma West "B". The Army has stated that joint use of the airspace is acceptable and anticipates there will be frequent times when both the proposed Yuma West "A" and Yuma West "B" will not be used simultaneously due to the variance in the programs to be conducted in each area. Division into two areas will permit a greater release of the unused portion of the airspace to the FAA.

The U.S. Army has stated that the proposed area is needed to provide the U.S. Army Materiel Command with the necessary area for priority test activities conducted by the Test and Evaluation Command. The activities include research and development, engineering acceptance and service testing programs. The programs involve activities such as firing of aircraft armament systems; a multiple use moving target range for

weapons testing of both ground-to-ground and air-to-ground systems; accuracy and armor plate tests of munitions and weapons; blast tests for vulnerability evaluation of test items and explosives; and air-to-ground delivery of missiles. The Army stated that all of these activities are new commitments to the Yuma Proving Ground and cannot be conducted in the present restricted airspace because of range limitations and activity saturation.

The proposed Yuma West area would extend into a portion of the Yuma transition area. Since the proposed restricted area would be joint use, it would not be excepted from the description of the Yuma transition area. Restricted Areas R-2301 and R-2307 are also joint use, and present references to them in the transition area description would be deleted to provide charting uniformity.

These amendments are proposed under section 307(a) of the Federal Aviation Act of 1958 (49 U.S.C. 1348).

Issued in Washington, D.C., on May 11, 1965.

DANIEL E. BARROW,
Chief, Airspace Regulations
and Procedures Division.

[F.R. Doc. 65-5181; Filed, May 17, 1965; 8:45 a.m.]

Notices

DEPARTMENT OF THE TREASURY

Coast Guard

[CGFR 65-23]

JAMES RIVER

Notice of Closure of Navigation During Launching of "George C. Marshall"

By virtue of the authority vested in me as Commandant, United States Coast Guard, by Treasury Department Order 120 dated July 31, 1950 (15 F.R. 6521), and Executive Order 10173, as amended by Executive Orders 10277 and 10352, I hereby affirm for publication in the FEDERAL REGISTER the order of O. C. Rohnke, Rear Admiral, United States Coast Guard, Commander, Fifth Coast Guard District, who has exercised authority as District Commander, such order reading as follows:

SPECIAL NOTICE JAMES RIVER

Under the authority of Title II of the Espionage Act of June 15, 1917 (40 Stat. 220), as amended, and Executive Order 10173, as amended, I declare that from 11 a.m., e.s.t., until 1:30 p.m., e.s.t., on Friday, 21 May 1965, the following area is a prohibited area and I order that it be closed to any person or vessel due to the launching of "George C. Marshall" (SSB(N) 654):

The water of the James River, Norfolk-Newport News Harbor, Virginia, within the coordinates of Latitude 36 degrees 59 minutes 34 seconds North, Longitude 76 degrees 26 minutes 53 seconds West at the shoreline of Newport News, thence southwesterly 500 yards to Latitude 36 degrees 59 minutes 27 seconds North, Longitude 76 degrees 27 minutes 10 seconds West, thence southeasterly to Latitude 36 degrees 58 minutes 43 seconds North, Longitude 76 degrees 26 minutes 41 seconds West, thence easterly to Newport News Shipbuilding Company Pier 8 Light (USCG Light List No. 2786.5).

No person or vessel may remain in or enter this prohibited area.

The Captain of the Port, Norfolk-Newport News Area, Va., shall enforce this order.

The Captain of the Port may be assisted by employees and facilities of any State or political subdivision, thereof or any Federal Agency.

For violation of this order Title II of the Espionage Act of June 15, 1917 (40 Stat. 220), as amended, provides:

"If any owner, agent, master, officer, or person in charge, or any member of the crew of any such vessel fails to comply with any regulation or rule issued or order given under the provisions of this title, or obstructs or interferes with the exercise of any power conferred by this title, the vessel, together with her tackle, apparel, furniture, and equipment, shall be subject to seizure and forfeiture to the United States in the same manner as merchandise is forfeited for violation of the customs revenue laws; and the person guilty of such failure, obstruction, or interference shall be fined not more than \$10,000 or imprisoned not more than two years, or both.

"If any other person knowingly fails to comply with any regulation or rule issued or order given under the provisions of this title, or knowingly obstructs or interferes with the exercise of any power conferred by this title, he shall be punished by imprisonment

for not more than ten years and may, at the discretion of the court, be fined not more than \$10,000."

Dated: May 7, 1965.

[SEAL] W. D. SHIELDS,
Vice Admiral, U.S. Coast Guard,
Acting Commandant.

[P.R. Doc. 65-5214; Filed, May 17, 1965;
8:47 a.m.]

POST OFFICE DEPARTMENT

POSTMASTERS AND ASSISTANT POSTMASTERS

Delegation of Authority To Administer Oaths of Office to Job Corps Enrollees

The following delegation of authority is made in Organization and Administration Transmittal Letter 108 dated May 17, 1965 signed by the Deputy Postmaster General:

Postmasters and assistant postmasters are authorized, when requested, to administer oaths of office to prospective Job Corps enrollees. No payment shall be accepted for administering the oath.

NOTE: The corresponding Postal Manual section is 844.21c.

(R.S. 161, as amended; 5 U.S.C. 16a, 22; 39 U.S.C. 309, 501)

LOUIS J. DOYLE,
General Counsel.

[P.R. Doc. 65-5203; Filed, May 17, 1965;
8:46 a.m.]

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

ARIZONA

Notice of Termination of Proposed Withdrawal and Reservation of Lands

Notice of an application, Serial No. Arizona 010780, for withdrawal and reservation of lands was published as Federal Register Document No. 62-10134 on page 10,002 of the issue for October 11, 1962. The applicant agency has canceled its application insofar as it involved the lands described below. Therefore, pursuant to the regulations in 43 CFR Part 2311, such lands will be at 10:00 a.m. on June 9, 1965, relieved of the segregative effect of the above mentioned application.

The lands involved in this notice of termination are:

GILA AND SALT RIVER BASE MERIDIAN, ARIZ.

T. 11 S., R. 15 E., UNSURVEYED.
In secs. 26 and 35.

FRED J. WEILER,
State Director.

MAY 10, 1965.

[P.R. Doc. 65-5202; Filed, May 17, 1965;
8:46 a.m.]

National Park Service

[Order 2]

SUPERINTENDENTS AND CERTAIN OTHER OFFICIALS

Delegation of Authority Regarding Administration, Operation and Development of National Capital Parks

SECTION 1. The National Park Service Superintendents in the National Capital Region whose positions are allocated to Civil Service Grade GS-14 and above, in the administration, operation and development of the areas under their supervision, are authorized to exercise all of the authority now or hereafter delegated to the Regional Director by the Director, except with respect to the following matters:

(a) Appointments and status changes involving personnel in grade GS-14 and higher grades; however, appointments and status changes involving grade GS-13 must be submitted to the National Capital Regional Office for review before being finalized.

(b) Classification of positions in any Civil Service or supervisory wage board grades.

(c) Establishment of permanent graded or ungraded positions.

(d) Establishment of wage rates.

(e) Acceptance of an offer in settlement of a timber trespass unless (1) the trespass is an innocent one, (2) the damages therefrom do not exceed \$500, and (3) payment of the full amount of the damages is offered.

(f) Approval of preliminary construction plans and working drawings not preceded by a preliminary drawing, not requiring approval by the Director, and preliminary and final concessioners' drawings.

(g) Approval of regularly scheduled overtime in excess of thirty days.

(h) Authority with respect to the preservation of historical and archeological data (including relics and specimens) which might otherwise be lost as the result of the construction of a dam.

(i) Acceptance of donations of personal property valued in excess of \$5,000, and acceptance of donations of money in excess of \$5,000.

(j) Sales of timber pursuant to section 3 of the Act of August 25, 1916 (39 Stat. 535; 16 U.S.C. 1952 ed., sec. 3).

(k) Acceptance of donations of lands and water rights, exchanges of lands and water rights, and purchase of lands and water rights.

(l) Disposition of lands or interests therein.

SEC. 2. The superintendents whose positions are allocated to Civil Service grades GS-13, GS-12, and GS-11, inclusive, in the administration, operation and development of the areas under their supervision, are authorized to exercise all of the authority now or hereafter

delegated to the Regional Director by the Director, except with respect to the following matters:

(a) Appointments and status changes involving personnel in the same Civil Service grade as, or higher grades than, the Superintendent making appointments or status changes.

(b) Classification of positions in any Civil Service or supervisory wage board grades.

(c) Establishment of permanent graded or ungraded positions.

(d) Establishment of wage rates.

(e) Approval of contracts for construction, supplies, or services in excess of \$50,000.

(f) Acceptance of an offer in settlement of a timber trespass unless (1) the trespass is an innocent one, (2) the damages therefrom do not exceed \$500, and (3) payment of the full amount of the damages is offered.

(g) Approval of preliminary construction plans and working drawings not preceded by a preliminary drawing, not requiring approval by the Director, and preliminary and final concessioners' drawings.

(h) Approval of regularly scheduled overtime in excess of thirty days.

(i) Authority with respect to the preservation of historical and archeological data (including relics and specimens) which might otherwise be lost as the result of the construction of a dam.

(j) Issuance of revocable special use permits having a term of more than three years.

(k) Acceptance of donations of personal property valued in excess of \$5,000, and acceptance of donations of money in excess of \$5,000.

(l) Sales of timber pursuant to section 3 of the Act of August 25, 1916 (39 Stat. 535; 16 U.S.C. 1952 ed., sec. 3).

(m) Acceptance of donations of lands and water rights, exchanges of lands and water rights, and purchase of lands and water rights.

(n) Disposition of lands or interests therein.

SEC. 3. Associate Regional Director and Assistant Regional Directors. The Associate Regional Director and Assistant Regional Directors may exercise all the authority of the Regional Director with respect to any matter which may come before them.

SEC. 4. Associate Regional Director and Assistant Regional Director (Administration). The Associate Regional Director and the Assistant Regional Director (Administration) may execute and approve contracts not in excess of \$200,000 for construction, supplies, equipment and services. This authority may be exercised by these officers in behalf of any area or office for which the National Capital Regional Office serves as the field finance office, except the National Capital Office, Design and Construction.

SEC. 5. Regional Chief, Division of Property Management and General Services and Regional Procurement Officer.

The Regional Chief, Division of Property Management and General Services, may execute, administer and approve contracts not in excess of \$200,000 for construction, supplies, equipment and services. The Regional Procurement Officer may execute and approve contracts not in excess of \$50,000 for supplies, equipment and services. This authority may be exercised by these officers on behalf of any office or area for which the National Capital Regional Office serves as the field finance office, except the National Capital Office, Design and Construction.

SEC. 6. Redelegation. The Superintendents may, in writing, redelegate to any officer or employee the authority delegated to them by this order. Each redelegation shall be published in the FEDERAL REGISTER.

SEC. 7. Appeal. Except in matters relating to contracts for construction, supplies, equipment, or services, any party aggrieved by any action or decision of any Superintendent or any of the officers mentioned herein shall have the right of appeal to the Regional Director. Any such appeal shall be in writing and shall be submitted to the Regional Director within thirty days after receipt by the aggrieved party of notice of the action taken or decision made by the Superintendent or other officer.

SEC. 8. Revocation. This order superseded National Capital Region Order No. 1 (28 F.R. 1811) as amended.

(National Park Service Order No. 14 (19 F.R. 8824), as amended; 39 Stat. 535, 16 U.S.C., sec. 2; National Capital Region Order No. 1 (28 F.R. 1811))

Dated: April 7, 1965.

T. SUTTON JETT,
Regional Director,
National Capital Region.

[F.R. Doc. 65-5200; Filed, May 17, 1965;
8:46 a.m.]

[Order 1, Amdt. 1]

SAN JUAN NATIONAL HISTORIC SITE; CONSTRUCTION AND MAINTENANCE REPRESENTATIVE

Delegation of Authority Regarding Execution of Contracts for Supplies, Equipment or Services

2. Construction and Maintenance Representative. The Construction and Maintenance Representative may issue purchase orders not in excess of \$500 for supplies or equipment in conformity with applicable regulations and statutory authority and subject to availability of appropriations.

(National Park Service Order No. 14 (19 F.R. 8824), as amended; 39 Stat. 535, 16 U.S.C., sec. 2; Southeast Region Order No. 3 (21 F.R. 1493))

JULIO MARRERO-NUÑEZ,
Superintendent,
San Juan National Historic Site.

APRIL 15, 1965.

[F.R. Doc. 65-5201; Filed, May 17, 1965;
8:46 a.m.]

Office of the Secretary

[Order 2885, Amdt. 1]

JOB CORPS CONSERVATION CENTER COORDINATION

Approvals

Section 4 of Secretary's Order 2885, dated January 7, 1965, published in the FEDERAL REGISTER January 13, 1965 (30 F.R. 450), is amended to read:

Sec. 4. Approvals. Appointments to the positions of bureau conservation center officers, center directors and deputy center directors for work program are made by the head of the bureau concerned with the concurrence of the Job Corps Conservation Center Coordinator. The Secretary will approve budget requests for the program, center sites, activation schedules, and basic working agreements with the Office of Economic Opportunity and other Federal agencies involved in the program. All matters that are to be approved by the Secretary shall be routed through the Interior Job Corps Conservation Center Coordinator and the Director, Resources Program Staff, before referral to the Secretary.

STEWART L. UDALL,
Secretary of the Interior.

MAY 11, 1965.

[F.R. Doc. 65-5190; Filed, May 17, 1965;
8:46 a.m.]

RALPH F. BOVIER

Statement of Changes in Financial Interests

In accordance with the requirements of section 710(b)(6) of the Defense Production Act of 1950, as amended, and Executive Order 10647 of November 28, 1955, the following changes have taken place in my financial interests during the past 6 months:

- (1) No change.
- (2) No change.
- (3) No change.
- (4) No change.

This statement is made as of April 29, 1965.

Dated: April 29, 1965.

R. F. BOVIER.

[F.R. Doc. 65-5191; Filed, May 17, 1965;
8:46 a.m.]

LEMORE W. CLARK

Statement of Changes in Financial Interests

In accordance with the requirements of section 710(b)(6) of the Defense Production Act of 1950, as amended, and Executive Order 10647 of November 28, 1955, the following changes have taken place in my financial interests during the past 6 months:

- (1) No change.
- (2) A. Deletions: None. B. Additions: Great A. & P. Tea, Florida Gas Company.
- (3) No change.
- (4) No change.

This statement is made as of May 3, 1965.

Dated: May 3, 1965.

L. W. CLARK.

[F.R. Doc. 65-5192; Filed, May 17, 1965; 8:46 a.m.]

MARVIN F. PERSONS

Statement of Changes in Financial Interests

In accordance with the requirements of section 710(b) (6) of the Defense Production Act of 1950, as amended, and Executive Order 10647 of November 28, 1955, the following changes have taken place in my financial interests during the past 6 months:

- (1) No change.
- (2) No change.
- (3) No change.
- (4) No change.

This statement is made as of April 29, 1965.

Dated: April 29, 1965.

M. F. PERSONS.

[F.R. Doc. 65-5193; Filed, May 17, 1965; 8:46 a.m.]

GEORGE L. WILKINS

Statement of Changes in Financial Interests

In accordance with the requirements of section 710(b) (6) of the Defense Production Act of 1950, as amended, and Executive Order 10647 of November 28, 1955, the following changes have taken place in my financial interests during the past 6 months:

- (1) No change.
- (2) No change.
- (3) No change.
- (4) No change.

This statement is made as of May 3, 1965.

Dated: May 3, 1965.

GEO. L. WILKINS.

[F.R. Doc. 65-5194; Filed, May 17, 1965; 8:46 a.m.]

DEPARTMENT OF AGRICULTURE

Office of the Secretary

TOBACCO INSPECTION AND PRICE SUPPORT SERVICES

Notice of Public Hearings Regarding Applications for Additional Sale at Danville, Va., and a Proposed New Market at Yadkinville, N.C.

Notice is hereby given of public hearings to be held upon the following applications for tobacco inspection and price support services. The date, time, and place of hearing for each application is as follows:

The hearing upon the application of W. N. Terry, Jr., President, and Charles K. Waddell, Secretary-Treasurer, of The Danville Tobacco Association, Inc., 402

Masonic Temple, Danville, Va., for tobacco inspection and price support services for an additional sale on the Danville tobacco market will be held in the Courtroom, U.S. Post Office and Courthouse Building, 700 Main Street, Danville, Va., beginning at 9:30 a.m., e.s.t., on May 24, 1965.

The hearing upon the application of J. A. Miller, J. A. Miller, Jr., and David Lee Miller, of Route 2, Yadkinville, N.C., for tobacco inspection and price support services for a new market at Yadkinville, N.C., will be held in the auditorium, County Agricultural Building, 537 Spruce Street, Winston-Salem, N.C., beginning at 1 p.m., e.s.t., on May 25, 1965.

The aforesaid public hearings will be conducted and evidence received pursuant to the concurrent and identical policy statements and regulations governing the extension of tobacco inspection and price support services to new markets and to additional sales on designated markets (7 CFR Part 29, Subpart A).

Done at Washington, D.C., this 13th day of May 1965.

GEORGE L. MEHREN,
Assistant Secretary.

[F.R. Doc. 65-5223; Filed, May 17, 1965; 8:48 a.m.]

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Food and Drug Administration

DEARBORN CHEMICAL CO.

Notice of Filing of Petition for Food Additive Sodium Polyacrylate

Pursuant to the provisions of the Federal Food, Drug, and Cosmetic Act (sec. 409(b) (5), 72 Stat. 1786; 21 U.S.C. 348 (b) (5)), notice is given that a petition (FAP 5A1535) has been filed by Dearborn Chemical Co., Post Office Box 337, Lake Zurich, Ill., 60047, proposing an amendment to § 121.1088 of the food additive regulations to provide for the safe use of sodium polyacrylate as a boiler water additive.

Dated: May 10, 1965.

MALCOLM R. STEPHENS,
Assistant Commissioner
for Regulations.

[F.R. Doc. 65-5212; Filed, May 17, 1965; 8:47 a.m.]

CIVIL AERONAUTICS BOARD

ENGEL BROTHERS, INC., ET AL.

Notice of Proposed Approval

Application of Engel Brothers, Inc., et al., for approval of control and interlocking relationships under sections 408 and 409 of the Federal Aviation Act of 1958, as amended, Docket 15970.

Notice is hereby given, pursuant to the statutory requirements of section 408(b) that the undersigned intends to issue the

attached order under delegated authority. Interested persons are hereby afforded a period of fifteen days from the date of service within which to file comments or request a hearing with respect to the action proposed in the order.

Dated at Washington, D.C., May 13, 1965.

[SEAL]

J. W. ROSENTHAL,
Chief, Routes and Agreements
Division, Bureau of Economic
Regulation.

ORDER APPROVING CONTROL AND INTERLOCKING RELATIONSHIP

By application filed March 23, 1965, as amended April 20, 1965, Joseph W. Engel, William E. Engel, and Engel Bros., Inc. (Engel), request the Board to approve under section 408 of the Federal Aviation Act of 1958, as amended, (the Act) control relationships resulting from the control by Joseph and William Engel of Engel & Engel Bros. Moving & Storage, Inc. (Moving), and through Engel of T.E.K. Van Lines, Inc. (TEK). The application also requests approval of certain interlocking relationships as shown in the appendix below.

Engel is an interstate motor common carrier of household goods and an applicant for interstate and international air freight forwarder authority restricted to the movement of household goods.¹ Moving is a motor common carrier engaged in the interstate transportation of household goods and TEK is an interstate motor common carrier of household goods. The applicants state that these companies are operated independently of each other; that the proposed relationships will not adversely affect the public interest; and that the public will be benefited by the establishment of a stable and reliable air freight forwarder service for the transportation of household goods.

No adverse comments or requests for a hearing have been received.

Notice of intent to dispose of the application without a hearing has been published in the FEDERAL REGISTER, and a copy of such notice has been furnished by the Board to the Attorney General not later than the day following the date of such publication, both in accordance with section 408(b) of the Act.

Upon consideration of the application, it is concluded that Moving and TEK are common carriers within the meaning of section 408 of the Act and that the common control of Engel and Moving and through Engel of TEK by Joseph and William Engel is subject to section 408 of the Act. However, it has been further concluded that such relationships do not affect the control of an air carrier directly engaged in the operation of aircraft in air transportation, do not result in creating a monopoly and do not restrain competition. Furthermore, no person disclosing a substantial interest in this proceeding is currently requesting a hearing and it is found that the public interest does not require a hearing. It therefore appears that approval of the control relationships would not be inconsistent with the public interest.

It is also concluded that interlocking relationships within the scope of section 409 (a) of the Act will exist between the companies as a result of the holding by Joseph and William Engel of the positions described in the appendix below. However, it is further concluded that the parties have made a due showing in the form and manner pre-

¹ The term "household goods" has been defined by the Board in the Air Freight Forwarder Authority Case, Order E-21056, July 10, 1964, Docket 12193, et al. For purposes of the instant proceeding (Docket 15970), Engel is considered to be an air carrier.

scribed that such interlocking relationships will not adversely affect the public interest. Pursuant to authority duly delegated by the Board in the Board's regulations, 14 CFR 385.13, it is found that the foregoing control relationships should be approved under section 408(b) of the Act, without a hearing, and that the interlocking relationships should be approved under section 409.

Accordingly, it is ordered:

1. That the common control by Joseph and William Engel of Engel & Moving, and through Engel of TEK, be and it hereby is approved; and
2. That, subject to the provisions of Part 251 of the Board's economic regulations, as now in effect and hereafter amended, the interlocking relationships existing by reason of the holding by Joseph and William Engel

of the positions set forth in the appendix hereto be and they hereby are approved.

Persons entitled to petition the Board for review of this order pursuant to the Board's regulations, 14 CFR 385.50, may file such petitions within five days after the date of service of this order.

This order shall be effective and become the action of the Civil Aeronautics Board upon expiration of the above period unless within such period a petition for review thereof is filed, or the Board gives notice that it will review this order on its own motion.

By: J. W. ROSENTHAL,
Chief, Routes and Agreements Division,
Bureau of Economic Regulation.

[SEAL] HAROLD R. SANDERSON,
Secretary.

APPENDIX

INTERLOCKING RELATIONSHIPS IN DOCKET 15070

Individual	Engle	Moving	TEK
Joseph W. Engel.....	President, treasurer and director.	President, treasurer and director.	Secretary-treasurer and director.
William E. Engel.....	Vice president, secretary and director.	Vice president, secretary and director.	

[F.R. Doc. 65-5224; Filed, May 17, 1965; 8:48 a.m.]

FEDERAL COMMUNICATIONS COMMISSION

[Docket Nos. 15767, 15768; FCC 65M-597]

BIRMINGHAM BROADCASTING CO. AND DORSEY EUGENE NEWMAN

Order Continuing Hearing

In re applications of Birmingham Broadcasting Co., Irondale, Ala., Docket No. 15767, File No. BP-16260; Dorsey Eugene Newman, Irondale, Ala., Docket No. 15768, File No. BP-16388; for construction permits.

The Review Board has before it a "Joint Request for Approval of Agreement Under Rule 1.525," filed by the captioned applicants. Should this request be approved, cause for hearing would be removed. Accordingly, the Examiner on his own motion takes the action set forth below:

It is ordered, This 12th day of May 1965, that the hearing in this proceeding now scheduled for 10 a.m., May 12, 1965, is continued to 10 a.m., June 14, 1965.

Released: May 12, 1965.

FEDERAL COMMUNICATIONS COMMISSION,
[SEAL] BEN F. WAPLE,
Secretary.

[F.R. Doc. 65-5218; Filed, May 17, 1965; 8:48 a.m.]

[Docket Nos. 15998-16000; FCC 65M-599]

EMERALD BROADCASTING CORP. (KPIR) ET AL.

Order Scheduling Hearing

In re applications of Emerald Broadcasting Corp. (KPIR), Eugene, Oreg., Docket No. 15998, File No. BP-15590; Pendleton Broadcasting Co. (KUMA), Pendleton, Oreg., Docket No. 15999,

File No. BP-16220; Hi-Desert Broadcasting Corp. (KDHD), Twenty-Nine Palms, Calif., Docket No. 16000, File No. BP-16503; for construction permits.

It is ordered, This 10th day of May 1965, that Walther W. Guenther shall serve as the presiding officer in the above-entitled proceeding; that the hearings therein shall commence at 10 a.m. on July 21, 1965; and that a prehearing conference shall be convened at 9 a.m. on June 4, 1965; And it is further ordered, That all proceedings shall be held in the offices of the Commission, Washington, D.C.

Released: May 12, 1965.

FEDERAL COMMUNICATIONS COMMISSION,
[SEAL] BEN F. WAPLE,
Secretary.

[F.R. Doc. 65-5219; Filed, May 17, 1965; 8:48 a.m.]

[Docket No. 15957; FCC 65M-593]

RALPH HICKS AND SOUTHWESTERN BELL TELEPHONE CO.

Memorandum Opinion and Order Continuing Prehearing Conference

In the matter of Ralph Hicks, complainant v. Southwestern Bell Telephone Co., defendant, Docket No. 15957.

1. Counsel for the defendant under date of May 3, 1965 advised the Hearing Examiner that an agreement dated April 20, 1965 had been entered into with the complainant, Hicks, relating to interconnected service to be furnished complainant by defendant at Fort Smith, Ark. The agreement referred to above has been furnished to the Corporation Commission of the State of Oklahoma and the Public Service Commission of the State of Arkansas.

2. Counsel further advised that when the orders are received from the respective state commission, they will be forwarded for consideration in the docket

in this proceeding along with the agreement.

3. In view of the foregoing, it is considered appropriate that the prehearing conference now scheduled for May 20, 1965 should be continued.

Accordingly, it is ordered, This 12th day of May 1965, that the prehearing conference now scheduled for May 20, 1965, be and the same is hereby continued to June 11, 1965, 10 a.m., in the Commission's Offices, Washington, D.C.

It is further ordered, That the hearing now scheduled for June 2, 1965, be and the same is hereby continued without date.

Released: May 12, 1965.

FEDERAL COMMUNICATIONS COMMISSION,
[SEAL] BEN F. WAPLE,
Secretary.

[F.R. Doc. 65-5220; Filed, May 17, 1965; 8:48 a.m.]

[Docket No. 15995; FCC 65M-593]

KENT-SUSSEX BROADCASTING CO.

Order Scheduling Hearing

In re application of H. M. Griffith, Jr. and C. V. Lundstedt, a partnership, doing business as the Kent-Sussex Broadcasting Co., Docket No. 15995, File No. BR-2885; for renewal of license of Station WKSB, Milford, Del.

It is ordered, This 10th day of May 1965, that H. Gifford Irion will preside at the hearing in the above-entitled proceeding which is hereby scheduled to commence at 10 a.m. on July 28, 1965, in Milford, Del.; And it is further ordered, That a prehearing conference in the proceeding will be convened by the presiding officer at 9 a.m. on June 3, 1965, in Washington, D.C.

Released: May 12, 1965.

FEDERAL COMMUNICATIONS COMMISSION,
[SEAL] BEN F. WAPLE,
Secretary.

[F.R. Doc. 65-5221; Filed, May 17, 1965; 8:48 a.m.]

FEDERAL MARITIME COMMISSION

[No. 65-14]

INBOUND CARGO AT NEW YORK HARBOR

Free Time and Demurrage Practices; Prehearing Conference

MAY 13, 1965.

Pursuant to Rule 6(d) of the Commission's rules of practice and procedure, a prehearing conference in this proceeding will be held before the undersigned beginning at 10 a.m., June 1, 1965, in Room 114, 1321 H Street NW., Washington, D.C.

Notice of this prehearing conference will be published in the FEDERAL REGISTER.

CHARLES E. MORGAN,
Presiding Examiner.

[F.R. Doc. 65-5217; Filed, May 17, 1965; 8:48 a.m.]

FEDERAL POWER COMMISSION

[Docket No. CP65-354]

HUMBLE GAS TRANSMISSION CO.

Notice of Application

MAY 11, 1965.

Take notice that on May 5, 1965, Humble Gas Transmission Co. (Applicant), 1700 Commerce Building, New Orleans, La., 70112, filed in Docket No. CP65-354 an application pursuant to section 7(b) of the Natural Gas Act for permission and approval to abandon natural gas service to Tennessee Gas Transmission Co. (Tennessee Gas), all as more fully set forth in the application on file with the Commission and open to public inspection.

Specifically, Applicant seeks permission and approval to abandon its sale of natural gas from the Alligator Bayou Field in Chambers County, Tex., to Tennessee Gas. The application states that the reason for the proposed abandonment of service is that Tennessee Gas's Agua Dulce-Sabine Line is being abandoned pursuant to the authorization granted to Tennessee Gas by the Commission's order issued January 12, 1965, in Docket No. CP64-218 (Phase II). Applicant states that the line will be used by an affiliate of Tennessee Gas for the transportation of natural gas in interstate commerce and that Tennessee Gas will no longer purchase gas produced by Applicant from the Alligator Bayou Field.

Protests or petitions to intervene may be filed with the Federal Power Commission, Washington, D.C., 20426, in accordance with the rules of practice and procedure (18 CFR 1.8 or 1.10) and the regulations under the Natural Gas Act (157.10) on or before June 7, 1965.

Take further notice that, pursuant to the authority contained in and subject to the jurisdiction conferred upon the Federal Power Commission by sections 7 and 15 of the Natural Gas Act and the Commission's rules of practice and procedure, a hearing will be held without further notice before the Commission on this application if no protest or petition to intervene is filed within the time required herein, and the Commission on its own review of the matter finds that a grant of permission and approval for the proposed abandonment is required by the public convenience and necessity. If a protest or petition for leave to intervene is timely filed, or if the Commission on its own motion believes that a formal hearing is required, further notice of such hearing will be duly given.

Under the procedure herein provided for, unless otherwise advised, it will be unnecessary for Applicant to appear or be represented at the hearing.

JOSEPH H. GUTRIDE,
Secretary.

[P.R. Doc. 65-5183; Filed, May 17, 1965; 8:45 a.m.]

[Docket Nos. CP65-349-CP65-351]
MIDWESTERN GAS TRANSMISSION CO.

Notice of Application

MAY 11, 1965.

Take notice that on May 3, 1965, Midwestern Gas Transmission Co. (Applicant), 231 South La Salle Street, Chicago, Ill., filed in Docket No. CP65-350 an application pursuant to section 3 of the Natural Gas Act requesting an order of the Commission authorizing Applicant to import natural gas from the Dominion of Canada (Canada). On the same date Applicant filed in Docket No. CP65-349 an application pursuant to section 7(c) of the Natural Gas Act for a certificate of public convenience and necessity authorizing the construction and operation of facilities for the interstate transportation of natural gas in the states of Minnesota and Wisconsin. Applicant filed a third application, on the same day, in Docket No. CP65-351 for an original permit pursuant to Executive Order No. 10485, dated September 3, 1953, authorizing the construction, operation, maintenance and connection of facilities at the international boundary between the United States and Canada for the importation of natural gas from Canada. The proposal involved is more fully set forth in the applications submitted in the above docket numbers, and these applications are on file with the Commission and open to public inspection.

The applications incorporate a proposal by Applicant to transport natural gas for the account of Trans-Canada Pipe Lines Limited (Trans-Canada) from Emerson, Manitoba, to Marshfield, Wis. The application states that Applicant's existing facilities presently interconnect with the existing facilities of Trans-Canada at a point on the international boundary near Emerson, Manitoba, and also interconnect with the facilities of Michigan Wisconsin Pipe Line Co. (Michigan Wisconsin) near Marshfield, Wis. Applicant is informed that Michigan Wisconsin will file shortly an application with the Commission wherein it will seek authorization to construct and operate facilities to receive at Marshfield and to transport and to redeliver natural gas to Trans-Canada at delivery points located on the international boundary between the United States and Canada near Sarnia, Ontario, and Sault St. Marie, Ontario. Both the present filing and that contemplated by Michigan Wisconsin propose the transportation of a fourth year peak day volume of 600,384 Mcf of natural gas per day. The proposal set forth in the application is competitive and mutually exclusive with the project proposed by Great Lakes Transportation Company filed with the Commission in Docket Nos. CP65-171, CP65-172 and CP65-173.

Specifically, Applicant seeks authorization to construct, over a period of 4 years, 5.6 miles of 36-inch pipeline and 487.7 miles of 30-inch pipeline, all of

which will loop existing lines of Applicant, expansion of the Marshfield meter station, and the addition of 58,900 compressor horsepower at the existing stations near Hallock and Staples in Minnesota and new stations near Ada, Minn., and St. Croix Falls, Wis.

The cost of the facilities proposed to be constructed by Applicant is estimated to be \$77,331,000, which is to be financed by the issuance of debentures and additional common stock.

Protests or petitions to intervene may be filed with the Federal Power Commission, Washington, D.C., 20426, in accordance with the rules of practice and procedure (18 CFR 1.8 or 1.10) and the regulations under the Natural Gas Act (157.10) on or before June 6, 1965.

Take further notice that, pursuant to the authority contained in and subject to the jurisdiction conferred upon the Federal Power Commission by sections 3, 7 and 15 of the Natural Gas Act and the Commission's rules of practice and procedure, a hearing will be held without further notice before the Commission on these applications if no protest or petition to intervene is filed within the time required herein, and the Commission on its own review of the matter finds that a grant of the certificate and the permit are required by the public convenience and necessity. If a protest or petition for leave to intervene is timely filed, or if the Commission on its own motion believes that a formal hearing is required, further notice of such hearing will be duly given.

Under the procedure herein provided for, unless otherwise advised, it will be unnecessary for Applicant to appear or be represented at the hearing.

JOSEPH H. GUTRIDE,
Secretary.

[P.R. Doc. 65-5184; Filed, May 17, 1965; 8:45 a.m.]

[Project No. 233]

PACIFIC GAS AND ELECTRIC CO.

Modification of Notice of Land Withdrawal

MAY 11, 1965.

On June 16, 1952, The Director of the Bureau of Land Management was notified of the reservation of approximately 129.49 acres of United States lands, for this project (No. 233) pursuant to the filing on April 7, 1952 of an application for amendment of license for the Pacific Gas and Electric Co., Licensee for Project No. 233 to include changes in plans for the location of the Pit 4 powerhouse, tunnel, and penstock as delimited on accompanying map Exhibit "K" Sheet 2A (FPC No. 233-74) filed with the Commission April 8, 1952.

By letter dated March 12, 1965 (received by the Commission March 17, 1965), The Pacific Gas and Electric Co. transmitted revised map Exhibit "K" Sheet 2A (FPC No. 233-78) showing the

location of the aforementioned Pit 4 powerhouse area, tunnel and adit rights-of-way, and includes the location of an access road right-of-way not heretofore included in this project, all "as built."

Therefore, in accordance with the provisions of Section 24 of the Act of June 10, 1920, as amended, notice is hereby given that the hereinafter described lands, insofar as title thereto remains in the United States are, from the date of receipt of maps on March 16, 1965, reserved from all forms of disposal under the laws of the United States until otherwise directed by the Commission or by Congress.

MOUNT DIABLO MERIDIAN, CALIF.

FIT NO. 4 POWERHOUSE AREA

T. 36 N., R. 1 E.,
Section 10, N $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$,
Section 15; (Unsurveyed) NE $\frac{1}{4}$ NW $\frac{1}{4}$.

Approximately 160.00 acres.

All portions of the following described subdivisions lying within a right-of-way 100 feet in width, 50 feet on each side of the center line survey of the tunnel and adit location as delimited on revised map, Exhibit "K" Sheet 2A (FPC No. 233-78).

T. 36 N., R. 1 E.,
Section 10, S $\frac{1}{2}$ SE $\frac{1}{4}$;
Section 11, S $\frac{1}{2}$ S $\frac{1}{2}$ (Unsurveyed);
Section 12, S $\frac{1}{2}$ S $\frac{1}{2}$ (Unsurveyed).

T. 36 N., R. 2 E.,
Section 7, S $\frac{1}{2}$ S $\frac{1}{2}$ (Unsurveyed);
Section 8, S $\frac{1}{2}$ S $\frac{1}{2}$ (Unsurveyed);
Section 17, NE $\frac{1}{4}$ NW $\frac{1}{4}$ (Unsurveyed).

48.32 acres, more or less.

All portions of the following described subdivisions lying within a right-of-way 200 feet in width, 100 feet on each side of the center line survey of the access road location as delimited on map, Exhibit "K" Sheet 2A (FPC No. 233-78).

T. 36 N., R. 1 E.,
Section 15, SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$
(Unsurveyed);
Section 22, N $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NE $\frac{1}{4}$ (Unsurveyed);
Section 23, N $\frac{1}{2}$ (Unsurveyed);
Section 24, NW $\frac{1}{4}$ NE $\frac{1}{4}$, S $\frac{1}{2}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$,
NE $\frac{1}{4}$ SE $\frac{1}{4}$ (Unsurveyed).

T. 36 N., R. 2 E.,
Section 8, SE $\frac{1}{4}$ SW $\frac{1}{4}$, S $\frac{1}{2}$ SE $\frac{1}{4}$ (Unsurveyed);
Section 17, E $\frac{1}{2}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ (Unsurveyed);
Section 19, NE $\frac{1}{4}$, Fractional S $\frac{1}{2}$ NW $\frac{1}{4}$ and
N $\frac{1}{2}$ SW $\frac{1}{4}$, NW $\frac{1}{4}$ SE $\frac{1}{4}$ (Unsurveyed);
Section 20, NW $\frac{1}{4}$ NW $\frac{1}{4}$ (Unsurveyed).

Approximately 36,300 feet or 165.04 acres more or less.

A copy of the revised map Exhibit "K" Sheet 2A (FPC No. 233-78) superseding map sheet (FPC No. 233-74) is being transmitted to the Bureau of Land Management, Forest Service and Geological Survey.

This withdrawal notice modifies and supersedes, in its entirety, the notice dated June 26, 1952, to the Bureau of Land Management. The area of United States lands reserved pursuant to the filing of the revised map exhibits is approximately 373.36 acres, all of which are within the Shasta National Forest. Of the total area all except approximately 77.63 acres within the access road right-of-way have heretofore been reserved for power purposes under Power Site Classification No. 83 or by prior reserves for this Project No. 233.

By the direction of the Commission.

JOSEPH H. GUTRIDE,
Secretary.

[F.R. Doc. 65-5185; Filed, May 17, 1965;
8:45 a.m.]

[Project No. 2289]

ROCKY MOUNTAIN POWER CO.

Notice of Amended Application for License for Proposed Project

MAY 11, 1965.

Public notice is hereby given that application, as amended, has been filed under the Federal Power Act (16 U.S.C. 791a-825r) by Rocky Mountain Power Co. (correspondence to: Smith W. Brookhart, Attorney, Brookhart, Becker & Dorsey, 1700 K Street NW., Washington, D.C., 20006) for a license for proposed Project No. 2289, known as the Sweetwater Hydroelectric Project, to be located on Lake, Cross, Dry Sweetwater, Sweetwater, Lost Solar and Park Creeks; White River and South Fork of the White River (all within the Colorado River Drainage Basin), in Garfield, Eagle, and Rio Blanco Counties, Colo., and affecting lands of the United States within the White River National Forest and the Flat Tops Wilderness Area.

As proposed, the project is to be constructed in three stages, as follows: Stage I; Sweetwater forebay dam; forebay tunnel; penstock tunnel; penstock; powerplant containing two motor-generator pump storage units of 82,500 kw each; dam at outlet of Sweetwater Lake creating usable reservoir storage of 11,000 acre-feet; switchyard; access roads and other necessary appurtenances; and Stage II; expansion of the Sweetwater penstock tunnel; penstock; addition of the 3d and 4th 82,500 kw motor-generator pump storage units to the powerhouse; switchyard and other additional appurtenances as necessary; and Stage III; further expansion of all Sweetwater facilities to permit the installation of the 5th and 6th motor-generator pump storage units; Sweetwater Forebay low-head pumping plant containing two 8,400 hp units for pumping; Lost Solar Creek earth fill upper forebay dam (3,500 acre-feet of usable storage); South Fork earth-rockfill afterbay reservoir dam on the South Fork of White River (5,800 acre-feet of usable storage); Meadows Reservoir (124,000 acre-feet of usable storage) created by a 280-foot high rock-fill dam on the South Fork of the White River; water conduits connecting South Fork Reservoir with Lost Solar Forebay; Lost Solar Forebay with Meadows Reservoir; Meadows Reservoir with Sweetwater Forebay Reservoir; Lost Solar powerplant containing four initial and provision for four future units with ultimate capacity of 495,000 kilowatts. Transmission facilities are to be provided by East-West Intertie, Inc., a separate corporation, to be licensed separately.

Protests or petitions to intervene may be filed with the Federal Power Commission, Washington, D.C., 20426, in accordance with the rules of practice and procedure of the Commission (18 CFR 1.8 or 1.10). The last day upon which pro-

tests or petitions may be filed is June 10, 1965. The application is on file with the Commission for public inspection.

JOSEPH H. GUTRIDE,
Secretary.

[F.R. Doc. 65-5186; Filed, May 17, 1965;
8:45 a.m.]

[Docket No. CP65-352]

TENNESSEE GAS TRANSMISSION CO.

Notice of Application

MAY 11, 1965.

Take notice that on May 5, 1965, Tennessee Gas Transmission Co. (Applicant), Post Office Box 2511, Houston, Tex., 77001, filed in Docket No. CP65-352 an application pursuant to section 7(c) of the Natural Gas Act for a certificate of public convenience and necessity authorizing the construction and operation of facilities for the purpose of liquefaction, storage and vaporization of natural gas and for the sale of said gas to its General Service Customers in the New England Service Area, all as more fully set forth in the application on file with the Commission and open to public inspection.

The application states that 18 General Service Customers of Applicant have requested a maximum daily liquefied natural gas quantity of 121,454 Mcf and a maximum winter liquefied natural gas contract quantity of 3,032,176 Mcf. To serve these requirements, Applicant proposes to construct and operate the following facilities: (1) A liquefied natural gas plant and storage facilities to be located at Applicant's compressor station No. 267 at Hopkinton, Mass., (2) the replacement of 10 miles of lateral pipeline which will result in increased diameters varying from 6 inches to 12 inches at Torrington, Conn., Nashua, N.H., and Southbridge, Worcester, and Gloucester, Mass., and (3) meter facilities.

Applicant states that the proposed facilities will enable it to liquefy natural gas, store it as a liquid during the off-peak periods, and vaporize it for sale and delivery during the winter period. The liquefaction capacity is to be 12,500 Mcf per day, the storage capacity will be 3,000,000 Mcf and the vaporization or deliverability capacity will be 248,000 Mcf per day.

The cost of the proposed new and replacement facilities is estimated to be \$14,950,000, which will be financed initially through Applicant's revolving credit arrangement with permanent financing including first mortgage bonds to be arranged later.

Protests or petitions to intervene may be filed with the Federal Power Commission, Washington, D.C., 20426, in accordance with the rules of practice and procedure (18 CFR 1.8 or 1.10) and the regulations under the Natural Gas Act (157.10) on or before June 7, 1965.

Take further notice that, pursuant to the authority contained in and subject to the jurisdiction conferred upon the Federal Power Commission by sections 7 and 15 of the Natural Gas Act and the Commission's rules of practice and procedure, a hearing will be held without

further notice before the Commission on this application if no protest or petition to intervene is filed within the time required herein, and the Commission on its own review of the matter finds that a grant of the certificate is required by the public convenience and necessity. If a protest or petition for leave to intervene is timely filed, or if the Commission on its own motion believes that a formal hearing is required, further notice of such hearing will be duly given.

Under the procedure herein provided for, unless otherwise advised, it will be unnecessary for Applicant to appear or be represented at the hearing.

JOSEPH H. GUTRIDE,
Secretary.

[P.R. Doc. 65-5187; Filed, May 17, 1965;
8:45 a.m.]

[Docket No. CP65-355]

WESTERN GAS SERVICE CO.

Notice of Application

MAY 11, 1965.

Take notice that on May 6, 1965, Western Gas Service Co. (Applicant), Post Office Box 9777, El Paso, Tex., 79988, filed in Docket No. CP65-355 an application pursuant to section 7(c) of the Natural Gas Act for a certificate of public convenience and necessity authorizing the construction and operation of facilities to purchase natural gas from Colorado Interstate Gas Co. (Colorado) from Colorado's main transmission line, all as more fully set forth in the application which is on file with the Commission and open to public inspection.

Specifically, Applicant requests authority to construct 1,098 miles of 4½-inch O.D. steel main to connect its present facilities to a new tap on Colorado's Fourway to Kit Carson pipeline at Stratford, Tex., and a new tap on the same pipeline near Keyes, Okla. Applicant states that these two new taps will provide gas for Applicant's new irrigation well customers in these areas.

The cost of the new facilities is estimated to be \$10,400.

The application states that Applicant has agreed to purchase from Colorado up to a maximum of 10,000 Mcf per day over a 2 year period and anticipates that it will require 576,840 Mcf during the first year. The letter agreement further provides that Applicant will take or pay for a minimum volume of 34,500 Mcf each month.

Protests or petitions to intervene may be filed with the Federal Power Commission, Washington, D.C., 20426, in accordance with the rules of practice and procedure (18 CFR 1.8 or 1.10) and the regulations under the Natural Gas Act (157.10) on or before June 7, 1965.

Take further notice that, pursuant to the authority contained in and subject to the jurisdiction conferred upon the Federal Power Commission by sections 7 and 15 of the Natural Gas Act and the Commission's rules of practice and procedure, a hearing will be held without further notice before the Commission on this application if no protest or petition to intervene is filed within the time re-

quired herein, and the Commission on its own review of the matter finds that a grant of the certificate is required by the public convenience and necessity. If a protest or petition for leave to intervene is timely filed, or if the Commission on its own motion believes that a formal hearing is required, further notice of such hearing will be duly given.

Under the procedure herein provided for, unless otherwise advised, it will be unnecessary for Applicant to appear or be represented at the hearing.

JOSEPH H. GUTRIDE,
Secretary.

[P.R. Doc. 65-5189; Filed, May 17, 1965;
8:45 a.m.]

INTERSTATE COMMERCE COMMISSION

FOURTH SECTION APPLICATION FOR RELIEF

MAY 13, 1965.

Protests to the granting of an application must be prepared in accordance with Rule 1.40 of the general rules of practice (49 CFR 1.40) and filed within 15 days from the date of publication of this notice in the FEDERAL REGISTER.

LONG-AND-SHORT HAUL

PSA No. 39764—Gypsum and plaster returned from, to and between points in western trunkline territory. Filed by Western Trunk Line Committee, agent (No. A-2399), for interested rail carriers. Rates on plaster, gypsum lath and gypsum wallboard and related articles, in carloads, on shipments returned from original destinations in southern, western trunkline territories also Colorado and Wyoming, to original points of shipment in western trunkline territory, also Colorado, Montana, Utah, and Wyoming.

Grounds for relief—Carrier competition.

Tariffs—Supplement 119 to Western Trunk Line Committee, agent, tariff I.C.C. A-4411 and 5 other schedules named in the application.

By the Commission.

[SEAL] BERTHA F. ARMES,
Acting Secretary.

[P.R. Doc. 65-5215; Filed, May 17, 1965;
8:47 a.m.]

[Notice 1174]

MOTOR CARRIER TRANSFER PROCEEDINGS

MAY 13, 1965.

Synopses of orders entered pursuant to section 212(b) of the Interstate Commerce Act, and rules and regulations prescribed thereunder (49 CFR Part 179), appear below:

As provided in the Commission's special rules of practice any interested person may file a petition seeking reconsideration of the following numbered proceedings within 20 days from the date of publication of this notice. Pursuant to section 17(8) of the Interstate Com-

merce Act, the filing of such a petition will postpone the effective date of the order in that proceeding pending its disposition. The matters relied upon by petitioners must be specified in their petitions with particularity.

No. MC-FC-67429. By order of May 12, 1965, the Transfer Board approved the transfer to R. D. Transfer, Inc., Omaha, Nebr., of a portion of Certificate No. MC-76052, and the entire Certificates in Nos. MC-76052 (Sub-No. 22) and MC-76052 (Sub-No. 23), issued March 17, 1964, October 23, 1962, and July 3, 1963, respectively, to Montezuma Truck Lines, Inc., Commerce City, Colo., authorizing the transportation of lumber, over irregular routes, between points in Colorado, Utah, Nebraska, and Wyoming; between points in Arizona, on the one hand, and, on the other, points in Utah (with restriction); between points in Colorado; lumber, from Blair, Nebr., Goodland, Kans., and Poncha Springs, Colo., and points within 5 miles of each, and points in Colorado west of the Continental Divide, to points in Illinois (except Chicago and East St. Louis and their respective commercial zones), and that part of Wisconsin on and south of a line beginning at Sheboygan and extending over Wisconsin Highway 23 to Fond du Lac, thence over U.S. Highway 151 to junction Wisconsin Highway 68, thence over Wisconsin Highway 68 to junction Wisconsin Highway 33, thence over Wisconsin Highway 33 to Portage, and thence along the Wisconsin River to the Mississippi River (with restriction); and forest products, from points in Michigan and Wisconsin, to points in Colorado and Wyoming, Donald L. Stern, 924 City National Bank Building, Omaha 2, Nebr., representative for transferee. Marion F. Jones, 526 Denham Building, Denver, Colo., representative for transferor.

No. MC-FC-67480. By order of May 12, 1965, the Transfer Board, on reconsideration, approved the transfer to Herb Davies, doing business as Davies Truck Line, Topeka, Kans., of the "claimed grandfather-proviso rights" sought in the proceeding No. MC-59368 (Sub-No. 3) in the name of Merold Hurd, Ruby Hurd, administratrix, doing business as P & H Truck Line, Topeka, Kans., for a certificate of registration, covering the transportation of property between specified points and areas in Kansas. Docket No. MC-124950 (Sub-No. 2) has been assigned to cover the subject transfer of "claimed rights" in the instant proceeding No. MC-FC-67480. Erle W. Francis, 214 West Sixth Street, Topeka, Kans., 66603, attorney for applicants.

No. MC-FC-67805. By order of May 10, 1965, the Transfer Board approved the transfer to Bucks County Construction Co., a corporation, Pennel, Pa., of Certificate No. MC-76079 issued May 16, 1955, to Mary E. Graham, Philadelphia, Pa., authorizing the transportation over irregular routes, of machinery, including pumps, condensers, dynamos, motors, and parts, between Philadelphia, Pa., on the one hand, and, on the other, Wilmington, Del., and points in New Jersey; and between points in Philadelphia, Pa. E. Stephen Heisley, 529 Transportation

Building, Washington, D.C., 20006, attorney for applicants.

No. MC-FC-67825. By order of May 12, 1965, the Transfer Board approved the transfer to Frank Gebbia, doing business as Gebbia Trucking Co., Clark, N.J., of the operating rights issued by the Commission November 8, 1963, under Permit No. MC-85405 to Thomas C. Murphy and Henry C. Murphy, a partnership, doing business as Murphy Brothers, Brooklyn, N.Y., authorizing the transportation, over irregular routes of new and used office furniture and fixtures, between New York, N.Y., on the one hand, and, on the other, points in Connecticut, New York, New Jersey, and Pennsylvania. Henry

W. Rapuano, 378 Ninth Street, Brooklyn, 15, N.Y., attorney for applicants.

No. MC-FC-67830. By order of May 10, 1965, the Transfer Board approved the transfer to Paul J. Schmit, doing business as Paul J. Schmit Trucking, Milwaukee, Wis., of Permits Nos. MC-109724, MC-109724 (Sub-No. 1), and MC-109724 (Sub-No. 2), issued October 18, 1948, June 10, 1953, and September 28, 1961, respectively, to John Dewar, Waukesha, Wis., authorizing the transportation over irregular routes of drain tile, culvert pipe, and sewer pipe, from Waukesha, Wis., to points in Illinois on and north of U.S. Highway 6; crushed stone, from points in the towns of Pewaukee and Lisbon, Waukesha County, Wis., to

points in Illinois on and north of U.S. Highway 6; cut stone from points in the town of Genesee, Waukesha County, Wis., to points in Illinois on and north of U.S. Highway 6; and skids and pallets, from points in Illinois on and north of U.S. Highway 6 to points in the towns of Pewaukee, Lisbon, and Genesee, Waukesha County, Wis.; and pig iron, in dump vehicles, from Chicago, Ill., to Whitewater, Wis. William C. Dineen, 710 North Plankinton Avenue, Milwaukee, Wis., 53203, attorney for applicants.

[SEAL]

BERTHA F. ARMES,
Acting Secretary.

[P.R. Doc. 65-5216; Filed, May 17, 1965; 8:47 a.m.]

CUMULATIVE LIST OF CFR PARTS AFFECTED—MAY

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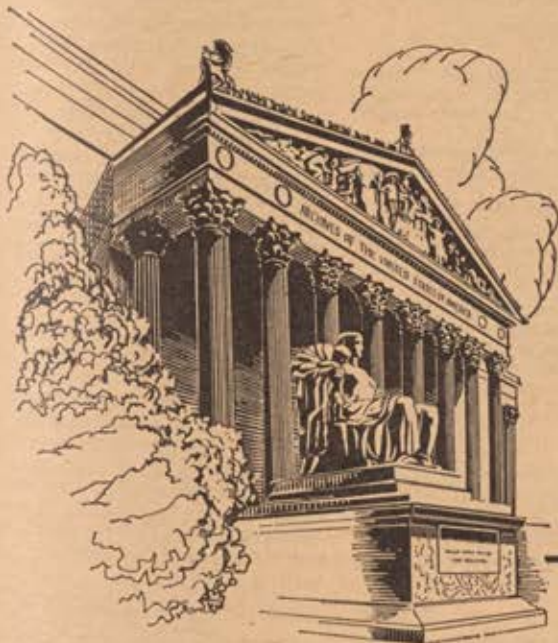
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Tuesday, May 18, 1965 • Washington, D.C.

PART II

Department of Commerce
National Bureau of Standards

Electricity Test Fee Schedules



Title 15—COMMERCE AND FOREIGN TRADE

Chapter II—National Bureau of Standards, Department of Commerce

SUBCHAPTER A—TEST FEE SCHEDULES

PART 201—ELECTRICITY

Under the provisions of 15 U.S.C. sections 275(a) and 277, the test fee schedules of the National Bureau of Standards, Department of Commerce, pertaining to electricity are revised as provided herein.

This revision supersedes Title 15, Chapter II, Subchapter A, Part 201, which appeared in 29 F.R. 7316, 9841, 15810, and 16319. It includes several increases of range and adds two new services; one for frequency stability calibration of signal sources, and one for continuous wave low level power measurement of coaxial bolometer units and bolometer-coupler units. The fees have generally been revised upward to assure full recovery of the cost of providing calibration services. The major new cost factor included is the impact of Federal pay legislation which took effect in July 1964.

PART 201—ELECTRICITY

NOTE: The calibration service covered by this part includes the determinations of the corrections for standard electrical and electronic measuring apparatus and their range-extending auxiliaries used at power and audio frequencies (up to 30 kHz (kc/s), high frequencies 30 kHz (kc/s) to 1000 MHz (Mc/s) and higher), and microwave frequencies (above 1000 MHz (Mc/s)).

The Bureau does not test, except occasionally for other agencies of the Federal Government, electrical devices or supplies not directly related to the field of measurement. Tests of power transformers, motors, generators, relays, wiring, appliances, etc., should not be requested.

RESISTANCE MEASUREMENTS

PRECISION WIRE-WOUND RESISTANCE STANDARDS AND APPARATUS

Sec.	
201.100	General.
201.101	Precision standard resistors.
201.102	Precision resistance apparatus.

RESISTANCE STANDARDS OTHER THAN WIRE-WOUND

201.103	Multi-megohm resistors.
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INDUCTANCE AND CAPACITANCE MEASUREMENTS

201.104	Standard inductors.
201.105	Standard capacitors; tests with alternating current.

ELECTROCHEMISTRY

201.201	Standard cells.
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ELECTRICAL INSTRUMENTS

201.300	General.
201.301	Standard resistors for current measurements.
201.302	Volt boxes (fixed-ratio voltage dividers).
201.303	Ac-dc instruments and thermal converters.
201.304	Ac-dc wattmeters, single phase.
201.305	Watt-hour meters.
201.306	Current transformers.
201.307	Current transformer comparators (testing sets).

MAGNETIC MEASUREMENTS

Sec.	
201.400	General.
201.401	General magnetic measurements; normal induction and hysteresis.
201.402	Magnetic materials; alternating-current permeability and core loss.
201.403	Magnetic testing apparatus; mutual inductors, search coils, and fluxmeters.

DIELECTRIC MEASUREMENTS

201.500	Dielectric constant, dissipation factor.
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VOLTAGE RATIO AND HIGH-VOLTAGE MEASUREMENTS

201.601	Voltage dividers.
201.602	Voltage transformers.
201.603	Voltage transformer comparators.
201.604	Kilovoltmeters.

LOW-FREQUENCY REGION

201.701	Frequency stability calibration of signal sources, up to 30 kHz (kc/s).
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HIGH-FREQUENCY REGION

201.800	General.
201.810	Rf, rf-dc voltmeters and thermal converters in the frequency range of 30 kHz (kc/s) to 1000 MHz (Mc/s); from 0.2 to 300 V.
201.811	Rf micropotentiometers, voltmeters, and signal sources from 30 kHz (kc/s) to 1000 MHz (Mc/s), from 1 μ V to 0.1 V.
201.820	Rf calorimeters, 30 kHz (kc/s) to 500 MHz (Mc/s).
201.821	Continuous wave low-level power measurements of coaxial bolometer units and bolometer-coupler units.
201.830	Immittance, 30 kHz (kc/s) to 4 GHz (Gc/s).
201.840	Dissipative fixed coaxial attenuators.
201.841	Dissipative variable coaxial attenuators.
201.842	Waveguide below-cutoff (piston) attenuators.
201.843	Coaxial fixed directional couplers.
201.844	Coaxial variable directional couplers.
201.850	Field strength measurements, 30 Hz (c/s) to 1000 MHz (Mc/s).
201.860	Frequency stability calibration of signal sources, from 30 kHz (kc/s) to 500 MHz (Mc/s).

MICROWAVE REGION

201.900	General.
201.910	Continuous low-level power measurement of waveguide bolometer units and bolometer-coupler units.
201.911	Continuous low-level power measurement of waveguide dry calorimeters.
201.920	Reflection coefficient magnitude measurement on waveguide reflectors (mismatches).
201.930	Frequency measurement on cavity wavemeters.
201.940	Attenuation difference measurements on variable attenuators.
201.941	Insertion loss measurements on fixed attenuators.
201.950	Effective noise temperature measurements on noise sources.

AUTHORITY: The provisions of this Part 201 issued under sec. 9, 31 Stat. 1450, as amended; 15 U.S.C. 277; interprets or applies sec. 7, 70 Stat. 959; 15 U.S.C. 275a.

RESISTANCE MEASUREMENTS

INVOLVING PRECISION WIRE-WOUND RESISTORS

§ 201.100 General.

In general, §§ 201.101 and 201.102 apply only to apparatus embodying the following features:

(a) The resistance material should have a low temperature coefficient, should not change its resistance appreciably with time, and for low-valued coils should have a small thermoelectric power against copper.

(b) All wire standard resistors and the more important section of resistance apparatus for use in d-c circuits should be wound on metal or ceramic supports, preferably in a single layer. Electrical connections to the resistance material should be brazed in all cases in which the total resistance is less than 1,000 ohms. The resistance material should be protected against oxidation and other chemical action and should be annealed or aged by baking after winding.

(c) Precision standard resistors should be so adjusted as to give an accuracy of at least 0.02 percent without corrections. Precision resistance apparatus should be adjusted within 0.05 percent of nominal value.

(d) Because comparatively rapid changes in resistance take place in new apparatus, it is not advisable to calibrate new or repaired apparatus until at least two months after the resistors have been annealed and adjusted. Precision apparatus known to be a prototype will be held in the laboratory (in the absence of other instructions) for at least a month, when the measurements will be repeated to determine the drift in value, if any. No extra charge is made for these later measurements. Occasionally during the course of calibration it is discovered that the standard or instrument under observation is defective and in need of repair. In such instances the item in question will be rejected and a fee equal to the published fee, in whole or in part, will be assessed, commensurate with the effort expended before calibration was halted.

(e) Unless otherwise stated, the tests listed are generally made using a direct current of such magnitude as to cause only a negligible heating of the resistance material. Calibrations of standard resistors, bridges, and decade resistors consist of determinations of the resistance of the standards or of the resistance of the elements of the bridges or similar apparatus from which values corresponding to all possible readings can be computed. Precision standard resistors are ordinarily measured at a temperature of 25° C., while resistance apparatus is measured at room temperatures, usually from 22 to 25° C.

(f) The Bureau does not calibrate portable self-contained test equipment having relatively low accuracy such as portable potentiometers, resistance test sets, and double-bridge ohmmeters. The accuracy of these devices is such that a complete detailed determination of corrections is not economically feasible. Apparatus of this type may be spot-checked by measuring known voltages or resistances with them. Adequate calibration services of this type can be obtained from a number of commercial testing laboratories.

§ 201.101 Precision standard resistors.

Standards of 10 ohms and less of the precision type provided with amalgamated current terminals and designed for

oil immersion must be of the four-terminal type, that is, must have both current and potential terminals. The resistance of standards having nominal values in range 0.0001 ohm to 100,000 ohms will usually be given to the nearest 0.0001 percent in terms of the calibrating unit (the legal unit) maintained by the Bureau with a group of 1-ohm standard resistors. Each report of calibration will state the uncertainty of the reported value at the time of calibration. This uncertainty will vary from 0.0001 percent for Thomas-type 1-ohm standards to 0.002 percent for resistors of nominal value 0.0001 ohm. Additional information regarding standard resistors (is included with) the report of calibration.

Item	Description	Fee
201.101a-1	Determination of resistance in oil bath at 25° C. For all standards having resistances in the range 0.0001 to 100,000 ohms, inclusive, provided they are adjusted with 0.05 percent of a nominal value which is itself a decimal multiple (or submultiple) of 1 ohm:	
201.101a-1	Two-terminal measurements	\$40.00
201.101a-2	Four-terminal measurements 0.01 ohm to 10 ohms (except Thomas type)	50.00
201.101a-3	Four-terminal measurements, Thomas-type 1 ohm and standards 0.001 ohm and less	70.00
201.101a	Determination of resistance in oil bath at 25° C. For odd-valued standards not falling within the scope of item 201.101a:	
201.101b-1	Two-terminal measurements	65.00
201.101b-2	Four-terminal measurements	75.00
201.101c-1	Measurement of resistance in oil bath at 20, 25, and 30° C., and determination of temperature coefficient. Such measurements are made only when it is shown that the small changes in resistance resulting from necessary variations of the temperature from 25° C. are of importance.	
201.101c-1	Two-terminal measurements	150.00
201.101c-2	Four-terminal measurements	175.00
201.101d	For special tests not covered by the above schedule, advance arrangements must be made. Fees will be charged dependent on the time involved in making the tests.	

§ 201.102 Precision resistance apparatus.

Corrections pertinent to apparatus of suitable quality submitted under this section will ordinarily be reported to a number of significant figures so chosen that normal variation of ambient conditions within the stated bounds of test conditions will not affect the corrections by more than a few units in the last place reported. Calibrations will be made at room temperature, usually 22 to 25° C.

Item	Description	Fee
201.102a	Precision decade and plug boxes. For decades not exceeding 10,000 ohms per step: (1) First point in each box. (2) Each additional point in same resistance box	\$30.00
201.102b	Megohm box, 10 sections each 100,000 ohms	5.00
201.102c	Megohm boxes, wire-wound, 10 equal sections. Calibrations with all sections in parallel giving nominal value 0.01 to 10 megohms	195.00
201.102d-1	Precision Wheatstone bridges	70.00
201.102d-2	Calorimetric bridges of all kinds	520.00
201.102e	Potentiometers, minimum steps 10 μ V or more	705.00
201.102f	Potentiometers, minimum steps less than 10 μ V	300.00
		555.00

Item	Description	Fee
201.102g	Kelvin bridge ratio box	\$215.00
201.102h	Double ratio set for Kelvin bridge, with double set of fixed and variable arms	630.00
201.102i-1	Four-dial precision resistive voltage divider	350.00
201.102i-2	Five-dial precision resistive voltage divider	435.00
201.102i-3	Six-dial precision resistive voltage divider or universal ratio set	475.00
201.102j	Quick resistance ratio test on any precision voltage divider. Linearity check in steps of one-ninth of input resistance	110.00
201.102k	Direct reading ratio set, 3 dials	110.00
201.102l	Direct reading ratio set, 4 dials	285.00
201.102m	Double direct reading ratio set	520.00
201.102n	For special tests not covered by the above schedule, advance arrangements must be made. Fees will be charged dependent on the time involved in making the tests.	

RESISTANCE STANDARDS OTHER THAN WIRE-WOUND

§ 201.103 Multi-megohm resistance standards—except wire-wound.

Measurements made on resistors submitted under this section are accurate to 0.1 percent at the time of test if nominal values are in the range 10^6 to 10^{12} ohms; for higher-valued resistors the accuracy is 0.5 percent. In order that the reported results be of significance it is necessary that standards submitted for tests be made of suitable materials processed in such a manner that resistance values do not change rapidly with time. They should be so constructed and treated that the effect of relative humidity is minimized. The resistance of these standards usually depends on the magnitude of the applied voltage; the test voltage should therefore be specified. Each resistor should have an identifying number engraved on or permanently attached to it.

Item	Description	Fee
201.103a	Determination of resistance of a resistor at one voltage (1.5 to 250 V) at room temperature (23° C.) and humidity (50 percent rh or less) when the resistor has a nominal value between 10^6 and 10^9 ohms	\$45.00
201.103b	Determination of resistance of a resistor at one voltage (1.5 to 250 V) at standard laboratory temperature (23° C.) and humidity (50 percent rh or less) when the resistance is higher than 10^9 ohms but the current involved is not less than 10^{-12} amp.	55.00
201.103c	Determination of resistance of a resistor at each voltage (1.5 to 250 V) at standard laboratory temperature (23° C.) and humidity (50 percent rh or less) when the current involved is less than 10^{-12} amp but not less than 10^{-13} amp.	70.00
201.103d	For special tests not covered by the above schedule, advance arrangements must be made. Fees will be charged dependent on the time involved in making the tests.	

INDUCTANCE AND CAPACITANCE MEASUREMENTS

NOTE: Tests at radio frequencies are performed at the NBS Boulder Laboratories, Boulder, Colo., 80301.

§ 201.104 Standard inductors.

(a) Inductors for use in a-c bridges are ordinarily tested at 100, 400, 1,000, or

10,000 Hz (c/s) at a room temperature of 23° C. and a relative humidity of 50 percent or less. Measurements at 10,000 Hz (c/s) are limited to standard inductors of 0.1 henry or less. Most inductors used at 60 Hz (c/s) can be tested at 100 Hz (c/s) since the variation of inductance with frequency in this range is usually negligible. Purchase orders should state which frequency or frequencies are to be used for calibration purposes. A metal-encased standard is calibrated with the case connected to the "low" terminal of the inductor unless other conditions are specified. Variable inductors used at circuit elements in laboratory setups are low-accuracy devices which do not come within the purview of this schedule and should not be submitted for calibration. Q values are not supplied for inductors calibrated under this schedule. Inductors intended for use as Q standards at radio frequency should be referred to the Boulder Laboratories. Mutual inductors used in magnetic testing for calibrating ballistic galvanometers should be calibrated with direct current under item 201.403a.

(b) Accuracy: Inductance values and accuracy statements given in reports of calibration depend upon two factors: (1) The accuracy of the comparison of the client's inductor with the NBS working standards of inductance; (2) the uncertainty in the derivation of the unit of inductance which is embodied in the NBS working standards. In general, inductance values will be given to as many significant figures as are justified at the time of measurement. The uncertainty figure given in each report of calibration takes into account factors (1) and (2) stated above and will vary from 0.02 percent to 0.2 percent depending upon the nominal value of the inductor and the frequency of the test current employed.

(c) Inductors can usually be shipped safely by express but should be carefully packed to avoid damage to the coil fastenings and terminals.

Item	Description	Fee
201.104a	Determination of self or mutual inductance of a fixed inductor with non-magnetic core at one frequency, 100, 400, 1,000, or 10,000 Hz (c/s)	\$40.00
201.104b	Determination at an additional frequency 100, 400, 1,000, or 10,000 Hz (c/s) on an inductor tested under 201.104a	25.00
201.104c	For special tests not covered by the above schedule, advance arrangements must be made. Fees will be charged dependent upon the nature of the calibration.	

§ 201.105 Standard capacitors.

(a) Calibrations are ordinarily performed at 65, 100, 400, 1,000, and 10,000 Hz (c/s) with an ambient temperature of about 23° C. and a relative humidity of 50 percent or less.

(b) The accuracy stated in the report of calibration is determined in part by the accuracy of the NBS measurements and in part by the performance characteristics of the capacitor itself and is sufficiently broad to allow for variations in the stray capacitance at the connectors, variations in temperature of a few degrees Celsius, considerable variation in

relative humidity and atmospheric pressure, and frequency deviations of a few percent from the stated test conditions. Over the above frequency range, and in the capacitance range from 0.001 pF to 100 μ F, the uncertainty usually lies in the range 0.002 to 0.5 percent.

(c) The capacitance value given is the equivalent parallel capacitance. In general a determination of the equivalent parallel conductance with high accuracy is not feasible; however, for solid dielectric capacitors an approximate value is given without additional charge.

(d) Continuously adjustable ("variable") capacitors are no longer calibrated by the Bureau.

(e) In applying the following schedule to decade capacitance boxes the first entry (201.105a) applies to a determination of the zero capacitance and conductance of the box (all dials set at zero). The second entry applies to the determination of the capacitance and conductance added to the circuit when any one dial is advanced from zero to a specified setting, and at the frequency used in determining zero capacitance. For measurements at additional frequencies the schedule is applied in the same manner, i.e., the higher fee is used for the first point (zero calibration) at the new frequency, and the lower fee applies to additional points at that frequency.

Item	Description	Fee
201.105a	Determination of either direct or grounded capacitance of a fixed capacitor or one section of a subdivided capacitor, with alternating current at one frequency selected from those listed above (201.105).....	\$45.00
201.105b	Determination of either direct or grounded capacitance of each additional point on the same subdivided capacitor submitted under item 201.105a.....	20.00
201.105c	For special calibrations not covered by the above schedule, advance arrangements must be made. Fees will be charged dependent on the time involved in making the calibration.	

ELECTROCHEMISTRY

§ 201.201 Standard cells.

(a) Unsaturated standard cells will be accepted for calibration by the Bureau only from public utilities and others having operations of such a nature as to require calibrations by the Bureau.

(b) Unsaturated cells normally require about two weeks for a complete calibration. The cells are kept in a thermally insulated cabinet and readings of their emf are taken daily for a period of ten days after the values have become reasonably constant. If the emf continues to fluctuate, or is unusually low, or if the cell shows other abnormal indications, the nature of the failure is stated. Unsaturated cells are not likely to be injured by normal transportation (mail or express), if they are carefully packed. Shipment during very cold weather should be avoided because of the possible hazard from freezing.

(c) Saturated cells should be transported by messenger because they should never be inverted nor tipped more than 45°. In order that the reported values

are of the highest accuracy the emfs of saturated cells are measured while they are kept 6 to 8 weeks in an NBS temperature-controlled oil bath or in their own thermoregulated air bath.

Item	Description	Fee
201.201a	Cadmium standard cell (unsaturated type), determination of electromotive force with an uncertainty of 0.006 percent.....	\$41.00
201.201b	Cadmium standard cell (saturated type), measurement of the first cell of a group at a fixed temperature of 28° C., in thermostatically controlled oil bath or at a fixed temperature in a thermoregulated air bath.....	\$2.00
201.201c	Each additional saturated cell of a group.....	41.00
201.201d	Cadmium standard cell (saturated type), measurement of the first cell of a group at any temperature between 20 and 35° C., except 28° C., in a thermostatically controlled oil bath.....	100.00
201.201e	Each additional cell of a group (at temperatures between 20 and 35° C., except 28° C., in a thermostatically controlled oil bath).....	48.00
201.201f	For special tests not covered by the above schedule, fees will be charged dependent upon the nature of the test.	

ELECTRICAL INSTRUMENTS

§ 201.300 General.

(a) Indicating (pointer-and-scale) instruments should be calibrated quite frequently with d-c standards and ac-dc transfer instruments, or with stable d-c or a-c sources which are calibrated periodically in this way. Suitable standards and transfer instruments are now readily available commercially. Because of the necessity of frequent tests, a single d-c or a-c calibration of an indicating instrument has little permanent value. Thus in this category the Bureau ordinarily accepts for calibration only rms ac-dc instruments and thermal converters of 0.1 percent rated accuracy or better, for ac-dc difference tests only.

(b) The Bureau's ac-dc difference tests consist of determination of the difference between quantities (current, voltage, or power) required to give the same response (output) of an instrument or thermal converter on alternating current and on reversed direct current, as evaluated by comparison with an NBS ac-dc transfer standard. The alternating quantity, Q_a , required for a given response of the instrument or converter is then $Q_a = Q_d(1+S)$ where Q_d is the average quantity required for this response on reversed direct current, as determined by d-c standards, and S is the small fractional ac-dc difference. Usually NBS ac-dc difference tests are made on each range of the instrument or converter. The differences depend on the ratios of the reactances of the components, and increase with frequency, but are small and relatively permanent over the rated frequency range of a well-designed instrument. Therefore, NBS tests are normally made only at the upper rated frequency on each range and at the lower rated frequency on one range. Ordinarily, the tests need not be repeated at intervals of less than five years, and then only if the instrument is to be used

over the upper part of its frequency range.

§ 201.301 Standard resistors for current measurements.

(a) *Calibration.* The Bureau normally calibrates only resistors of 0.04 percent accuracy or better. Test results for suitable standard resistors for current measurements are usually reported with an uncertainty of 0.01 percent.

(b) *Design.* A standard resistor for current measurements is a four-terminal resistor, for which the resistance is defined as the ratio of the open-circuit potential difference between the potential terminals to the current through the current terminals. The resistance value will be definite and reproducible only if the current flow pattern at the potential terminals is completely reproduced. This flow pattern should be fixed by resistor design to be independent of the way in which current is introduced at the current terminals and of the location of leads on the potential terminals. In some instances where this has not been done the type and location of connections to the current terminals can be specified adequately to fix the flow pattern at the potential terminals.

(c) *High-current resistors.* (1) Resistors for high currents (above about 1,000 amperes) require considerable power, so that their temperature rise between low and rated current, and the resulting change in resistance, will depend not only on their design, including means provided for dissipating heat, but also on the connecting bus bars and their junctions to the resistor. Bus bars of generous cross section may carry away a significant part of the heat generated in the resistor; inadequate bus bars may actually contribute to the heating of the resistor. In addition, contact resistance at the points of connection to the bus bars, unless carefully minimized, may contribute appreciably to the heating. (Contact resistance of bolted connections depends on area of contact, cleanness of surfaces, and pressure.) Resistance determinations made in the laboratory at rated current may therefore be of little value because the working temperature conditions cannot be duplicated. The best experimental procedure to use in such cases is to place the standard in a temperature-controlled enclosure and measure its resistance with a comparatively low test current when it is heated uniformly to temperatures approximating that at which it will operate in service (201.301 d and e). From data at two or more elevated temperatures, combined with that at room temperature, a curve can be plotted from which the resistance at the operating temperature can be read, provided this temperature is determined by the user with the resistor under the actual operating conditions.

(2) Changes in the resistance may also result from strains in the resistance element produced by mechanical forces incidental to clamping the resistor connections, as well as from inherent internal expansion constraints on resistor parts, or forces from the magnetic field produced by the current.

(d) *Test schedule.* Resistors when first submitted for test should be tested with about 20 percent of rated current and with full rated current; normally when resubmitted for test, determinations need be made only with 20 percent of rated current; once stability is proved, the resistor need not be recalibrated at intervals of less than two years.

Item	Description	Fee
201.301a-1	Initial determination of resistance of a single-range resistor or one range of a multirange resistor, at 30 percent rated current or less (current rating not to exceed 300 amp).....	\$60.00
201.301a-2	Same as a-1, except current rating above 300 amp but not to exceed 1,000 amp.....	100.00
201.301b	Determination of resistance on another range of a multirange resistor, at 30 percent rated current or less (current rating not to exceed 300 amp).....	23.00
201.301c	Test according to item 201.301a or 201.301b having been made, for an additional determination at another test current (not to exceed 1,000 amp).....	30.00
201.301d	Additional determination of resistance at temperatures above room temperature at a current not greater than 30 percent rated, for first elevated temperature.....	100.00
201.301e	Additional determination of resistance of each additional elevated temperature, at a current not greater than 30 percent rated.....	24.00
201.301f	Twenty determinations of resistances corresponding to 9 plug positions and 11 slider positions of an adjustable low-resistance standard, at 30 amp.....	270.00
201.301g	For determinations of resistance at currents larger than 1,000 amp and requiring unusual setups or procedures, and for special tests not covered by the above schedule, advance arrangements must be made. Fees for such tests will depend upon the nature of the test.	

wire-wound resistors. The magnitude of this effect varies with coil construction and with wire size and coating. Because humidity effects may reach equilibrium only after days (or even weeks), it is recommended that laboratory humidity be held continuously at or below 50 percent.

(c) *Ambient temperature and self-heating effects.* Changes in ambient temperature should have little effect on ratio if all the resistance elements have the same temperature coefficient. However, self-heating as a result of sustained operation may significantly change the ratios because of unequal temperature rise in the various resistors. The magnitude of this effect depends on construction and coil arrangement, and on the power dissipated. It should (1) be less than for high ranges, (2) be greater for volt boxes that require higher current at rated voltage, (3) increase approximately with the square of the applied voltage, and (4) be entirely negligible at 20 percent of rated voltage on all ranges.

(d) *Suggested test schedule.* (1) Volt boxes should be tested at rated voltage. The first calibration test should also include a test at 20 percent rated voltage on one or more of the higher ranges, which are preferably selected by the Bureau. The equilibrium values at 20 and 100 percent rated voltage may be used to estimate the magnitude of the self-heating effects for the various ranges. Tests having once been made at 20 and 100 percent rated voltage, subsequent determinations need be made only at rated voltage, since the self-heating effect should not change with time.

(2) Once stability has been established, a volt box should not require recalibrations at intervals less than two years.

Item	Description	Fee
201.302a	Determination of ratio on one range at rated voltage, not to exceed 1,500 V, and at a ratio not to exceed 10,000:1.....	\$95.00
201.302b	Determination of ratio at rated voltage on an additional range.....	20.00
201.302c	Determination at a reduced voltage on a range tested in 201.302 a or b.....	12.00
201.302d	Test per range, at rated voltage, of a multirange guarded standard voltage divider. (Design similar to that described in NBS RP1419.) Values normally reported with an uncertainty of 0.001 percent.....	26.00
201.302e	For tests on volt boxes not covered by the above schedule, advance arrangements must be made. Fees will be charged depending upon the nature of the test.	

§ 201.303 *Ac-dc instruments and thermal converters (20 to 50,000 Hz (c/s), up to 20 amp and 600 V).*

Ordinarily rms ac-dc instruments or converters of 0.1 percent rated accuracy or better are accepted for test, which consists of ac-dc difference determinations by the procedures of items 201.303 a to c. See 201.300.

Item	Description	Fee
201.303a	Initial determination of ac-dc difference of an instrument or converter at one applied voltage or current, one frequency from 20 through 50,000 Hz (c/s).....	\$50.00
201.303b	Each additional determination of ac-dc difference of the same instrument, converter or set of converters, one frequency from 20 through 20,000 Hz (c/s).....	13.00
201.303c	Each additional determination of ac-dc difference of the same instrument, converter, or set of converters, one frequency from 20,000 through 50,000 Hz (c/s).....	23.00
201.303d	For special tests not covered by the above schedule, advance arrangements must be made. Fees will be charged depending upon the nature of the test. For tests at higher voltages see 201.604.	

§ 201.304 *Ac-dc wattmeters, single phase (20 to 2,000 Hz (c/s), up to 15 amperes and 500 volts).*

Ordinarily only single-phase ac-dc wattmeters of 0.1 percent rated accuracy or better are accepted for test, which consists of ac-dc difference determinations by the procedures of items 201.304 a to c. See 201.300. Unless otherwise specified, these tests are made at two scale points at 0.5 power factor on a base range and one scale point at other combinations of ranges, followed by tests at unity power factor at one scale point on one or more ranges, depending upon the results obtained.

Item	Description	Fee
201.304a	Determination of the difference between the reading on reversed direct current and the reading on alternating current at the first scale point at which this difference is determined, at currents not to exceed 15 amp.....	\$58.00
201.304b	Determination of this difference at one scale point on an additional range, frequency, or power factor, at currents not to exceed 15 amp.....	22.00
201.304c	Determination at each additional scale point with the same combination of range, frequency, and power factor, at currents not to exceed 15 amp.....	10.00
201.304d	For frequencies greater than 70 Hz (c/s) and for special tests not covered by the above schedule, advance arrangements must be made. Fees will be charged depending upon the nature of the test.	

§ 201.305 *Watt-hour meters.*

Except under unusual circumstances, only portable standard watt-hour meters (rotating standards) will be accepted for test. Tests consist of determinations of the percentage registration of the meter "as received." If meters are to be cleaned and adjusted this must be done before they are submitted for test. The Bureau does not undertake the cleaning and adjustment of meters and does not knowingly begin tests on faulty meters. Before tests can be started the test conditions must be completely specified by the user as to current and voltage ranges to be tested, frequency, applied voltage and current, and power factor. A guide listing a limited yet adequate schedule

§ 201.302 *Volt boxes (fixed ratio voltage dividers).*

A volt box is a resistive voltage divider used to extend the range of the voltage measured by a potentiometer. Its ratio for any range is obtained by dividing the voltage across its input terminals by the open-circuit voltage across the section to be connected to the potentiometer.

(a) *Calibration.* The Bureau normally calibrates only volt boxes for which the maker's stated ratio accuracy is 0.04 percent or better. Values of ratio are normally reported with an uncertainty of 0.005 percent.

(b) *Humidity effects.* The insulating structure of a volt box is equivalent to a network of high resistances in parallel with one or more of its wire-wound precision resistance elements. Thus, changes in insulation resistance as a result of variations in surface or volume moisture may affect the ratios. Such ratio changes are normally less on low than on high ratios. This effect can be reduced or eliminated by constructions which provide built-in guard electrodes, maintained at appropriate potentials. Another effect of humidity is to produce changes in the values of the precision

of tests is available at no charge. Test voltages should be chosen from the following values: 1, 2, or 4 times 110, 115, 120, 125, and 130 V. Test current should be chosen from the following values: 1, 10, or 100 times 0.25, 0.5, 0.75, 1, 1.25, 1.5, 2, 2.5, 3, 3.75, 4, 5, 7.5 amperes (but not to exceed 100 amperes). Tests at other voltages or currents, or at power factors other than 1.0 and 0.5 current lagging, will be considered as special tests, because rearrangements of circuits are required (see 201.305z). Unless otherwise specified, test runs on portable standard watt-hour meters (rotating standards) are of approximately 100 seconds duration. The meters are energized for at least 30 minutes at rated voltage and current on one range before starting the test.

Item	Description	Fee
201.305a	Test at 60 Hz (c/s) on one combination of range, applied voltage, and power factor, at not more than five current loads.	\$72.00
201.305b	Additional test on the same or an additional combination of range, applied current, voltage, and power factor.	10.00
201.305c	Test of one or two additional meters simultaneously with the first, under the same conditions as 201.305a, per meter.	37.00
201.305d	Test of each additional meter simultaneously with the first, under the same conditions as 201.305b, per meter.	6.00
201.305e	For special tests not covered by the above schedule, advance arrangements must be made. Fees will be charged depending upon the time required for the test.	

§ 201.306 Current transformers.

(a) Calibration: The Bureau normally calibrates only current transformers of high quality for use as reference standards. The Bureau may decline requests for tests which are not to be used for establishing or checking a reference standard. If the transformer quality is stated in terms of ASA accuracy classes, calibration will normally be limited to transformers stated to be in the 0.3 percent class for one or more ASA burdens. Bureau equipment is primarily designed for testing current transformers whose rated secondary current is 5 amperes. Results obtained at frequencies near 60 Hz (c/s) will normally be reported with an uncertainty of 0.05 percent in ratio and 1 min in phase angle. However, in some instances the ratio can be reported with an uncertainty of 0.02 percent and the phase angle to 0.5 minute.

(b) Test information: Tests cannot be started until information is furnished concerning the following conditions: (1) test frequency, (2) secondary test currents, (3) secondary burdens, (4) ranges to be tested. It is customary to make tests at secondary currents of 0.5, 1, 2, 3, 4, and 5 amperes.

(c) Transformer burden: (1) Current transformers should be tested with burdens equivalent to the impedance imposed when the transformer is used as a reference standard. Inclusion of tests at ASA burdens is not recommended. The burdens listed in the American Standard for Instrument Transformers, C-57.13, are for rating purposes only and differ from the instrument burdens im-

posed on a reference standard. Large errors in measurement can result if the values of ratio and phase angle obtained with an ASA burden are used for the transformer when it supplies only an instrument burden.

(2) Preferably the burden should be specified in terms of the measured resistance and inductance, including the leads to connect the instruments to the secondary of the transformer. If this measurement cannot be made conveniently, it will suffice in most cases to state the name of the maker, the type, range, and serial number of each instrument used in the burden, and the length and size of the leads used in the secondary circuit. Alternatively the burden may be stated in terms of the volt-amperes and power factor of the secondary circuit at the test frequency.

(3) The test equipment regularly used at the Bureau imposes a minimum test burden of about 0.16 ohm with a minimum inductance of about 10 μ H (if the burden inductance is larger than 10 μ H, the minimum resistance is increased above 0.16 ohm). Special test equipment and procedures must be used for burdens lower than 0.16 ohm, so that advance arrangements must be made and higher fees must be charged. In planning for the tests of a transformer it is therefore desirable to select a low burden, but one larger than this minimum, preferably not less than 0.2 ohm. The required total may be made up by incorporating resistance in the leads to the instruments.

(d) Multirange current transformers, in which the same sections of primary windings are used in series and in parallel, usually have phase angles and ratio factors which are equal on the several ranges to within the accuracy needed for almost any measurement purpose. Hence a test at six values of secondary current on one range is nearly always sufficient to determine the characteristics of the transformer. Further tests, often made at 0.5 and 5 secondary amperes on each additional range, merely serve as a safeguard by means of which mistakes in winding may be detected. When the various ranges of a multirange transformer are obtained by taps on either winding, this relation does not necessarily hold, particularly in the case of secondary taps; and tests in addition to the initial six-point test on one range should be made, using two values of secondary current on each of the ranges so obtained. Transformers of some designs, however, show very little difference in ratio factor and phase angle on the various ranges, and the Bureau should be consulted before tests on a large number of ranges are requested.

(e) Demagnetization: Unless otherwise specified, current transformers will be demagnetized before being tested. If it is desired to have a transformer tested as submitted (without demagnetization), this fact should specifically be stated.

(f) Test limitation at frequencies greater than 60 Hz (c/s): At 400 Hz (c/s), the maximum current range for which tests are made is about 200 amperes and the phase angle values are normally reported to an accuracy of 3 minutes; at 800 Hz (c/s) there is a further reduction

in the current range and accuracy. If the burdens at these higher frequencies are specified in terms of volt-amperes and power factor, the frequency for which these values are stated must be clearly indicated so that the proper burden resistance and inductance can be duplicated.

(g) Recalibration: At room temperature the ratio and phase angle under a specified test condition should be repeatable unless the core is magnetized. Once stability has been demonstrated a current transformer should not require recalibration at intervals less than five years.

Item	Description	Fee
201.306a-1	Determinations of the ratio and phase angle of a current transformer on one range at one frequency and one burden (not less than 0.2 ohm resistance) at not more than six values of secondary current, namely, 0.5, 1, 2, 3, 4, and 5 amp unless otherwise specified; primary current not to exceed 500 amp.	\$114.00
201.306a-2	Same as a-1 except primary current greater than 500 amp but not to exceed 8,000 amp.	140.00
201.306b-1	Determinations of the ratio and phase angle at one value of secondary current on an additional combination of frequency, range, and burden (not less than 0.2 ohm resistance); primary current not to exceed 500 amp.	20.00
201.306b-2	Same as b-1 except primary current greater than 500 amp but not to exceed 8,000 amp.	26.00
201.306c	Determinations of ratio and phase angle at an additional value of secondary current with the same combination of frequency, range, and burden used in 201.306a or b, primary current not to exceed 8,000 amp.	10.00
201.306d	For tests of current transformers at frequencies other than 25, 50, or 60 Hz (c/s), or with burdens less than 0.2 ohm resistance, or with primary currents greater than 8,000 amp, and for special tests not covered by the above schedule, advance arrangements must be made. Fees will be charged depending upon the nature of the test.	

§ 201.307 Current transformer comparators (testing sets).

Item	Description	Fee
201.307a	Determination of the values of current ratio and phase angle for settings of the dials of a current transformer comparator for 60 Hz (c/s) (not exceeding 13 points on ratio dial and 15 on phase angle dial).	\$360.00
201.307b	Determination according to 201.307a having been made, for 10 determinations at 25 Hz (c/s) or for determinations on the second range of a double-range comparator.	40.00
201.307c	For special tests not covered by the above schedule, advance arrangements must be made. Fees will be charged depending upon the nature of the test.	

MAGNETIC MEASUREMENTS

§ 201.400 General.

(a) A general discussion of magnetic principles and methods used in magnetic testing is given in NBS Monograph 47, Basic Magnetic Quantities and the Measurement of the Magnetic Properties of Materials. Price 30 cents. Available from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.

(b) Tests in this field are for the most part made on samples which serve as standards to coordinate work in various laboratories and thus secure uniformity in commercial testing. For this purpose it is essential that the standard bars be very uniform in their magnetic properties. The Bureau does not normally make routine acceptance tests of magnetic materials unless these specimens are to be used, at least temporarily, as standards. The standard dimensions of magnetic test specimens are given in §§ 201.401 and 201.402. It is occasionally possible to test specimens of unusual materials or shapes where the services of the Bureau are needed in the development of new test procedures which are likely to be of importance in the industry. In such cases a full understanding of the problem should be developed by correspondence, or preferably by a visit which will permit direct discussion between engineers concerned and the Bureau staff.

§ 201.401 General magnetic measurements; normal induction and hysteresis.

Specimens submitted for test should be of rectangular cross section, width not to exceed 3.0 cm (1 1/8 in.); thickness not to exceed 1.0 cm (3/8 in.); for magnetizing forces from 0 to 300 or 0 to 5,000 oersteds, length to be not less than 25.4 cm (10 in.); for magnetizing forces in the range 100 to 5,000 oersteds, length to be not less than 7 cm (2 3/4 in.). Specimens whose permeability is not greater than 4 may be of circular cross section, diameter not to exceed 1.27 cm (1/2 in.) but in any event cross-sectional area must be not less than 0.2 cm² (0.031 in.²).

Item	Description	Fee
201.401a	Determination of data for normal induction curve in the range 0 to 300 oersteds.	\$50.00
201.401b	Determination of data for normal induction curve in the range 100 to 5,000 oersteds.	60.00
201.401c	Determination of data for normal induction curve in the range 0 to 5,000 oersteds.	100.00
201.401d	Determination of data for demagnetization curve, one value of magnetizing force.	60.00
201.401e	Same as 201.401d, each additional value of maximum magnetizing force.	40.00
201.401f	Determination of permeability for specimens whose permeability is less than 4, first specimen.	20.00
201.401g	Each additional specimen submitted at the same time.	10.00
201.401z	For examination of material found to be unsuitable for test, or for special tests not covered by the above schedule, fees will be charged dependent on the cost of such examination or special test.	

§ 201.402 Magnetic materials; a-c permeability and core loss.

Test specimens should consist of the proper number of strips 3 cm (1 1/8 in.) wide and either 28 cm (11 1/8 in.) to 30.5 cm (12 in.), or 50 cm (19 3/8 in.) long prepared in accordance with the specifications of the American Society for Testing and Materials, A-34.

Item	Description	Fee
201.402a	Determination of total core loss at 60 Hz (c/s) at one value of maximum induction.	\$45.00
201.402b	Same as 201.402a, each additional value of maximum induction.	15.00
201.402c	Determination of a-c permeability at 60 Hz (c/s) at one value of maximum induction.	45.00
201.402d	Same as 201.402c, each additional value of maximum induction.	15.00
201.402z	For examination of material found to be unsuitable for test, or for special tests not covered by the above schedule, fees will be charged dependent on the cost of such examination or special test.	

§ 201.403 Magnetic testing apparatus; mutual inductors, search coils, and fluxmeters.

Item	Description	Fee
201.403a	Determination of mutual induction by direct current.	\$30.00
201.403b	Same as 201.403a, each additional inductor submitted at the same time or each additional value for variable or tapped inductors.	15.00
201.403c	Determination of the area-turns of a search coil, first coil.	35.00
201.403d	Each additional search coil submitted at the same time.	20.00
201.403e	Calibration of fluxmeter at not more than five points on one range.	45.00
201.403f	Calibration of fluxmeter at one scale point on an additional range.	10.00
201.403g	Calibration of standard magnets.	\$0.00-70.00
201.403z	For examination of apparatus unsuitable for test, or for special tests not covered by the above schedule, fees will be charged dependent on the cost of such examination or special test.	

DIELECTRIC MEASUREMENTS

§ 201.500 Dielectric constant and dissipation factor.

In general, the Bureau will make tests of insulating and dielectric properties of materials only on (1) specimens of known composition of pure materials for which values are considered of use by the Bureau, or by other government agencies; and (2) dielectric reference standards made from materials exhibiting reproducible behavior under specified environmental conditions (such as humidity), when such standards are needed for improving methods of measurement. Measurements are not made on the effective insulation resistances, dielectric constant or dissipation factor of structures and assemblies of insulation, or on electric breakdown generally. Inquiries giving comprehensive information regarding any tests desired from low frequencies up to 30 kHz (kc/s) should be directed to the National Bureau of Standards, Washington, D.C., 20234. Inquiries concerning tests above 30 kHz (kc/s) should be addressed to the National Bureau of Standards, Boulder, Colo. 80301.

VOLTAGE RATIO AND HIGH-VOLTAGE MEASUREMENTS

NOTE: See § 201.102 for information relative to the calibration of resistive voltage dividers with direct current. See § 201.302

for information relative to the calibration of volt boxes.

§ 201.601 Voltage dividers.

(a) The calibration of ratio devices such as voltage dividers need not be referred to the national standards of inductance or resistance or to any other national standard. However, methods and equipment are available at the Bureau for the measurement of alternating-voltage ratios with high accuracy, and a routine calibration service for first-quality decade inductive voltage dividers is provided. Inductive voltage dividers which incorporate a resistive divider as a fine adjustment are not accepted for calibration.

(b) The largest contribution to instability in inductive voltage dividers often arises in the decade switches. Variable contact resistance in these switches sometimes affects the stability of voltage-ratio measurements to a significant extent but is most evident by its effect on the phase angle. When a decade inductive voltage divider exhibits large changes in phase angle on repeated measurements after the switches have been disturbed, the divider should no longer be considered satisfactory for use as a standard of voltage ratio.

(c) Corrections for the separate decades of an inductive divider, in general, cannot be simply combined; however, the correction to a step setting of one of the higher decades is usually independent of the setting of the lowest decades. Stray impedances must be fixed by connecting the case to the divider at one point; and unless otherwise specified, the case will be connected to one of the common terminals. Calibration intervals of three years should be satisfactory for good quality inductive voltage dividers which have not been abused.

(d) Decade inductive voltage dividers are calibrated at the Bureau by a comparison method, using as a working standard a well-constructed inductive divider which has previously been calibrated by capacitance-ratio or other suitable methods. The comparison method is simple and convenient and can be used in other laboratories for the rapid calibration of other voltage dividers. Accordingly, it is recommended that, in general, only one divider from a laboratory be submitted to the Bureau for calibration and that other dividers be calibrated by a comparison method using it as a standard.

Item	Description	Fee
201.601a	Determination of the ratio and phase angle of an inductive voltage divider for each setting of the three highest decades (all decades except the one under calibration being set at 0) and for two other arbitrary settings to be selected by NBS, at one frequency (50, 100, 400 and 1,000 Hz (c/s) services are available at NBS Washington; 400 and 1,000 Hz (c/s) services are available at NBS-Boulder) and with an input voltage not exceeding 150 volts rms (calibrations are ordinarily made with an input voltage of 100 volts rms).	\$130.00

Item	Description	Fee
201.601b	Determination of the ratio and phase angle of an inductive voltage divider for each setting of the highest decade (all other decades being set at 0) and for one arbitrary setting of each of the 2d and 3d decades to be selected by NBS, at one frequency and with an input voltage not exceeding 150 volts rms (see 201.601a above).	\$75.00
201.601a	Determination of the ratios and phase angles of resistive or capacitive voltage dividers and of inductive voltage dividers at frequencies (other than those listed) up to 10 kHz (kc/s) or in other respects beyond those covered in items 201.601a and 201.601b are handled on a special test basis, and advance arrangements must be made. Fees will be charged dependent upon the nature of the test.	

§ 201.602 Voltage transformers.

(a) *Acceptance.* The Bureau normally accepts voltage transformers for calibration only if they are suitable for use as reference standards. Results of tests at or near 60 Hz (c/s) will normally be reported to 0.01 percent in ratio and 1 minute in phase angle.

(b) *Test information.* Tests cannot be started until information is furnished concerning the following test conditions: (1) Test frequency; (2) secondary test voltages; (3) secondary burdens; (4) ranges to be tested.

(c) *Transformer burdens.* The ratio and phase angle of a voltage transformer vary linearly with secondary current under conditions of constant voltage, frequency, and power factor within its rating. Hence, if values of ratio and phase angle are determined on open circuit (zero burden) and at one burden having a particular power factor, values at other burdens with the same power factor (and at the same voltage and frequency) can be found by linear interpolation. If the ratio and phase angle of a voltage transformer are known both on open circuit (zero burden) and at a single unity power-factor burden, the ratio and phase angle for any burden within its rating at any power factor (at the same voltage and frequency) can be computed with sufficient accuracy for many measurement purposes by the following formulas:

$$F = F_0 + \frac{I}{I_0} [(F_1 - F_0) \cos \phi + (\gamma_0 - \gamma_1) \sin \phi],$$

and

$$\gamma = \gamma_0 + \frac{I}{I_0} [(F_1 - F_0) \sin \phi - (\gamma_0 - \gamma_1) \cos \phi],$$

where I_1 and I are the secondary current at the known unity power-factor burden and the desired burden, respectively; F_0 , F_1 , and F are the ratio correction factors at zero burden, the known unity power-factor burden, and the desired burden, respectively; γ_0 , γ_1 , and γ are the corresponding phase angles in radians; and $\cos \phi$ is the power factor of the desired burden (ϕ being taken as positive for inductive burdens). The following conversion factors apply:

- 1 minute = 0.000291 radian
1 radian = 3438 minutes

The "standard burdens" of the ASA Standard for Instrument Transformers (C57.13) are for rating purposes only, and are not recommended for use as test

burdens in calibrating a voltage transformer for use as a reference standard. Values of ratio and phase angle at any ASA burden can be computed with sufficient accuracy for rating purposes by using the above formulas. The test burdens recommended are stated in item 201.602a-1, below. In this item, the instrument burden "to be specified by the user" should preferably be the burden with which the transformer will be used as a reference standard, in the test circuit, and may be stated either in terms of volt-amperes and power factor at a specified voltage and frequency, or the resistance and reactance of the test circuit elements.

(d) *Test voltages.* When a secondary burden of fixed impedance is used, the ratio and phase angle of a well-designed voltage transformer are nearly independent of the secondary voltage within its normal operating range. Hence, tests at a single voltage are sufficient unless the transformer is to be operated over an extended voltage range. In extended-range operation the variations of ratio factor and phase angle with voltage are identical for any constant-impedance burden. Hence, it should be sufficient to make ratio and phase-angle determinations at the extremes of the expected voltage-range of operation and at one or perhaps two intermediate voltage points on one burden (preferably zero burden). Tests at all additional burdens need be made at only a single voltage.

(e) *Multirange transformer.* When multiple ranges are provided by series-parallel primary connections, the ratio correction factors and phase angles (for constant secondary voltage, burden, and frequency) are practically identical for all ranges so obtained. (Hence a single determination on each range after the first serves to completely define the transformer performance when the added ranges are obtained by primary series-parallel combinations.) When multiple ranges are obtained by tapping a portion of one of the windings, or by secondary series-parallel combinations, the ratio correction factors and phase angles are not necessarily the same on the various ranges.

(f) *Fuses.* It is recommended that voltage transformers intended as reference standards be used without fuses, because fuse resistance affects both ratio and phase angle values so that fuse deterioration or replacement may alter the values. When a fused transformer is submitted, tests with the fuses in place will be made only if this is specifically requested by the customer.

(g) *Tests at 400 Hz (c/s).* Ratio and phase angle determinations at 400 Hz (c/s) can be made up to 9,000 volts. Results of such tests will normally be reported to 0.03 percent in ratio and 3 minutes in phase angle.

(h) *Recalibration.* The ratio and phase angle of a voltage transformer for a given burden, voltage, and frequency should not change significantly with time unless the transformer is damaged. Once stability has been demonstrated,

a transformer should not require recalibration at intervals less than five years.

(i) *Shipment.* Heavy transformers should be shipped in wooden boxes and held in place, if necessary, by checks or cleats. Large transformers, especially those having oil-filled iron cases, should be crated separately and arranged, whenever possible, so that the terminals can be made accessible for tests without removing the entire crate. The tops of boxes should be marked "this side up." Large transformers (those more than 12 ft. high including crating, or weighing more than 6,000 lbs.) require special handling; advance arrangements, including provision for delivery inside the laboratory, must be made.

Item	Description	Fee
	NOTE: It is recommended that a voltage transformer be calibrated under schedule 201.602a-1 or 201.602a-2 the first time it is submitted to NBS for calibration. In view of the performance characteristics discussed above, it is believed that subsequent calibrations under schedule 201.602a-3 or 201.602a-4 should meet most requirements.	
201.602a-1	Determinations of the ratio and phase angle of a voltage transformer at one frequency (25, 50, or 60 Hz (c/s)), one range, and one secondary voltage, with not more than four values of secondary burden; namely, those giving zero, half, and full rated noninductive load at rated voltage, and with one instrument burden of approximately unity power factor to be specified by the user; primary voltage not to exceed 25,000 V.	\$100.00
201.602a-2	As in a-1 except primary voltage greater than 25,000 V but not to exceed 100,000 V.	150.00
201.602a-3	Determination of the ratio and phase angle of a voltage transformer at one frequency (25, 50, or 60 Hz (c/s)), one range, one secondary voltage and with one unity power factor burden; primary voltage not to exceed 25,000 V.	50.00
201.602a-4	Determination of the ratio and phase angle of a voltage transformer at one frequency (25, 50, or 60 Hz (c/s)), one range, one secondary voltage and with one unity power factor burden; primary voltage not to exceed 100,000 V.	120.00
201.602b	Determination of ratio and phase angle at one value of secondary voltage on an additional range or frequency, and with any of the burdens used in 201.602a.	20.00
201.602c	Determination of ratio and phase angle with an additional burden (already used in 201.602a) and with the same combination of range, frequency, and voltage used in 201.602b.	15.00
201.602d	Determination of ratio and phase angle at an additional burden of approximately unity power factor other than those used in 201.602a.	30.00
201.602e	Determination of ratio and phase angle at an additional value of secondary voltage on the same combination of range, frequency, and burden used in 201.602 a, b, c, or d.	10.00
201.602z	For tests of voltage transformers at other frequencies, with primary voltage greater than 100,000 V, or with other than unity power factor burdens, and for other special tests not covered by the above schedule, advance arrangements must be made. Fees will be charged, depending on the nature of the test. At 400 Hz (c/s), test fees are approximately double those at 60 Hz (c/s).	

§ 201.603 Voltage transformer comparators.

Item	Description	Fee
201.603a	Calibrations of voltage transformer comparators are handled on a special test basis; however, advance arrangements need not be made. Fees will be charged dependent upon the nature of the calibration required.	

§ 201.604 Kilovoltmeters.

Item	Description	Fee
201.604a	Calibration of kilovoltmeters at five scale points on one range using 60 Hz (c/s) alternating voltage (up to 60 kV).....	\$100.00
201.604b	Calibration of kilovoltmeters at five scale points on one range using direct voltage of one polarity to ground (up to 60 kV).....	50.00
201.604c	Calibration at one scale point on an additional range (up to 60 kV) for 201.604 a or b.....	25.00
201.604d	Calibration of each additional scale point on one of the ranges calibrated under 201.604 a, b, or c.....	10.00
201.604e	For calibrations at voltages above 60 kV, advance arrangements must be made. Fees will be charged dependent upon the nature of the calibration required.	

LOW-FREQUENCY REGION

§ 201.701 Frequency stability calibration of signal sources, up to 30 kHz (kc/s).

(Services available only at the Boulder Laboratories.)

(a) Frequency stability calibrations are made on signal sources up to 30 kHz (kc/s). (See schedule 201.860 for calibration service at higher frequencies.)

(b) The signal source should have a power output of at least 10 milliwatts (into a matched load).

(c) Frequency stability of the signal source should be better than approximately one part in 10⁷.

Item	Description	Fee
201.701a	Measurement of frequency stability of signal sources, up to 30 kHz (kc/s).....	(*)

*Fees. The fees to be charged for these calibration services performed by the National Bureau of Standards at its Boulder Laboratories, Boulder, Colo., are not fixed at this time. Charges will be made for actual costs incurred. Upon request, estimates will be furnished for specific tasks which should provide a close approximation of actual cost.

HIGH-FREQUENCY REGION

§ 201.800 General.

(a) (1) In the high-frequency region of approximately 30 kHz (kc/s) to 1000 MHz (Mc/s) and higher, the Electronic Calibration Center, Boulder Laboratories, is equipped to calibrate standards of voltage, power, impedance, attenuation, and field strength. These standards are limited at present to those designed for cw measurements and having coaxial terminals (usually type N connectors). No general provisions have yet been made for standards with balanced transmission-line terminals.

(2) Stable rf power sources and detectors are required to perform such measurements. This is accomplished by use of crystal-controlled rf power sources

and receivers. Rf power sources have power stabilization circuits that provide a power output constant to within 0.1 percent or better over periods of one hour or more. Special low-noise, crystal-controlled receivers meet the exacting requirements to monitor or detect these signals. In using standards at high frequencies it is often desirable, and even necessary, to duplicate these conditions.

(3) Calibration services for high-frequency standards with coaxial connectors are performed at the fixed frequencies of 30, 100, and 300 kHz (kc/s), and 1, 3, 10, 30, 100, 300, and 1000 MHz (Mc/s). Calibrations are available at other frequencies for some standards, as well as continuous frequency coverage up to 12 GHz (Gc/s) for certain calibrations, but usually with less accuracy.

(4) Connectors limit the accuracy of measurements in the high-frequency region to some extent. To avoid instability from this cause, precision connectors should be used on interlaboratory standards. In the case of Type N connectors, certain mechanical dimensions should fall within tolerances specified by the Armed Services Electro-Standards Agency (ASESA) in Procurement Specification MIL-C-71. If dimensions fall outside the specified tolerances, there is a possibility of damaging the mating connectors on interlaboratory standards and NBS working standards. Critical dimensions of Type N connectors are indicated on a drawing that may be obtained from the Electronic Calibration Center, National Bureau of Standards, Boulder, Colo., 80301.

(b) Fees: The fees to be charged for the following calibration services performed by the National Bureau of Standards at its Boulder Laboratories, Boulder, Colo., are not fixed at this time. Charges will be made for actual costs incurred. Upon request, estimates will be furnished for specific tasks which should provide a close approximation of actual cost.

§ 201.810 Rf, rf-dc voltmeters, and thermal converters in the frequency range of 30 kHz (kc/s) to 1000 MHz (Mc/s); from 0.2 V to 300 V.

Ordinarily instruments equally suitable for use on d-c and rf will be calibrated only for rf-dc difference by the procedure of item 201.810a, since periodic calibrations can be made by the user on reversed direct current. Such reversed d-c calibrations will be made at the Bureau only under unusual circumstances and by advance arrangement. Instruments for use only on rf will be given rf calibrations by the procedures of items 201.810 a, b. Instruments which respond to average or peak values or which are not in ASA accuracy class 1/4 percent or better are not usually accepted for calibration below 30 MHz (Mc/s).

Item	Description	Fee
201.810a	Determination of voltage at 30, 100, 300 kHz (kc/s), 1, 3, 10, 30, and 100 MHz (Mc/s) from 0.2 to 300 V.....	(*)
201.810b	Determination of voltage at 300, 400, 500, 700, and 1000 MHz (Mc/s) from 0.2 to 20 V.....	(*)
201.810c	Special calibrations not covered by the above schedule.....	(*)

*See § 201.800(b). Fees.

§ 201.811 Rf micropotentiometers, voltmeters, and signal sources in the frequency range from 30 kHz (kc/s) to 1000 MHz (Mc/s), from 1 μV to 0.1 volt.

The Bureau normally accepts for calibration only high-quality instruments suitable for use as interlaboratory standards. These instruments should have a stability of 1 percent or better and an accuracy of 3 percent or better. Rf voltmeters will be calibrated by the procedures of items 201.811 a, b. The Bureau usually accepts only signal sources (signal generators) high enough in quality to be considered as interlaboratory standards. If these instruments are equally suitable for use on d-c and rf, they will be calibrated for rf-dc difference by the procedures of items 201.811 a, b. Signal sources suitable for use only on rf will be calibrated by the procedure of item 201.811a.

Item	Description	Fee
201.811a	Determination of voltage for micropotentiometers, voltmeters, and signal sources from 30 kHz (kc/s) to 900 MHz (Mc/s), from 1 μV to 0.1 V.....	(*)
201.811b	Determination of voltage for voltmeters from 900 to 1000 MHz (Mc/s), from 100 μV to 0.1 V.....	(*)
201.811c	Special calibrations not covered by the above schedule.....	(*)

*See § 201.800(b). Fees.

§ 201.820 Rf calorimeters, 30 kHz (kc/s) to 500 MHz (Mc/s).

(a) For maximum calibration accuracy, interlaboratory rf calorimeters should repeat readings to one percent or better with a constant power input.

(b) At present only rf calorimeters utilizing Type N connectors for rf power input can be calibrated. Refer to § 201-800 for special requirements for Type N connectors used on interlaboratory standards.

Item	Description	Fee
201.820a	Calibration of rf calorimeter at one frequency at 100 and 300 kHz (kc/s); 1, 3, 10, and 30 MHz (Mc/s); and at one power level from 0.001 to 200 W.....	(*)
201.820b	Calibration of rf calorimeter at one frequency at 100, 200, 300, 400, and 500 MHz (Mc/s); at one power level from 0.001 to 100 W.....	(*)
201.820c	Each additional power level at the same frequency.....	(*)
201.820d	Special calibrations not covered by the above schedule.....	(*)

*See § 201.800(b). Fees.

§ 201.821 Continuous wave low-level, power measurement of coaxial bolometer units and bolometer-coupler units.

(a) A bolometer unit includes both the bolometer element or elements and the bolometer mount in which they are supported.

(b) Power measurements are made on barretter-type bolometer units having nominal resistance of 50, 100, or 200 ohms at a bias current between 3.5 and 10 mA; and on thermistor-type bolometer units having a nominal resistance of 50, 100, or 200 ohms at a bias current between 5

and 15 mA. Bolometer units¹ should be of the fixed tuned or untuned broadband type and must have suitable² male or female Type N connectors.

(c) Power measurements are made on bolometer units at cw power levels of 1, and 10 mW only.

(d) Power measurements are made on bolometer-coupler combinations having coupling ratios from 3 to 30 dB. A bolometer unit of the fixed tuned or untuned broadband type should be permanently attached to the side arm of the directional coupler. The directional coupler should have good design features, with a directivity of 30 dB or greater, and a VSWR no greater than 1.10 for the input and output ports of the main arm of the coupler.

(e) Effective efficiency for bolometer units is defined as the ratio of the substituted d-c power in the bolometer unit to the microwave power dissipated within the bolometer unit.³

(f) Calibration factor for bolometer units is defined as the ratio of the substituted d-c power in the bolometer unit to the rf power incident upon the bolometer unit.⁴

(g) Calibration factor for bolometer-coupler units is defined as the ratio of the substituted d-c power in the bolometer unit on the side arm of the directional coupler to the rf power incident upon a nonreflecting load attached to the output port of the main arm.⁵

(h) For temperature-compensated bolometer units, the d-c cable may be sent with the unit for maximum accuracy of calibration.

Item	Description	Fee
201.821a	Measurement of calibration factor of a coaxial bolometer unit at one frequency at 100 MHz (Mc/s) or 1 GHz (Gc/s); and at one power level, 1 or 10 mW	(*)
201.821b	Measurement of calibration factor of a coaxial bolometer-coupler unit at one frequency at 30, 100, 200, 300, 400, 500 MHz (Mc/s), or 1 GHz (Gc/s); and at one power level	(*)
201.821c	Each additional power level at the same frequency	(*)
201.821s	Special calibrations not covered by the above schedule	(*)

*See § 201.800(b). Fees.

§ 201.830 Immittance, 30 kHz (kc/s) to 4 GHz (Gc/s).

(a) Maximum accuracy can be achieved only in the case of instruments and components equipped with connectors having a plane of reference directly compatible with the Bureau system with no necessity for special adapters. In the interest of preserving higher calibration accuracies, coaxial connectors should be utilized on standard instruments and components wherever possible. Calibrations are not performed on capacitors

¹ Bolometer unit is here defined to include the bolometer element and the bolometer mount.

² See § 201.800.

³ Desch, R. F., and R. E. Larson, *Bolometric Microwave Power Calibration Techniques* at NBS, IEEE Trans-*I&M*, IM-12, No. 1, 29 (June 1963).

with unshielded terminals, e.g. binding posts and banana plug connectors.

(b) Power applied to any item under test will normally not exceed 1 W. Where caution in this respect is necessary it should be clearly stated in the calibration request. All calibrations described in this section are performed under ambient conditions of approximately 23° C. and 40 percent relative humidity.

Item	Description	Fee
201.830a-1	Two-terminal impedance measurement at one point in the frequency range 30 to 400 kHz (kc/s), 0 to 10,000 ohms resistance, and 0 to 1100 μ H inductance	(*)
201.830a-2	Each additional point within the limits in item 201.830a-1	(*)
201.830b-1	Two-terminal impedance measurement at one point in the frequency range 30 kHz (kc/s) to 1 MHz (Mc/s), 0 to 1900 ohms resistance, and 0 to 110 μ H inductance	(*)
201.830b-2	Each additional point within the limits in item 201.830b-1	(*)
201.830c-1	Two-terminal admittance measurement at one point in the frequency range 30 kHz (kc/s) to 1 MHz (Mc/s), 0 to 1100 μ mho conductance, and 0 to 1100 pF capacitance	(*)
201.830c-2	Each additional point within the limits in item 201.830c-1	(*)
201.830d-1	Two-terminal admittance measurement at one point in the frequency range 5 to 250 MHz (Mc/s), 0 to 50 μ mho conductance, and 0 to 50 pF capacitance	(*)
201.830d-2	Each additional point within the limits in item 201.830d-1	(*)
201.830e-1	Two-terminal impedance measurement of coaxial components at frequencies from 50 MHz (Mc/s) to 4 GHz (Gc/s), within the range 0.5 to 5000 ohms for magnitude and 0 to 90° for phase angle	(*)
201.830e-2	Each additional point within the limits in item 201.830e-1	(*)
201.830f-1	Q-Standard calibration in the frequency range 50 kHz (kc/s) to 45 MHz (Mc/s), 0 to 1000 for effective Q, and 30 to 450 pF for effective resonating capacitance	(*)
201.830z	Special two-terminal immittance calibrations not covered by the above schedule	(*)
201.831a-1	Three-terminal capacitance calibration at 100 kHz (kc/s), 465 kHz (kc/s), or 1 MHz (Mc/s) for the following fixed nominal values: 10 ⁻² , 10 ⁻¹ , 10 ⁰ , 10 ¹ , and 10 ² pF, per frequency	(*)
201.831b-1	Three-terminal capacitance calibration at 465 kHz (kc/s) at one point in the range 0.001 to 100 pF	(*)
201.831b-2	Each additional point within the limits in item 201.831b-1	(*)

*See § 201.800(b). Fees.

§ 201.840 Dissipative fixed coaxial attenuators.

(a) Dissipative fixed coaxial attenuators are normally calibrated in a system having a characteristic impedance of 50+*j*0 ohms. Since the accuracy of the calibration is degraded by any deviation or uncertainty in this characteristic impedance, the types of allowable connectors are limited. Precision connectors having a known plane of reference or the Type N meeting Procurement Specification MIL-C-71 are required. (See § 201.800.) All measurements are made by the substitution method which requires that the connectors used be asexual or the attenuator have a male connector at one port and a female connector at the other port. If an adapter is required to comply with the foregoing,

it must be supplied with the attenuator and the combination will be calibrated as one unit. Attenuators having a VSWR of 1.30 or greater at either port are not acceptable.

(b) Maximum power to any attenuator will not exceed 20 mW unless prior arrangements for higher power levels have been made.

Item	Description	Fee
201.840a-1	Measurement of insertion loss of fixed attenuator at one of the following frequencies: 1, 10, 30, 60, 100, and 300 MHz (Mc/s). Range: 0 to 100 dB	(*)
201.840a-2	Each additional attenuator at the same frequency and over the same range as item 201.840a-1	(*)
201.840b-1	Measurement of insertion loss of fixed attenuator at any frequency between 200 MHz (Mc/s) and 12 GHz (Gc/s). Range: 0 to 60 dB	(*)
201.840b-2	Each additional attenuator at the same frequency and over the same range as item 201.840b-1	(*)
201.840z	Special calibrations not covered by the above schedule	(*)

*See § 201.800(b). Fees.

§ 201.841 Dissipative variable coaxial attenuators.

(a) These attenuators are calibrated in accordance with item 201.840 except that the zero or other specified setting is used as the reference. Because attenuation difference only is measured, both ports may have the same connector.

(b) Variable attenuators must have a repeatability of setting better than 0.1 dB; incremental attenuators must have a repeatability of 0.01 dB or better.

Item	Description	Fee
201.841a-1	Measurement of one increment on dissipative variable attenuator or at one of the following frequencies: 1, 10, 30, 60, 100, and 300 MHz (Mc/s). Range 0 to 100 dB	(*)
201.841a-2	Each additional increment at the same frequency and over the same range as item 201.841a-1	(*)
201.841b-1	Measurement of one increment on a dissipative variable attenuator at any frequency between 200 MHz (Mc/s) and 12 GHz (Gc/s). Range 0 to 60 dB	(*)
201.841b-2	Each additional increment at the same frequency and over the same range as item 201.841b-1	(*)
201.841z	Special calibrations not covered by the above schedule	(*)

*See § 201.800(b). Fees.

§ 201.842 Waveguide below-cutoff (piston) attenuators.

(a) Waveguide below-cutoff attenuators are normally calibrated in a system having a characteristic impedance of 50+*j*0 ohms. As only attenuation difference measurements are made on this type of attenuator, Type BNC, C, TNC, etc., connectors are acceptable but precision type connectors are preferred.

(b) An insertion loss measurement at the attenuator zero setting can be made. Maximum power to any attenuator will not exceed 20 mW unless prior arrangements for higher power levels have been made.

(c) Calibrations are performed at the following frequencies: 1, 10, 30, 60, 100, and 300 MHz (Mc/s).

Item	Description	Fee
201.842-1	One increment on a waveguide below-cutoff attenuator at one of the following frequencies: 1, 10, 30, 60, 100, and 300 MHz (Mc/s). Range (including initial insertion loss): up to 110 dB.	(*)
201.842-2	Each additional increment at the same frequency and over the same range as item 201.842-1.	(*)
201.842z	Special calibrations not covered by the above schedule.	(*)

*See § 201.800(b). Fees.

§ 201.843 Coaxial fixed directional couplers.

Fixed directional couplers are calibrated in accordance with item 201.840. Terminations must be supplied for any arm not used during a measurement.

Item	Description	Fee
201.843-1	Single insertion loss measurement between any two arms of a coaxial fixed directional coupler at one of the following frequencies: 1, 10, 30, 60, 100, and 300 MHz (Mc/s). Range: 0 to 100 dB.	(*)
201.843-2	Each additional insertion loss measurement between any two arms at the same frequency and over the same range as item 201.843-1.	(*)
201.843-1	Single insertion loss measurement between any two arms at any frequency between 200 MHz (Mc/s) and 12 GHz (Gc/s). Range: 0 to 60 dB.	(*)
201.843-2	Each additional insertion loss measurement between any two arms at the same frequency and over the same range as item 201.843-1.	(*)
201.843z	Special calibrations not covered by the above schedule.	(*)

*See § 201.800(b). Fees.

§ 201.844 Coaxial variable directional couplers.

(a) Coaxial variable directional couplers are calibrated in accordance with item 201.841. Terminations must be supplied for any arm not used during a measurement.

(b) The change in coupling to the side arm relative to the minimum setting on the device is normally measured.

Item	Description	Fee
201.844-1	Single coupling increment between input and variable arm of coaxial variable directional coupler at one of the following frequencies: 1, 10, 30, 60, 100, and 300 MHz (Mc/s). Range (including initial coupling loss): up to 110 dB.	(*)
201.844-2	Each additional increment at the same frequency, and over the same range as item 201.844-1.	(*)
201.844-1	Same measurement as in item 201.844-1 at any frequency between 200 MHz (Mc/s) and 12 GHz (Gc/s). Range (including initial coupling loss): up to 60 dB.	(*)
201.844-2	Same measurement as in item 201.844-2 at the same frequency and over the same range as item 201.844-1.	(*)
201.844z	Special calibrations not covered by the above schedule.	(*)

*See § 201.800(b). Fees.

§ 201.850 Field strength meters, 30 Hz (c/s) to 1000 MHz (Mc/s).

(a) Field strength standards and field strength meters are calibrated in terms of

cw signals in the frequency range from 30 Hz (c/s) to 1000 MHz (Mc/s). Loop antennas are calibrated in the frequency range from 30 Hz (c/s) to 30 MHz (Mc/s), and horizontally polarized dipole antennas are calibrated from 30 to 1000 MHz (Mc/s). The magnitude of the calibrating fields varies from approximately 25 to 200 mV/m for loop antennas, and approximately 50 mV/m for dipole antennas.

(b) The internal characteristics of field strength meters, such as the overall linearity of the receiver, accuracy of the signal input attenuators, and the accuracy of the receiver as a two-terminal rf voltmeter can be measured at frequencies from 30 Hz (c/s) to 1000 MHz (Mc/s).

(c) When field strength standards or meters are submitted for calibration an instruction manual and all accessories should be included, and the instrument should be in excellent operating condition.

Item	Description	Fee
201.850a-1	Calibration of loop antenna at one frequency, 30 Hz (c/s) to 30 MHz (Mc/s).	(*)
201.850a-2	Calibration of loop antenna at frequencies additional to item 201.850a-1, 30 Hz (c/s) to 30 MHz (Mc/s).	(*)
210.850z	Special calibrations not covered by the above schedule.	(*)
210.851a-1	Calibration of dipole antenna at one frequency, 30 to 1000 MHz (Mc/s).	(*)
201.851a-2	Calibration of dipole antenna at frequencies additional to item 201.851a-1, 30 to 400 MHz (Mc/s).	(*)
201.851a-3	Calibration of dipole antenna at frequencies additional to item 201.851a-1, 400 to 1000 MHz (Mc/s).	(*)
201.851z	Special calibrations not covered by the above schedule.	(*)
201.852a-1	Calibration of input attenuators at one frequency, initial step.	(*)
201.852a-2	Calibration of additional steps of input attenuator in addition to item 201.852a-1.	(*)
201.852b-1	Calibration of the overall linearity of receiver and output circuit at one frequency and one attenuator setting, initial point.	(*)
201.852b-2	Calibration of overall linearity of receiver at other points in addition to item 201.852b-1.	(*)
201.852c-1	Calibration of the receiver as a two-terminal rf voltmeter, 1 to 10,000 μ V, 0 to 400 MHz (Mc/s), at one frequency.	(*)
201.852c-2	Calibration of the receiver as a two-terminal rf voltmeter at other frequencies additional to item 201.852c-1, 0 to 400 MHz (Mc/s).	(*)
201.852c-3	Calibration of receiver as a two-terminal rf voltmeter at other frequencies additional to item 201.852c-1, 400 to 1000 MHz (Mc/s).	(*)
201.852z	Special calibrations not covered by the above schedule.	(*)

*See § 201.800(b). Fees.

§ 201.860 Frequency stability calibration of signal sources.

(Service available only at the Boulder Laboratories.)

(a) Frequency stability calibrations are made on signal sources in the frequency range from 30 kHz (kc/s) to 500 MHz (Mc/s).

(b) The signal source should have a power output of at least 10 milliwatts (into a matched load).

(c) Frequency stability of the signal source should be better than approximately one part in 10^7 .

Item	Description	Fee
201.860a	Measurement of frequency stability of signal sources, from 30 kHz (kc/s) to 500 MHz (Mc/s).	(*)

*See § 201.800(b). Fees.

MICROWAVE REGION

§ 201.900 General.

(a) (1) Microwave calibration services presently available include measurements in power, impedance, frequency, attenuation, and noise. The frequency range covered for each of the measurements is given below.

(2) In performing microwave calibrations, a considerable amount of time is needed to prepare the system for measurement operation. Much of this preparation is related to the adjustment of the system to the frequency of operation selected for the calibration. Time and cost often can be reduced by minimizing the number of times the operating frequency of the calibration system must be readjusted. To help in achieving this reduction in costs, a list of suggested calibration frequencies is presented in the following table. These frequencies are suggested for use in connection with this schedule and for interlaboratory standards utilizing terminations consisting of the standard waveguide sizes given below in the table of suggested calibration frequencies. It should be emphasized that the suggested frequencies are primarily for economy and for convenience to those requesting calibrations. In general the calibration instrumentation for the microwave region is intended to provide complete and continuous frequency coverage as appropriate for the various waveguide sizes. Those having need for calibrations at other than suggested frequencies can be accommodated.

EIA waveguide designation	Frequency range GHz (Gc/s)	Suggested calibration frequencies GHz (Gc/s)		
		No. 1	No. 2	No. 3
WR284	2.60-3.95	2.85	3.25	3.55
WR187	3.95-5.85	4.35	4.90	5.25
WR137	5.85-8.20	6.45	7.00	7.40
WR112	7.05-10.0	7.75	8.50	9.00
WR90	8.20-12.4	9.00	9.80	11.2
WR62	12.4-18.0	13.5	15.0	17.0
WR42	18.0-26.5	19.8	22.0	23.8
WR28	26.5-40.0	29.0	33.0	37.0

(b) Fees: The fees to be charged for the following calibration services performed by the National Bureau of Standards at its Boulder Laboratories, Boulder, Colo. are not fixed at this time. Charges will be made for actual costs incurred. Upon request, estimates will be furnished for specific tasks which should provide a close approximation of actual costs.

§ 201.910 Continuous low-level, power measurement of waveguide bolometer units and bolometer-coupler units.

(a) Power measurements are made on barretter-type bolometer units having

nominal resistance of either 100 or 200 ohms at a bias current between 3.5 and 10 mA, and on thermistor-type bolometer units having a nominal resistance of either 100 or 200 ohms at a bias current between 5 and 15 mA. Bolometer units should be of the fixed tuned or untuned broadband type.

(b) Power measurements are made on bolometer units at power values from 0.1 to 10 mV.

(c) Power measurements are made on bolometer-coupler combinations having coupling ratios from 3 to 20 dB. A bolometer unit of the fixed tuned or untuned broadband type should be permanently attached to the side arm of the coupler. The three-port directional coupler should have good design features with a directivity of 40 dB or greater and a VSWR no greater than 1.05 for the input and output ports of the main arm of the coupler.

(d) Effective efficiency for bolometer units is defined as the ratio of the substituted d-c power in the bolometer unit to the microwave power dissipated within the bolometer unit.

(e) Calibration factor for bolometer units is defined as the ratio of the substituted d-c power in the bolometer unit to the microwave power incident upon the bolometer unit.

(f) Calibration factor for bolometer-coupler units is defined as the ratio of the substituted d-c power in the bolometer unit on the side arm of the directional coupler to the microwave power incident upon a nonreflecting load attached to the output port of the main arm.

(g) Efficiency for bolometer units is defined as the ratio of the microwave power absorbed by the barretter element to the microwave power dissipated within the bolometer unit.

Item	Description	Fee
201.910a-1	Measurement of effective efficiency of bolometer unit at a single frequency of the following waveguide sizes terminated with standard waveguide connectors:	(*)
201.910a-2	WR90 (8.2-12.4 GHz) (Ge/s).....	(*)
201.910a-3	WR137 (5.85-8.20 GHz) (Ge/s).....	(*)
201.910b-1	Measurement of calibration factor of bolometer unit at a single frequency of the following waveguide sizes terminated with standard waveguide connectors:	(*)
201.910b-2	WR90 (8.2-12.4 GHz) (Ge/s).....	(*)
201.910b-3	WR137 (5.85-8.20 GHz) (Ge/s).....	(*)
201.910c-1	Measurement of efficiency of bolometer unit at a single frequency of the following waveguide size terminated with a standard waveguide connector:	(*)
201.910c-2	WR90 (8.2-12.4 GHz) (Ge/s).....	(*)
201.910c-3	WR137 (5.85-8.20 GHz) (Ge/s).....	(*)
201.910d-3	WR137 (5.85-8.20 GHz) (Ge/s).....	(*)
201.910s	Special calibrations not covered by the above schedule.....	(*)

*See § 201.900(b). Fees.

§ 201.911 Continuous low-level power measurement of waveguide dry calorimeters.

Item	Description	Fee
201.911a-1	Measurement of output voltage versus input microwave power for dry calorimeter at a single frequency of WR90 waveguide (8.2-12.4 GHz) (Ge/s) terminated with a standard waveguide connector, at power values from 10 milliwatts to 1 watt.....	(*)
201.911a-2	Each additional power value at the same frequency as item 201.911a-1.....	(*)
201.911s	Special calibrations not covered by the above schedule.....	(*)

*See § 201.900(b). Fees.

§ 201.920 Reflection coefficient magnitude measurement on waveguide reflectors (mismatches).

(a) Reflection coefficient measurements are made on reflectors producing a reflection coefficient magnitude in the range 0.025 to 1.0.

(b) Reflectors must be fitted with standard types of waveguide flanges. The face of these flanges should be machined flat and smooth and should not contain protrusions or indentations. The connecting holes of the flange should be symmetrically and accurately aligned to the rectangular waveguide opening.

Item	Description	Fee
201.920a-1	Measurement of reflection coefficient magnitude of reflector at a single frequency of the following waveguide sizes terminated with standard waveguide connectors:	(*)
201.920a-2	WR90 (8.2-12.4 GHz) (Ge/s).....	(*)
201.920s	WR137 (5.85-8.20 GHz) (Ge/s).....	(*)
201.920s	Special calibrations not covered by the above schedule.....	(*)

*See § 201.900(b). Fees.

§ 201.930 Frequency measurement on cavity wavemeters.

(a) Frequency measurements are made on fixed or variable cavity wavemeters of either the reaction (one-port) type or the transmission (two-port) type.

(b) Frequency measurements are made on fixed or variable cavity wavemeters having coaxial terminals with Type N connectors (male or female) in the frequency range of 1000 MHz (Mc/s) to 10 GHz (Gc/s).

(c) Frequency measurements are made on fixed or variable cavity wavemeters having standard type waveguide terminals in the frequency range of 2.6 to 75 GHz (Gc/s).

Item	Description	Fee
201.930a	Measurement of resonance frequency of fixed cavity wavemeter.....	(*)
201.930b	Setting of adjustable cavity wavemeter at prescribed resonance frequency.....	(*)
201.930c-1	Calibration of dial setting versus resonance frequency of variable cavity wavemeter at initial prescribed frequency.....	(*)

Item	Description	Fee
201.930c-2	Calibration of dial setting versus resonance frequency of variable cavity wavemeter at each prescribed frequency additional to the initial frequency and on the same wavemeter as 201.930c-1.....	(*)
201.930s	Special calibrations not covered by the above schedule.....	(*)

*See § 201.900(b). Fees.

§ 201.940 Attenuation difference measurements on variable attenuators.

(a) Attenuation difference measurements are made on step or continuously variable attenuators usually with the zero dial setting used as the reference position.

(b) Attenuation measurements are made for attenuation values from 0 to 50 dB. This range of attenuation values can be extended to 70 dB in some frequency ranges.

(c) Variable attenuators should have a repeatability of dial setting better than ± 0.1 dB.

(d) Variable attenuators should have a VSWR less than 1.1 at each waveguide port.

Item	Description	Fee
201.940a-1	Measurement of attenuation difference of direct-reading variable attenuator at an initial prescribed dial setting at a single frequency of the following waveguide sizes terminated with standard waveguide connectors:	(*)
201.940a-2	WR284 (2.60-3.95 GHz) (Ge/s).....	(*)
201.940a-3	WR187 (3.95-5.85 GHz) (Ge/s).....	(*)
201.940a-4	WR137 (5.85-8.20 GHz) (Ge/s).....	(*)
201.940a-5	WR112 (7.05-10.0 GHz) (Ge/s).....	(*)
201.940a-6	WR90 (8.2-12.4 GHz) (Ge/s).....	(*)
201.940a-7	WR62 (12.4-18.0 GHz) (Ge/s).....	(*)
201.940a-8	WR42 (18.0-26.5 GHz) (Ge/s).....	(*)
201.940a-9	WR28 (26.5-40.0 GHz) (Ge/s).....	(*)
201.940a-20	Measurement of attenuation difference of direct-reading variable attenuator at each prescribed dial setting additional to the initial dial setting at the same frequency and on the same attenuator as 201.940a-1 to 201.940a-8.....	(*)
201.940b-1	Calibration of dial setting versus attenuation difference for indirect-reading variable attenuator at an initial prescribed attenuation difference value at a single frequency of the following waveguide sizes terminated with standard waveguide connectors:	(*)
201.940b-2	WR284 (2.60-3.95 GHz) (Ge/s).....	(*)
201.940b-3	WR187 (3.95-5.85 GHz) (Ge/s).....	(*)
201.940b-4	WR137 (5.85-8.20 GHz) (Ge/s).....	(*)
201.940b-5	WR112 (7.05-10.0 GHz) (Ge/s).....	(*)
201.940b-6	WR90 (8.2-12.4 GHz) (Ge/s).....	(*)
201.940b-7	WR62 (12.4-18.0 GHz) (Ge/s).....	(*)
201.940b-8	WR42 (18.0-26.5 GHz) (Ge/s).....	(*)
201.940b-9	WR28 (26.5-40.0 GHz) (Ge/s).....	(*)
201.940b-20	Calibration of dial setting versus attenuation difference for indirect-reading variable attenuator at each prescribed attenuation difference value additional to the initial attenuation difference value at the same frequency and on the same attenuator as 201.940b-1 to 201.940b-8.....	(*)
201.940s	Special calibrations not included in the above schedule.....	(*)

*See § 201.900(b). Fees.

§ 201.941 Insertion loss measurements on fixed attenuators.

(a) Insertion loss measurements are made on fixed two-port attenuators.

(b) Insertion loss measurements are made for insertion loss values from 0 to 50 dB. This range of attenuation values can be extended to 70 dB in some frequency ranges.

(c) Fixed attenuators should have a VSWR less than 1.1 at each waveguide port.

Item	Description	Fee
	Measurement of insertion loss of fixed attenuator at a single frequency of the following waveguide sizes terminated with standard waveguide connectors:	
201.941a-1	WR284 (2.60-3.95 GHz) (Ge/s).....	(*)
201.941a-2	WR187 (3.95-5.85 GHz) (Ge/s).....	(*)
201.941a-3	WR137 (5.85-8.2 GHz) (Ge/s).....	(*)
201.941a-4	WR112 (7.05-10.0 GHz) (Ge/s).....	(*)
201.941a-5	WR90 (8.2-12.4 GHz) (Ge/s).....	(*)
201.941a-6	WR62 (12.4-18.0 GHz) (Ge/s).....	(*)
201.941a-7	WR42 (18.0-26.5 GHz) (Ge/s).....	(*)
201.941a-8	WR28 (26.5-40.0 GHz) (Ge/s).....	(*)
201.941z	Special calibrations not included in the above schedule.....	(*)

*See § 201.900(b). Fees.

§ 201.950 Effective noise temperature measurement on noise sources.

(a) Effective noise temperature measurements are made on waveguide noise sources (usually a gas-discharge tube)

under conditions of continuous, unmodulated operation in the range 900 to 300,000° K. (excess noise ratio range 3.3 to 30 dB).

(b) The direct current required for normal operation of the gas-discharge tube should not exceed 300 mA but should be sufficient to prevent excessive plasma oscillations.

(c) The waveguide noise source must have an input VSWR no greater than 1.2.

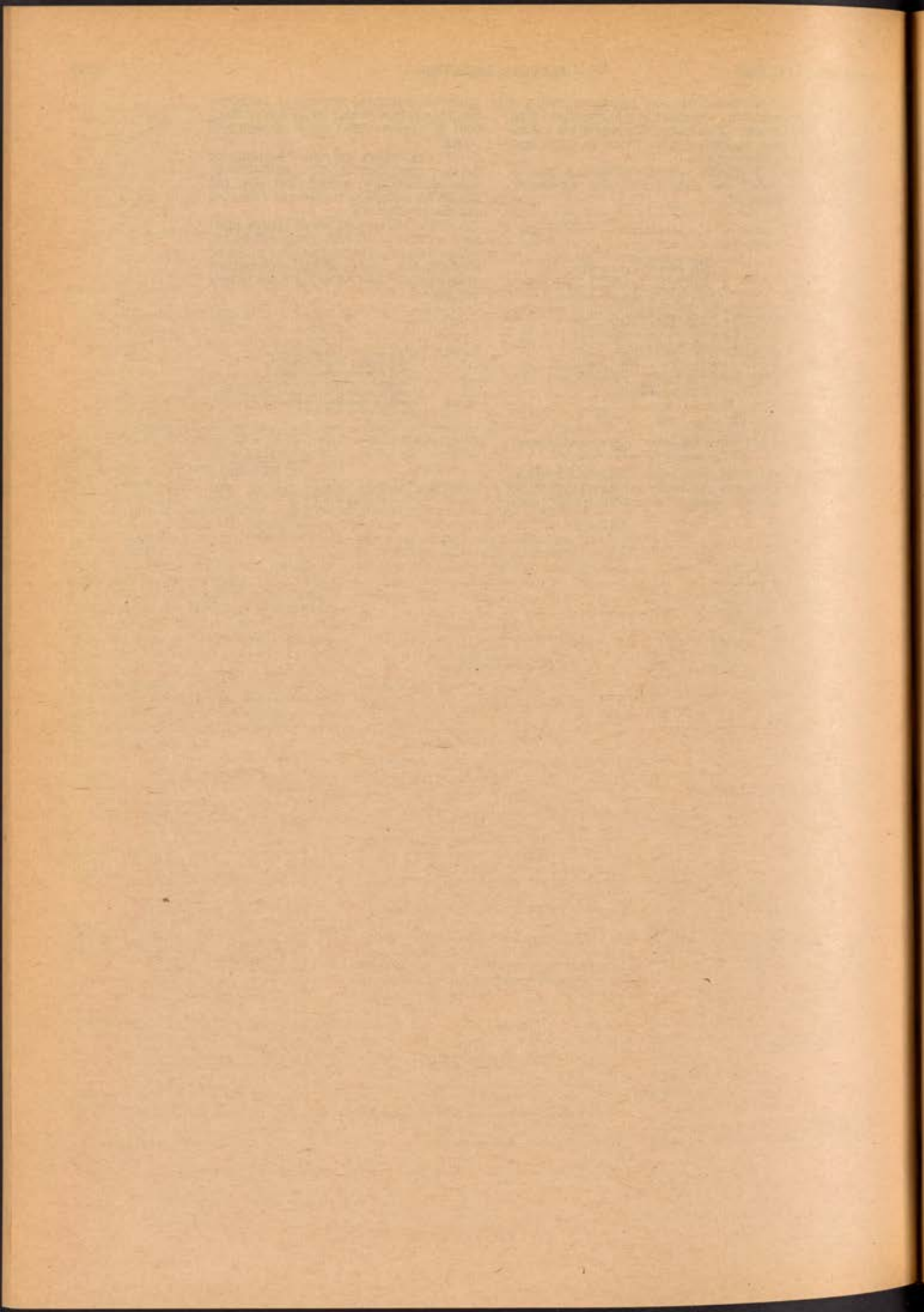
(d) The gas-discharge tube should be secure in the mount, and the output port of the unit should be terminated with a matched load.

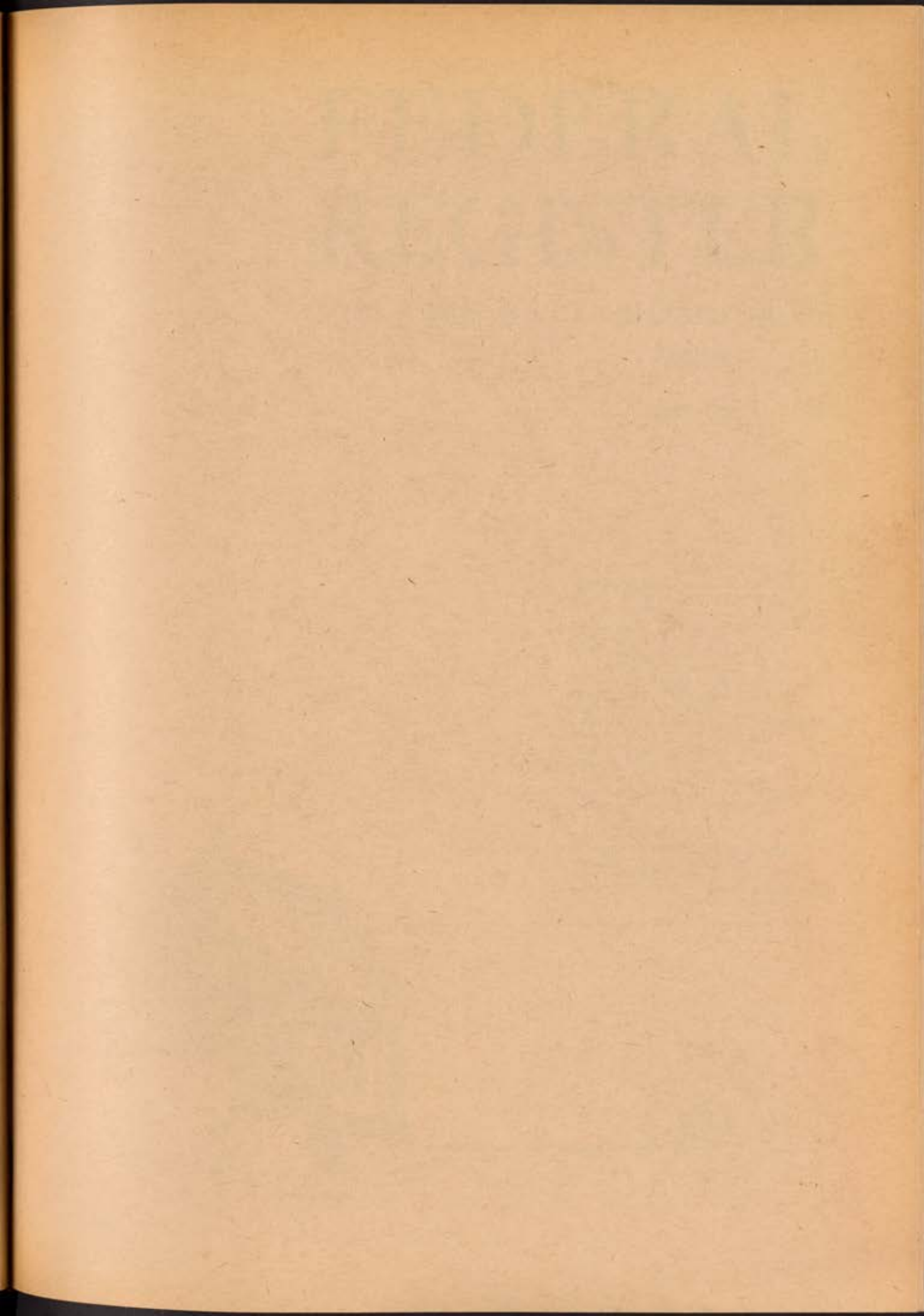
Item	Description	Fee
201.950a-1	Measurement of effective noise temperature of noise source in WR90 waveguide at a single frequency selected from 9.0, 9.8, and 11.2 GHz (Ge/s).....	(*)
201.950z	Special calibrations not covered by the above schedule.....	(*)

*See § 201.900(b). Fees.

A. V. ASTIN,
Director.

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