

PART I

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Rules and Regulations

Title 6—AGRICULTURAL CREDIT

Chapter I—Farm Credit Administration

SUBCHAPTER A—ADMINISTRATIVE PROVISIONS

PART 4—INFORMATION AND RECORDS

Office of Inspector General, Department of Agriculture

In order to include a reference therein to "Office of the Inspector General, Department of Agriculture", §§ 4.2 and 4.5 (b) of Title 6 of the Code of Federal Regulations (27 F.R. 10929) are amended to read as follows:

§ 4.2 Reports of farm credit examiners.

The contents of reports by farm credit examiners may not be disclosed without the consent of the Chief Examiner of the Farm Credit Administration, except to authorized representatives of the Farm Credit Administration or the bank or association concerned; or agents of the Federal Bureau of Investigation, Department of Justice; Bureau of the Chief Postal Inspector, Post Office Department; the Secret Service and Internal Revenue Service of the Department of the Treasury; Office of the Inspector General, Department of Agriculture; and the General Accounting Office, who request access to such reports for confidential use in connection with the official investigation of matters touched upon therein.

§ 4.5 Information and records regarding borrowers and applicants for loans.

(b) Accredited representatives of the following offices of the United States Government, at their request, may be given information pertinent to official investigations of individual cases by such offices, and may be permitted to examine such portions of the records and files as contain the pertinent information: Secret Service and Internal Revenue Service, Department of the Treasury; Federal Bureau of Investigation, Department of Justice; Bureau of the Chief Postal Inspector, Post Office Department; Office of the Inspector General, Department of Agriculture; and General Accounting Office. Before information is given to any such representative, he shall be required to present his official identification card, and to make a written request identifying the individual case on which information is sought and the particular information desired, and to certify that such information is pertinent to the official investigation of that case and is requested for confidential use of the investigating office.

(Sec. 2, 42 Stat. 1459, sec. 4, 46 Stat. 13, as amended, sec. 6, 47 Stat. 14, as amended; 12 U.S.C. 665, 1101, 1141b)

R. B. TOOTELL,
Governor,

Farm Credit Administration.

[F.R. Doc. 64-5350; Filed, May 27, 1964; 8:48 a.m.]

Title 14—AERONAUTICS AND SPACE

Chapter I—Federal Aviation Agency

SUBCHAPTER E—AIRSPACE [NEW]

[Airspace Docket No. 63-SW-105]

PART 71—DESIGNATION OF FEDERAL AIRWAYS, CONTROLLED AIRSPACE, AND REPORTING POINTS [NEW]

Alteration of Federal Airways and Alteration of Controlled Airspace

On February 4, 1964, a notice of proposed rule making was published in the FEDERAL REGISTER (29 F.R. 1694) stating that the Federal Aviation Agency was considering amendments to Part 71 [New] of the Federal Aviation Regulations which would realign VOR Federal airway No. 240 from New Orleans, La., to Mobile, Ala.; realign VOR Federal airway No. 22 from Tibby, La., via the new Harvey, La., VOR to Brookley, Ala.; and alter the New Orleans control area extension.

Interested persons were afforded an opportunity to participate in the rule making through submission of comments. The Department of the Navy stated that it had no objection to the proposal if a minimum airway base altitude of 4,000 feet is established between Tibby VOR and Dog Intersection to allow for NAS New Orleans arrival and departure traffic. The Air Transport Association of America had no objections to the proposal. No other comments were received. The development of arrival and departure procedures providing for the orderly flow of air traffic in the New Orleans area is the responsibility of local air traffic control offices. Arrangements for the use of altitudes on Victor 22 will be included in letters of agreement between the air traffic control facilities concerned.

In consideration of the foregoing, the following actions are taken:

1. Section 71.123 (29 F.R. 1009) is amended as follows:

a. In V-22 "New Orleans, La.; INT of New Orleans 085° and Brookley, Ala., 240° radials;" is deleted and "Harvey, La.; INT Harvey 073° and Brookley, Ala., 240° radials;" is substituted therefor, and "The airspace within R-2915 is excluded." is deleted and "The airspace within R-2915, and the airspace more than 4 miles south of the airway center-

line from 25 nmi west to 25 nmi east of Harvey are excluded." is substituted therefor.

b. V-240 is amended to read as follows:

V-240 From New Orleans, La., via the INT of New Orleans 085° and Mobile, Ala., 224° radials; to Mobile.

2. Section 71.165 (29 F.R. 1073) is amended as follows: In the New Orleans, La., control area extension "to the S boundary of V-22, thence E along V-22" is deleted and "to the S boundary of V-240, thence E along V-240" is substituted therefor.

These amendments shall become effective 0001 e.s.t., July 23, 1964.

(Sec. 307(a), 72 Stat. 749; 49 U.S.C. 1348)

Issued in Washington, D.C., on May 19, 1964.

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

[F.R. Doc. 64-5314; Filed, May 27, 1964; 8:45 a.m.]

[Airspace Docket No. 64-SW-3]

PART 71—DESIGNATION OF FEDERAL AIRWAYS, CONTROLLED AIRSPACE, AND REPORTING POINTS [NEW]

Alteration of Control Zone and Designation of Transition Area

On March 21, 1964, a notice of proposed rule making was published in the FEDERAL REGISTER (29 F.R. 3626) stating that the Federal Aviation Agency proposed to alter the controlled airspace in the Longview, Texas, terminal area.

Interested persons were afforded an opportunity to participate in the rule making through submission of comments. All comments received were favorable.

In consideration of the foregoing, Part 71 [New] of the Federal Aviation Regulations is amended, effective 0001 e.s.t., July 23, 1964, as hereinafter set forth.

In § 71.171 (29 F.R. 1101), the Longview, Tex., control zone is amended to read as follows:

Longview, Tex.

Within a 5-mile radius of the Gregg County Airport, Longview, Tex. (latitude 32°23'05" N., longitude 94°42'45" W.), within 2 miles each side of the Gregg County VOR 313° radial extending from the 5-mile radius zone to 8 miles NW of the VOR, within 2 miles each side of the Gregg County ILS localizer NW course extending from the 5-mile radius zone to the LOM, and within 2 miles each side of the Gregg County ILS localizer SE course extending from the 5-mile radius zone to the INT of the ILS localizer SE course and the Marshall, Tex., VOR 251° radial.

In § 71.181 (29 F.R. 1160), the Longview, Tex. transition area is designated as follows:

Longview, Tex.

That airspace extending upward from 1,200 feet above the surface within 5 miles E and 8 miles W of the Gregg County ILS localizer SE course extending from the INT of the Gregg County ILS localizer SE course and the Marshall, Tex., VOR 251° radial to 12 miles SE, and within 5 miles each side of the Marshall VOR 230° radial extending from the INT of the Gregg County VOR 181° radial and the Marshall VOR 230° radial to the INT of the Gregg County ILS localizer SE course and the Marshall VOR 230° radial, excluding the portion within Federal airways.

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

Issued in Washington, D.C., on May 22, 1964.

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

[F.R. Doc. 64-5313; Filed, May 27, 1964;
8:45 a.m.]

[Airspace Docket No. 63-EA-87]

PART 71—DESIGNATION OF FEDERAL AIRWAYS, CONTROLLED AIRSPACE, AND REPORTING POINTS [NEW]

Alteration of Federal Airway

On March 26, 1964, a notice of proposed rule making was published in the FEDERAL REGISTER (29 F.R. 3774) stating that the Federal Aviation Agency proposed to realign and extend VOR Federal airway No. 139 from Whitman, Mass., to Ipswich, Mass.

Interested persons were afforded an opportunity to participate in the rule making through submission of comments. All comments received were favorable.

The substance of the proposed amendment having been published and for the reason stated in the notice, § 71.123 (29 F.R. 1009, 1561) is amended as follows: In V-139 "thence via INT of Whitman 041° and Boston, Mass., 133° radials; to Boston." is deleted and "thence via INT of Whitman 041° and Manchester, N.H., 130° radials; INT of Manchester 130° and Boston, Mass., 014° radials; to INT of Manchester 117° and Boston 014° radials." is substituted therefor.

This amendment shall become effective 0001 e.s.t., July 23, 1964.

(Secs. 307(a), and 1110, 72 Stat. 749 and 800; 49 U.S.C. 1348 and 1510, and Executive Order 10854, 24 F.R. 9565)

Issued in Washington, D.C., on May 22, 1964.

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

[F.R. Doc. 64-5315; Filed, May 27, 1964;
8:45 a.m.]

[Airspace Docket No. 63-AL-9]

PART 71—DESIGNATION OF FEDERAL AIRWAYS, CONTROLLED AIRSPACE, AND REPORTING POINTS [NEW]

Designation of Federal Airway and Reporting Point

On June 8, 1963, a notice of proposed rule making was published in the FEDERAL

REGISTER (28 F.R. 5650) stating that the Federal Aviation Agency was considering the designation of a VOR Federal airway from Nome, Alaska, to Moses Point, Alaska, including a north alternate, and the designation of Nome as a reporting point.

Interested persons were afforded an opportunity to participate in the rule making through submission of comments but no comments were received.

In consideration of the foregoing and for the reasons stated in the notice, the following actions are taken:

1. In § 71.125 (29 F.R. 1046) V-452 is amended as follows: "From Moses Point, Alaska, via" is deleted and "From Nome, Alaska, via Moses Point, Alaska, including an N alternate;" is substituted therefor.

2. In §§ 71.211 and 71.213 (29 F.R. 1228, 1229) the following is added: "Nome, Alaska."

These amendments shall become effective 0001 e.s.t., July 23, 1964.

(Sec. 307(a), 72 Stat. 749; 49 U.S.C. 1348)

Issued in Washington, D.C., on May 22, 1964.

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

[F.R. Doc. 64-5316; Filed May 27, 1964;
8:45 a.m.]

[Airspace Docket No. 63-WE-129]

PART 71—DESIGNATION OF FEDERAL AIRWAYS, CONTROLLED AIRSPACE, AND REPORTING POINTS [NEW]

Alteration of Federal Airways

On February 11, 1964, a notice of proposed rule making was published in the FEDERAL REGISTER (29 F.R. 2351) stating that the Federal Aviation Agency was considering amendments to Part 71 [New] of the Federal Aviation Regulations which would alter VOR Federal airways Nos. 83 and 210.

Interested persons were afforded an opportunity to participate in the rule making through submission of comments. All comments received were favorable.

In consideration of the foregoing, the following actions are taken:

Section 71.123 (29 F.R. 1009, 3225) is amended as follows:

a. In V-83 "to Alamosa, Colo. From Pueblo, Colo., via" is deleted and "Alamosa, Colo.; INT Alamosa 075° and Pueblo, Colo., 203°; Pueblo;" is substituted therefor.

b. In V-210 "INT of Alamosa 075° and Pueblo, Colo., 203° radials; to Pueblo." is deleted and "INT Alamosa 075° and Lamar, Colo., 250° radials; to Lamar." is substituted therefor.

These amendments shall become effective 0001 e.s.t., July 23, 1964.

(Sec. 307(a), 72 Stat. 749; 49 U.S.C. 1348)

Issued in Washington, D.C., on May 22, 1964.

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

[F.R. Doc. 64-5317; Filed, May 27, 1964;
8:45 a.m.]

[Airspace Docket No. 63-WE-64]

PART 71—DESIGNATION OF FEDERAL AIRWAYS, CONTROLLED AIRSPACE, AND REPORTING POINTS [NEW]

PART 75—ESTABLISHMENT OF JET ROUTES [NEW]

Alteration of Jet Routes and Revocation of Domestic High Altitude Reporting Point

On February 15, 1964, a notice of proposed rule making was published in the FEDERAL REGISTER (29 F.R. 2509) stating that the Federal Aviation Agency (FAA) proposed the following:

1. Realignment of Jet Route No. 6 in part from the Hector, Calif., VORTAC via the Needles, Calif., VORTAC; the Prescott, Ariz., VORTAC; the Winslow, Ariz., VORTAC; the Albuquerque, N. Mex., VORTAC; the Tucumcari, N. Mex., VOR; to the Amarillo, Tex., VORTAC.

2. Realignment of Jet Route No. 78 in part from the Prescott VORTAC via the Winslow VORTAC; the Albuquerque VORTAC; the Tucumcari VOR; to the Amarillo VORTAC.

3. Revocation of the Prescott VORTAC as a compulsory reporting point.

Interested persons were afforded an opportunity to participate in the rule making through submission of comments. All comments received were favorable.

The substance of the proposed amendments having been published and for the reasons stated in the notice, the following actions are taken:

1. In § 75.100 (29 F.R. 1287 January 24, 1964) Jet Route No. 6 is amended as follows: In the text "Hector, Calif.; Prescott, Ariz.; Grants, N. Mex.; Albuquerque, N. Mex.; Amarillo, Texas;" is deleted and "Hector, Calif.; Needles, Calif.; Prescott, Ariz.; Winslow, Ariz.; Albuquerque, N. Mex.; Tucumcari, N. Mex.; Amarillo, Tex.;" is substituted therefor.

2. In § 75.100 (29 F.R. 1287 January 24, 1964) Jet Route No. 78 is amended as follows: In the text "Prescott, Ariz.; Albuquerque, N. Mex.; Amarillo, Tex.;" is deleted and "Prescott, Ariz.; Winslow, Ariz.; Albuquerque, N. Mex.; Tucumcari, N. Mex.; Amarillo, Tex.;" is substituted therefor.

3. In § 71.207 (29 F.R. 1223 January 24, 1964) "Prescott, Ariz." is deleted.

These amendments shall become effective 0001 e.s.t., July 23, 1964.

(Sec. 307(a), 72 Stat. 749; 49 U.S.C. 1348)

Issued in Washington, D.C., on May 19, 1964.

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

[F.R. Doc. 64-5318; Filed, May 27, 1964;
8:46 a.m.]

[Airspace Docket No. 63-WA-84]

PART 75—ESTABLISHMENT OF JET ROUTES [NEW]

Alteration of Jet Advisory Area

On February 28, 1964, a notice of proposed rule making was published in the

FEDERAL REGISTER (29 F.R. 2792) stating that the Federal Aviation Agency (FAA) proposed to extend the nonradar jet advisory area associated with Jet Route No. 38 to include flight levels 390 and 410.

Interested persons were afforded an opportunity to participate in the rule making through submission of comments. All comments received were favorable.

The substance of the proposed amendment having been published and for the reasons stated in the notice, the following action is taken:

In § 75.200 (29 F.R. 1300) Jet Route No. 38 jet advisory area is amended as follows:

Jet Route No. 38 jet advisory area.

Nonradar. From United States/Canadian Border to positive control area boundary NW of Duluth, Minn., at FL 310 and from FL 370 to FL 410, inclusive.

This amendment shall become effective 0001 e.s.t., July 23, 1964.

(Sec. 307(a), 72 Stat. 749; 49 U.S.C. 1348)

Issued in Washington, D.C., on May 19, 1964.

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

[F.R. Doc. 64-5319; Filed, May 27, 1964;
8:46 a.m.]

Title 19—CUSTOMS DUTIES

Chapter I—Bureau of Customs,
Department of the Treasury

[T.D. 56176]

PART 23—ENFORCEMENT OF CUSTOMS AND NAVIGATION LAWS

Narcotic Addicts and Violators; Border Crossings

MAY 21, 1964.

Section 23.9a of the Customs Regulations is the regulation promulgated under section 201 of the Narcotic Control Act of 1956, approved July 18, 1956 (18 U.S.C. 1407), which requires any U.S. citizen who is addicted to or uses certain narcotic drugs, or has been convicted of a violation of any of the narcotic or marihuana laws of the United States or of any State thereof, the penalty for which is imprisonment for more than one year, to register with a customs official prior to his departure from, and upon his return to, the United States. To clarify the existing regulation, the second sentence is being amended to provide that registration shall be made immediately upon his return to this country and at the first port of arrival; and also by the addition of a new sentence to cover situations in which a person seeking to register did not obtain a certificate of registration before departing from the United States or, having obtained a certificate of registration has lost said certificate or for any other reason cannot present

it. Accordingly, § 23.9a, Customs Regulations, is amended to read as follows:

§ 23.9a Narcotic addicts and violators; border crossings.

Any U.S. citizen who is addicted to or uses narcotic drugs as defined in section 4731 of the Internal Revenue Code of 1954, as amended (except in those cases where the narcotic drug is lawfully prescribed by a duly licensed physician in attendance upon such person) or who has been convicted of a violation of any of the narcotic or marihuana laws of the United States or of any State thereof, the penalty for which is imprisonment for more than one year, shall register his departure from the United States with the collector of customs at the port of departure on customs Form 3231, Registration Certificate of Narcotic User or Violator.^{19a} The original shall be given to the registrant who, upon his return to the United States shall immediately register with the collector of customs at the first port of arrival by signing before a customs officer and in the space provided for this purpose on the original and by surrendering the completed form to the customs officer. If the person seeking to register did not obtain a registration certificate on leaving the United States, or, having obtained a certificate, has lost it or for any reason he cannot present the certificate, he shall register on customs Form 3231 supplied by the customs officer immediately at the first port of arrival in the United States, and surrender the completed form to the collector of customs. (Sec. 201, 70 Stat. 574; 18 U.S.C. 1407.)

[SEAL] JAMES A. REED,
Assistant Secretary of the Treasury.

[F.R. Doc. 64-5369; Filed, May 27, 1964;
8:45 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 D—Food Additives Permitted in Food for Human Consumption

METHYL GLUCOSIDE-COCONUT OIL ESTER

The Commissioner of Food and Drugs, having evaluated data in a petition (FAP 1103) filed by Hodag Chemical Corporation, 7247 North Central Park Avenue, Skokie, Illinois, and other relevant material, has concluded that a regulation should issue to prescribe the safe use of methyl glucoside-coconut oil ester for improving crystallization in the refining of sucrose. 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; 29 F.R. 471), the food additive regulations are amended by adding to Subpart D the following new section:

§ 121.1151 Methyl glucoside-coconut oil ester.

Methyl glucoside-coconut oil ester may be safely used in food in accordance with the following conditions:

(a) It is the methyl glucoside-coconut oil ester having the following specifications:

Acid number.....	10-20.
Hydroxyl number.....	200-300.
pH (5% aqueous).....	4.8-5.0.
Saponification number.....	178-190.

(b) It is used as an aid in crystallization of sucrose at a level not to exceed the minimum quantity required to produce its intended effect.

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 5410, 330 Independence Avenue SW., Washington 25, D.C., written objections thereto. 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. All documents shall be filed in quintuplicate.

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 22, 1964.

GEO. P. LARRICK,
Commissioner of Food and Drugs.

[F.R. Doc. 64-5343; Filed, May 27, 1964;
8:47 a.m.]

SUBPART C—DRUGS

PART 130—NEW DRUGS

Required Records and Reports

The Commissioner of Food and Drugs, after consideration of the comments received in response to the notice of proposed rule making published in the FEDERAL REGISTER of February 28, 1964 (29 F.R. 2790), has concluded that the records and reports described in the notice are necessary in order to determine, or to facilitate a determination, whether there is or may be grounds for invoking section 505(e) of the Federal Food, Drug, and Cosmetic Act, or for rescinding any certificate or release or for amending or repealing any regulation issued under

section 507 of the Act. Therefore, in accordance with the provisions of the Act (secs. 505, 507, 701, 52 Stat. 1053, 1055 as amended; 59 Stat. 463 as amended; 21 U.S.C. 355, 357, 371) and under the authority delegated to him by the Secretary of Health, Education, and Welfare (21 CFR 2.90; 29 F.R. 471), the Commissioner hereby orders that Part 130 (21 CFR Part 130) be amended as hereinafter set forth.

§ 130.4 [Amended]

1a. In § 130.4 *Applications*, paragraph (c) is amended by inserting the following new sentence following the second sentence in the parenthetical paragraph in item 8 of Form FD-356—Rev. 1963: "Each supplemental application shall include up-to-date reports of any of the kinds of information required by § 130.13 (a) that has not previously been submitted as part of the application, including such submission under the records and reports requirements of § 130.13 or § 130.35."

b. Paragraph (c) is further amended by deleting the last four sentences from item 8 in Form FD-356—Rev. 1963.

2. Section 130.9 *Supplemental applications* is amended by inserting a new sentence after the second sentence in paragraph (a), and by deleting paragraphs (d) and (e). The new sentence in paragraph (a) reads as follows:

§ 130.9 Supplemental applications.

(a) * * * Each supplemental application shall include up-to-date reports of any of the kinds of information required by § 130.13(a) that has not previously been submitted as part of the application, including such submission under the records and reports requirements of § 130.13 or § 130.35. * * *

3. Section 130.13 *Records and reports concerning experience on drugs* * * * is amended as follows:

a. Paragraph (a)(1) is amended by adding thereto a new sentence;

b. Paragraph (a)(2) is amended by adding thereto a new sentence;

c. Paragraph (a)(3) is amended by changing the period at the end thereof to a comma and adding a clause;

d. Paragraph (a) is further amended by adding thereto a new subparagraph (6);

e. Paragraph (b)(2)(i) is amended by changing the second sentence therein;

f. Section 130.13 is further amended by adding thereto a new paragraph (g).

The additions to paragraph (a), paragraph (b)(2)(i) as amended, and the new paragraph (g) read as follows:

§ 130.13 Records and reports concerning experience on drugs for which an approval is in effect.

(a) * * *

(1) * * * An adequate summary and bibliography of literature reports will ordinarily suffice.

(2) * * * An adequate summary and bibliography of literature reports will ordinarily suffice.

(3) * * *, to the extent that such information is pertinent with respect to the safety or effectiveness of the drug or

to an evaluation of the adequacy of the methods, facilities, and controls used in its production.

* * *

(6) Information concerning the quantity of the drug distributed, in a manner and form that facilitates estimates of the incidence of any adverse effects reported to be associated with the use of the drug. This does not require disclosure of financial or pricing data.

(b) * * *

(2) * * *

(i) Information concerning any unexpected side effect, injury, toxicity, or sensitivity reaction or any unexpected incidence or severity thereof associated with clinical uses, studies, investigations, or tests, whether or not determined to be attributable to the drug, except that this requirement shall not apply to the submission of information described in a written communication to the applicant from the Food and Drug Administration as types of information that may be submitted at other designated intervals. "Unexpected" as used in this subdivision refers to conditions or developments not previously submitted as part of the new-drug application or not encountered during clinical trials of the drug, or conditions or developments occurring at a rate higher than shown by information previously submitted as part of the new-drug application, or than encountered during such clinical trials.

(g) The "applicant" required to establish and maintain records and make reports required by this section and under the regulations in § 130.35 includes any person whose name appears on the labeling of the drug as its manufacturer, packer, or distributor under an approval or who is engaged in the manufacturing, processing, packing, or labeling of the drug under an approval of the application of any supplement to it: *Provided, however*, That in order to avoid unnecessary duplication in the submission of reports any such applicant's obligation to submit a report may be met by its submission on his behalf, designated as such, by another person responsible for reporting.

4. Section 130.14 is amended by changing the third sentence in the introduction to paragraph (a). As amended, this paragraph reads:

§ 130.14 Contents of notice of hearing.

(a) The notice to the applicant of opportunity for a hearing on a proposal by the Commissioner to refuse to approve an application or to withdraw the approval of an application will specify the grounds upon which he proposes to issue his order. On request of the applicant, the Commissioner will explain the reasons for his action. The notice of hearing will be published in the FEDERAL REGISTER and will specify that the applicant has 30 days after issuance of the notice within which he is required to file a written appearance electing whether:

* * *

5. Part 130 is amended by adding thereto the following new section:

§ 130.35 Records and reports on new drugs and antibiotics for use by man for which applications or certification forms 5 and 6 became effective or were approved prior to June 20, 1963.

(a) Each applicant for whom a new-drug application or supplement for a drug for human use became effective or was approved at any time prior to June 20, 1963, and each person holding an approved form 5 or 6 for an antibiotic drug for human use at any time prior to June 20, 1963, shall submit, in triplicate, the following information for each dosage form within 60 days from the effective date of this order:

(1) Identification of the dosage form of the drug by its established and proprietary names, if any, the formula showing quantitatively each ingredient of the drug to the extent disclosed on the label (a copy of the label will ordinarily fulfill this requirement), the route of administration, and the new-drug application number.

(2) Whether the drug was marketed and whether it is currently marketed.

(3) If the drug was marketed and marketing has been discontinued, the date and reason for discontinuing its marketing.

(b) Each applicant for whom a new-drug application or supplement for a drug for human use became effective or was approved at any time prior to June 20, 1963, and each person holding an approved form 5 or 6 for an antibiotic drug for human use at any time prior to June 20, 1963, shall submit the following information with respect to each drug currently marketed within 120 days from the effective date of this order:

(1) A copy of the label on the package of the drug and of the package insert or brochure bearing directions or information for use of the article.

(2) If the label, brochure, or package insert is not identical in content to the one in the effective or approved new-drug application and its supplements, if any, or in the approved form 5 or 6, the applicant shall also report what changes have been made (other than minor changes in arrangement or printing or changes of an editorial nature) and why they were made, and shall submit the data supporting such changes if it has not previously been submitted.

(3) The applicant shall review the label, brochure, and package insert and shall submit a statement, signed by a responsible officer or employee, whether the label, brochure, or package insert fairly reflects the clinical experience reported to or otherwise received by the applicant. The applicant shall submit full reports of any well-controlled clinical studies that have not previously been submitted and which are pertinent to an evaluation of the effectiveness of the drug.

(4) The applicant shall also review or cause to be reviewed the promotional material currently in use, including labeling and advertising, and shall submit a statement, signed by a responsible officer or employee, whether all such promotional material fairly reflects the labeling in the approved or effective new-

drug application and its supplements, if any, or in the approved antibiotic form 5 or 6. Copies of representative labeling and advertising shall be attached.

(5) If the promotional material does not fairly reflect the labeling in the approved or effective new-drug application and its supplements, if any, or in the approved form 5 or 6, the applicant shall report the differences, state why they exist, and shall submit the data supporting any differences.

(6) If clinical experience reported to or otherwise received by the applicant indicates the need for change in claims for effectiveness or in side effects, warnings, or contraindications in the labeling or advertising currently in use, the applicant shall submit a supplemental application proposing such changes in the labeling and a showing that any advertising will be appropriately revised.

(7) If the clinical or other experience reported to or otherwise obtained by the applicant has revealed any information concerning any side-effect, injury, toxicity, or sensitivity reaction, or any unexpected incidence or severity thereof, which by kind, or incidence or severity is not fully disclosed in the labeling, whether or not determined to be attributable to the drug, this information shall be submitted as soon as the review reveals such facts. Such information shall include full reports of all available information with respect to any deaths apparently related to drug administration, whether or not determined to be attributable to the drug. Any such information previously submitted for inclusion in the new-drug application or antibiotic form 5 or 6 need not be resubmitted.

(8) If the clinical or other experience reported to or otherwise obtained by the applicant within the past 2 years has revealed any information with respect to a distributed batch concerning any mix-up in the drug or its labeling with another article; any bacteriological or any significant chemical, physical, or other change or deterioration of the drug; or any failure of one or more distributed batches to meet specifications established in the new-drug application or in the antibiotic regulations, this information shall be submitted as soon as the review reveals such facts. Any unresolved experience of the kinds listed in this paragraph shall be reported even though it occurred prior to the 2-year period.

(c) Such reports shall be addressed to the Secretary, Department of Health, Education, and Welfare, for the Commissioner of Food and Drugs, Washington, D.C., 20204, and shall be distinctly marked "New Drug (or Antibiotic) Report," together with the applicable new-drug application number or antibiotic account number on the envelope.

(d) Each such applicant shall maintain for inspection all records received or otherwise obtained by him containing any of the kinds of information described in § 130.13(a).

(e) After the submission of the initial reports required by paragraphs (a) and (b) of this section, each such applicant shall, after 1 year, submit for the reporting period reports of the kinds required by § 130.13(b) (3), not later than each anniversary date of the effectiveness of the new-drug application or initial antibiotic form 5 or 6 approval.

(f) Each applicant shall submit all information reported to or received by him of the kinds required by § 130.13(b) (1) and (2) as required in that section.

(g) Deliberate or repeated failure to make the reports required by paragraphs (a) and (b) of this section will be followed by written notice to the holder of the application and publication of such notice in the FEDERAL REGISTER, furnishing an opportunity for a hearing on a proposal to withdraw approval of the application. Any interested person who may be adversely affected by such an order may respond to such notice and avail himself of an opportunity to participate in such a hearing. This will allow any person distributing a drug that was covered by an application held by a person who did not make the required reports an opportunity to show cause why approval of the application should not be withdrawn and marketing of the drug discontinued.

(h) Reports showing that a new drug was not marketed or has been discontinued may be followed by publication in the FEDERAL REGISTER of a notice of a proposal to withdraw approval of such application, on any of the grounds specified in section 505(e) of the Act, giving any interested person who would be adversely affected by such an order an opportunity to respond and avail himself of a hearing prior to the issuance of such order. This will allow any person distributing a new drug that was covered by an application held by a person who did not market the drug or who has abandoned marketing of the drug an opportunity to show cause why approval of the application should not be withdrawn and why marketing of the drug should not be discontinued.

(i) Exemptions from annual reporting will be considered on the basis of petitions therefor, giving reasons why annual reporting is not required to protect the public health. No exemption will be allowed from the reporting requirements of paragraph (f) of this section and of § 130.13(b) (1) and (2).

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

(Secs. 505, 507, 701, 52 Stat. 1053, 1055 as amended; 59 Stat. 463 as amended; 21 U.S.C. 355, 357, 371)

Dated: May 22, 1964.

GEO. P. LARRICK,
Commissioner of Food and Drugs.

[F.R. Doc. 64-5311; Filed, May 27, 1964;
8:45 a.m.]

Title 25—INDIANS

Chapter I—Bureau of Indian Affairs, Department of the Interior

SUBCHAPTER T—OPERATION AND MAINTENANCE

PART 221—OPERATION AND MAINTENANCE CHARGES

Tribal and Trust Patent Indian Lands of the San Carlos Indian Irrigation Project, Arizona

There was published in the FEDERAL REGISTER on February 27, 1964 (29 F.R. 2762) notice to amend §§ 221.110, 221.112 and 221.113 of the Code of Federal Regulations, Title 25—Indians, dealing with the operation and maintenance of the Tribal and Trust Patent Indian lands of the San Carlos Indian Irrigation Project. This publication proposed to: (1) Change the basic assessment rate set forth in § 221.110 from \$4.35 to \$5.70 per acre per annum, (2) change the date the basic charges are payable as set forth in § 221.112 from May 15 to April 1 of each year, and (3) revise § 221.113 to provide for the payment of charges from revenue derived from farming operations on tribal and allotted lands conducted by the farming enterprise of the Gila River Indian Community.

Interested persons were given 30 days within which to submit written comments, suggestions, or objections with respect to the proposed amendment. No written communications were received, however, after further study and discussion with tribal officials, it was determined not to amend § 221.112 and to delete § 221.113, which is obsolete and no longer applicable to present operations. Accordingly, the proposed amendment is hereby adopted as set forth below. Because the assessments are payable on May 15 of each year, it is in the best interest of the water users and the project that the new rates be made effective as of May 15, 1964.

Section 221.110 is amended to read as follows:

§ 221.110 Basic charge.

Pursuant to the provisions of section 10 of the Act of March 3, 1905 (33 Stat. 1081), as amended and supplemented by the Acts of August 24, 1912 (37 Stat. 522), August 1, 1914 (38 Stat. 583, 25 U.S.C. 385), section 5 of the Act of June 7, 1924 (43 Stat. 476), March 7, 1928 (45 Stat. 210, Title 25 U.S.C. 387), and the Act of August 9, 1937 (50 Stat. 577), as amended by the Act of May 9, 1938 (52 Stat. 291-305), and in accordance with the public notice issued on December 1, 1932, operation and maintenance charges are assessable against the 50,000 acres of tribal lands and trust patent Indian lands of the San Carlos Indian Irrigation Project within the boundaries of the Gila River Indian Reservation, Arizona, and the basic rate assessed for the calendar year 1964 and the subsequent years un-

less changed by further order, is hereby fixed at \$5.70. Such rate shall entitle each acre of land to have delivered for use thereon two (2) acre-feet of water per acre or its proportionate share of the available water supply. The assessment for the 50,000 acres of Indian land will be payable as provided in § 221.111 to § 221.116, inclusive.

§ 221.113 [Revocation]

Sec. 221.113 *Alternate method of payment* is revoked.

(33 Stat. 1081; 37 Stat. 522; 38 Stat. 583; 50 Stat. 577; 52 Stat. 291-305)

STEWART L. UDALL,
Secretary of the Interior.

MAY 21, 1964.

[F.R. Doc. 64-5333; Filed, May 27, 1964; 8:47 a.m.]

Title 26—INTERNAL REVENUE

Chapter I—Internal Revenue Service, Department of the Treasury

SUBCHAPTER B—ESTATE AND GIFT TAXES (T.D. 6736)

PART 20—ESTATE TAX; ESTATES OF DECEDENTS DYING AFTER AUGUST 16, 1954

Extension of Time for Paying Tax

In order to liberalize the rules as to extensions of time for paying estate tax in cases of undue hardship, paragraph (b) of § 20.6161-1 of the Estate Tax Regulations (26 CFR Part 20) is amended to read as follows:

§ 20.6161-1 Extension of time for paying tax shown on the return.

(b) The extension will not be granted upon a general statement of hardship. The term "undue hardship" means more than an inconvenience to the estate. A sale of property at a price equal to its current fair market value, where a market exists, is not ordinarily considered as resulting in an undue hardship. However, a sale of property at a sacrifice price or on a severely depressed market would constitute an undue hardship. Furthermore, the necessity for selling an interest in a family business, which is included in the gross estate, to unrelated persons will be considered to be an undue hardship even though the interest could be sold at a price equal to its current fair market value.

Because this Treasury decision provides rules favorable to taxpayers, it is found that it is unnecessary to issue this Treasury decision with notice and public procedure thereon under section 4(a) of the Administrative Procedure Act, approved June 11, 1946, or subject to the effective date limitation of section 4(c) of said Act.

(Sec. 7805 of the Internal Revenue Code of 1954; 68A Stat. 917; 26 U.S.C. 7805)

[SEAL]

D. W. BACON,
Acting Commissioner
of Internal Revenue.

Approved: May 22, 1964.

STANLEY S. SURREY,
Assistant Secretary of the
Treasury.

[F.R. Doc. 64-5352; Filed, May 27, 1964; 8:48 a.m.]

Title 47—TELECOMMUNICATION

Chapter I—Federal Communications Commission

[Docket No. 15181; FCC 64-446]

PART 74—EXPERIMENTAL, AUXILIARY, AND SPECIAL BROADCAST SERVICES

Frequency Assignments

In the matter of Amendment of § 74.902 of the rules governing instructional television fixed stations to assign alternate channels to stations operating in the same area instead of every sixth channel; Docket No. 15181, RM-476.

Report and order. 1. On October 4, 1963, the Commission issued a notice of proposed rule making in the above-entitled matter. Interested parties were invited to comment on or before November 12, 1963, and to reply to such comments on or before November 22, 1963.

2. The change in the grouping of channels for assignment was requested by Adler Electronics, Inc. It was claimed that the suggested new grouping would permit the use of a single receiver for the simultaneous reception of as many as four channels thus, resulting in a substantial saving in costs to individual licensees. The purpose of the rule making was to elicit comments from knowledgeable persons as to possible technical problems that might arise as the result of the use of alternate channels in the same area.

3. A number of comments were filed by public school systems and colleges simply endorsing the proposal because of the prospect of saving in the cost of equipment. Comments directed toward the technical aspects of the proposal were filed by Lloyd P. Morris, President of the Board of Education Illinois District No. 85; Sarkes Tarzian, Inc., manufacturer of electronic equipment; Jerrold Electronics Corporation, manufacturer of video microwave equipment; Micro-Link Corporation, manufacturer of microwave equipment; Detroit Public Schools, Detroit, Mich.; and Adler Electronics, Inc., the petitioner. The Tri-County ETV Council of Illinois (Chicago area) filed comments similar to those of Lloyd P. Morris.

4. The comments of Mr. Morris and the Tri-County ETV Council were concerned with possible technical preclusion of two-way TV systems if assignments are limited to an alternate channel assign-

ment. Neither questioned the technical feasibility of alternate channel operation for one-way systems. Sarkes Tarzian, Inc., took the position that the Adler proposal to use broadband converters seemed to be of very limited value since it assumes either nondirectional antennas or a common point of signal origin. Their experience with nondirectional antennas in this region of the spectrum has been very disappointing. However, it is pointed out that directional antennas could be multiplexed into the converter. Tarzian also points out that intermodulation and desensitization could be a serious problem and image response not only to unwanted signals but also to electrical noise would tend to reduce the effectiveness of broadband converters. In spite of these factors, there could be some advantage in the lower cost of broadband equipment and the technical problems are not insurmountable but could increase the cost of a broadband system beyond that of a selective system using greater channel separation. Tarzian's conclusions are that considerably more test data is needed before the proposed change in channel grouping is adopted.

5. Jerrold Electronics Corporation undertakes a comparison of several possible channel groupings with several likely transmission situations including (I) transmissions on one, two, or three channels to a large number of schools very close to the transmitting point; (II) transmission on four, five, or six channels to a large number of schools very close to the transmitters; (III) transmissions on three, four, or five channels to approximately 10 schools located 5 to 15 miles from the transmitters; (IV) two-way service between two large schools with each providing service to a number of other schools grouped around them; and (V) the use of a one-way or two-way repeater for one or more channels. They find the Adler proposal "good" for situation I, "fair" for situation II, and "poor" for situations III, IV, and V. The present grouping is found to be "poor" for situation I, "fair" for situation II and "good" for situations III, IV, and V. A channel grouping of every third channel was found to be "fair" for all five situations and a channel grouping involving adjacent channel assignments in a single system was "fair" for situation I, "poor" for situation II, and impractical for situations III, IV, and V. On the basis of this analysis, Jerrold concluded that the grouping in the present rules should be retained.

6. Micro-Link Corporation supported the objective of the Adler proposal because of the economical possibilities. However, it differed with Adler as to the number of channels per group and the number of groups of channels. Micro-Link suggests that since a broadband converter will yield at most, four-channel simultaneous reception, no useful purpose is served by placing more than four channels in each group. They further suggest that seven groups containing four channels each and an eighth group with three channels will provide

greater flexibility in areas where a number of separate systems may wish to operate, than the present arrangement of five channels in five groups and six channels in a sixth group. Micro-Link mentions the possibility of ultimately obtaining 2 megacycles immediately above 2690 Mc/s so that a fourth channel can be added to the last group and urges that this be considered. Adler's comments were more or less a repetition of the factors set forth in the original petition.

7. The Detroit Public Schools (DPS) of the Board of Education of the City of Detroit concurred in the basic principles of assigning channels on an alternate channel basis. However, they suggested that since a single broadband converter could at most utilize four channels for simultaneous reception, inefficiency would be created by dividing the channels as proposed by Adler. An irregular grouping is suggested with some groups containing three channels, some four and some five. The DPS comment contained a novel suggestion, i.e., the possibility of altering the tuning of conventional TV receivers slightly to increase the number of alternate channels that would be available. For example, in areas where Channel 7, 9, 11, or 13 are in use the combination of Channels 8, 10, and 12 would yield only three available channels. By adjusting the tuning of Channel 7 downward 6 Mc/s, a fourth channel could be used, assuming that extraneous pickup of the services operating in the band immediately below Channel 7, could be avoided. Similarly, in circumstances where a combination of three alternate channels in the lower range of the TV receiver would be needed, a slight adjustment of the receiver tuning could yield Channels 2 and 4 plus another channel beginning 2 Mc/s above the normal lower limit of Channel 5. It would also be possible to adjust the tuning of the receivers to utilize Channel 3 plus a second channel beginning at the upper edge of Channel 4 and running 2 Mc/s into normal Channel 5, plus a third channel beginning 2 Mc/s above the normal lower limit of Channel 6 and running 2 Mc/s into the FM broadcast band. Such technique would not require the radiation of signals on the offset channels and would not be inconsistent with any rules or regulations of the Commission. While the technical specifications for this service were designed so that conventional TV receivers could be used for displaying the program material, there is nothing in the rules that requires the use of conventional TV receivers and the incoming signals may be converted to any suitable frequency for distribution over a wired system within each reception point.¹

8. Adler's reply to the comments of Jerrold and Lloyd P. Morris, stated that

¹ In the present state of the art, wired distribution systems are designed to handle VHF signals only. Future developments are expected to make the distribution of UHF signals over wired systems feasible and this limitation will no longer apply. In any case, nothing in the rules adopted herein precludes the conversion of the signals to UHF television channels or any other portion of the spectrum.

while local circumstances may make it impossible to use a single broadband converter in some areas, there will be many areas where such broadband converters can be used. Wherever this is possible, the total number of converters required will be less. Insofar as two-way transmission is concerned, Adler contends that this will usually involve separate licensees and they will not be required to use channels in the same group.

9. The comments filed in this proceeding show evidence of careful thought and have proven most helpful in a matter where we must rely upon engineering judgment instead of actual experience. Of the alternative suggestions made in the comments, that made by Micro-Link appears to offer more advantages. We agree that there is no particular advantage in including more than four alternate channels in any one group since no more than four equally spaced VHF channels could be accommodated on conventional TV receivers used to display the signal. Furthermore, an eight-group, four-channel system may offer more flexibility in making assignments than a six-group, five-channel system. We may retain the five-channel availability to a single licensee by permitting the selection of the fifth channel from one of the remaining channel groups. This has the added advantage of providing adequate channel separation for two-way communication where the transmitter and receiver are located in close proximity. Thus, our original proposal has been modified accordingly.

10. The arrangement of the channels in groups and the limitation in the number of channels available to each licensee is intended to provide a reasonable number of channels to each of several licensees in a given area. While some licensees may never wish to use all of the channels in a single group, others may start with only one or two and plan to use the others at a later date. The tentative reservation of channels for such contemplated expansion is implicit in the grouping idea. The advantages of the alternate channel arrangement adopted herein would be impaired unless we provide for such tentative reservation. Therefore, the rules adopted herein will permit an applicant for fewer than the total number of channels in a given group, to request reservation of the remaining channels in that group for its use. Such a request for reservation must contain a factual showing that the applicant has definite plans for use of the channels in the near future. While we will undertake to avoid assignments on the channels requested we can offer no guarantee that they will be reserved for any specified period of time and they will be assigned to other applicants if the need arises.

11. Accordingly, it is ordered, That effective July 1, 1964, § 74.902 of the Commission rules is amended to read as follows:

§ 74.902 Frequency assignments.

(a) The following frequencies may be assigned to instructional television fixed stations:

Group A		Group B		Group C		Group D	
Channel No.	Band limits Mc/s	Channel No.	Band limits Mc/s	Channel No.	Band limits Mc/s	Channel No.	Band limits Mc/s
A-1	2500-2506	B-1	2506-2512	C-1	2548-2554	D-1	2554-2560
A-2	2512-2518	B-2	2518-2524	C-2	2560-2566	D-2	2566-2572
A-3	2524-2530	B-3	2530-2536	C-3	2572-2578	D-3	2578-2584
A-4	2536-2542	B-4	2542-2548	C-4	2584-2590	D-4	2590-2596

Group E		Group F		Group G		Group H	
Channel No.	Band limits Mc/s	Channel No.	Band limits Mc/s	Channel No.	Band limits Mc/s	Channel No.	Band limits Mc/s
E-1	2596-2602	F-1	2602-2608	G-1	2644-2650	H-1	2650-2656
E-2	2608-2614	F-2	2614-2620	G-2	2656-2662	H-2	2662-2668
E-3	2620-2626	F-3	2626-2632	G-3	2668-2674	H-3	2674-2680
E-4	2632-2638	F-4	2638-2644	G-4	2680-2686		

(b) The frequency band 2500-2690 Mc/s is shared with operational fixed and international control stations. Assignments to new instructional television fixed stations will not be made where interference will be caused to existing stations operating in accordance with the Table of Frequency Allocations in § 2.106 of this chapter. Similarly, assignments to new operational fixed or international control stations will not be made where interference will be caused to existing instructional television fixed stations. Existing operational fixed and international control stations may employ different channelling and this fact should be kept in mind in assessing potential interference.

(c) Applicants proposing operation of up to four transmitters at a single loca-

tion shall specify channels in only one of the groups listed in paragraph (a) of this section. An applicant proposing operation of less than four transmitters at a single location may request that the remaining channels in the group be reserved for future expansion of the system. The Commission will undertake to avoid assigning the remaining channels in the group to other applicants for so long as such action is feasible in the judgment of the Commission. If operation of more than four transmitters is proposed by an applicant or if a proposed multichannel system involves reception of one instructional television fixed station at the transmitter location of other stations in the same system, the applicant may specify a channel in a different group. Initially, a single applicant

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will be limited to a single channel in the additional group and requests for the reservation of channels in more than one group will not be honored. This limits the number of channels available to a single licensee for use in a single area of operation to five, but shall not be construed as guaranteeing as many as five channels to any licensee. The area of operation of a station is considered to be the area within which the use of a channel by one licensee precludes its use by other licensees.

(d) The same channel may be assigned to more than one station or more than one licensee in the same area if the geometric arrangement of the transmitting and receiving points or the times of operation are such that interference is not likely to occur.

11. Authority for the adoption of the amendments adopted herein is contained in sections 4(i), 303(c) of the Communications Act of 1934, as amended.

(Sec. 4, 48 Stat. 1066, as amended; 47 U.S.C. 154. Interprets or applies sec. 303, 48 Stat. 1082, as amended; 47 U.S.C. 303)

Adopted: May 20, 1964.

Released: May 22, 1964.

FEDERAL COMMUNICATIONS
COMMISSION,

[SEAL] BEN F. WAPLE,
Secretary.

[F.R. Doc. 64-5355; Filed, May 27, 1964;
8:48 a.m.]

Proposed Rule Making

DEPARTMENT OF THE TREASURY

Internal Revenue Service

[26 CFR Part 49]

EXCISE TAXES

Proposed Exemption for Construction or Reconstruction of Club Facilities

Notice is hereby given, pursuant to the Administrative Procedure Act, approved June 11, 1946, that the regulations set forth in tentative form below are proposed to be prescribed by the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury or his delegate. Prior to the final adoption of such regulations, consideration will be given to any comments or suggestions pertaining thereto which are submitted in writing, in duplicate, to the Commissioner of Internal Revenue, Attention: T.P., Washington, D.C., 20224, within the period of 30 days from the date of publication of this notice in the FEDERAL REGISTER. Any person submitting written comments or suggestions who desires an opportunity to comment orally at a public hearing on these proposed regulations should submit his request, in writing, to the Commissioner within the 30-day period. In such case, a public hearing will be held, and notice of the time, place, and date will be published in a subsequent issue of the FEDERAL REGISTER. The proposed regulations are to be issued under the authority contained in section 7805 of the Internal Revenue Code of 1954 (68A Stat. 917; 26 U.S.C. 7805).

[SEAL] MORTIMER M. CAPLIN,
Commissioner of Internal Revenue.

In order to set forth a method by which "earmarking" may be shown for purposes of application of the exemption for payments for capital improvements of a club and to indicate whether interest payments on loans to finance capital improvements come within the scope of the exemption, paragraphs (a)(1) and (b)(1) of § 49.4243-2 of the Facilities and Services Excise Tax Regulations are amended to read as follows:

§ 49.4243-2 Exemptions; payments for capital improvements.

(a) *Assessments paid before November 1, 1959.*—(1) *In general.* Membership assessments paid during the period January 1, 1959, to October 31, 1959, inclusive, for construction or reconstruction by the club or organization, begun on or after January 1, 1959, of a social, athletic, or sporting facility owned or leased by it are exempt from the tax imposed under section 4241(a)(1) on amounts paid as dues or membership fees. Any such assessment for construction or reconstruction begun on or after January 1, 1959, of a capital addition to, or capital improvement of, any such facility is also

exempt from tax. Assessments paid for the retirement of indebtedness (a mortgage loan, for example) incurred by reason of the construction or reconstruction of any such facility, capital addition, or capital improvement are considered to be assessments for construction or reconstruction. Assessments for the payment of interest in connection with such indebtedness are likewise considered to be assessments for construction or reconstruction. Assessments paid for the replenishment of reserve funds expended by the club or organization for construction or reconstruction are also considered to be assessments for such construction or reconstruction. However, assessments for the purchase of land or for the purchase of existing facilities do not come within the exemption. Neither do assessments for ordinary maintenance or repair of club facilities come within the exemption. Moreover, assessments paid are not within the exemption unless they are earmarked by the club or organization at the time of receipt for use as provided in this paragraph. Earmarking may be shown in various ways. One method would be the setting up of a separate account in the records of the club or organization for the particular construction or reconstruction project. This account should show the date on which the construction or reconstruction project was established, the amounts paid by the members specifically for such project, and the dates on which such amounts were received by the club or organization.

(b) *Amounts paid after October 31, 1959, as dues or membership fees, as initiation fees, or for life memberships.*

(1) *In general.* Except as otherwise provided in paragraph (c) of this section, any amount constituting dues or membership fees, initiation fees, or a payment for a life membership with respect to which the life member has elected to pay tax pursuant to section 4241(a)(3)(B) (see paragraph (c)(2) of § 49.4241-1), which is paid after October 31, 1959—

(i) For construction or reconstruction by the club or organization, begun on or after January 1, 1959, of any social, athletic, or sporting facility owned or leased by it, or

(ii) For construction or reconstruction by the club or organization, begun on or after January 1, 1959, of any capital addition to, or capital improvement of, any such facility, or

(iii) For furnishings or fixtures, such as furniture, drapes, carpeting, refrigerators, etc. (including installation charges), for any such facility, to the extent that such furnishings or fixtures are required, by reason of the construction or reconstruction described in subdivision (i) or (ii), for the use of such facility upon completion of such construction or reconstruction,

is exempt from the tax imposed under section 4241. Amounts paid for the retirement of indebtedness (a mortgage loan, for example) incurred by reason of the construction or reconstruction of any such facility, capital addition, or capital improvement, or purchase of such furnishings or fixtures for the use of the facility upon completion of construction or reconstruction are exempt from the tax imposed under section 4241. Amounts paid for interest in connection with such indebtedness are likewise exempt from the tax imposed under section 4241. Amounts paid for the replenishment of reserve funds expended by the club or organization for purposes described in subdivision (i), (ii), or (iii) of this subparagraph are also exempt from the tax imposed under section 4241. However, amounts paid for the purchase of land or for the purchase of existing facilities do not come within the exemption. Neither do amounts paid for ordinary maintenance or repair of club facilities come within the exemption. Moreover, amounts paid are not within the exemption unless they are earmarked by the club or organization at the time of receipt for use as provided in this paragraph. Earmarking may be shown in various ways. One method would be the setting up of a separate account in the records of the club or organization for the particular construction or reconstruction project. This account should show the date on which the construction or reconstruction project was established, the amounts paid by the members specifically for such project, and the dates on which such amounts were received by the club or organization.

[F.R. Doc. 64-5353; Filed, May 27, 1964; 8:48 a.m.]

DEPARTMENT OF AGRICULTURE

Agricultural Marketing Service

[7 CFR Parts 101-108, 110-113]

LICENSED WAREHOUSES

Records Retention Requirements

Notice is hereby given in accordance with section 4 of the Administrative Procedure Act (5 U.S.C. 1003) that the Agricultural Marketing Service, pursuant to the authority conferred by section 28 of the United States Warehouse Act (7 U.S.C. 268) is considering amending the warehouse regulations appearing in Parts 101 through 108 and 110 through 113 of Subchapter E of Chapter I in Title 7 of the Code of Federal Regulations in the following respects:

1. Sections 101.17, 102.20, 103.17, 104.17, 105.17, 106.17, 107.17, 108.17, 110.17, 111.18, 112.17, and 113.17 would be amended to read:

§ ----- Copies of receipts.

At least one actual or skeleton copy of all receipts shall be made, and all copies, except skeleton copies, shall have clearly and conspicuously printed or stamped thereon the words "Copy—Not Negotiable." A copy of each receipt issued shall be retained by the warehouseman for a period of one year after December 31 of the year in which the corresponding original receipt is canceled.

2. Sections 101.33, 102.37, 103.40, 105.33, 106.37, 107.39, 108.33, 110.34, 111.41, 112.34 and 113.36 and paragraph (a) of § 104.28 would be amended by adding a sentence at the end thereof to read: "Such records shall be retained by the warehouseman for a period of six years after December 31 of the year in which created, and for such longer period as may be necessary for the purposes of any litigation which the warehouseman knows to be pending, or as may be required by the Administrator in particular cases to carry out the purposes of the Act."

3. Sections 101.36, 105.35, 106.39, 107.42, 108.35, 110.36, 111.44, 112.36 and 113.38, the last paragraph of § 103.41, and paragraph (b) of § 102.38 would be amended to read: "Each warehouseman shall keep on file, as a part of the records of the warehouse, for a period of three years after December 31 of the year in which submitted, an exact copy of each report submitted by such warehouseman under the regulations in this part."

4. Paragraph (b) of § 104.29 would be amended to read:

(b) Each warehouseman shall keep on file, as a part of the records of the warehouse, for a period of three years after December 31 of the year in which submitted, an exact copy of each report submitted by such warehouseman under the regulations in this part. Copies of grade and weight certificates as are required to be filed with him by § 104.57 shall be retained, as a part of the records of the warehouse, for a period of one year after December 31 of the year in which the receipt based on such certificates is canceled.

5. The last sentence of § 101.49 would be amended to read: "A record of the sampling, including the written request, if any, of the owner of the cotton or the person having a legal right to have such cotton sampled, shall be kept by the licensed warehouseman as a part of the warehouse records for a period of one year after December 31 of the year in which such cotton is removed from the warehouse."

6. Sections 102.29, 103.24, 105.46, 106.54, 107.55, 108.47, 110.50, 111.56, 112.49 and 113.52 would be amended by adding a sentence at the end thereof to read: "Such certificates shall be retained as a part of the records of the warehouse, for a period of one year after December 31 of the year in which the receipt based on such certificates is canceled."

7. The last sentence of § 101.47 would be amended to read: "All certificates and memoranda within this section shall be retained in the records of the licensed warehouseman for a period of one year after December 31 of the year in which

the receipt based on such certificates or memoranda is canceled."

8. Section 102.30 would be amended by adding a sentence at the end thereof to read: "Records required under this section with respect to nonstorage grain shall be retained, as a part of the records of the warehouse, for a period of one year after December 31 of the year in which the lot of nonstorage grain is delivered from the warehouse."

9. The following sentence would be added at the end of paragraph (c) of §§ 102.54, 107.51 and 111.52; after the second sentence in paragraph (c) of §§ 103.39 and 113.47; after the first sentence in paragraph (c) of §§ 106.48 and 108.42; and after the first sentence in paragraph (b) of §§ 110.46 and 112.43: "A copy of such notice shall be kept as a record of the warehouse."

10. Sections 102.54, 107.51, 110.46, 111.52 and 112.43 would be amended by adding a new paragraph (f), and §§ 103.39, 106.48, 108.42 and 113.47 would be amended by adding a new paragraph (g), both to read: Records required to be kept by this section shall be retained, as a part of the records of the warehouse, for a period of six years after December 31 of the year in which created, and for such longer period as may be necessary for the purposes of any litigation which the warehouseman knows to be pending, or as may be required by the Administrator in particular cases to carry out the purposes of the Act.

Regulations in each part require licensees to maintain certain records and to retain copies of all reports filed with the Department. In a number of instances, no minimum retention period is specified by the section of the regulations requiring the creation of the record or report. These amendments would relieve restrictions by specifying a definite period for which records and reports are to be retained by federally licensed warehousemen and otherwise would clarify the requirements of the regulations.

Any interested persons who wish to submit written data, views or arguments on the proposed amendments may do so by filing them with the Director, Special Services Division, Agricultural Marketing Service, U.S. Department of Agriculture, Washington, D.C., 20250, within 30 days after publication hereof in the FEDERAL REGISTER.

Done at Washington, D.C., this 22d day of May 1964.

CLARENCE H. GIRARD,
Deputy Administrator,
Agricultural Marketing Service.

[F.R. Doc. 64-5365; Filed, May 27, 1964;
8:49 a.m.]

FEDERAL AVIATION AGENCY

[14 CFR Parts 40, 41, 42]

[Reg. Docket No. 5094; Notice 64-32]

AIR CARRIERS

Certification and Operations

The Federal Aviation Agency has under consideration a proposal to amend

Parts 40, 41, and 42 of the Civil Air Regulations to make minor substantive changes in each part to conform with comparable provisions in one or more of the other parts. These changes will remove unjustified inconsistencies in those parts and will facilitate the recodification of Parts 40, 41, and 42.

Interested persons are invited to participate in the making of the proposed rules by submitting such written data, views, or arguments as they desire. Communications should identify the regulatory docket or notice number and be submitted in duplicate to the Federal Aviation Agency, Office of the General Counsel: Attention Rules Docket, 800 Independence Avenue SW., Washington, D.C., 20553. All communications received on or before July 3, 1964, will be considered by the Administrator before taking action on the proposed rules. The proposals contained in this notice may be changed in the light of comments received, and if finally promulgated will be subject to such changes as may be necessary for their recodification under the Agency's Recodification Program, as announced in Draft Release 61-25 (26 F.R. 10698). All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons.

The changes that would be made to Parts 40, 41, and 42 by this proposal are as follows:

1. *Section 40.15 Display of certificate.* Section 40.15 requires an air carrier to keep its operating certificate available at its principal operations office for inspection by the Administrator. Sections 41.15 and 42.17 in addition require an air carrier to keep its operations specifications available for inspection. The Agency feels that an air carrier operating under Part 40 should keep both its operating certificate and operations specifications available for inspection.

2. *Sections 40.202 Supplemental oxygen; reciprocating-engine-powered airplanes; and 40.202-T Supplemental oxygen for sustenance; turbine-powered airplanes.* Sections 41.202, 41.202-T, 42.202, and 42.202-T contain a provision relating to continuous use of oxygen by all crewmembers and also oxygen requirements for standby crewmembers if they are to perform further flight deck duty on the flight. Comparable provisions are presently contained in CAM 40.202-1 and 40.202-2 as interpretations. The Agency proposes to make these interpretations part of the regulations.

3. *Section 41.177 Passenger information for all operations.* Section 41.177 would be amended by adding thereto a provision presently contained in §§ 40.177 and 42.177 that specifically prohibits passengers and cabin attendants from smoking while the no smoking sign is lighted and requires passengers to fasten their seat belts and keep them fastened while the seat belt sign is lighted. The Agency feels that this rule directed to the passenger is needed since there have been instances where passengers have refused to obey these instructions.

4. *Section 41.261 Composition of flight crew.* Sections 40.261(a) and 42.261(a)

provide that "no air carrier shall operate an airplane with less than the minimum flight crew specified in the airworthiness certificate or in the Airplane Flight Manual" whereas § 41.261(a) merely refers to the "Airplane Flight Manual". For conformity, and since the minimum flight crew for some airplanes may be specified in the operating limitations of their airworthiness certificates, § 41.261(a) would be amended to conform to §§ 40.261 and 42.261.

5. *Sections 41.302 Pilot checks; and 42.302 Pilot checks; airplanes.* Section 41.302(b)(1) prohibits an air carrier from initially utilizing a pilot as pilot in command until he has demonstrated to a check pilot his ability to pilot and navigate airplanes to be flown by him. Thereafter, he is prohibited from serving as pilot in command unless he satisfactorily completes a similar pilot proficiency check at least each 6 months. Sections 40.302(b)(1) and 42.302(b)(1) in addition provide that wherever the performance of any proficiency check is deemed unsatisfactory by the check pilot, he may, at his discretion, give additional training to the pilot during the course of the proficiency check. This proposed amendment would add a comparable provision to § 41.302(b)(1). This proposed amendment would also add a second sentence to subparagraph (1) of § 41.302(b) to make it clear that a pilot, who has unsatisfactorily performed a proficiency check, may not be used in operations under the part until he has demonstrated such proficiency, regardless of whether or not the pilot is given additional training by the check pilot. The last sentence in present § 42.302(b)(1) was intended to achieve this result and would therefore also be amended to make the intent clear.

6. *Section 41.302 Pilot checks.* The items to be added by this proposed amendment are, as a matter of course, actually performed by a pilot who undergoes a proficiency check under present Part 41. Therefore to eliminate any doubt with respect to the applicability of these items to pilots taking proficiency checks under Part 41 it is proposed to amend this section to expressly include these items in the pilot proficiency checklist.

7. *Sections 41.391 Continuance of flight; flight hazards; and 42.391 Continuance of flight; flight hazards; airplanes.* In the recent amendments to Part 40, § 40.391(b) was amended by adding language expressly requiring the approval of a minimum equipment list for operations en route with required equipment inoperative for reasons set forth in the preamble to Notice 63-20. This proposed amendment would add the same minimum equipment list requirement to § 41.391(b). It would also amend § 42.391(b) to provide for the approval by an authorized representative of the Administrator of both the minimum equipment list and procedures for continuance of flight beyond a terminal point with certain required equipment inoperative, neither of which are covered by present § 42.391(b). There is no difference between the operations conducted under Part 42 and Parts 40

and 41 which justifies the absence of the approval for the equipment list or procedures for continuance of flight with inoperative equipment.

8. *Section 42.33 Airports.* This section lists the criteria used in determining the acceptability of an airport for use by a supplemental air carrier or large commercial operator. Comparable sections in Parts 40 and 41 list "public protection" as one of the criteria for the acceptability of airports for use by air carriers certificated under those parts. "Public protection" is not listed in the criteria for airports that may be used by persons operating under Part 42. The public should have the same protection at airports used by Part 42 operators as they have at airports used by air carriers certificated under Parts 40 and 41. Section 42.33 is therefore being amended to include the term "public protection" in the listed criteria.

9. *Section 42.396(a)(1)(iii) Fuel supply for all operations; airplanes.* This paragraph distinguishes between the fuel requirements for domestic operations (from a point within the contiguous United States to another point within the contiguous United States) and operations to or from points outside of the United States, conducted by persons operating under Part 42.

The fuel requirements for the domestic operations under Part 42 are the same as the fuel requirements for domestic carriers certificated under Part 40. The fuel requirements for operations to or from points outside of the United States are the same as the fuel requirements for the overseas and foreign operations conducted by air carriers certificated under Part 41. Section 42.396(a)(1)(iii) in its current form does not require the additional fuel for operations from a point outside the United States to another point outside the United States, that is required for the same operation under Part 41. It is intended that these requirements be included in § 42.396. There is no justification for a difference in the fuel requirements for Part 42 operators conducting these operations and Part 41 certificated air carriers conducting these operations, since they are operating in the same environment and either may encounter the same conditions requiring additional fuel.

This paragraph is therefore being revised so that it clearly distinguishes the difference in the fuel requirements for operations from one point in the contiguous United States to another point in the contiguous United States and those fuel requirements for all other operations including operations from a point outside the United States to another point outside the United States.

In consideration of the foregoing, it is proposed to amend Parts 40, 41, and 42 of the Civil Air Regulations as follows:

§ 40.15 [Amended]

1. By amending § 40.15 by inserting between the words "certificate" and "shall" the words "and operations specifications".

2. By amending § 40.202(b) by adding a new subparagraph (3) to read as follows:

§ 40.202 Supplemental oxygen; reciprocating-engine-powered airplanes.

(b) Crewmembers. * * *

(3) When oxygen must be used by a flight crewmember, it shall be used continuously by such crewmember during the required periods, except when it is necessary to remove the oxygen mask or other dispenser in connection with his regular duties. Standby crewmembers who are on call or are definitely going to have flight deck duty prior to the completion of the flight shall be provided with the same amount of supplemental oxygen as is provided for crewmembers on duty other than flight deck duty. If a standby crewmember is not on call and will not be on flight deck duty during the remainder of the flight, such crewmember shall be considered as a passenger with regard to supplemental oxygen requirements.

3. By amending § 40.202-T(b) by adding a new subparagraph (3) to read as follows:

§ 40.202-T Supplemental oxygen for sustenance; turbine-powered airplanes.

(b) Crewmembers. * * *

(3) When oxygen must be used by a flight crewmember, it shall be used continuously by such crewmember during the required periods, except when it is necessary to remove the oxygen mask or other dispenser in connection with his regular duties. Standby crewmembers who are on call or are definitely going to have flight deck duty prior to the completion of the flight shall be provided with the same amount of supplemental oxygen as is provided for crewmembers on duty other than flight deck duty. If a standby crewmember is not on call and will not be on flight deck duty during the remainder of the flight, such crewmember shall be considered as a passenger with regard to supplemental oxygen requirements.

§ 41.177 [Amended]

4. By amending § 41.177 by adding at the end thereof the following sentence: "No passenger or cabin attendant will smoke while the no smoking sign is lighted and all passengers will fasten their seat belts and keep them fastened while the seat belt sign is lighted."

§ 41.261 [Amended]

5. By amending § 41.261(a) by inserting between the words "specified" and "in" the words "in the airworthiness certificate or".

6. By amending § 41.302(b) by adding at the end of subparagraph (1) the following two sentences and by adding at the end of subdivision (1) of subparagraph (2) the following words:

§ 41.302 Pilot checks.

(b) Proficiency check. * * *

(1) * * * If performance of any of the proficiency check items specified in subparagraph (2) of this paragraph is unsatisfactory in the judgment of the check pilot he may, at his discretion, give additional training to the pilot during

the course of the proficiency check. If the pilot being checked is unable to demonstrate satisfactory performance to the check pilot, he shall not be used in operations under this part until such time as he shall have demonstrated proficiency.

(2) * * *

(1) * * * missed approach and traffic control procedures, crosswind landing, landing under circling approach conditions, takeoffs and landings with engine(s) failures, demonstration of pilot judgment, and emergency procedures.

§ 41.391 [Amended]

7. By amending § 41.391(b) by inserting in the second sentence between the words "manual," and "procedures" the words "the minimum equipment list and".

§ 42.302 [Amended]

8. By amending § 42.302(b) (1) by deleting the last sentence and inserting in lieu thereof the following sentence: "If the pilot being checked is unable to demonstrate satisfactory performance to the check pilot, he shall not be used in operations under this part until such time as he shall have demonstrated proficiency."

§ 42.391 [Amended]

9. By amending § 42.391(b) by adding at the end thereof the following sentence: "An authorized representative of the Administrator may approve, for incorporation in the operator's manual, the minimum equipment list and procedures for continuance of flight beyond a terminal point with equipment referred to in § 42.170(c) inoperative, if he finds that, in the particular circumstances of the case, literal compliance with that requirement is not necessary in the interest of safety."

§ 42.33 [Amended]

10. By amending § 42.33 by inserting between the words "facilities" and "lighting" the words "public protection".

11. By amending § 42.396(a) (1) (iii) to read as follows:

§ 42.396 Fuel supply for all operations; airplanes.

(a) *Reciprocating-engine and turbo-propeller-powered airplanes.* * * *

(1) * * *

(iii) To fly for a period of at least 45 minutes at normal cruising consumption in operations from one point in the contiguous United States to another point in the contiguous United States, or in all other operations, to fly at least 30 minutes plus 15 percent of the total time required to fly at normal cruising consumption to the airports specified in subdivisions (i) and (ii) of this subparagraph or to fly for 90 minutes at normal cruising consumption, whichever is lesser.

These amendments are proposed under the authority of section 313(a) and 601 through 610 of the Federal Aviation Act of 1958 (49 U.S.C. 1354 and 1421 through 1430).

Issued in Washington, D.C., on May 25, 1964.

W. LLOYD LANE,
Acting Director,
Flight Standards Service.

[F.R. Doc. 64-5337; Filed, May 27, 1964;
8:47 a.m.]

[14 CFR Part 71 [New]]

[Airspace Docket No. 64-PC-1]

FEDERAL AIRWAY

Proposed Designation

In consonance with ICAO International Standards and Recommended Practices, notice is hereby given that the Federal Aviation Agency (FAA) is considering an amendment to Part 71 [New] of the Federal Aviation Regulations. This proposal relates to navigable airspace outside the United States.

Applicability of International Standards and Recommended Practices by the Air Traffic Service, FAA, in areas outside domestic airspace of the U.S. is governed by Article 12 and Annex 11 to the Convention on International Civil Aviation (ICAO), which pertains to the establishment of air navigation facilities and services necessary to promoting safe, orderly, and expeditious flow of civil air traffic. Its purpose is to insure that civil flying on international air routes is carried out under uniform conditions designed to improve the safety and efficiency of air operations.

The International Standards and Recommended Practices in Annex 11 apply to those parts of the airspace under the jurisdiction of a contracting State, derived from ICAO, wherein air traffic services are provided and also whenever a contracting State accepts the responsibility of providing air traffic services over high seas or in airspace of undetermined sovereignty. A contracting State accepting such responsibility may apply the International Standards and Recommended Practices to civil aircraft in a manner consistent with that adopted for airspace under its domestic jurisdiction.

In accordance with Article 3 of the Convention on International Civil Aviation, Chicago, 1944, State aircraft are exempt from the provisions of Annex 11 and its Standards and Recommended Practices. As a contracting State, the U.S. agreed by Article 3(d) that its State aircraft will be operating in international airspace with due regard for the safety of civil aircraft.

Since this action involves in part the designation of navigable airspace outside the United States, the Administrator has consulted with the Secretary of State and the Secretary of Defense in accordance with the provisions of Executive Order 10854.

The Federal Aviation Agency is considering the designation of VOR Federal airway No. 5 Hawaii from the intersection of Lanai, Hawaii, 118° and Maui, Hawaii, 179° True radials via the intersection of Maui 179° and Lanai 140° True radials, to the intersection of Lanai 140°

and Upolu Point, Hawaii, 211° True radials, excluding the airspace below 1,200 feet above the surface.

This airway would provide a connecting link with the interisland airway structure and also provide a route for VOR-equipped aircraft operating between Honolulu, Hawaii, and Kona, Hawaii. It would parallel Amber Federal airway No. 11. The centerline of the segment of this airway and the segment of VOR Federal airway No. 1 Hawaii, based on radials of the Maui VOR are only 4° apart in the vicinity of Kahoolawe, Hawaii. These alignments are necessary to provide the lowest possible minimum en route altitude on each airway segment.

Interested persons may submit such written data, views, or arguments as they may desire. Communications should be submitted in triplicate to the Director, Pacific Region, Attn: Chief, Air Traffic Division, Federal Aviation Agency, P.O. Box 4009, Honolulu, Hawaii, 96812. 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 Regional Air Traffic Division Chief, or the Chief, Airspace Regulations and Procedures Division, Federal Aviation Agency, Washington, D.C., 20553. 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 Federal Aviation Agency, Office of the General Counsel: Attention Rules Docket, 800 Independence Avenue SW., Washington, D.C. An informal docket will also be available for examination at the office of the Regional Air Traffic Division Chief.

(Sec. 307(a) and 1110, 72 Stat. 749 and 800; 49 U.S.C. 1348 and 1510, and Executive Order 10854, 24 F.R. 9565)

Issued in Washington, D.C., on May 19, 1964.

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

[F.R. Doc. 64-5320; Filed, May 27, 1964;
8:46 a.m.]

[14 CFR Part 71 [New]]

[Airspace Docket No. 63-WA-18]

CONTROLLED AIRSPACE AND FEDERAL AIRWAYS

Withdrawal of Notice of Proposed Rule Making

In a notice of proposed rule making published as Airspace Docket No. 63-WA-18 on January 17, 1964 (29 F.R. 435),

it was stated that the Federal Aviation Agency proposed to alter Control 1408 (Miami, Fla.) by including a portion of Warning Area W-173 between 20,000 and 25,000 feet MSL. On March 11, 1964, a supplemental notice of proposed rule making was published in the FEDERAL REGISTER (29 F.R. 3235) and extended the time for submitting additional written data, views or arguments on Airspace Docket No. 63-WA-18 until March 20, 1964.

In response to the proposal, the U.S. Navy stated that the Navy flight training operations which would be affected by the proposal average 200 missions per month; and the Department of Defense stated that the proposal cannot be regarded as wholly consistent with requirements of national defense unless certain operational objections are resolved. The installation of radar at the Miami Center has permitted the development of refined terminal procedures which have negated any air traffic control need for use of the small segment of W-173.

In consideration of the foregoing, notice is hereby given that the proposals contained in Airspace Docket No. 63-WA-18 are withdrawn.

(Secs. 307(a), and 1110, 72 Stat. 749 and 800; 49 U.S.C. 1348 and 1510, and Executive Order 10854, 24 F.R. 9565)

Issued in Washington, D.C., on May 19, 1964.

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

[F.R. Doc. 64-5321; Filed, May 27, 1964;
8:46 a.m.]

[14 CFR Part 75 [New]]

[Airspace Docket No. 64-WA-6]

JET ROUTE

Withdrawal of Notice of Proposed Rule Making

In a notice of proposed rule making published in the FEDERAL REGISTER as Airspace Docket No. 64-WA-6 on February 28, 1964 (29 F.R. 2792), it was stated that the Federal Aviation Agency (FAA) was proposing to alter a segment of Jet Route No. 82 by realignment from the Erie, Pa., VORTAC via the Ithaca, N.Y., VOR to the Albany, N.Y., VORTAC. The inclusion of Ithaca VOR in the structure was proposed to provide more accurate navigational guidance.

Subsequent to the publication of the notice, it has been determined that expanded service volume of the Erie and Albany VORTACs will provide the required navigational guidance without the use of the Ithaca VOR.

In consideration of the foregoing, notice is hereby given that the proposal contained in Airspace Docket No. 64-WA-6 is withdrawn.

(Sec. 307(a) of the Federal Aviation Act of 1958 (72 Stat. 749; 49 U.S.C. 1348))

Issued in Washington, D.C., on May 19, 1964.

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

[F.R. Doc. 64-5322; Filed, May 27, 1964;
8:46 a.m.]

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Food and Drug Administration

[21 CFR Part 42]

DRIED WHOLE EGGS AND DRIED EGG YOLKS

Notice of Proposal To Amend Identity Standards To Provide for Glucose Removal; Extension of Time for Filing Comments on Prior Proposal

Notice is given that Armour and Company, 401 Wabash Avenue, Chicago, Ill., 60690, has petitioned for amendment of the standards of identity for dried whole eggs and dried egg yolks (21 CFR 42.30 (28 F.R. 7776), 42.60 (28 F.R. 4260)) to provide for glucose removal by a fermentation process. The petition does not set forth the specific wording of the amendments requested. However, it refers to two methods for glucose removal—the enzymatic method which was the subject of proposals published in the FEDERAL REGISTER of March 28, 1964 (29 F.R. 4099), and an alternative yeast-fermentation method. The petition supports giving equal recognition in the standards for dried egg products to both processes and it furnishes research data to support the assertion that there is no significant difference in the dried egg products processed by either method. The purpose of the petition would be achieved by amending the standards for dried whole eggs and for dried egg yolks to include in each standard, as an alternative method for glucose removal, a provision for adjustment of the pH of the liquid egg products with dilute, chemically pure hydrochloric acid and for controlled fermentation, using commercial grade baker's yeast (*Saccharomyces cerevisiae*), prior to drying the products.

The petition proposes to provide for label declaration to show when either of the two glucose removal processes has been used by having the standards prescribe use of the statement "Glucose removed for stability" or the statement "Stabilized, glucose removed".

Because of the correlation between the present proposal and the proposal that was the subject of the notice published in the FEDERAL REGISTER of March 28, 1964 (29 F.R. 4099), it is concluded that the time for filing comments on the notice published March 28, 1964, should be further extended to coincide with the period for filing comments on the fermentation proposal.

Pursuant to the provisions of the Federal Food, Drug, and Cosmetic Act (secs. 401, 701, 52 Stat. 1046, 1055, as amended 70 Stat. 919, 72 Stat. 948; 21 U.S.C. 341, 371) and in accordance with the authority delegated to the Commissioner of Food and Drugs by the Secretary of Health, Education, and Welfare (21 CFR 2.90; 29 F.R. 471) all interested persons are invited to submit their views in writing regarding the proposal included in this notice and the related proposal published March 28, 1964 (29 F.R. 4099). Such views and comments should be submitted, preferably in quintuplicate, to

the Hearing Clerk, Department of Health, Education, and Welfare, Room 5440, 330 Independence Avenue SW., Washington, D.C., 20201, within 30 days following the date of publication of this notice in the FEDERAL REGISTER. Views and comments may be accompanied by a memorandum or brief in support thereof.

Dated: May 22, 1964.

J. K. KIRK,
Assistant Commissioner
for Operations.

[F.R. Doc. 64-5364; Filed, May 27, 1964;
8:49 a.m.]

FEDERAL COMMUNICATIONS COMMISSION

[47 CFR Part 73]

[Docket No. 15404]

STEREOPHONIC PROGRAMING AND SCA OPERATION; FREQUENCY AND MODULATION MONITORS

Order Extending Time To File Comments and Reply Comments

In the matter of amendment of Part 73 of the Commission's rules and regulations to require FM broadcast stations engaging in multiplex stereophonic programming or SCA operation to install type approved frequency and modulation monitors capable of monitoring sub-carrier operation; Docket No. 15404.

1. The AM/FM Broadcast Equipment Section, Industrial Electronics Division, Electronic Industries Association, has formally requested that the time to file comments in this proceeding, which the notice of proposed rule making, adopted April 1, 1964, set as May 25, 1964 (and reply comments to be filed by June 15, 1964), be extended to August 15, 1964.

2. The reasons stated are that the section's Engineering Committee needs additional time to consider the specific problems involved before it can formulate specific comments and such industry comments are of great importance to manufacturers of FM broadcast equipment.

3. It appears that good cause exists for the Commission to extend the time for filing both comments and reply comments in this proceeding considering the technical complexity of the subject matter.

4. Accordingly, it is hereby ordered, That the time within which to file comments in this proceeding is extended to and including August 15, 1964. It is also ordered, That the time within which to file reply comments is extended to and including September 1, 1964.

5. Authority for extension as provided herein is contained in § 0.281(d)(8) of the Commission's rules and regulations.

Adopted: May 21, 1964.

Released: May 22, 1964.

FEDERAL COMMUNICATIONS
COMMISSION,
[SEAL] BEN F. WAPLE,
Secretary.

[F.R. Doc. 64-5356; Filed, May 27, 1964;
8:48 a.m.]

PROPOSED RULE MAKING

FEDERAL HOME LOAN BANK BOARD

[12 CFR Part 563]

[No. FSLIC-1,817]

OPERATIONS

Reports to the Corporation

MAY 25, 1964.

Whereas, by Federal Home Loan Bank Board Resolution No. FSLIC-1,815, dated May 11, 1964, and duly published in the FEDERAL REGISTER on May 20, 1964 (29 F.R. 6567), it was proposed by this Board to amend § 563.18 of the rules and regulations for Insurance of Accounts (12 CFR 563.18) to require semi-annual reports as of the end of each half of each insured institution's fiscal year, and

Whereas, by error, a sentence in the present regulation requiring the submission of monthly reports was omitted from the proposed amendment, and

Whereas, it is this Board's intention to continue to require the submission of monthly reports;

It is hereby resolved, That the proposed amendment to § 563.18 of the rules and regulations for Insurance of Accounts set forth in Federal Home Loan Bank Board Resolution No. FSLIC-1,815, dated May 11, 1964, and published in the FEDERAL REGISTER on May 20, 1964 (29 F.R. 6567), is hereby corrected to read as follows:

Section 563.18 is hereby amended to read as follows:

§ 563.18 Reports to the Corporation.

Each insured institution shall make a semiannual report of its affairs as of the end of each half of its fiscal year, on forms prescribed by the Corporation. The original of each such report shall be forwarded to the Corporation, Washington, D.C., and one copy shall be forwarded to the Federal home loan bank of which the institution is a member, within 30 days following the date as of which the report is made. The officers of each insured institution shall make a monthly report to the board of directors on forms prescribed by the Corporation, copies of which shall be filed as follows: One copy shall be forwarded to the Federal home loan bank of the district in which the insured institution is located and two copies to the Corporation, Washington, D.C.

(Secs. 402, 403, 48 Stat. 1256, 1257, as amended; 12 U.S.C. 1725, 1726. Reorg. Plan No. 3 of 1947, 12 F.R. 4981, 3 CFR 1947 Supp.)

Resolved further, That the remaining provisions of Federal Home Loan Bank Board Resolution No. FSLIC-1,815 shall remain in full force and effect.

By the Federal Home Loan Bank Board.

[SEAL]

HARRY W. CAULSEN,
Secretary.

[F.R. Doc. 64-5368; Filed, May 27, 1964;
8:45 a.m.]

Notices

DEPARTMENT OF STATE

[Public Notice 233; Delegation of Authority 105-5]

VARIOUS OFFICIALS

Delegation of Functions Under Mutual Educational and Cultural Exchange Act of 1961; Amendment

Delegation of Authority No. 105, dated August 14, 1962, "Subject: Delegation of Functions under the Mutual Educational and Cultural Exchange Act of 1961", is hereby amended as follows:

(1) Substitute a comma for the period at the conclusion of Section 1 and add the words, "including the negotiation and execution of contracts."

(2) Insert before the period at the end of section 2(b) the words, "and for providing policy direction and prescribing standards and procedures for the negotiation and execution of contracts."

Dated: May 20, 1964.

[SEAL]

DEAN RUSK,
Secretary of State.

[F.R. Doc. 64-5331; Filed, May 27, 1964; 8:47 a.m.]

[Public Notice 234; Delegation of Authority 23-G-2]

PROCUREMENT TRANSACTIONS

Delegation of Authority; Amendment

Delegation of Authority No. 23-G, dated July 6, 1962, "Subject: Delegation of Authority for Procurement Transactions", as amended, is hereby further amended as follows:

(1) Substitute for the existing language, "to make purchases and contracts", in lines 11 and 12 of the introductory paragraph the words, "to negotiate and execute contracts and purchases".

(2) Insert after paragraph 3 the following new paragraph:

4. Bureau of Educational and Cultural Affairs.

Assistant Secretary

Any person in the Bureau of Educational and Cultural Affairs who is designated in writing by the Assistant Secretary. The signed original of any such delegation must be transmitted to the Regulations and Procedures Staff for filing in the FEDERAL REGISTER.

Limitations. Transactions chargeable to funds available in the appropriation "Mutual Educational and Cultural Exchange Activities" (for FY 1962 and prior years, "International Educational Exchange Activities" and "International Educational Exchange Activities (Special Foreign Currency Program)") and in the appropriation "Center for Cultural and Technical Interchange Between East and West", or other funds available to

the Department for international educational and cultural activities.

Dated: May 14, 1964.

WILLIAM J. CROCKETT,
Deputy Under Secretary for
Administration.

[F.R. Doc. 64-5332; Filed, May 27, 1964; 8:47 a.m.]

DEPARTMENT OF THE TREASURY

Bureau of Customs

[AA 643.3-0]

BICYCLES FROM CZECHOSLOVAKIA

Notice of Intent To Revoke the Finding of Dumping

A finding of dumping with respect to bicycles from Czechoslovakia was made in Treasury Decision 55243 which was published in the FEDERAL REGISTER on October 19, 1960 (25 F.R. 9945).

After due investigation, I find that exporters of bicycles from Czechoslovakia are no longer selling, or are likely to sell, bicycles to the United States at less than fair value. Accordingly, notice is hereby given that the Treasury Department intends to revoke the dumping finding as to bicycles from Czechoslovakia.

Prior to the issuance of the proposed revocation, consideration will be given to any relevant data, views, or arguments which are submitted in writing by interested parties to the Commissioner of Customs, Bureau of Customs, Washington, D.C., 20226, and received not later than 30 days from the date of publication of this notice in the FEDERAL REGISTER.

[SEAL]

PHILIP NICHOLS, JR.,
Commissioner of Customs.

Approved: May 21, 1964.

JAMES A. REED,
Assistant Secretary
of the Treasury.

[F.R. Doc. 64-5351; Filed, May 27, 1964; 8:48 a.m.]

DEPARTMENT OF THE INTERIOR

Bureau of Land Management MONTANA

Notice of Filing of Montana Protraction Diagram

MAY 21, 1964.

Notice is hereby given that, effective with this publication, the following protraction diagram revised has been placed in the open files of the Montana Land Office, 1245 North 29th Street, Billings, Montana, 59101, and is available to the public as a matter of information only. In accordance with 43 CFR 3123.3, 3322, 3130, 3150, 3160, 3180, 3323, and 3210 formerly 192.42a, 188, 193, 195, 196, 198,

199, and 200, respectively, this protraction will become the basic record for the description of land in applications and offers for mineral leases and permits filed at and after 10:00 a.m. on the thirty-first day after publication of this Notice. This protraction will also become the basic record for the description of lands in applications for all other authorized uses at the above specified time. This protraction diagram will replace protraction diagram sheet No. 8 officially filed in the Montana Land Office, June 21, 1963.

PRINCIPAL MERIDIAN, MONTANA

Approved March 31, 1964

Montana Protraction Diagram (Unsurveyed)
Sheet No. 8
Tp. 7 S., Rs. 17, 18 E.
Tp. 8 S., Rs. 17, 18 E.
Tp. 9 S., Rs. 17, 18, 19, 20 E.

Copies of these diagrams are for sale at one dollar (\$1) per sheet by the Cadastral Engineering Office, Bureau of Land Management, 1245 North 29th Street, Billings, Montana, 59101.

E. J. ROWLAND,
State Director.

[F.R. Doc. 64-5334; Filed, May 27, 1964; 8:47 a.m.]

UTAH

Small Tract Classification Amendment

MAY 21, 1964.

The following small tract classifications are hereby amended to permit selection of the lands involved by the State of Utah under the provisions of Public Law 85-771:

Classification Order No. 1, Utah (A-2), Federal Register Document No. 54-7991, published October 12, 1954.

Classification U II-7, Federal Register Document No. 59-6259, published July 30, 1959, on page 6105.

Classification U II-10, Federal Register Document No. 60-10685, published November 17, 1960, on page 10954 and amended by Federal Register Document No. 61-3470, published April 25, 1961, on page 3328.

Classification No. 1, offer No. 2, Federal Register Document No. 62-9368, published September 21, 1962, on page 9411.

Offering of the tracts for sale will continue until selection applications are filed by the State. Immediately upon the filing of a selection application by the State, the land selected will be withdrawn from disposition under the Small Tract Law. If the application by the State of Utah is not consummated, the lands involved, upon final rejection of the State's application, may be again offered for sale at public auction under the provisions of the Small Tract Law at the discretion of the authorized officer.

R. D. NIELSON,
State Director.

[F.R. Doc. 64-5335; Filed, May 27, 1964; 8:47 a.m.]

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Food and Drug Administration
EASTMAN CHEMICAL PRODUCTS,
INC.

Notice of Filing of Petition Regarding Food Additive Polyethylene

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 1314) has been filed by Eastman Chemical Products, Inc., Kingsport, Tennessee, proposing that the list of substances in paragraph (b) of § 121.2571 *Components of paper and paperboard in contact with dry food* be amended by inserting alphabetically therein the new item "polyethylene, air oxidized (minimum molecular weight 1,200)."

Dated: May 21, 1964.

J. K. KIRK,
Assistant Commissioner
for Operations.

[F.R. Doc. 64-5344; Filed, May 27, 1964;
8:47 a.m.]

OLIN MATHIESON CHEMICAL CORP.

Notice of Filing of Petition Regarding Food Additives Ammonium Glucoheptonate, Ammonium Fructoheptonate, and Sodium Fructoheptonate

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 1396) has been filed by Olin Mathieson Chemical Corporation, 1730 K Street NW., Washington, D.C., 20006, proposing that § 121.2515 *Chelating agents used in the manufacture of paper and paperboard* be amended by inserting alphabetically in paragraph (a) the items ammonium glucoheptonate, ammonium fructoheptonate, and sodium fructoheptonate in the list of substances contained therein.

Dated: May 21, 1964.

J. K. KIRK,
Assistant Commissioner
for Operations.

[F.R. Doc. 64-5345; Filed, May 27, 1964;
8:47 a.m.]

DEPARTMENT OF AGRICULTURE

Agricultural Marketing Service
DATES

Notice of Purchase Program EMP 29a

In order to encourage domestic consumption of dates by diverting them from normal channels of trade and commerce, in accordance with section 32, Public Law 320, 74th Congress, approved August 24, 1935, as amended, an announcement of the contemplated purchase

by the Department of dates, in the form of date pieces, has been distributed to the industry. Date pieces so purchased will be distributed to non-profit school lunch programs and other eligible outlets. The date pieces must be manufactured from Deglet Noor or Zahidi varieties of dates produced domestically. Information relative to this purchase program may be obtained from Fruit and Vegetable Division, Agricultural Marketing Service, Department of Agriculture, Washington, D.C., 20250, or Los Angeles, California, 90015.

(Sec. 32, 49 Stat. 774, as amended, 7 U.S.C. 612c)

Dated: May 25, 1964.

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

[F.R. Doc. 64-5366; Filed, May 27, 1964;
8:49 a.m.]

Office of the Secretary PUERTO RICO

Designation of Area for Emergency Loans

For the purpose of making emergency loans pursuant to section 321 of the Consolidated Farmers Home Administration Act of 1961 (7 U.S.C. 1961), it has been determined that in the Commonwealth of Puerto Rico a natural disaster has caused a need for agricultural credit not readily available from commercial banks, cooperative lending agencies, or other responsible sources.

Pursuant to the authority set forth above, emergency loans will not be made in the above-named commonwealth after June 30, 1965, except to applicants who previously received emergency or special livestock loan assistance and who can qualify under established policies and procedures.

Done at Washington, D.C., this 22d day of May 1964.

ORVILLE L. FREEMAN,
Secretary.

[F.R. Doc. 64-5342; Filed, May 27, 1964;
8:47 a.m.]

CIVIL AERONAUTICS BOARD

[Docket No. 13777; Order E-20849]

INTERNATIONAL AIR TRANSPORT ASSOCIATION

Order Regarding Specific Commodity Rates

Adopted by the Civil Aeronautics Board at its office in Washington, D.C., on the 25th day of May 1964.

Agreement adopted by Traffic Conference 1 of the International Air Transport Association relating to specific commodity rates; Docket 13777, Agreement C.A.B. 17666, R-15 through R-28.

There has been filed with the Board, pursuant to section 412(a) of the Federal Aviation Act of 1958 (the Act) and Part 261 of the Board's Economic Regu-

lations, an agreement between various air carriers, foreign air carriers, and other carriers, embodied in the resolutions of Traffic Conference 1 of the International Air Transport Association (IATA), and adopted pursuant to the provisions of Resolution 590 (Commodity Rates Board).

The agreement, adopted pursuant to unprotested notices to the carriers and promulgated in IATA memoranda, amends one description and names additional specific commodity rates as set forth in the attachment hereto.¹

The Board, acting pursuant to sections 102, 204(a), and 412 of the Act, does not find the subject agreement to be adverse to the public interest or in violation of the Act, provided that approval thereof is conditioned as hereinafter ordered.

Accordingly, it is ordered, That Agreement C.A.B. 17666, R-15 through R-28, be and hereby is approved, provided that such approval shall not constitute approval of the specific commodity descriptions contained therein for purposes of tariff publication.

Any air carrier party to the agreement, or any interested person, may, within 15 days from the date of service of this order, submit statements in writing containing reasons deemed appropriate, together with supporting data, in support of or in opposition to the Board's action herein. An original and nineteen copies of the statements should be filed with the Board's Docket Section. The Board may, upon consideration of any such statements filed, modify or rescind its action herein by subsequent order.

This order will be published in the FEDERAL REGISTER.

By the Civil Aeronautics Board.

[SEAL] HAROLD R. SANDERSON,
Secretary.

[F.R. Doc. 64-5367; Filed, May 27, 1964;
8:49 a.m.]

FEDERAL COMMUNICATIONS COMMISSION

[Docket Nos. 15346, 15347; FCC 64M-449]

COPPER COUNTRY BROADCASTING CO. (WMPL) AND UPPER MICHIGAN BROADCASTING CO. (WHDF)

Order Continuing Hearing

In re application of Copper Country Broadcasting Company (WMPL), Hancock, Michigan, Docket No. 15346, File No. BP-15410, for construction permit; in re application of The Upper Michigan Broadcasting Company (WHDF), Houghton, Michigan, Docket No. 15347, File No. BL-9076, for license to operate a standard broadcast station.

On the Hearing Examiner's own motion: It is ordered, This 21st day of May 1964, that, due to other commitments of the Hearing Examiner, the presently scheduled date of June 15, 1964, for commencement of hearing is continued to 10:00 a.m., July 20, 1964; and

¹ Filed as part of the original document.

In view of the above: *It is further ordered*, That certain procedural dates are changed as follows:

	From—	To—
Exchange of engineering exhibits.	May 18, 1964 ¹	June 15, 1964
Notification of witnesses, if any, desired for cross-examination.	June 1, 1964	July 6, 1964

¹ As a result of the Hearing Examiner's hereinabove action on his own motion, the request of counsel for The Upper Michigan Broadcasting Company to change this date to May 25, 1964, submitted by letter dated May 18 (received May 19), has become moot.

Released: May 22, 1964.

FEDERAL COMMUNICATIONS
COMMISSION,

[SEAL] BEN F. WAPLE,
Secretary.

[F.R. Doc. 64-5358; Filed, May 27, 1964;
8:48 a.m.]

[Docket Nos. 15485, 15486; FCC 64-470]

DIRIGO BROADCASTING, INC., AND DOWNEAST TELEVISION, INC.

Order Designating Applications for Consolidated Hearing on Stated Issues

In re applications of Dirigo Broadcasting, Inc., Bangor, Maine, Docket No. 15485, File No. BPCT-2911; Downeast Television, Inc., Bangor, Maine, Docket No. 15486, File No. BPCT-2952; for a construction permit for new television broadcast station.

At a session of the Federal Communications Commission held at its offices in Washington, D.C., on the 20th day of May 1964;

The Commission, having under consideration the above-captioned applications, each requesting a construction permit for a new television broadcast station to operate on Channel 7, Bangor, Maine; and

It appearing, that the above-captioned applications are mutually exclusive in that operation by the applicants as proposed would result in mutually destructive interference; and

It further appearing, that the following matters are to be considered in connection with the issues specified below:

Based on information contained in the application of Dirigo Broadcasting, Inc., it appears that the total cost of construction of the proposed new station will be approximately \$279,000, and cash in the amount of approximately \$160,000 will be required for the construction and initial operation of the proposed station. To meet the costs of construction, the applicant relies upon deferred credit of \$197,794 and the availability of a loan of \$300,000 from First Finance Corporation and, if necessary, a loan of \$300,000 from the Bank of Miami Beach. With respect to the loan from First Finance Corporation, however, no terms of repayment have been shown and the financial statement of First Finance Corporation does not show current and liquid assets (as defined in section III, paragraph 4(d), Form 301) in excess of current liabilities in sufficient amount

to enable the proposed lender to meet its commitment. With respect to the loan from Bank of Miami Beach, the letter purporting to be a commitment to lend money does not appear to be a firm undertaking since it merely states that the bank would "attempt to arrange financing", contains no terms of repayment, and is made subject to certain undisclosed conditions. It cannot be determined, therefore, that the applicant is financially qualified.

It further appearing, that Downeast Television, Inc., proposes to locate its main studio in Hampden, Maine, approximately 1,000 yards outside the corporate limits of the City of Bangor; that the applicant has requested a waiver of § 73.613(a) of the Commission's rules; that good cause has been shown and a waiver of said rule appears warranted; and

It further appearing, that, on April 10, 1964, Dirigo Broadcasting, Inc., filed a "Petition For Conditional Grant" pursuant to the provisions of § 1.592(a) (2) of the Commission's rules; that, on April 21, 1964, Downeast Television, Inc., filed an Opposition to the petition; that, while the Commission recognizes the need for a third television service to Bangor, Maine, the Commission is of the opinion that the fact that there are presently two television stations in operation in Bangor indicates that there is not the urgency for broadcast service contemplated by § 1.592(a) (2) sufficient to warrant a conditional grant of one application against the opposition of the other applicant, prior to designation for hearing; that the applicants may, pursuant to § 1.592(b) of the rules, request authority for interim operation after designation for hearing, with full protection being accorded the interests of both applicants; and

It further appearing, that, except as indicated above, Dirigo Broadcasting, Inc., is legally, technically and otherwise qualified to construct, own, and operate the proposed television broadcast station; and Downeast Television, Inc., is legally, financially, technically, and otherwise qualified to construct, own, and operate the proposed television broadcast station; and

It further appearing, that upon due consideration of the above-captioned applications, the Commission finds that, pursuant to section 309(e) of the Communications Act of 1934, as amended, a hearing is necessary and that the said applications must be designated for hearing in a consolidated proceeding on the issues set forth below:

It is ordered, That, pursuant to section 309(e) of the Communications Act of 1934, as amended, the above-captioned applications of Dirigo Broadcasting, Inc., and Downeast Television, Inc., are designated for hearing in a consolidated proceeding at a time and place to be specified in a subsequent Order, upon the following issues:

1. To determine whether Dirigo Broadcasting, Inc., is financially qualified to construct, own, and operate the proposed television broadcast station.

2. To determine, on a comparative basis, which of the operations proposed in the above-captioned applications

would better serve the public interest, convenience, and necessity in light of the significant differences between the applicants as to:

(a) The background and experience of each, bearing on its ability to own and operate the proposed television broadcast station.

(b) The proposals of each with respect to the management and operation of the proposed television broadcast stations.

(c) The programming services proposed in each of the above-captioned applications.

3. To determine, in the light of the evidence adduced pursuant to the foregoing issues, which, if either, of the instant applications should be granted.

It is further ordered, That, on the basis of good cause shown, § 73.613(a) of the Commission's rules is hereby waived to permit Downeast Television, Inc., to locate its main studio outside the city limits of Bangor, Maine; and

It is further ordered, That the "Petition For Conditional Grant" filed herein by Dirigo Broadcasting, Inc., is denied; and

It is further ordered, That, the issues in the above-captioned proceedings may be enlarged by the Examiner, on his own motion or on petition properly filed by a party to the proceeding, and upon sufficient allegations of fact in support thereof, by the addition of the following issue: "To determine whether the funds available to the applicant will give reasonable assurance that the proposals set forth in the application will be effectuated."

It is further ordered, That, to avail themselves of the opportunity to be heard, Dirigo Broadcasting, Inc., and Downeast Television, Inc., pursuant to § 1.221(c) of the Commission's rules, in person or by attorney, shall, within twenty (20) days of the mailing of this order, file with the Commission, in triplicate, a written appearance stating an intention to appear on the date set for the hearing and present evidence on the issues specified in this order.

It is further ordered, That the applicants herein shall, pursuant to section 311(a) (2) of the Communications Act of 1934, as amended, and § 1.594(a) of the Commission's rules, give notice of the hearing either individually or, if feasible, jointly, within the time and in the manner prescribed in such rule, and shall advise the Commission of the publication of such notice as required by § 1.594(g) of the rules.

Released: May 25, 1964.

FEDERAL COMMUNICATIONS

COMMISSION,

[SEAL] BEN F. WAPLE,
Secretary.

[F.R. Doc. 64-5362; Filed, May 27, 1964;
8:49 a.m.]

[Docket Nos. 15269, 15270; FCC 64M-445]

MEREDITH COLON JOHNSTON
(WECP) AND WILLIAM HOWARD
COLE (WHOC)

Order Continuing Hearing

In re applications of Meredith Colon Johnston (WECP), Carthage, Mississippi,

Docket No. 15269, File No. BP-15088; William Howard Cole (WHOC), Philadelphia, Mississippi, Docket No. 15270, File No. BP-15231; for construction permits.

With the consent of all other parties to grant of the request and to its immediate consideration: *It is ordered*, This 20th day of May 1964, that the oral request of Meredith Colon Johnston made on May 19, 1964, to continue hearing in the above-entitled matter from 10 a.m., May 21, 1964, to 10 a.m., June 15, 1964, is granted.

Released: May 21, 1964.

FEDERAL COMMUNICATIONS
COMMISSION,
[SEAL] BEN F. WAPLE,
Secretary.

[F.R. Doc. 64-5357; Filed, May 27, 1964;
8:48 a.m.]

[Docket Nos. 13931, 13933; FCC 64M-451]

**BURLINGTON BROADCASTING CO.
AND MOUNT HOLLY-BURLINGTON
BROADCASTING CO., INC.**

Order Scheduling Hearing

In re applications of William S. Halpern and Louis N. Seltzer, d/b as Burlington Broadcasting Company, Burlington, New Jersey, Docket No. 13931, File No. BP-12580; Mount Holly-Burlington Broadcasting Company, Inc., Mount Holly, New Jersey, Docket No. 13933, File No. BP-13952; for construction permit.

The Chief Hearing Examiner having under consideration a motion in behalf of the Commission's Broadcast Bureau, filed May 12, 1964, that Mount Holly, New Jersey, be designated as the site for the further hearings to be held in the above-entitled proceeding;

It appearing, from an examination of the special issues embodied in the Commission's remand order released herein May 1, 1964, that it would be impossible to develop an adequate record in this proceeding unless hearings therein are conducted at the location proposed by the Bureau;

It is ordered, This 21st day of May 1964, that the motion is granted, and that sessions of the further hearings in the above-entitled proceeding shall be held in Mount Holly, New Jersey, commencing July 13, 1964.

Released: May 22, 1964.

FEDERAL COMMUNICATIONS
COMMISSION,
[SEAL] BEN F. WAPLE,
Secretary.

[F.R. Doc. 64-5359; Filed, May 27, 1964;
8:48 a.m.]

[Docket Nos. 15374-15376; FCC 64-458]

KTIV TELEVISION CO. (KTIV) ET AL.

**Memorandum Opinion and Order
Amending Issues**

In re applications of KTIV Television Company (KTIV), Sioux City, Iowa, Docket No. 15374, File No. BPCT-3127, for construction permit to make changes in the facilities of Television Broadcast

Station KTIV; Peoples Broadcasting Corporation (KVTV), Sioux City, Iowa, Docket No. 15375, File No. BPCT-3128, for construction permit to make changes in the facilities of Television Broadcast Station KVTV; Central Broadcasting Company (WHO-TV), Des Moines, Iowa, Docket No. 15376, File No. BPCT-3138, for construction permit to make changes in the facilities of Television Broadcast Station WHO-TV.

1. The Commission has before it for consideration: (a) A joint petition for clarification, revision, and enlargement of issues filed by KTIV Television Company and Peoples Broadcasting Corporation, licensees of television stations KTIV and KVTV respectively, Sioux City, Iowa; (b) a statement in support of the joint petition filed by Central Broadcasting Company, licensee of television station WHO-TV, Des Moines, Iowa; (c) a response to the joint petition filed by the Broadcast Bureau, and (d) and oppositions filed by Northwest Television Company, licensee of UHF television station KQTV, Fort Dodge, Iowa, a party to this proceeding.

2. By Memorandum Opinion and Order (FCC 64-212), released March 16, 1964, the Commission designated the above-captioned applications for hearing in a consolidated proceeding. KTIV (Channel 4) seeks authority to change its transmitter site from its present location 8 miles north of Sioux City to a site 11 miles northeast of Sioux City, 7 miles in the direction of Fort Dodge, Iowa, where it proposes to share a common tower with station KVTV. The proposal also contemplates a change of antenna height above average terrain from the present 770 feet to 1915 feet. No change in effective radiated power is involved. The KVTV (Channel 9) proposal involves a change of site from 41st and Howard Streets, in Sioux City, an increase of antenna height above average terrain from 720 feet to 2025 feet, and an increase of visual effective radiated power from 288 kilowatts to 310 kilowatts. WHO-TV (Channel 13) seeks authority to change the site of its transmitter from its present location one mile south of Mitchellville, Iowa, to a site 2 miles northwest of Polk City, Iowa (15.5 miles north northwest of Des Moines, Iowa), a move of 22 miles toward Fort Dodge, Iowa. The proposal also contemplates an increase of antenna height above average terrain from 780 feet to 1545 feet. No change in effective radiated power is proposed.

3. As a result of a petition to deny filed by KQTV, Channel 21, Fort Dodge, Iowa, the only UHF station in Iowa and the only television station in Fort Dodge, objecting to further encroachment by the above applicants into the area presently served by KQTV due to the economic injury it would suffer, coupled with our concern with the plight of UHF stations in a VHF dominated area, we ordered a hearing to be held on the following issues:

1. To determine the areas and populations which may be expected to gain or lose television service in the event of a grant of the above-captioned applications, or any of them, and the availability

of other television service to such areas and populations.

2. To determine whether a grant of the above-captioned applications, or any of them, would impair the ability of Television Broadcast Station KQTV to compete effectively, or would jeopardize, in whole or in part, the continuation of its existing service.

3. To determine, if Issue 2, above, is resolved in the affirmative, the areas and populations, if any, which may be expected to lose television service and the availability of other television service to such areas and populations.

4. To determine, in the light of the evidence adduced pursuant to issues 1, 2, and 3, above, whether a grant of the above-captioned applications, or any of them would be consistent with the objective of improving the opportunities for effective competition among a greater number of stations.

5. To determine, in the light of the evidence adduced pursuant to issues 1, 2, and 3, above, whether a grant of the above-captioned applications, or any of them, would be consistent with the objective of providing at least one television service to all parts of the United States and each community with at least one television broadcast service.

6. To determine, in the light of the evidence adduced pursuant to the foregoing issues, whether a grant of the above-captioned applications of KTIV Television Company, Peoples Broadcasting Corporation and Central Broadcasting Company, or any of them, would serve the public interest, convenience and necessity.

KQTV was made a party to this hearing and was ordered to carry the burden of proceeding with the introduction of evidence and the burden of proof with respect to issues 2 and 3.

Request for clarification and revision.

4. KTIV and KVTV, supported by WHO-TV, request that issues 2 and 4 be clarified to read as follows:

2. To determine what would be the impact upon UHF television broadcasting in the Fort Dodge area, if any or all of the above-captioned applications are granted.

4. To determine, in light of (a) the evidence adduced pursuant to issues 1, 2 and 3 above, and (b) the need for the television service to be gained as a result of a grant of any of the captioned applications in relation to the need for the television service which may be lost, whether a grant of the above-captioned applications, or any of them, would be consistent with the public interest.

5. In support of their request, petitioners allege that casting issues 2 and 4 in terms as vague as "compete effectively", "jeopardize", and "effective competition" not only will lead to extensive and needless argument as to the meaning of these issues, but is contrary to the applicable rule of law on the subject found in *Sanders Brothers* as interpreted in the *Carroll Case*.¹ These decisions,

¹ Federal Communications Commission v. *Sanders Brothers Radio Station*, 309 U.S. 470 (1940); *Carroll Broadcasting Company v. Federal Communications Commission*, 258 F. 2d 440 (1958).

petitioners assert, say nothing about "effective" competition and give the Commission no authority to deny applications in order to perpetuate "effective competition." Petitioners argue that the Commission is required to permit an existing licensee an opportunity to prove that the grant of a pending application will adversely affect the complaining station's service to its audience, with the result that the public interest, not the private interest, of the complainant will suffer. They stress, however, that injury to the public interest is the only legal basis upon which a denial can be predicated.

6. Additionally, petitioners aver that since their stations and KQTV, Fort Dodge, are more than 100 miles apart, and since petitioners have represented that they will not sell local advertising in the KQTV area, an inquiry into the matter of "competition" is irrelevant, and the revision of issues 2 and 4 as requested will permit evidence concerning the possible demise of KQTV, without involving the hearing in opinions as to the meaning or legal propriety of "effective competition." Petitioners further argue that this proceeding, involving Fort Dodge and Sioux City, more than 100 miles apart, resembles the factual situation in *WHAS, Inc., 21 Pike and Fischer, R.R. 929*, involving Lexington and Louisville, approximately 70 miles apart, wherein an issue in substance similar to requested revised issue 2 was designated. Implicit in the *WHAS* issue, petitioners urge, was the recognition that Louisville and Lexington are separate television markets, as in fact Fort Dodge and Sioux City are separate. According to petitioners, the requested changes will make this proceeding consistent with our action in the *WHAS* case.

7. In answer to petitioners' arguments just outlined, we hold that the use of the words "effective competition" neither substitutes a new standard of private interest in lieu of the public interest standard, nor departs from issues designated in other proceedings. See *Triangle Publications, Inc. v. Federal Communications Commission*, 291 F.2d 342, 21 Pike and Fischer, R.R. 2039 (1961), where the United States Court of Appeals affirmed the Commission in a case involving issues in substance identical to those which we have here designated as issues 2 and 4. The Court there stated, at page 2042:

"... while private interests are not the standard by which to judge the matter, nevertheless where the public interest would be adversely affected by injury to private interests, then the Commission is entitled to consider whether the injury attributable to the new competition would adversely affect the public interest. It found such injury likely to occur in this instance because of the probable adverse effect upon existing UHF stations in the Springfield area whose services were of genuine value to the community, the curtailment of which would be a significant loss."

Thus it is clear that the Commission is empowered to inquire into all of the facts which bear upon the possible injury, not only the demise, of its licensees.

8. Petitioners' contention that the 100 miles distance between Fort Dodge and

Sioux City obviates the need for any inquiry since there will be no "direct competition" is likewise an oversimplification of the problem. A grant of the Sioux City applications will result in the penetration for the first time of KQTV's service area by the signals of KTIV and KVTU, and the grant of the WHO-TV application will result in a greatly increased penetration of KQTV's service area; therefore, the Commission is duty-bound to inquire as to what effects such grants would have upon the operation of KQTV, irrespective of whether those effects are direct or indirect, to insure that the public interest will be best served by any action the Commission may take. See *Carter Mountain Transmission Corp. v. Federal Communications Commission*, 321 F.2d 359 (D.C. Cir. 1963). In our Order of Designation, we stated at paragraph 8, that "We do not propose to provide a 'protected contour area' for KQTV, but rather we are interested in the effect on the public interest of the possible demise of KQTV in the event of a grant of any or all of these applications." Explicit in this language is the fact that the term "effective competition" was intended as no more than a guideline for use in evaluating the possible injury to the public interest, the public interest being the ultimate standard and the ultimate issue to be determined (issue 6) in this proceeding. In this light, "effective competition" is neither uncertain nor vague.

9. In addition, as noted in paragraph 3, supra, KQTV was ordered to carry the burden of proof with respect to issues 2 and 3. Issue 4 is a conclusionary issue based on the evidence introduced under Issues 1, 2, and 3. In light of this, the Commission again must conclude that these issues are neither vague nor uncertain since the real party affected by issues 2 and 4, i.e., KQTV, has sought neither clarification nor revision and, more importantly, since petitioners have in no way established in what regard their proposed "impact issues" are more definite or specific than those presently framed. For these reasons, we will deny the requested clarification and revision of issues 2 and 4.

10. Petitioners also request "limited" clarification of issue 5 as follows:

To determine in light of the evidence adduced pursuant to issues 1, 2, and 3, above, whether a grant of the above-captioned applications, or any of them, would be consistent with Priority No. 1; "To provide at least one television service to all parts of the United States" and Priority No. 2; "To provide each community with at least one television broadcast station."

Petitioners state that the issue as designated (see paragraph 3, supra) lumps two of the priorities found in our Sixth Report and Order into what is described as an "objective" in the singular and that their requested revision will separate these priorities, making them consistent with their wording as found in the Report. In our view, the issue as designated is completely clear and no compelling reason or justification for its change has been advanced by petitioners. Therefore, we deny this request for clarification of issue 5. We do, however, on

our own motion and to be consistent with the wording of Priority No. 2, change the last word of issue 5 from "service" to "station."

Request for enlargement of issues. 11. Petitioners request that the following issue be added to the proceeding:

To determine all of the facts and circumstances which led to the proposals of KTIV and KVTU for a joint transmitter site and to seek to improve the facilities of their existing television stations.

Under this issue, petitioners assert that they desire to present evidence concerning their efforts to locate a site suitable to both broadcasting and aviation interests, and revealing the difficulties they encountered in this matter over the six-year period since their efforts began. Also, they wish to demonstrate certain public interest elements which motivated their applications, such as their desire to serve white and grey areas and to serve better the Sioux City retail trading area. WHO-TV supports this request, asking that the proposed additional issue be modified to include a determination with respect to it as well.

12. The background matters upon which petitioners desire to submit evidence, especially the long history of their problems in locating a site for their super-height tower, are irrelevant to a determination of this proceeding. The Commission is only concerned with the effect of a grant of these applications, not the reasons predicated their filing. The only real public interest factor presented in this pleading, i.e., the white and grey areas to be served by the Sioux City proposals, is specifically covered by issue 1 and will permit petitioners to make whatever showing they may desire in this regard. In connection with WHO-TV's request that it also be included in the issue, the additional fact is present that its request was not timely filed under § 1.229 of our rules and no showing of good cause for the delay was made. For these reasons, the request for an additional issue is denied.

Accordingly, it is ordered, This 20th day of May 1964, That the joint petition for clarification, revision, and enlargement of issues filed by KTIV Television Company and Peoples Broadcasting Corporation is denied in its entirety; that issue 5 is modified to the extent indicated above; and that the request for an additional issue made by WHO-TV is also denied.

Released: May 25, 1964.

FEDERAL COMMUNICATIONS
COMMISSION,

[SEAL] BEN F. WAPLE,
Secretary.

[F.R. Doc. 64-5363; Filed, May 27, 1964;
8:49 a.m.]

[Docket No. 14611; FCC 64M-452]

PROGRESS BROADCASTING CORP.
(WHOM)

Order Continuing Oral Argument

In re application of Progress Broadcasting Corporation (WHOM), New York, New York, Docket No. 14611, File No. BP-13915; for construction permit.

It is ordered, This 22d day of May 1964, that the oral argument scheduled to be presented in the above-entitled proceeding on May 25, 1964, is continued to a date to be specified by the presiding Hearing Examiner.

Released: May 22, 1964.

FEDERAL COMMUNICATIONS
COMMISSION,

[SEAL] BEN F. WAPLE,
Secretary.

[F.R. Doc. 64-5360; Filed, May 27, 1964;
8:48 a.m.]

[Docket No. 15276; FCC 64M-443]

CHARLES A. SEAMAN

Order Continuing Prehearing Conference

In re application of Charles A. Seaman, 935 Tanner Avenue, Elizabeth, Pennsylvania, Docket No. 15276, for a general class amateur operator license.

At the oral joint request of counsel for all parties, who are presently drafting stipulations looking toward expeditious disposition of the issues herein: It is ordered, This 21st day of May 1964, that the further prehearing conference, presently scheduled to be held at 2:00 p.m., May 22, 1964, is continued to 2:00 p.m., June 19, 1964.

Released: May 21, 1964.

FEDERAL COMMUNICATIONS
COMMISSION,

[SEAL] BEN F. WAPLE,
Secretary.

[F.R. Doc. 64-5361; Filed, May 27, 1964;
8:48 a.m.]

FEDERAL POWER COMMISSION

[Docket Nos. G-6078 etc.]

SHARPLES AND COMPANY PROPERTIES ET AL.

Notice of Applications for Certificates, Abandonment of Service and Petitions To Amend Certificates¹

MAY 20, 1964.

Take notice that each of the Applicants listed herein has filed an application or petition pursuant to section 7 of the Natural Gas Act for authorization to sell natural gas in interstate commerce or to abandon service heretofore authorized as described herein, all as more fully described in the respective applications and amendments which are on file with the Commission and open to public inspection.

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) on or before June 15, 1964.

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 all applications in which no protest or notice to intervene is filed within the time required herein, if the Commission on its own review of the matter believes that a grant of the certificates is required by the public convenience and

necessity. Where a protest or petition for leave to intervene is timely filed, or where 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 Applicants to appear or be represented at the hearing.

GORDON M. GRANT,
Acting Secretary.

Docket No. and date filed	Applicant	Purchaser, field and location	Price Per Mcft	Pressure base
G-6078 E 5-4-64	Sharpley and Co. Properties (successor to The Sharpley Oil Corp.).	Montana-Dakota Utilities Co., Worland Field, Washakie and Big Horn Counties, Wyo.	10.5	15.025
G-10006 C 5-11-64	Amerada Petroleum Corp.	El Paso Natural Gas Co., Southeast Lindrith Area, Rio Arriba County, N. Mex.	12.2295	15.025
G-11272 D 5-8-64	G. H. Vaughn, Jr. (partial abandonment).	Florida Gas Transmission Co., Angelita North Field, San Patricio County, Tex.	(1)	-----
G-11487 E 5-4-64	Livingston Oil Co. (successor to Crescent Oil & Gas Corp., Operator).	Texas Eastern Transmission Corp., Waskom Field, Panola County, Tex.	15.0	14.65
G-12354 E 5-11-64	Socony Mobil Oil Co., Inc. (successor to BBM Drilling Co. (Operator), et al.).	El Paso Natural Gas Co., Spraberry Trend Field, Midland County, Tex.	10.096	14.65
CI60-37 E 5-4-64	Livingston Oil Co. (successor to Crescent Oil & Gas Corp.).	Tennessee Gas Transmission Co., Garwood Field, Colorado and Lavaca Counties, Tex.	14.5	14.65
CI61-592 E 5-4-64	do.	Cities Service Gas Co., West Palmer Field, Barber County, Kans.	13.0	14.65
CI62-483 E 5-13-64	Southwest Petroleum Management Corp. (Operator), et al. (successor to The Textar Corp. (Operator), et al.).	Texas Eastern Transmission Corp., West Weesatche Field, Goliad County, Tex.	13.8733	14.65
CI62-535 E 5-11-64	Sohio Petroleum Company (successor to M. D. Abel, et al., d/b/a Abel & Bancroft).	El Paso Natural Gas Co., acreage in La Plata County, Colo.	* 14.0	15.025
CI62-675 E 5-1-64	do.	El Paso Natural Gas Co., acreage in Reagan County, Tex.	* 13.984	14.65
CI62-813 E 5-1-64	Sohio Petroleum Company (successor to M. D. Abel, et al., d/b/a Abel & Bancroft (Operator), et al.).	El Paso Natural Gas Co., acreage in Midland County, Tex.	* 13.984	14.65
CI62-850 E 5-1-64	do.	El Paso Natural Gas Co., acreage in Upton County, Tex.	* 13.984	14.65
CI62-1022 E 5-1-64	do.	West Lake Natural Gasoline Co., acreage in Nolan County, Tex.	* 8.5	14.65
CI63-60 C 5-7-64	Roy L. Cook.	Southern Union Gathering Co., Dakota Formation, San Juan County, N. Mex.	13.0	15.025
CI63-395 E 5-1-64	Sohio Petroleum Co. (successor to M. D. Abel, et al., d/b/a Abel & Bancroft).	West Lake Natural Gasoline Co., acreage in Nolan County, Okla.	* 8.5	14.65
CI63-462 C 5-12-64	Phillips Petroleum Co.	Michigan Wisconsin Pipe Line Co., acreage in Alfalfa County, Okla.	15.0	14.65
CI63-483 A 10-15-62	Barnwell, Inc.	United Gas Pipe Line Co., Maxie-Pistol Ridge Field, Forrest County, Miss.	* 20.126 * 20.0	15.025 15.025
CI63-799 A 12-31-62	An-Son Corp.	Transcontinental Gas Pipe Line Corp., South Bourg Field, Terrebonne Parish, La.	* 20.625	15.025
CI63-1343 C 5-11-64	Irving Pasternak.	El Paso Natural Gas Co., acreage in Rio Arriba and Sandoval Counties, N. Mex.	13.0	15.025
CI63-1383 E 5-4-64	Livingston Oil Co. (successor to Crescent Oil & Gas Corp. (Operator), et al.).	Texas Eastern Transmission Corp., Garwood Field, Colorado County, Tex.	13.0	14.65
CI64-157 C 5-8-64 D 5-8-64 CI64-175 C 3-27-64	Skelly Oil Co.	Kansas-Nebraska Natural Gas Co., Inc., Bradshaw Area, Hamilton County, Kans.	12.5	14.65
CI64-1120 A 3-20-64	Parker Petroleum.	El Paso Natural Gas Co., Basin Dakota Field, San Juan and Rio Arriba Counties, N. Mex.	13.0	15.02
CI64-1348 A 5-8-64	Jesse M. Brooks and M. James Brooks, Jr. (Operators), et al.	Pennzoil Co., Union Dist., Ritchie County, W. Va.	15.0	15.325
CI64-1349 A 5-8-64	Neal Rudder, agent for Edgar M. Martin Well No. 1 and Harvey H. Shepler Well No. 1.	Arkansas Louisiana Gas Co., Jefferson Field, Marion County, Tex.	10.6344	14.65
CI64-1351 A 5-8-64	Van Norman Oil Co.	Equitable Gas Co., Union Dist., Ritchie County, W. Va.	25.0	15.325
CI64-1352 B 5-8-64	G. H. Vaughn, Jr. and Jack C. Vaughn.	Phillips Petroleum Co., Texas-Hugoton Field, Sherman County, Tex.	* 10.5924	14.65
CI64-1353 A 5-8-64	Worldwide Petroleum Corp.	El Paso Natural Gas Co., Pegasus Field, Midland and Upton Counties, Tex.	(15)	-----
CI64-1354 A 5-12-64	Petroleum Promotions, Inc.	Phillips Petroleum Co., West Panhandle Brown Dolomite Field, Moore County, Tex.	12.0	14.65
CI64-1355 A 5-12-64	D. A. Dorward, et al.	Hope Natural Gas Co., Court House Dist., Lewis County, W. Va.	25.0	15.325
		Hope Natural Gas Co., Glenville Dist., Gilmer County, W. Va.	25.0	15.325

Filing code: A—Initial service.
B—Abandonment.
C—Amendment to add acreage.
D—Amendment to delete acreage.
E—Succession.

See footnotes at end of table.

¹ This notice does not provide for consolidation for hearing of the several matters covered herein, nor should it be so construed.

Docket No. and date filed	Applicant	Purchaser, field and location	Price Per Mcf	Pressure base
CI64-1356 B 5-11-64	Walter Kuhn, d/b/a Walter Kuhn Drilling Co.	Northern Natural Gas Co., acreage in Seward County, Kans.	Depleted	-----
CI64-1357 A 5-12-64	Lauden Flournoy d/b/a Flournoy Production Co. (Operator), et al.	United Gas Pipe Line Co., acreage in Refugio County, Tex.	14.0	14.65
CI64-1358 A 5-11-64	Union Producing Co.	United Gas Pipe Line Co., Block 53 Field, Eugene Island Area, Offshore St. Mary Parish, La.	11.2462	15.025
CI64-1359 A 5-11-64	Worldwide Petroleum Corp.	Lake Shore Pipe Line Co., Bushnell (Pennsylvania) Field, Erie County, Pa.	27.0	15.025
CI64-1360 A 5-11-64	The Hefner Production Co. and Harry H. Hurd.	Panhandle Eastern Pipe Line Co., Alva East Field, Woods County, Okla.	15.0	14.65
CI64-1361 ¹⁴ B 5-11-64	Delhi-Taylor Oil Corp.	El Paso Natural Gas Co., Ute Indian Well No. 2, La Plata County, Colo.	Depleted	-----
CI64-1362 ¹⁴ B 5-11-64	do	El Paso Natural Gas Co., Ute Well No. 1, La Plata County, Colo.	Depleted	-----
CI64-1363 B 5-11-64	The California Co., A Division of California Oil Co.	Transcontinental Gas Pipe Line Corp., Sharon Field, Jasper and Jones Counties, Miss.	Depleted	-----
CI64-1364 B 5-11-64	Tenneco Oil Co.	Cities Service Gas Co., Buffalo (West) Area, Harper County, Okla.	Depleted	-----
CI64-1365 B 5-14-64	Humble Oil & Refining Co.	Panhandle Eastern Pipe Line Co., Williams Unit, Texas County, Okla.	Depleted	-----
CI64-1366 ¹⁴ B 5-11-64	Delhi-Taylor Oil Corp.	El Paso Natural Gas Co., Atlantic 4-A Well, San Juan County, N. Mex.	Depleted	-----
CI64-1368 A 5-14-64	W. Earl Rowe, Operator	The Algas Co., Embleton Field, Jim Wells County, Tex.	11.01408	14.65
CI64-1369 A 5-14-64	Anadarko Production Co.	Panhandle Eastern Pipe Line Co., North Richland Center Field, Texas County, Okla.	17.0	14.65
CI64-1370 A 5-13-64	Union Drilling, Inc.	Cumberland and Allegheny Gas Co., Hackers Creek Dist., Lewis County, W. Va.	25.0	15.325

¹ Applicant seeks to abandon nonproductive rights underlying the leasehold acreage below subsurface depth of 6,325 feet.

² Rate in effect subject to refund in Docket No. RI64-665.

³ Rate in effect subject to refund in Docket No. G-16477.

⁴ Rate in effect subject to refund in Docket No. RI63-410.

⁵ Acquired acreage from Marathon Oil Company and Continental Oil Company.

⁶ Rate for gas delivered from acreage acquired from Marathon Oil Company—Marathon's settlement rate approved by Commission's order of June 28, 1962, in The Ohio Oil Company (now Marathon), Docket Nos. RI60-92, et al.

⁷ Rate for gas delivered from acreage assigned by Continental Oil Company.

⁸ Rate approved by Commission's order of July 30, 1962, approving an offer of settlement in Texaco Inc., et al. Docket Nos. G-13169, et al.

⁹ Applicant assigned all of its interest in SE/4—Section 23, NW/4—Section 27 and SE/4—Section 2, Hamilton County, to Kansas-Nebraska Natural Gas Company, Inc.

¹⁰ Amendment previously noticed on April 6, 1964, in Docket Nos. G-2728, et al. at a rate of 12.0 cents/Mcf.

¹¹ Application previously noticed on March 31, 1964 in Docket Nos. G-5145, et al. at a rate of 12.0 cents/Mcf.

¹² Rate in effect subject to refund in Docket No. RI61-334.

¹³ Sold properties to Socony Mobil Oil Company, Inc.

¹⁴ Filing made by Tenneco Oil Company.

[F.R. Doc. 64-5241; Filed, May 27, 1964; 8:45 a.m.]

[Docket No. CP64-264]

CIMARRON TRANSMISSION CO.

Notice of Application

MAY 22, 1964.

Take notice that on April 29, 1964, as amended on May 21, 1964, Cimarron Transmission Company (Applicant), National Bank of Tulsa Building, Tulsa 3, Oklahoma, filed in Docket No. CP64-264 an application pursuant to section 7(c) of the Natural Gas Act for a certificate of public convenience and necessity authorizing the construction during the 12-month period commencing on the date of issuance of such authorization and the operation of gas purchase facilities to enable Applicant to take into its certificated main pipeline system natural gas which will be purchased from producers thereof, all as more fully set forth in the application, as supplemented, which is on file with the Commission and open to public inspection.

The purpose of this "budget-type" application is to augment Applicant's ability to act with reasonable dispatch in contracting for and connecting to its pipeline system new supplies of natural gas in various producing areas generally coextensive with said system.

The total cost of the proposed facilities will not exceed a maximum of \$100,000,

with no single project to exceed a cost of \$20,000, which costs will be financed from funds on hand, from cash generated by operations, from internal sources and from financing already arranged.

This matter is one that should be disposed of as promptly as possible under the applicable rules and regulations and to that end:

Take further notice that preliminary staff analysis has indicated that there are no problems which would warrant a recommendation that the Commission designate this application for formal hearing before an examiner and 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 may be held without further notice before the Commission on this application provided no protest or petition to intervene is filed within the time required herein. Where a protest or petition for leave to intervene is timely filed, or where 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.

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) on or before June 19, 1964.

GORDON M. GRANT,
Acting Secretary.

[F.R. Doc. 64-5338; Filed, May 27, 1964; 8:47 a.m.]

[Docket No. CP64-112]

NORTHERN NATURAL GAS CO.

Notice of Petition To Amend

MAY 22, 1964.

Take notice that on April 17, 1964, Northern Natural Gas Company (Petitioner) with its principal place of business in Omaha, Nebraska, filed in Docket No. CP64-112 a petition to amend the Commission's order issued February 10, 1964, in said docket by increasing the contract demand volume of gas to the City of Ponca, Nebraska (Ponca) from 538 Mcf per day to 563 Mcf per day, an increase of 25 Mcf of natural gas per day, all as more fully set forth in the petition to amend on file with the Commission and open to public inspection.

The application states that no additional construction of facilities will be required because the facilities authorized to be constructed by the order in this docket issued in February 10, 1964, provided for an additional 20,031 Mcf per day of gas to meet contract demand of existing customers for the 1964-65 heating season.

Protests, petitions to intervene or requests for hearing 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) on or before June 12, 1964.

GORDON M. GRANT,
Acting Secretary.

[F.R. Doc. 64-5339; Filed, May 27, 1964; 8:47 a.m.]

[Docket Nos. G-8969, etc.]

TEXACO, INC.

Order Terminating Proceedings

MAY 7, 1964.

On December 30, 1963, we issued an order in these proceedings approving a rate settlement proposal, terminating proceedings and prescribing refunds. The order provided, inter alia, that the section 4(e) proceedings listed in Appendix A to the order, shall terminate upon full compliance by Texaco with all the terms and provisions of the order. Not included among the section 4(e) proceedings set forth in Appendix A were certain of such proceedings which relate to proposed increased rates, never made effective, under certain of the rate schedules for which settlement rates were approved. Accordingly, it is appropriate that the proceedings concerning such proposed increased rates be severed from

¹ The additional dockets involved herein are set forth in the appendix hereto.

related area rate proceedings, and terminated at the same time as the proceedings set forth in Appendix A to the order of December 30, 1963, and under the same terms and provisions.

The Commission finds: The proposed settlement of the subject proceedings having been approved by order issued December 30, 1963, and the proposed increased rates concerned therein never having been made effective, good cause exists for terminating the proceedings, and for severing certain of the proceedings from related area rate proceedings.

The Commission orders: Upon full compliance by Texaco Inc. with all the terms and provisions of the order issued herein on December 30, 1963, the section 4(e) proceedings listed in the appendix hereto shall terminate, and certain of said proceedings shall be severed from the consolidated proceedings in Docket Nos. AR64-1 and AR64-2.

By the Commission.

[SEAL] GORDON M. GRANT,
Acting Secretary.

APPENDIX

Rate Schedule Nos.	Docket Nos.
2-----	RI64-266.
3-----	RI64-265.
4-----	RI64-264.
5-----	RI64-264.
166-----	RI64-183.
184-----	RI64-126. ¹
200-----	RI64-264.
201-----	RI64-10. ¹
212-----	RI64-229. ²

¹ Consolidated with the Area Rate Proceeding, Docket No. AR64-1, et al.

² This proceeding to be terminated and severed from the Area Rate Proceeding, Docket No. AR64-2, et al., insofar as it pertains to Rate Schedule No. 212.

[F.R. Doc. 64-5340; Filed, May 27, 1964; 8:47 a.m.]

[Docket No. G-13221 etc.]

UNION TEXAS PETROLEUM ET AL.

Order Conditionally Approving Settlement Proposal and Conditionally Issuing Certificates of Public Convenience and Necessity

APRIL 16, 1964.

Union Texas Petroleum, et al., Docket Nos. G-13221, etc.; Ocean Drilling & Exploration Company (Operator), et al., Docket Nos. CI60-743, CI61-1469, CI61-1708.

On January 23, 1964, Ocean Drilling & Exploration Company (Odeco) filed an offer of settlement and petition requesting that the above-entitled Odeco dockets be severed from the consolidated proceeding Union Texas Petroleum et al., Docket No. G-13221, et al. (hereinafter referred to as the Union Texas proceeding) and that certificates of public convenience and necessity be issued to Odeco in accordance with its applications and settlement proposal.

On January 31, 1964, the Commission staff filed an answer to Odeco's petition urging rejection of the settlement proposal and denial of the petition. Specifically,

staff objected to the offer for its failure to provide for refunds of amounts collected by Odeco under its Rate Schedule No. 3 (Docket No. CI60-743) above that which would have been collected at the settlement rate proposed, 19 cents per Mcf.¹

Staff argued that since the Commission approved the Humble Oil & Refining Company (Humble) settlement by order issued in these proceedings on August 7, 1963, it has approved the settlement of over one hundred additional dockets, and, with one exception, the settlements have provided for refunds of all amounts in excess of the settlement rates collected under temporary certificates which contained refund conditions. Staff contended that Odeco too should make refunds of excesses which it has collected under its Rate Schedule No. 3.

On February 17, 1964 the Philadelphia Gas Works Division of the United Gas Improvement Company (PGW) filed a letter with the Secretary indicating opposition to the settlement offer of Odeco. On February 28, 1964, Public Service Electric & Gas Company (PSE&G) filed a letter with the Secretary supporting the position of PGW.

On February 24, 1964, Odeco filed a supplement to its offer of settlement agreeing to make refunds which staff, in its answer, contended are required. Subsequent to the filing of Odeco's supplement, both PGW and PSE&G withdrew their opposition to Odeco's settlement offer.²

Odeco's settlement proposal, as now supplemented, is similar to recent settlements conditionally approved by the Commission in the Union Texas proceeding³ and provides for the issuance of certificates of public convenience and necessity at a rate of 19 cents per Mcf for sales of gas from offshore south Louisiana under Odeco's FPC Gas Rate Schedules Nos. 3, 5, and 6; a rate-increase moratorium through March 31, 1968 (subject to the usual exceptions); extension of the take-or-pay makeup periods from 2 years to 4 years; refunds with interest of all amounts above the settlement rate collected since the dates of initial deliveries.

We find this proposal, as supplemented, to be in the public interest generally and shall approve it subject to the following reservations and conditions.

We shall require that interest on the amounts to be refunded accrue through the last day of the month in which the supplement to the petition and offer was filed, February 29, 1964. This has been a requirement in all of our orders approving settlements arising out of the Union Texas proceeding.

In the context of the proposal, we interpret the term "delivered" as used in paragraph 1 of the proposal to include

¹ All volumes expressed at 15.025 psia.

² The withdrawals of opposition were filed by PGW on Mar. 25, 1964, and by PSE&G on Apr. 1, 1964.

³ See e.g. orders issued Aug. 7, 1963 (Humble Oil & Refining Co.) and Oct. 9, 1963 (Gulf Oil Corporation and Socony Mobil Oil Company, Inc.) in Union Texas Petroleum, et al., Docket Nos. G-13221, et al.

gas required to be taken during the moratorium period but paid for and not taken and our approval is conditioned upon such interpretation. Thus, prepayments, if any, will be made during the moratorium period at a rate no higher than the rate in effect for gas physically delivered.

The settlement provisions for adjustments in rates according to our order or orders in Area Rate Proceeding, Docket No. AR61-2, seek to anticipate in part the nature of our final determinations in this matter. It is clear that we shall make no determinations in this matter which will control our conclusions in Docket No. AR61-2. The settlement proposal also provides that adjustments in price growing out of the Area Rate Proceeding, Docket No. AR61-2, should go into effect upon conclusion of judicial review of our final order.

However, we cannot now commit the Commission to conditionally staying the effectiveness of its final order in Docket No. AR61-2. These matters should be decided at the conclusion of that proceeding and our approval of the settlement will be so conditioned.

The purchaser in each case is Transcontinental Gas Pipe Line Corporation (Transco). The refunds to be received as a result of the settlement of Docket Nos. CI60-745 and CI61-1469 will be passed on to Transco's customers. Transco will also adjust its rates to reflect the reduced gas purchase costs resulting from the settlement of these two dockets.

However, the flow through provisions of our order in the recent Transco rate settlement in Docket No. RP61-13⁴ do not refer specifically to Docket No. CI61-1708. Therefore, in order to avoid a situation in which a pipeline obtains and keeps the benefits of refunds and reductions in gas purchase costs even though it may be, in the absence of such refunds and reductions in gas purchase costs, earning a reasonable rate of return on invested capital, we shall require Transco to report to the Commission the amount of refund and interest that it receives as a result of the settlement of this docket, the estimated annual reductions in purchased gas costs, the proposed disposition of the refunds and the proposed rate adjustments, if any, to reflect the reduction in gas purchase costs which result from the settlement of Docket No. CI61-1708. We shall require Transco to hold the refunds and amounts equal to the reductions and purchased gas costs which will accrue as a result of the settlement of Docket No. CI61-1708 in a special account subject to further orders of the Commission.

In accordance with the above we shall sever Docket Nos. CI60-745, CI61-1469 and CI61-1708 from the consolidated proceeding Union Texas Petroleum, et al., Docket Nos. G-13221, et al., and issue certificates of public convenience and necessity in accordance with the applica-

⁴ Transcontinental Gas Pipe Line Corporation, Docket No. RP61-13, 27 FPC 187 (1962).

tions settlement proposal, as supplemented, and conditions of this order.⁵

The Commission find:

(1) Ocean Drilling & Exploration Company is a natural-gas company within the meaning of the Natural Gas Act, and is engaged in the sale of natural gas in interstate commerce for resale for ultimate public consumption, subject to the jurisdiction of the Commission.

(2) The proposed sales of natural gas are subject to the jurisdiction of the Commission, and such sales, together with the construction and operation of any facilities subject to the jurisdiction of the Commission necessary therefor, are subject to the requirements of subsections (c) and (e) of section 7 of the Natural Gas Act.

(3) Odeco is able and willing properly to do the acts and to perform the services proposed, and to conform to the provisions of the Natural Gas Act and the requirements, rules and regulations of the Commission thereunder.

(4) The proposed sales, together with the construction and operation of any facilities subject to the jurisdiction of the Commission and necessary therefor, are required by the public convenience and necessity and are in the public interest upon the conditions set forth below, and certificates should be issued as ordered below.

(5) The conditions attached to the certificates herein issued are required by the public convenience and necessity.

(6) It is in the public interest and it is appropriate in carrying out the provisions of the Natural Gas Act that Transco be required to submit the report and account for the refunds, interest and purchased gas cost reductions as ordered below.

The Commission orders:

(A) The matters in Docket Nos. CI60-743, CI61-1469 and CI61-1708 are hereby severed from the consolidated proceeding Union Texas Petroleum, et al., Docket Nos. G-13221, et al.

(B) Certificates of public convenience and necessity are hereby issued to Ocean Drilling & Exploration Company upon the conditions set forth herein authorizing the sales of natural gas in interstate commerce for resale as proposed and as modified by the settlement proposal, as supplemented, and this order, and for the construction and operation of any facilities described in the application and settlement proposal, as supplemented, herein.

(C) The certificates granted by paragraph (B) above, are granted upon the express condition that Odeco comply fully with the terms of this order and the settlement proposal, as supplemented, which settlement is expressly approved, under the conditions of this order.

(D) Within 90 days from the date of issuance of this order, Odeco shall refund to the pipeline purchaser the difference between the amounts collected for gas delivered since the dates of initial

deliveries and the amounts that would have been collected under the settlement rate for gas delivered since such dates together with interest computed at a rate of 7 percent per annum, such interest to accrue through the last day of the month in which the supplement to the settlement proposal was filed, February 29, 1964.

(E) Within 30 days after making the refunds required by the terms and conditions of this order and the settlement proposal as modified, Odeco shall report to the Commission, in triplicate, the amount of the refunds made to its pipeline purchaser, showing separately the amount of principal and interest so paid and the bases used for such determinations, together with a release from the purchaser showing receipt of the refunds in conformity with the settlement as approved.

(F) Upon full compliance of Odeco with all the terms of this order and of the settlement proposal, as supplemented, Odeco shall be relieved of any further refund obligations in these certificate proceedings and said proceedings shall terminate.

(G) The certificates herein issued are not transferable and shall be effective only so long as Odeco continues the acts and operations hereby authorized in accordance with the provisions of the Natural Gas Act and the applicable rules, regulations and orders of the Commission.

(H) The grant of the certificates herein shall not be construed as a waiver of the requirements of section 4 of the Natural Gas Act, or Part 154 of the regulations thereunder: *Provided, however*, That the 30-day notice provision of § 154.94(b) and the detailed submittal requirements of § 154.94(f) are hereby waived insofar as they apply to the filing of reductions in rates as required by this order and the settlement proposal, as supplemented.

(I) The grant of certificates herein and approval of the settlement proposal, as supplemented, is without prejudice to any findings or orders which have been or may hereafter be made by the Commission in any proceeding now pending or hereafter instituted by or against Odeco, particularly any proceeding under section 5 of the Natural Gas Act and is without prejudice to claims or contentions which may be made by the Commission, Odeco, the Commission staff, or any affected party herein in any other proceeding.

(J) Within 15 days from the date of receipt of refunds and interests applicable to Docket No. CI61-1708 required by this order, Transco shall submit a report to the Commission and serve a copy on its jurisdictional customers and the various state utility commissions wherein it does business, setting forth the amount of refund and interest received, the estimated annual reduction, its proposed disposition of such refunds and its proposed rate adjustments to reflect the reduction in gas purchase costs which result from the settlement of Docket No. CI61-1708. Pending Commission action and further orders respecting such proposed disposition and adjustments,

Transco shall hold in a special account such refunds and interest resulting from the settlement of Docket No. CI61-1708.

By the Commission.

[SEAL]

GORDON M. GRANT,
Acting Secretary.

[F.R. Doc. 64-5341; Filed, May 27, 1964; 8:47 a.m.]

GENERAL SERVICES ADMINISTRATION

[Delegation of Authority 426]

ATOMIC ENERGY COMMISSION CHAIRMAN

Delegation of Authority Regarding Contract for Electric Power

1. Pursuant to the authority vested in me by the Federal Property and Administrative Services Act of 1949 (63 Stat. 377), as amended, authority is hereby delegated to the Chairman of the United States Atomic Energy Commission to enter into a contract in accordance with section 201(a)(3) thereof, for a period not exceeding 10 years for the purchase of auxiliary electric power for the operation of its weapons facility at Site 300, near Livermore, California.

2. The delegation of authority shall be subject to all provisions of Title III of said Act with respect to such contract, and to all provisions of law.

3. The authority delegated herein may be redelegated to any contracting officer or official of the Commission.

4. The Commission shall file a copy of said contract, and any amendments thereto, with the General Services Administration, as soon as practicable after the execution thereof.

5. This delegation of authority shall be effective upon the date of execution.

Dated: May 22, 1964.

BERNARD L. BOUTIN,
Administrator of
General Services.

[F.R. Doc. 64-5354; Filed, May 27, 1964; 8:48 a.m.]

SECURITIES AND EXCHANGE COMMISSION

[File No. 812-1676]

AXE-HOUGHTON FUND A, INC., ET AL.

Notice of Application for Temporary Exemption

MAY 22, 1964.

In the matter of Axe-Houghton Fund A, Inc., Axe-Houghton Fund B, Inc., Axe-Houghton Stock Fund, Inc., Axe Science Corporation, E. W. Axe & Co., Inc., Axe Science Management Company, Inc., 400 Benedict Avenue, Tarrytown, New York; Axe Securities Corporation, 730 Fifth Avenue, New York, New York, 10019; File No. 812-1676.

⁵The hearings in the Union Texas Petroleum, et al., consolidated proceeding, concluded July 25, 1963 and the Examiner's Decision was issued on Jan. 14, 1964. The matter is now before the Commission on exception to the Examiner's Decision.

Notice is hereby given that an application has been filed pursuant to section 6(c) of the Investment Company Act of 1940 ("Act") by the Companies named above, Axe-Houghton Fund A, Inc. ("Fund A"), Axe-Houghton Fund B, Inc. ("Fund B"), Axe-Houghton Stock Fund, Inc. ("Stock Fund") and Axe Science Corporation ("Science Fund") are all registered open-end diversified investment companies and together are referred to herein as the "four funds". E. W. Axe & Co., Inc. ("Axe & Co.") is the investment adviser to Fund A, Fund B and Stock Fund and may be deemed a sub-adviser to Science Fund. Axe Science Management Company, Inc. ("Science Management") is the investment adviser to Science Fund. Axe Securities Corporation ("Axe Securities") is the principal underwriter for each of the four funds.

The application requests an order of the Commission (1) exempting, for the period from March 26 to April 2, 1964, Axe & Co. and Science Management from the requirements of section 15(a) of the Act, Axe Securities from the requirements of section 15(b), and each of the four funds from the requirements of section 15(c); (2) exempting, for the period from April 2, 1964 until the close of the special meeting of shareholders of Science Fund to be held in lieu of the 1964 annual meeting, Science Management and Axe & Co. from the provisions of section 15(a) of the Act prohibiting them from serving as investment advisers to Science Fund without the approval of investment advisory agreements with Science Fund by the vote of a majority of the outstanding voting securities of Science Fund; and (3) exempting, for the period from April 2, 1964 until the final adjournment of the last 1965 annual meeting or special meeting in lieu thereof held by any of the four funds, Axe & Co., from the provisions of section 15(a) of the Act prohibiting it from serving as investment adviser to Fund A, Fund B and Stock Fund without the approval of its investment advisory agreements with such funds by a vote of the majority of the outstanding voting securities of Fund A, Fund B, and Stock Fund, respectively. All interested persons are referred to the application on file with the Commission for a full statement of the representations therein, which are summarized below.

On March 26, 1964, Emerson W. Axe and his wife, Ruth H. Axe, each held 50 percent of the outstanding voting securities of Axe and Co. and of Axe Securities and each held 36 percent of the outstanding voting securities of Science Management. On March 26, 1964, Emerson W. Axe died and the shares previously owned by him passed to his estate. Ruth H. Axe continues to own the shares previously held by her, as set forth above, and, pursuant to her husband's will, has been appointed executor of his estate. As such executor, Ruth H. Axe has the right to vote the shares previously held by Emerson W. Axe and now held in his estate.

Under the terms of the will of Emerson W. Axe, all of his property, except certain tangible personalty, has been devised

one-half to his widow, and one-half to his widow and two other relatives as trustees under a charitable trust created by the will. The division of the property in the estate may be made in terms of value rather than in kind and it will not be possible to determine which of the assets of the deceased will be distributed to his widow and which to the trust until the assets of the estate have been valued and its liabilities determined and satisfied. Distribution by the estate of the securities of Axe & Co. and Science Management will not be made prior to the conclusion of the last annual shareholders meeting, or special meeting in lieu thereof, of any of the four funds in 1965 without the prior written approval of this Commission. The 1965 annual meetings of the funds normally would be held as follows: Fund A on February 9, Fund B on January 27, Stock Fund on April 12 and Science Fund on May 5.

Prior to his death, Mr. Axe was President and his wife, Ruth H. Axe, was Vice-President of Fund A, Fund B, Stock Fund and Axe & Co. Mr. Axe was Chairman of the Board and Mrs. Axe was President of Science Fund and Science Management. Mr. Axe held no office in Axe Securities. Subsequent to Mr. Axe's death, Mrs. Axe was elected President of Fund A, Fund B, Stock Fund and Axe & Co., and she continues as President of Science Fund and Science Management. Donald W. Ellsworth was elected to the position as Vice-President of Stock Fund previously held by Mrs. Axe, and Justin S. Dunn was elected to the positions as Vice-President of Fund A and Fund B previously held by Mrs. Axe. Mr. Axe was also a director of each of the four funds and of Axe & Co. and Science Management. To fill the vacancies created by the death of Mr. Axe, Mr. Ellsworth was elected to the boards of directors of the four funds, Mr. Dunn was elected to the board of directors of Science Management, and Louis K. Hyde was elected to the board of directors of Axe & Co. Mr. Hyde has resigned as a director of Stock Fund. Mr. Ellsworth and Mr. Dunn have each been associated for more than 20 years, and Mr. Hyde for more than 10 years, with Axe & Co. Each was a Senior Vice-President of Axe & Co. at the time of the death of Mr. Axe and Mr. Dunn was also a director of Axe & Co.

The transfer to the estate of Emerson W. Axe of the securities of Axe & Co., Axe Securities and Science Management previously held by Emerson W. Axe may be deemed, pursuant to sections 2(a)(4) and 15(a)(4) of the Act, to have constituted an assignment of the investment advisory agreements and the underwriting agreements of such companies and to have terminated such agreements. On April 2, 1964, the respective boards of directors of Fund A, Fund B and Stock Fund re-adopted their investment advisory agreements with Axe & Co. and their underwriting agreements with Axe Securities in effect on March 26, 1964, and the board of directors of Science Fund readopted its investment advisory agreement with Science Management, its research agency agreement with Axe & Co., which may be deemed an investment

advisory agreement, and its underwriting agreement with Axe Securities in effect on March 26, 1964.

Science Fund has postponed its annual shareholders meeting, scheduled to be held on May 6, 1964, pending the issuance of an order upon the present application. At a special meeting to be held in lieu of said annual meeting it is proposed to submit the investment advisory agreements of Science Fund re-adopted on April 2, 1964 for approval or disapproval by the shareholders. The 1964 annual shareholders meetings of Fund A, Fund B and Stock Fund have already been held and the application states that the calling of special meetings of shareholders of such funds to permit shareholders to vote upon the investment advisory agreements re-adopted on April 2, 1964 would involve substantial expense to those funds. Such agreements will be presented for the vote of shareholders at the 1965 annual meetings, or special meetings in lieu thereof, of Fund A, Fund B, and Stock Fund, or, alternatively, there may be presented for the vote of shareholders of each of the four funds at their 1965 annual meetings, or special meetings in lieu thereof, proposals for the re-execution of the respective investment advisory agreements of such funds to take place upon the distribution of the stock of Axe & Co. and Science Management from the estate of Mr. Axe.

Section 15(a) of the Act provides, among other things, that it shall be unlawful for any person to serve or act as an investment adviser of a registered investment company except pursuant to a written contract which has been approved by the vote of a majority of the outstanding voting securities of such registered investment company and provides in substance for its automatic termination in the event of its assignment by the investment adviser.

Section 15(b) provides, among other things, that it shall be unlawful for any principal underwriter for a registered open-end company to offer for sale, sell or deliver after sale any security of which such company is the issuer except pursuant to a written contract with such company, which contract shall provide for its automatic termination in the event of assignment by such underwriter.

Section 15(c) provides, among other things, that it is unlawful for any registered investment company having a board of directors to enter into, renew, or perform any investment advisory or underwriting contract unless the terms of the contract and any renewal thereof are approved by a majority of the directors who are not parties to such contract or affiliated persons of any such party or by the vote of a majority of the outstanding voting securities of such company.

Section 6(c) of the Act provides that the Commission, by order upon application, may conditionally or unconditionally exempt any person or transaction from any provision of the Act or of any rule or regulation thereunder, if and to the extent that such exemption is necessary or appropriate in the public interest and consistent with the protection of in-

vestors and the purposes fairly intended by the policy and provisions of the Act.

Notice is further given that any interested person may, not later than June 8, 1964 at 5:30 p.m., submit to the Commission in writing a request for a hearing on the matter accompanied by a statement as to the nature of his interest, the reason for such request and the issues of fact or law proposed to be controverted, or he may request that he be notified if the Commission should order a hearing thereon. Any such communication should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C., 20549. A copy of such request shall be served personally or by mail (air mail if the person being served is located more than 500 miles from the point of mailing) upon applicants at the addresses stated above. Proof of such service (by affidavit or in case of an attorney-at-law by certificate) shall be filed contemporaneously with the request. At any time after said date, as provided by Rule 0-5 of the rules and regulations promulgated under the Act, an order disposing of the application herein may be issued by the Commission upon the basis of the showing contained in said application, unless an order for hearing upon said application shall be issued upon request or upon the Commission's own motion.

For the Commission (pursuant to delegated authority).

[SEAL] ORVAL L. DuBois,
Secretary.

[F.R. Doc. 64-5328; Filed, May 27, 1964;
8:46 a.m.]

[File No. 24SF-2875]

SOLAR SYSTEMS, INC.

Order Temporarily Suspending Exemption, Statement of Reasons Therefor, and Notice and Opportunity for Hearing

MAY 22, 1964.

I. Solar Systems, Inc. (issuer), 11936 Valerio St., North Hollywood, Calif., a Delaware corporation, filed with the Commission on April 20, 1961, a notification on Form 1-A and an offering circular, relating to a proposed public offering of 125,000 shares of its 10 cents par value common stock at \$2.00 per share for an aggregate offering price of \$250,000, for the purpose of obtaining an exemption from the registration requirements of the Securities Act of 1933, as amended, pursuant to the provisions of section 3(b) thereof and Regulation A promulgated thereunder. Darius, Inc. was named as underwriter.

II. The Commission has reasonable cause to believe that:

A. The terms and conditions of Regulation A have not been complied with in that:

1. The issuer failed to disclose in the notification the existence and identity of affiliated persons and affiliated companies.

2. The issuer failed to disclose in the notification the issuance of unregistered securities by an affiliate.

3. The offering, when computed in accordance with Rule 254 of Regulation A, exceeded the maximum permissible under the Regulation.

B. The offering was made in violation of section 17 of the Securities Act of 1933, as amended, since the offering circular contained untrue statements of material facts and omitted to state material facts necessary in order to make the statements made, in the light of the circumstances under which they were made, not misleading in that:

1. There was a failure to disclose adequately and accurately material transactions with an affiliate.

2. There was a failure to disclose adequately and accurately the intended use of proceeds.

3. There was a failure to disclose its business and products adequately and accurately.

III. It appearing to the Commission that it is in the public interest and for the protection of investors that the exemption of the issuer under Regulation A be temporarily suspended.

It is ordered, Pursuant to Rule 261(a) (1) and (2) of the general rules and regulations under the Securities Act of 1933, as amended, that the exemption under Regulation A be, and it hereby is, temporarily suspended.

Notice is hereby given that any person having any interest in the matter may file with the Secretary of the Commission a written request for hearing within thirty days after the entry of this order; that within twenty days after receipt of such request the Commission will, or at any time upon its own motion may, set the matter down for hearing at a place to be designated by the Commission, for the purpose of determining whether this order of suspension should be vacated or made permanent, without prejudice, however, to the consideration and presentation of additional matters at the hearing; that, if no hearing is requested and none is ordered by the Commission, this order shall become permanent on the thirtieth day after its entry and shall remain in effect unless or until it is modified or vacated by the Commission; and that notice of the time and place for any hearing will promptly be given by the Commission.

By the Commission.

[SEAL] ORVAL L. DuBois,
Secretary.

[F.R. Doc. 64-5329; Filed, May 27, 1964;
8:46 a.m.]

[File No. 24SF-2672]

U.S. SYSTEMS, INC.

Order Temporarily Suspending Exemption, Statement of Reasons Therefor, and Notice of Opportunity for Hearing

MAY 22, 1964.

I. U.S. Systems, Inc. (issuer), P. O. Box 157, Minden, Nevada, a Delaware corporation, filed with the Commission

on November 26, 1959, a notification and offering circular relating to a proposed public offering of 100,000 shares of its 30 cents par value common stock at \$3.00 per share for an aggregate offering price of \$300,000 for the purpose of obtaining an exemption from the registration requirements of the Securities Act of 1933, as amended, pursuant to the provisions of section 3(b) thereof and Regulation A promulgated thereunder. Pacific Coast Securities Company, Inc., and Paul C. Kimball and Company were underwriters on a firm commitment basis.

II. The Commission has reason to believe that:

A. The terms and conditions of Regulation A have not been complied with in that:

1. The issuer failed to disclose in the notification the existence and identity of affiliates.

2. The offering, when computed in accordance with Rule 254 of Regulation A, exceeded the \$300,000 maximum permissible under the Regulation.

B. The offering was made in violation of section 17 of the Securities Act of 1933, as amended, since the offering circular contained untrue statements of material facts and omitted to state material facts necessary in order to make the statements made, in the light of the circumstances under which they were made, not misleading in that:

1. The offering circular failed to disclose, adequately and accurately, the intended use of proceeds and the remuneration to be paid to officers and directors.

2. The issuer falsely stated that any offering of the promotional stock purchased by insiders would be made in accordance with the applicable provisions of the Securities Act of 1933.

III. It appearing to the Commission that it is in the public interest and for the protection of investors that the exemption of the issuer under Regulation A be temporarily suspended.

It is ordered, Pursuant to Rule 261(a) (1) and (4) of the General Rules and Regulations under the Securities Act of 1933, as amended, that the exemption under Regulation A be, and it hereby is, temporarily suspended.

Notice is hereby given that any person having any interest in the matter may file with the Secretary of the Commission a written request for hearing within thirty days after the entry of this order; that within twenty days after receipt of such request the Commission will, or at any time upon its own motion may, set the matter down for hearing at a place to be designated by the Commission, for the purpose of determining whether this order of suspension should be vacated or made permanent, without prejudice, however, to the consideration and presentation of additional matters at the hearing; that, if no hearing is requested and none is ordered by the Commission, this order shall become permanent on the 30th day after its entry and shall remain in effect unless or until it is modified or vacated by the Commission; and that notice of the time

and place for any hearing will promptly be given by the Commission.

By the Commission.

[SEAL] ORVAL L. DuBois,
Secretary.

[F.R. Doc. 64-5330; Filed, May 27, 1964;
8:47 a.m.]

SMALL BUSINESS ADMINISTRATION

[Declaration of Disaster Area 467]

NEBRASKA

Declaration of Disaster Area

Whereas, it has been reported that during the month of May 1964, because of the effects of certain disasters, damage resulted to residences and business property located in Greeley and Boone Counties, in the State of Nebraska;

Whereas, the Small Business Administration has investigated and has received other reports of investigations of conditions in the areas affected;

Whereas, after reading and evaluating reports of such conditions, I find the conditions in such areas constitute a catastrophe within the purview of the Small Business Act, as amended.

Now, therefore, as Executive Administrator of the Small Business Administration, I hereby determine that:

1. Applications for disaster loans under the provisions of section 7(b)(1) of the Small Business Act, as amended, may be received and considered by the Offices below indicated from persons or firms whose property, situated in the aforesaid Counties and areas adjacent thereto, suffered damage or destruction resulting from tornado and accompanying conditions occurring on or about May 5, 1964.

OFFICES

Small Business Administration Regional Office,
1006 Grand Avenue,
Kansas City 6, Missouri.
Small Business Administration Branch Office,
215 North 17th Street,
Omaha 2, Nebraska.

2. A temporary office will be established in Wolbach, Nebraska, address to be announced locally.

3. Applications for disaster loans under the authority of this Declaration will not be accepted subsequent to November 30, 1964.

Dated: May 7, 1964.

ROSS D. DAVIS,
Executive Administrator.

[F.R. Doc. 64-5323; Filed, May 27, 1964;
8:46 a.m.]

[Declaration of Disaster Area 468]

MICHIGAN

Declaration of Disaster Area

Whereas, it has been reported that during the month of May 1964, because of the effects of certain disasters, dam-

age resulted to residences and business property located in Macomb County in the State of Michigan;

Whereas, the Small Business Administration has investigated and has received other reports of investigations of conditions in the areas affected;

Whereas, after reading and evaluating reports of such conditions, I find that the conditions in such areas constitute a catastrophe within the purview of the Small Business Act, as amended.

Now, therefore, as Executive Administrator of the Small Business Administration, I hereby determine that:

1. Applications for disaster loans under the provisions of section 7(b)(1) of the Small Business Act, as amended, may be received and considered by the Office below indicated from persons or firms whose property, situated in the aforesaid County and areas adjacent thereto, suffered damage or destruction resulting from tornado and accompanying conditions occurring on or about May 8, 1964.

OFFICE

Small Business Administration Regional Office,
232 West Grand River Avenue,
Detroit 28, Michigan.

2. Applications for disaster loans under the authority of this Declaration will not be accepted subsequent to November 30, 1964.

Dated: May 9, 1964.

ROSS D. DAVIS,
Executive Administrator.

[F.R. Doc. 64-5324; Filed, May 27, 1964;
8:46 a.m.]

[Declaration of Disaster Area 469]

NORTH DAKOTA

Declaration of Disaster Area

Whereas, it has been reported that during the month of May 1964, because of the effects of certain disasters, damage resulted to residences and business property located in Richland County in the State of North Dakota;

Whereas, the Small Business Administration has investigated and has received other reports of investigations of conditions in the areas affected;

Whereas, after reading and evaluating reports of such conditions, I find that the conditions in such areas constitute a catastrophe within the purview of the Small Business Act, as amended.

Now, therefore, as Executive Administrator of the Small Business Administration, I hereby determine that:

1. Applications for disaster loans under the provisions of section 7(b)(1) of the Small Business Act, as amended, may be received and considered by the Offices below indicated from persons or firms whose property, situated in the aforesaid county and areas adjacent thereto, suffered damage or destruction resulting from tornado and accompanying conditions occurring on or about May 5, 1964.

OFFICES:

Small Business Administration Regional Office,
603 Second Avenue South,
Minneapolis 2, Minnesota.

Small Business Administration Branch Office,
207 North Fifth Street,
 Fargo, North Dakota.

2. Applications for disaster loans under the authority of this Declaration will not be accepted subsequent to November 30, 1964.

Dated: May 7, 1964.

ROSS D. DAVIS,
Executive Administrator.

[F.R. Doc. 64-5325; Filed, May 27, 1964;
8:46 a.m.]

[Delegation of Authority 30-XIV, Amdt. 2]

LOS ANGELES REGIONAL AREA

Delegation of Authority To Conduct Program Activities

Pursuant to the authority delegated to the Regional Director by Delegation of Authority No. 30 (Revision 8), as amended, 28 F.R. 3228, 7204, 8179 and 29 F.R. 4842, Delegation of Authority No. 30-XIV, as amended, 28 F.R. 4953 and 8180 is hereby amended by:

A. Deleting subitem I.C.3.a. and substituting the following in lieu thereof:

3. To approve the following:

a. Business Loans

1. Direct not exceeding \$100,000,

2. Participation not exceeding \$250,000.

B. Deleting subitem I.K.1. a. through d. and substituting the following in lieu thereof:

1. To approve the following loans:

a. Direct not exceeding \$50,000

b. Participation not exceeding \$150,000,

c. Simplified Bank Participation not exceeding \$250,000,

d. Simplified Early Maturities not exceeding \$250,000.

Effective date: March 11, 1964.

ALVIN P. MEYERS,
Regional Director,
Los Angeles Regional Office.

[F.R. Doc. 64-5326; Filed, May 27, 1964;
8:46 a.m.]

INTERSTATE COMMERCE COMMISSION

FOURTH SECTION APPLICATIONS FOR RELIEF

MAY 25, 1964.

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

FSA No. 39040: Joint motor-rail rates—Eastern Central. Filed by The Eastern Central Motor Carriers Association, Inc., agent (No. 261), for interested carriers. Rates on various commodities moving on class and commodity rates over joint routes of applicant rail and motor carriers, between points in

Central States, Middle West and Southwestern territories, on the one hand, and points in Middle Atlantic and New England territories on the other.

Grounds for relief: Motortruck competition.

Tariff: 10th revised page 47-A to Eastern Central Motor Carriers Association, Inc., agent, tariff MF-I.C.C. A-230.

FSA No. 39041: *Joint motor-rail rates—Eastern Central*. Filed by The Eastern Central Motor Carriers Association, Inc., agent (No. 262), for interested carriers. Rates on various commodities moving on class and commodity rates over joint routes of applicant rail and motor carriers, between points in Central States, Middle West and Southwestern territories, on the one hand, and points in Middle Atlantic and New England territories, on the other. Grounds for relief: Motortruck competition.

Tariff: 13th revised page 69 to Eastern Central Motor Carriers Association, Inc., agent, tariff MF-I.C.C. A-230.

FSA No. 39042: *Joint motor-rail rates—Eastern Central*. Filed by The Eastern Central Motor Carriers Association, Inc., agent (No. 263), for interested carriers. Rates on various commodities moving on LTL class rates over joint routes of applicant rail and motor carriers, between points in Central States and Illinois territories, on the one hand, and points in Middle Atlantic and New England territories, on the other.

Grounds for relief: Motortruck competition.

Tariff: 3d revised page 118-A to Eastern Central Motor Carriers Association, Inc., agent, tariff MF-I.C.C. A-230.

FSA No. 39043: *Joint motor-rail rates—Eastern Central*. Filed by The Eastern Central Motor Carriers Association, Inc., agent (No. 264), for interested carriers. Rates on various commodities moving on class and commodity rates over joint routes of applicant rail and motor carriers between points in Central States, Middle West and Southwestern territories, on the one hand, and points in Middle Atlantic and New England territories, on the other.

Grounds for relief: Motortruck competition.

Tariff: 17th revised page 222 to Eastern Central Motor Carriers Association, Inc., agent, tariff MF-I.C.C. A-230.

FSA No. 39044: *Cement to points in North Dakota*. Filed by Western Trunk Line Committee, Agent (No. A-2361), for interested rail carriers. Rates on cement, hydraulic, masonry or portland, in bulk, also kindred or related articles, in carloads, from points in western trunkline territory, to specified points in North Dakota.

Grounds for relief: Market competition.

Tariffs: Supplements 141 and 7 to Western Trunk Line Committee, agent, tariffs I.C.C. A-4308 and A-4527, respectively.

FSA No. 39045: *Blackstrap molasses from Gulf Ports*. Filed by Southwestern Freight Bureau, agent (No. B-8547), for interested rail carriers. Rates on blackstrap molasses, in tank carloads, from points in Alabama, Louisiana, Mississippi, and Texas, to points in Illinois Freight

Association and western trunkline territories, also points in Arkansas, Oklahoma, and southern Missouri.

Grounds for relief: Market competition.

Tariffs: Supplement 7 to Southwestern Freight Bureau, agent, tariff I.C.C. 4467 and supplement 107 to Southern Freight Association, agent, tariff I.C.C. N-4.

FSA No. 39046: *Asphalt from Stroud, Okla.* Filed by Southwestern Freight Bureau, agent (No. B-8549), for interested rail carriers. Rates on asphalt, as described in the application, in tank carloads, from Stroud, Okla., to points in Illinois Freight Association and western trunkline territories.

Grounds for relief: Market competition.

Tariff: Supplement 344 to Southwestern Freight Association, agent, tariff I.C.C. 4279.

FSA No. 39047: *Class and commodity rates from and to Frazer, Fla.* Filed by O. W. South, Jr., agent (No. A4519), for interested rail carriers. Rates on various commodities moving on class and commodity rates, in carloads, and less-than-carloads, between Frazer, Fla., on the one hand, and points in the United States and Canada, on the other.

Grounds for relief: New station and grouping.

By the Commission

[SEAL]

HAROLD D. McCoy,
Secretary.

[F.R. Doc. 64-5347; Filed, May 27, 1964;
8:47 a.m.]

[Notice 990]

MOTOR CARRIER TRANSFER PROCEEDINGS

MAY 25, 1964.

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 Commerce 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 66069. By order of May 15, 1964, the Transfer Board approved the transfer to Kodiak Oilfield Haulers, Inc., Soldatna, Alaska, of the "grandfather" operating rights claimed to have been performed by Walter L. Hooper, doing business as Homer Freight Lines, Soldatna, Alaska, and the substitution of Kodiak Oilfield Haulers, Inc., as applicant in the proceeding, assigned Docket No. MC 123367, seeking the issuance of a certificate authorizing the transportation of: General commodities, between all points in Alaska. John M.

Savage, 303 Lathrop Building, Anchorage, Alaska, attorney for applicants.

No. MC-FC 66117. By order of May 15, 1964, the Transfer Board approved the transfer to Alaska Terminals, Inc., Seattle, Wash., of the "claimed Grandfather-Alaska operating rights" sought in the proceeding presently pending before the Commission in No. MC 118491 (Sub-No. 2) in the name of Hugh B. Mitchell, Paul Pollack, and Estate of D. C. Taylor, deceased, a partnership in dissolution, doing business as Alaska Terminals, Anchorage, Alaska, covering the transportation of General commodities, with certain exceptions, over irregular routes, between points in Alaska. Julian C. Rice, Suite A, Nerland Building Post Office Box 516, Fairbanks, Alaska, attorney for applicants.

No. MC-FC 66599. By order of May 15, 1964, the Transfer Board approved the transfer to Rhoades Truck Lines, Inc., Austin, Tex., of the claimed "grandfather" operating rights of Jeff Miller Rhoades, doing business as Rhoades Truck Line, Austin, Tex., as described in the appendix of the order of the Commission, Division 1, acting as an Appellate Division, entered April 16, 1964, in No. MC 102162 (Sub-No. 3) covering operations in Texas. J. Malcolm Robinson, Post Office Box 1117, Austin, Tex., attorney for applicants.

No. MC-FC 66709. By order of May 22, 1964, the Transfer Board approved the transfer to P.C.M. Trucking, Inc., Orefield, Pa., of the operating rights in Certificate in Nos. MC 50493, MC 50493 (Sub-No. 1), MC 50493 (Sub-No. 2), MC 50493 (Sub-No. 5), MC 50493 (Sub-No. 6), MC 50493 (Sub-No. 9), MC 50493 (Sub-No. 11), MC 50493 (Sub-No. 12), and MC 50493 (Sub-No. 20), issued by the Commission, November 20, 1939, September 13, 1940, August 23, 1941, February 25, 1947, May 15, 1950, February 2, 1961, August 25, 1961, July 27, 1962, and April 6, 1964, respectively to Paul J. Miller, Orefield, Pa., authorizing the transportation, over irregular routes, of fertilizer, farm products, Alfalfa meal, poultry feed, spray materials, agricultural spray materials, fresh fruits, feed constituents, oyster shells, crushed or ground in bulk, and in bags, fish meal and fish meal byproducts (other than in liquid form in bulk in tank vehicles) in bulk and in packages, dicalcium phosphate (feed grade), in bulk, dicalcium phosphate (feed grade), in bags, poultry and animal feeding materials, crab meal, animal and poultry feed and fish meal, from, to, and between specified points in Pennsylvania, New York, New Jersey, the District of Columbia, Maryland, Connecticut, Delaware, Virginia, West Virginia, and Florida, varying with the commodities specified, and in permit in No. MC 115859 (Sub-No. 1), issued September 26, 1963, to Paul J. Miller, Orefield, Pa., authorizing the transportation, over irregular routes, of canned animal foods, from the plant site of the Allen Products Co., Inc., at South Whiteall Township, Lehigh County, Pa., to points in Florida and Georgia, and frozen meats, meat products, and meat byproducts, unfit for human consumption, in vehicles equipped with mechanical refrigeration, from points in Florida and Georgia to the

side of the plant of Allen Products Co., Inc., at South Whiteall Township, Lehigh County, Pa., Albert E. Enoch, 556 Main Street, Bethlehem, Pa., applicants' representative. Frank A. Doocey, 506 Hamilton Street, Allentown, Pa., applicants attorney.

No. MC-FC 66718. By order of May 19, 1964, the Transfer Board approved the transfer to Lionel Truck Lines, Inc., Chicago, Ill., of the operating rights in Permits in Nos. MC 86528 (Sub-No. 1) and MC 86528 (Sub-No. 4), issued by the Commission July 31, 1958, and May 28, 1963, respectively, to Gerald J. Goldman and Ruth S. Goldman, a partnership, doing business as Lionel Truck Lines, Chicago, Ill., authorizing the transportation, over irregular routes, of such merchandise as is dealt in by wholesale grocery houses, from Chicago, Ill., to points in a specified portion of Indiana, empty food and beverage containers and returned or rejected merchandise, from points in a specified area in Indiana to Chicago, Ill., canned fruits and vegetables, from points in a described portion of Michigan, to Chicago, Ill., and such merchandise as is dealt in by wholesale, retail, and chain grocery and food business houses, and in connection therewith, equipment, materials, and supplies used in the conduct of such business, between points in a described territory in Illinois. James F. Flanagan, 111 West Washington Street, Chicago, Ill., 60602, attorney for applicants.

No. MC-FC 66780. By order of May 15, 1964, the Transfer Board approved the transfer to Ascenzo & Sons, Inc., Bronx, N.Y., of the operating rights issued by the Commission, December 3, 1958, under Certificate in No. MC 95965 to Charles Ascenzo and Joseph Ascenzo, a partnership, doing business as Ascenzo & Sons, New York (Bronx), N.Y., authorizing the transportation of: Stone

and granite, rough and finished, and stone and granite monuments, between New York, N.Y., on the one hand, and, on the other, points in New York, New Jersey, and Connecticut within 50 miles of City Hall, New York, N.Y. Robert F. Mitchell, Jr., 12 Charles Lane, Port Chester, N.Y., attorney for applicants.

No. MC-FC 66816. By order of May 19, 1964, the Transfer Board approved the transfer to A & W Transfer & Storage Co., a corporation, San Antonio, Tex., of the operating rights claimed in No. MC 121282 (Sub-No. 1) under the "grandfather" clause of section 206(a) (7) (b), Interstate Commerce Act by Reliable Moving & Storage, Inc., San Antonio, Tex., and the substitution of transferee as applicant for a certificate of registration from this Commission corresponding to the grant of intrastate authority to transferor issued by the Railroad Commission of Texas in certificate No. 18114. Maynard F. Robinson, 819 Frost National Building, San Antonio, Tex., attorney for applicants.

No. MC-FC 66867. By order of May 15, 1964, the Transfer Board approved the transfer to Wiser Bros., Inc., 1177 Spring Street, Fairfax, Va., of portion of the operating rights issued by the Commission January 29, 1963, under Certificate No. MC 58913, to R. W. Doggett, Inc., 2781 South Eads Street, Arlington, Va., authorizing the transportation, over irregular routes of contractors' tools and equipment, street car bodies, and small houses, between Manassas, Va., and points in Virginia within 50 miles of Manassas, on the one hand, and, on the other, Washington, D.C., and points in Maryland within 50 miles of Washington.

[SEAL]

HAROLD D. MCCOY,
Secretary.

[F.R. Doc. 64-5348; Filed, May 27, 1964;
8:47 a.m.]

[Sec. 5a, Application 70, Amdt. 4]

WESTERN MOTOR TARIFF BUREAU, INC.

Application for Approval of Amendments to Agreement

MAY 25, 1964.

The Commission is in receipt of an application in the above-entitled and numbered proceeding for approval of amendments to the agreement therein approved under the provisions of section 5a of the Interstate Commerce Act.

Filed May 15, 1964 by: W. J. Knoell, general manager, attorney-in-fact, Post Office Box 3244, Huntington Park, Calif.

Amendments involved: Change in the rules of procedure to remove the restriction as to the maximum number of standing rate committee members.

The application may be inspected at the office of the Commission in Washington, D.C.

Any interested person desiring the Commission to hold a hearing upon such application shall request the Commission in writing so to do within 20 days from the date of this notice. As provided by the general rules of practice of the Commission, persons other than applicants should fairly disclose their interest, and the position they intend to take at the hearing with respect to the application. Otherwise the Commission, in its discretion, may proceed to investigate and determine the matters involved in such application without further or formal hearing.

By the Commission, Division 2.

[SEAL]

HAROLD D. MCCOY,
Secretary.

[F.R. Doc. 64-5349; Filed, May 27, 1964;
8:47 a.m.]

CUMULATIVE CODIFICATION GUIDE—MAY

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Now Available**CODE OF FEDERAL
REGULATIONS**

(As of January 1, 1964)

The following revised books and
supplement are now available:**Titles 1-4 (Supp.) \$1.25****Title 7 (Parts 400-899) (Rev.)
\$3.00****Title 38 (Rev.) \$2.25**A cumulative checklist of CFR issuances for
1964 appears in the first issue of each
month under Title 1.Order from Superintendent of Documents,
Government Printing Office, Washington,
D.C., 20402

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THE NATIONAL ARCHIVES
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FEDERAL REGISTER

VOLUME 29 NUMBER 105

Washington, Thursday, May 28, 1964

Federal Aviation Agency

•—————•

[14 CFR Part 29 [New]]

Transport Category Rotorcraft
Proposed Airworthiness Standards

FEDERAL AVIATION AGENCY

[14 CFR Parts 7, 29 [New]]

[Reg. Docket No. 5084; Notice No. 64-30]

TRANSPORT CATEGORY ROTORCRAFT

Proposed Airworthiness Standards

The Federal Aviation Agency is considering a proposal to recodify present Part 7 of the Civil Air Regulations into Part 29 [New].

Interested persons are invited to participate in the proposed recodification by submitting such written data, views, or arguments as they may desire. Communications should identify the regulatory docket or notice number and be submitted in duplicate to the Federal Aviation Agency, Office of the General Counsel: Attention Rules Docket, 800 Independence Avenue SW., Washington, D.C., 20553. All communications received within 60 days after publication of this notice in the FEDERAL REGISTER will be considered by the Administrator before taking action on the proposed recodification. The proposal contained in this notice may be changed in the light of comments received. All comments submitted will be available in the rules docket for examination by interested persons, both before and after the closing date for comments.

Proposed Part 29 [New] contains the airworthiness requirements for rotorcraft to be certificated in the transport categories. The procedural requirements of Part 7 are being transferred to proposed Part 21 [New].

The object of Part 29 [New] is to restate existing regulations, not to make new ones. The pertinent provisions have been freely reworded and rearranged, subject to every precaution against disturbing existing rights, privileges, duties, or functions. In addition, in cases where well established administrative practice or construction has established authoritative interpretations, the revised language reflects the interpretations.

Each proposed recodified section is followed by a note citing the present section of the regulations upon which it is based. A cross-reference table has been placed at the end of Part 29 [New] to permit easy access from the old regulations to the new. Internal cross references to Parts or sections that are not yet recodified contain a blank space for later insertion of the correct recodified number with the present number contained in brackets. When a Part or section that is referred to in a cross reference is later recodified, the correct number will be inserted and the bracketed number will be dropped.

No substantive changes involving an increased burden on the public have been made in the regulations, the purpose of the recodification project being simply to streamline and clarify present regulatory language and to delete obsolete or redundant provisions. It should be noted that the definitions, abbreviations, and rules of construction contained in Part 1 [New] published in the FEDERAL REGISTER on May 15, 1962 (27 F.R. 4587), would apply to the proposed rules. In

addition, those definitions in present Part 7 (and not now in Part 1 [New] or executed in proposed Part 29 [New]) that are necessary, will be added to Part 1 [New] prior to the adoption of Part 29 [New].

Present CAR 7.306 requires that certain values contained in the publication ANC-17 be used for design purposes. This publication has been replaced with the publication MIL HDBK-17. This change is accordingly reflected in proposed FAR 29.263.

The material in present CAR 7.333 and in the note following present § 7.332(a), containing an acceptable method for showing compliance with the limit drop test requirements when an effective mass is used for analysis, has been placed in proposed Appendix A.

Present CAR 7.116 requires the hovering performance of certain rotorcraft to be determined at a height above the ground consistent with the procedure used in establishing the "takeoff and accelerate-stop distance". No such distance, or related procedure, is specified in present Part 7. Established practice indicates that the procedure referred to is that used in establishing the takeoff climbout path and the rejected takeoff path. This practice is accordingly reflected in proposed § 29.57, paragraph (a).

Present CAR 7.357 provides that flight crew emergency exits are not required on "small" rotorcraft if existing passenger emergency exits allow ready evacuation of the flight crew. In this context, the term "small" has little meaning other than to suggest a relationship between rotorcraft size and the accessibility of passenger emergency exits to the flight crew. Further, the definition of "small aircraft" in Part 1 [New] relates the term "small" to the sole criterion of weight. Ease of evacuation, not size or weight, is the test for compliance with the subject requirement. The term "small" is accordingly deleted in proposed § 29.365, paragraph (b).

Preliminary study indicates that references to "miles" and "miles per hour" should be standardized in terms of nautical measurement. When this part is finally adopted, it is therefore proposed to use the terms "nautical mile" and "knot" where "mile" and "miles per hour" are now used. Nautical equivalents of existing values will be used, so that no increases in burden will result. Comment is specifically invited on this matter.

When finally adopted, Part 29 [New] will include the substance of any applicable rules or amendments adopted and made effective during the period between the date of notice and the effective date of the final rule, and may also include applicable rules on which individual notices of proposed rule making have been issued and the comment period has expired, but which have not been theretofore adopted.

In consideration of the foregoing it is proposed to amend Chapter I of Title 14 of the Code of Federal Regulations by deleting present Part 7 and adding a Part 29 [New] reading as hereinafter set forth.

This proposal is made under the authority of sections 313(a), 601, and 603 of the Federal Aviation Act of 1958 (72 Stat. 752, 775, 776; 49 U.S.C. 1354(a), 1421, and 1423).

Issued in Washington, D.C., on May 20, 1964.

N. E. HALABY,
Administrator.

PART 29—AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY ROTORCRAFT

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Subpart A—General

§ 29.1 Applicability.

(a) This part prescribes airworthiness standards for the issue of, and changes to, type and supplemental type certificates for—

(1) Multiengine rotorcraft that meet the requirements for transport category A;

(2) Rotorcraft with maximum weights of 20,000 pounds or less that meet the requirements for transport category B; and

(3) Multiengine rotorcraft that meet the requirements for transport category A or B.

(b) Each person who applies under Part 21 [New] for a certificate or change described in paragraph (a) of this section must show compliance with all applicable requirements in this part.

[Revision note: Paragraph (a) combines §§ 7.0 (1st sentence) and 7.20 (a) and (b) (1st sentence); paragraph (b) supplied]

Subpart B—Flight

§ 29.21 Proof of compliance.

(a) Each requirement of this subpart must be complied with at each appropriate combination of weight and center of gravity within the range of loading conditions for which certification is requested. This must be shown—

(1) By tests upon a rotorcraft of the type for which certification is requested, or by calculations based on, and equal in accuracy to, the results of testing; and

(2) By systematic investigation of all required combinations of weight and center of gravity, if compliance cannot be reasonably inferred from combinations investigated.

(b) The controllability, stability, and trim of the rotorcraft must be shown for all altitudes up to the maximum expected in operation.

[Revision note: Based on § 7.100(a) through (c)]

§ 29.23 Weight limitations.

(a) *Maximum weight.* The maximum weight, that is, the greatest weight for

which compliance with every applicable requirement of this part is shown, or, at the option of the applicant, the greatest weight for each altitude and for each practically separable operating condition, such as takeoff, en route operation, and landing, must be established so that it is not greater than—

(1) The weight selected by the applicant;

(2) The design maximum weight, that is, the greatest weight for which compliance with every applicable structural loading condition of this part is shown; or

(3) The greatest weight at which compliance with every applicable flight requirement is shown.

(b) *Minimum weight.* The minimum weight, that is, the lowest weight for which compliance with every applicable requirement of this part is shown, must be established so that it is not less than—

(1) The lowest weight selected by the applicant;

(2) The design minimum weight, that is, the lowest weight for which compliance with every structural loading condition of this Part is shown; or

(3) The lowest weight for which compliance with every applicable flight requirement is shown.

[Revision note: Based on § 7.101]

§ 29.25 Center of gravity limitations and loading instructions.

(a) A limit rearward and a limit forward center of gravity must be established for each weight established under § 29.23. No such limit may lie beyond—

(1) The extremes selected by the applicant;

(2) The extremes for which the structure is proven; or

(3) The extremes for which compliance with all applicable flight requirements is shown.

(b) Loading instructions must be provided for each possible loading condition between the maximum and minimum weights specified in § 29.23 that can result in a center of gravity beyond any limit prescribed in paragraph (a) of this section, assuming all probable occupant weights.

[Revision note: Based on § 7.102]

§ 29.27 Main rotor speed and pitch limits.

(a) *Main rotor speed limits.* A range of main rotor speeds must be established that—

(1) With power on, provides adequate margin to accommodate all variations in rotor speed occurring in all appropriate maneuvers, and is consistent with the kind of governor or synchronizer used; and

(2) With power off, allows all appropriate autorotative maneuvers to be performed throughout all ranges of airspeed and weight for which certification is requested.

(b) *Main rotor pitch limits.* The range of main rotor pitch settings must be limited as follows:

(1) A means must be provided so that the normal high pitch limit, with full throttle, does not result in rotor speeds

substantially less than the minimum approved for any sustained flight condition. This means need not be provided, however, if—

(i) The inherent characteristics of the rotorcraft make it unnecessary; or

(ii) Adequate means are provided to warn the pilot of unsafe main rotor speeds.

(2) With power off, the low pitch limit must—

(i) Provide rotor speeds within the approved range for all autorotative conditions under the most critical combinations of weight and airspeed; and

(ii) Allow the pilot, without exceptional skill, to prevent overspeeding of the rotor.

(c) *Emergency high pitch.* A main rotor pitch higher than the normal high pitch limit prescribed in paragraph (b) (1) of this section may be made available for emergency use if the normal high pitch limit cannot be exceeded inadvertently.

[Revision note: Based on § 7.103]

§ 29.29 Empty weight and corresponding center of gravity.

(a) The empty weight and corresponding center of gravity must be determined by weighing the rotorcraft without the weight of crew and payload, but with the weight of—

- (1) All fixed ballast;
- (2) All unusable fuel;
- (3) All undrainable oil;
- (4) All engine coolant; and
- (5) All hydraulic fluid.

(b) The condition of the rotorcraft when weighed under paragraph (a) of this section must be easily reproducible and well defined, particularly with respect to the weights of fuel, oil, coolant, and installed equipment.

[Revision note: Based on § 7.104]

§ 29.31 Removable ballast.

Removable ballast may be used in showing compliance with the flight requirements of this part.

[Revision note: Based on § 7.105]

PERFORMANCE

§ 29.41 General.

(a) The performance prescribed in this subpart must be determined—

- (1) With normal piloting skill;
- (2) Without exceptionally favorable conditions; and
- (3) With each powerplant accessory absorbing the normal amount of power for the flight condition being investigated.

(b) Compliance with the performance requirements of this subpart must be shown—

- (1) In still air at sea level with a standard atmosphere;
- (2) For the range of atmospheric variables selected by the applicant; and
- (3) Where engine power affects performance, with air at 80 percent relative humidity, or 0.7" Hg. vapor pressure, whichever is less.

[Revision note: Based on § 7.110 (less note following)]

§ 29.43 Limiting height-speed envelope.

(a) If there is any combination of height and forward speed (including hover) under which a safe landing cannot be made under the applicable power failure condition in paragraph (b) of this section, a limiting height-speed envelope must be established for that condition.

(b) The applicable power failure conditions are—

(1) For category A rotorcraft, sudden failure of the critical engine, with the remaining engines at takeoff power;

(2) For category B rotorcraft, complete power failure; and

(3) For multiengine, category B rotorcraft for which certification under the powerplant installation requirements of category A is requested, condition as in subparagraph (1) or (2) of this paragraph.

[Revision note: Based on § 7.111]

§ 29.45 Takeoff data; general.

(a) All takeoff data required by §§ 29.47 (b) and (c), 29.49, and 29.51 (a) and (b) must be determined—

(1) At all weights, altitudes, and temperatures selected by the applicant; and

(2) With the operating engines within approved limitations.

(b) All takeoff data, when corrected, must—

(1) Assume a level takeoff surface; and

(2) Be determined—

(i) On a smooth, dry, hard surface; and

(ii) So that reproduction of performance does not require exceptional piloting skill or alertness, or exceptionally favorable conditions.

[Revision note: Based on § 7.112 (less (a))]

§ 29.47 Takeoff; category A.

(a) *General.* The takeoff performance must be determined and scheduled so that, if one engine fails at any time after the start of takeoff, the rotorcraft can—

(1) Return to, and stop safely on, the takeoff area; or

(2) Continue the takeoff and climb-out, and attain a configuration and airspeed allowing compliance with § 29.51 (b).

(b) *Critical decision point.* The critical decision point must be a combination of height and speed selected by the applicant in establishing the flight paths under paragraph (c) of this section. The critical decision point must be obtained so as to avoid the critical areas of the limiting height-speed envelope established under § 29.43.

(c) *Takeoff climbout path and rejected takeoff path.* The takeoff climbout path, and the rejected takeoff path must be established so that the takeoff, climbout, and rejected takeoff are accomplished with a safe, smooth transition between all stages of the maneuver. The takeoff may be begun in any manner if the takeoff surface is defined and adequate safeguards are maintained to ensure proper center of gravity and control positions. In addition, the following rules apply:

(1) The rejected takeoff path must be established with takeoff power on all engines from the start of takeoff to the critical decision point, at which point it must be assumed that the critical engine becomes inoperative, and that the rotorcraft is brought to a safe stop with the remaining engines operating within approved limitations.

(2) The takeoff climbout path must be established with takeoff power on all engines from the start of takeoff to the critical decision point, at which point it must be assumed that the critical engine becomes inoperative. With the remaining engines operating within their approved limitations, the rotorcraft must be accelerated to the takeoff safety speed by the end of the rejected takeoff distance, and the climbout must be accomplished—

(i) At not less than the takeoff safety speed used in meeting the rate of climb specified in § 29.51 (a); and

(ii) So that the airspeed and configuration used in meeting the climb requirement of § 29.51 (b) are attained.

[Revision note: Combines §§ 7.112(a), 7.113, and 7.114(a)]

§ 29.49 Takeoff; category B.

The takeoff and climbout must be established with the most unfavorable center of gravity. The takeoff may be begun in any manner if—

(a) The takeoff surface is defined;

(b) Adequate safeguards are maintained to ensure proper center of gravity and control positions; and

(c) A landing can be made safely at any point along the flight path if an engine fails.

[Revision note: Based on § 7.114 (less (a))]

§ 29.51 Climb requirements; category A.

Each category A rotorcraft must meet the following takeoff and en route climb requirements:

(a) *Takeoff climb.* The steady rate of climb without ground effect must be at least 100 feet per minute for each weight, altitude, and temperature condition for which takeoff data are to be scheduled, with—

(1) The critical engine inoperative and the remaining engines operating within approved limitations;

(2) The most unfavorable center of gravity for takeoff;

(3) The landing gear extended;

(4) The speed selected by the applicant; and

(5) Cowl flaps or other means of controlling the engine-cooling air supply in the position that provides adequate cooling at the temperatures and altitudes for which certification is requested.

(b) *Climb at maximum continuous power.* The steady rate of climb without ground effect must be at least 150 feet per minute for each weight, altitude, and temperature condition for which takeoff data are to be scheduled, with—

(1) The critical engine inoperative and the remaining engines at maximum continuous power;

(2) The most unfavorable center of gravity for takeoff;

(3) The landing gear retracted;

(4) The speed selected by the applicant; and

(5) Cowl flaps or other means of controlling the engine-cooling air supply in the position that provides adequate cooling at the temperatures and altitudes for which certification is requested.

(c) *En route climb.* The steady rate of climb in feet per minute at any altitude at which the rotorcraft is expected to operate, and at any weight within the range of weights for which certification is requested, must be determined with—

(1) The critical engine inoperative, and the remaining engines at the maximum continuous power available at each altitude;

(2) The most unfavorable center of gravity;

(3) The landing gear retracted;

(4) The speed selected by the applicant; and

(5) Cowl flaps or other means of controlling the engine-cooling air supply in the position that provides adequate cooling at the temperatures and altitudes for which certification is requested.

[Revision note: Based on § 7.115 (less (b))]

§ 29.53 Climb requirements; category B.

(a) The steady rate of climb at V_Y must be determined for each category B rotorcraft—

(1) With maximum continuous power on all engines and the landing gear retracted; and

(2) Over the range of weights, altitudes, and temperatures for which certification is requested.

(b) For each category B rotorcraft except helicopters, the rate of climb determined under paragraph (a) must provide a steady climb gradient of at least 1:6 under standard sea level conditions.

(c) For multiengine category B helicopters complying with the requirements for category A rotorcraft in § 29.43, the steady rate of climb or descent must be determined at the speed for best rate of climb (or minimum rate of descent) with one engine inoperative and the remaining engines at maximum continuous power.

[Revision note: Based on § 7.115(b) (less (3))]

§ 29.55 Helicopter angle of glide; category B.

For each category B helicopter, the steady angle of glide must be determined in autorotation—

(a) At the maximum and minimum rates of descent;

(b) At maximum weight; and

(c) With the optimum forward speed.

[Revision note: Based on § 7.115(b) (3)]

§ 29.57 Performance at minimum operating speed.

(a) For each category A rotorcraft, the hovering performance must be determined over the range of weight, altitudes, and temperatures for which takeoff data are scheduled—

(1) With not more than takeoff power on all engines;

(2) With the landing gear extended; and

(3) At a height consistent with the procedure used in establishing the takeoff climbout and rejected takeoff paths.

(b) For each category B helicopter—

(1) The hovering performance must be determined over all ranges of weight, altitude, and temperature for which certification is requested, with—

- (i) Takeoff power on all engines;
- (ii) The landing gear extended; and
- (iii) The helicopter in the ground effect at a height consistent with normal takeoff procedures; and

(2) The hovering ceiling determined under subparagraph (1) of this paragraph must be at least 4,000 feet at maximum weight with a standard atmosphere.

(c) For rotorcraft other than helicopters, the steady rate of climb at the minimum operating speed must be determined, over the range of weights, altitudes, and temperatures for which certification is requested, with—

- (1) Takeoff power; and
- (2) The landing gear extended.

[Revision note: Based on § 7.116]

§ 29.58 Landing data; general.

(a) All corrected landing data must—

(1) Assume a level landing surface; and

(2) Be determined on a smooth, dry, hard surface.

(b) The approach and landing must be made so that its reproduction does not require exceptional piloting skill or exceptionally favorable conditions.

(c) During the landing, there may be no excessive vertical acceleration and no tendency to bounce, nose over, ground loop, porpoise, or water loop.

(d) The landing data required by §§ 29.59 (b) and (c), and 29.61 must be determined—

(1) At all weights, altitudes, and temperatures selected by the applicant; and

(2) With all operating engines within approved limitations.

[Revision note: Based on § 7.117 (less (a))]

§ 29.59 Landing; category A.

(a) *General.* For each category A rotorcraft, the landing performance must be determined and scheduled so that, if one engine fails at any point in the approach path, the rotorcraft can land and stop safely, or climb out from a point in the approach path and attain a rotorcraft configuration and speed allowing compliance with the climb requirement of § 29.51 (b).

(b) *One engine inoperative.* The approach, balked landing, and landing paths must be established, with one engine inoperative, so that the transition between each stage can be made smoothly and safely. The approach and landing speeds must be selected by the applicant and must be appropriate to the type of rotorcraft. In addition, the following rules apply:

(1) The approach and landing path must be established to avoid the critical areas of a limiting height-speed envelope established—

- (i) Under § 29.43; or
- (ii) Under the landing condition with one engine inoperative.

(2) The balked-landing path must be established so that, from a combination of height and speed in the approach path selected by the applicant, a safe climbout can be made at speeds allowing compliance with the climb requirements of § 29.51 (a) and (b).

(c) *Complete power failure.* It must be possible to make a safe landing on a prepared runway after complete power failure during normal cruise. The maximum allowable rate of descent in autorotation must be determined.

[Revision note: Combines §§ 7.117(a) and 7.118 (a) and (b)]

§ 29.61 Landing; category B.

(a) *Autorotative landing.* For each category B rotorcraft, the horizontal distance required to land and come to a complete stop (or to a speed of approximately three m.p.h. for water landings) from a point 50 feet above the landing surface, must be determined with—

(1) Glide speeds appropriate to the type of rotorcraft and chosen by the applicant; and

(2) The approach and landing must be made with power off and entered from steady autorotation.

(b) *Optional requirements for multi-engine rotorcraft.* Each multiengine category B rotorcraft that conforms with the powerplant installation requirements of category A must conform with—

(1) Paragraph (a) of this paragraph; or

(2) Section 29.59 (b) and (c), omitting the climbout requirement of § 29.59 (b) (2).

[Revision note: Based on § 7.118 (less (a) and (b))]

FLIGHT CHARACTERISTICS

§ 29.69 General.

The rotorcraft must—

(a) Conform with this section and §§ 29.71 through 29.75 at all normally expected operating altitudes, under all critical loading conditions within the range of weights and centers of gravity for which certification is requested, and under all conditions of speed, power, and rotor r.p.m. for which certification is requested;

(b) Be able to maintain any required flight condition and make a smooth transition from any flight condition to any other flight condition without exceptional piloting skill, alertness or strength, and without danger of exceeding the limit load factor under all operating conditions probable for the type, including sudden powerplant failure; and

(c) Have all additional characteristics required by the Administrator for night or instrument operation, if certification for such operation is requested.

[Revision note: Based on § 7.120]

§ 29.71 Controllability and maneuverability.

(a) The rotorcraft must be safely controllable and maneuverable—

(1) During steady flight; and

(2) During all maneuvers appropriate to the type, including—

- (i) Takeoff;
- (ii) Climb;
- (iii) Level flight;

(iv) Turning flight;

(v) Glide; and

(vi) Landing (power on and power off).

(b) The margin of cyclic control must allow satisfactory roll and pitch control—

(1) At V_{NE} , with—

- (i) Maximum weight;
- (ii) Critical center of gravity;
- (iii) Critical rotor r.p.m.; and
- (iv) Power on and power off; and
- (2) At V_H or V_{NE} , whichever is less,

with—

- (i) Failure of power; and
- (ii) Conditions as in subdivisions (1) through (iii) of subparagraph (1).

(c) A maximum wind velocity of not less than 20 miles per hour must be established in which the rotorcraft can be operated without loss of control on or near the ground in any maneuver appropriate to the type (such as crosswind takeoffs, sideward flight, and rearward flight), with—

- (1) Critical center of gravity; and
- (2) Critical rotor r.p.m.

(d) The rotorcraft, after power failure, must be controllable over the range of speeds and altitudes for which certification is requested, when the power failure occurs under maximum continuous power and critical weight. No corrective action time delay for any condition following power failure may be less than—

(1) For the cruise condition, one second, or normal pilot reaction time (whichever is greater); and

(2) For any other condition, normal pilot reaction time.

[Revision note: Based on § 7.121]

§ 29.73 Trim control.

The trim control—

(a) Must trim all steady longitudinal and lateral control forces to zero with the rotorcraft in level flight at any speed appropriate to the type; and

(b) May not introduce any undesirable discontinuities in control force gradients.

[Revision note: Based on § 7.122]

§ 29.75 Stability.

(a) *General.* It must be shown that the rotorcraft can be flown, without undue pilot fatigue or strain, in all normal maneuvers for a period of time as long as that expected in normal operation. At least three landings and takeoffs must be performed during this demonstration.

(b) *Static longitudinal stability.* The longitudinal cyclic control must be designed so that, for the ranges of altitude and rotor r.p.m. for which certification is requested, and with throttle and collective pitch held constant during the maneuvers specified in paragraphs (c) and (d) of this section—

(1) A rearward movement of the control is necessary to obtain airspeeds less than the trim speed; and

(2) A forward movement of the control is necessary to obtain airspeeds greater than the trim speed.

However, the stick position versus speed curve may have a negative slope within the speed ranges specified for each maneuver in paragraph (c) of this section if

the necessary negative stick displacement is not greater than ten percent of the total stick travel.

(c) *Test maneuvers.* The following maneuvers must be performed:

(1) Climb at all speeds from $0.85 V_Y$ to $1.2 V_Y$, with—

- (i) Critical weight;
- (ii) Critical center of gravity;
- (iii) Maximum continuous power;
- (iv) The landing gear retracted; and
- (v) The rotorcraft trimmed for V_Y .

(2) Cruise at all speeds from $0.7 V_{NE}$ or $0.7 V_{NE}$, whichever is less, to $1.1 V_H$ or $1.1 V_{NE}$, whichever is less, with—

- (i) Critical weight;
- (ii) Critical center of gravity;
- (iii) Power for level flight at $0.9 V_H$ or $0.9 V_{NE}$, whichever is less;
- (iv) The landing gear retracted; and
- (v) The rotorcraft trimmed for $0.9 V_H$ or $0.9 V_{NE}$, whichever is less.

(3) Autorotation throughout the speed range for which certification is requested, with—

- (i) Critical weight;
- (ii) Critical center of gravity;
- (iii) Power off;
- (iv) The landing gear (a) retracted and (b) extended; and
- (v) The rotorcraft trimmed for the speed for minimum rate of descent.

(d) *Hovering.* For helicopters—
(1) In the hovering condition, the longitudinal cyclic control must operate with the sense and direction of motion prescribed in paragraph (b) of this section; and

(2) The stick position curve must have a stable slope between the maximum approved rearward speed and a forward speed of 20 miles per hour, with—

- (i) The determined hovering weight (for category A helicopters), or critical weight (for other rotorcraft);
- (ii) Critical center of gravity;
- (iii) Power required for hovering in still air;
- (iv) The landing gear retracted; and
- (v) The helicopter trimmed for hovering.

[Revision note: Based on § 7.123]

GROUND AND WATER HANDLING CHARACTERISTICS

§ 29.85 General.

The rotorcraft must have satisfactory ground and water handling characteristics, including freedom from all uncontrollable tendencies in all conditions expected in operation.

[Revision note: Based on § 7.130]

§ 29.87 Ground resonance.

The rotorcraft, when on the ground, may not have any dangerous tendency to oscillate with the rotor turning.

[Revision note: Based on § 7.131]

§ 29.89 Spray characteristics.

If certification for water operation is requested, no spray characteristics during taxiing, takeoff, or landing may obscure the vision of the pilot or damage the rotors, propellers, or other parts of the rotorcraft.

[Revision note: Based on § 7.132]

MISCELLANEOUS FLIGHT REQUIREMENTS

§ 29.99 Vibration.

Each part of the rotorcraft must be free from excessive vibration under all appropriate conditions of speed and power.

[Revision note: Based on § 7.140 (vibration aspect)]

Subpart C—Structure

GENERAL

§ 29.121 Loads; proof of compliance.

(a) Strength requirements are specified in terms of limit loads and ultimate loads. Unless otherwise provided, all specified loads are limit loads.

(b) Unless otherwise provided, the specified air, ground, and water loads must be placed in equilibrium with inertia forces, considering all items of mass in the rotorcraft. These loads must be distributed in a manner closely approximating or conservatively representing actual conditions.

(c) If deflections under load would significantly change the distribution of external or internal loads, this redistribution must be taken into account.

(d) Unless otherwise specified, a factor of safety of 1.5 must be used. This factor applies to external and inertia loads unless its application to the resulting internal stresses is more conservative.

[Revision note: Based on § 7.200]

§ 29.123 Strength and deformation.

(a) The structure must be able to support limit loads without detrimental, permanent deformation. At all loads up to limit loads, the deformation may not interfere with safe operation of the rotorcraft.

(b) The structure must be able to support ultimate loads without failure. This must be shown by—

(1) Applying ultimate loads to the structure in a static test for at least three seconds; or

(2) Dynamic tests simulating actual load application.

[Revision note: Based on § 7.201]

§ 29.125 Proof of structure.

(a) Compliance with the strength and deformation requirements of this subpart must be shown for all critical loading conditions. Structural analysis may be used only if the structure conforms to those for which experience has shown this method to be reliable. In all other cases, substantiating load tests must be made.

(b) Proof of compliance with the strength requirements of this subpart must include—

(1) Dynamic and endurance tests of rotors, rotor drives, and rotor controls;

(2) Limit load tests of the control system, including control surfaces;

(3) Operation tests of the control system;

(4) Flight stress measurement tests;

(5) Landing gear shock absorption tests; and

(6) For each new or unusual design feature, all additional tests required by the Administrator.

[Revision note: Combines §§ 7.202 (less (c)) and 7.203]

§ 29.127 Design limitations.

The following values and limitations must be established to show compliance with the structural requirements of this subpart:

(a) The design maximum and minimum weights.

(b) The main rotor r.p.m. ranges, power on and power off.

(c) The maximum forward speeds for each main rotor r.p.m. within the ranges determined under paragraph (b) of this section.

(d) The maximum rearward and side-ward flight speeds.

(e) The center of gravity limits corresponding to the limitations determined under paragraphs (b), (c), and (d) of this section.

(f) The rotational speed ratios between each powerplant and each connected rotating component.

(g) The positive and negative limit maneuvering load factors.

[Revision note: Based on § 7.204]

FLIGHT LOADS

§ 29.137 General.

Compliance with the flight load requirements of this subpart must be shown—

(a) At all weights from the design minimum weight to the design maximum weight; and

(b) With any practical distribution of disposable load within the operating limitations in the rotorcraft flight manual.

[Revision note: Based on § 7.210]

§ 29.139 Flight load factor.

The flight load factor must be assumed to act normal to the longitudinal axis of the rotorcraft, and to be equal in magnitude and opposite in direction to the rotorcraft inertia load factor at the center of gravity.

[Revision note: Based on § 7.211]

§ 29.141 Maneuvering conditions.

(a) *Limit maneuvering load factors.* The rotorcraft must be able to withstand—

(1) A positive limit maneuvering load factor of 3.5 and a negative limit maneuvering load factor of 1.0; or

(2) Any lesser positive limit maneuvering load factor not less than 2.0, and lesser negative limit maneuvering load factor not less than 0.5, for which—

(i) The probability of being exceeded is shown by analysis and flight tests to be extremely remote; and

(ii) The selected values are appropriate to each design weight condition between the design maximum and design minimum weights.

(b) *Resultant limit maneuvering loads.* All loads resulting from the application of limit maneuvering load factors must be assumed to act at the center of each rotor hub and at each auxiliary lifting surface, and to act in directions and with distributions of load among the

rotors and auxiliary lifting surfaces so as to represent all critical maneuvering motions, including power-on and power-off flight with the maximum design rotor tip speed ratio. The rotor tip speed ratio is the ratio of the rotorcraft flight velocity component in the plane of the rotor disc to the rotational tip speed of the rotor blades, and is expressed as follows:

$$\mu = \frac{V \cos \alpha}{\Omega R}$$

where—

V = The airspeed along the flight path (f.p.s.);

α = The angle between the projection, in the plane of symmetry, of the axis of no feathering and a line perpendicular to the flight path (radians, positive when axis is pointing aft);

Ω = The angular velocity of rotor (radians per second); and

R = The rotor radius (ft.).

[Revision note: Combines §§ 7.212 and 7.1(h) (6)]

§ 29.143 Gust loads.

Each rotorcraft must be designed to withstand, at all critical airspeeds including hovering, all loads resulting from vertical and horizontal gusts of 30 feet per second.

[Revision note: Based on § 7.213]

§ 29.145 Yawing conditions.

(a) Each rotorcraft must be designed for all loads resulting from the maneuver specified in paragraph (b) of this section, with—

(1) All unbalanced aerodynamic moments about the center of gravity reacted in a rational or conservative manner considering the principal masses furnishing the reacting inertia forces;

(2) Maximum main rotor speed; and

(3) All forward speeds up to V_{NE} or V_H , whichever is less.

(b) With the rotorcraft in unaccelerated flight at zero yaw, it must be assumed that—

(1) The cockpit directional control is suddenly displaced to the maximum deflection limited by the control stops or by maximum pilot effort;

(2) The rotorcraft then yaws to a resulting sideslip angle; and

(3) The directional control is then suddenly returned to neutral.

[Revision note: Based on § 7.214]

CONTROL SURFACE AND SYSTEM LOADS

§ 29.155 General.

Each auxiliary rotor, fixed or movable stabilizing or control surface, and each system operating any flight control must meet the requirements of §§ 29.157 through 29.165.

[Revision note: Based on § 7.220]

§ 29.157 Auxiliary rotor assemblies.

(a) All auxiliary rotor assemblies. Each auxiliary rotor assembly must be tested as prescribed in § 29.439.

(b) Assemblies with detachable blades. Each auxiliary rotor assembly with detachable blades must be able to withstand all centrifugal loads resulting from the maximum design rotor r.p.m.

(c) Highly stressed metal components. For each auxiliary rotor with highly

stressed metal components, all vibration stresses must be determined in flight and shown not to exceed safe values for continuous operation.

[Revision note: Based on § 7.221]

§ 29.159 Auxiliary rotor attachment structure.

The attachment structure for each auxiliary rotor must be designed to withstand a limit load equal to the maximum loads occurring in the structure in all flight and landing conditions.

[Revision note: Based on § 7.222]

§ 29.161 Ground clearance; tail rotor guard.

(a) It must be impossible for the tail rotor to contact the landing surface during a normal landing.

(b) If a tail rotor guard is required to show compliance with paragraph (a) of this section—

(1) Suitable design loads must be established for the guard; and

(2) The guard and its supporting structure must be designed to withstand all loads established under subparagraph (1) of this paragraph.

[Revision note: Based on § 7.223]

§ 29.163 Stabilizing and control surfaces.

(a) Each stabilizing and control surface must be designed so that—

(1) Limit loads are not less than the greater of—

(i) 15 pounds per square foot; or

(ii) The load resulting where C_N equals 0.55 at the maximum design speed; and

(2) The surface can withstand all critical loads resulting from maneuvers and from combined maneuvers and gusts.

(b) Compliance with paragraph (a) of this section must be shown with load conditions that closely simulate actual pressure distribution conditions.

[Revision note: Based on § 7.224]

§ 29.165 Primary control system loads.

(a) General. Each primary control system, including its supporting structures, must be able to withstand the following loads:

(1) All loads resulting from application of the limit pilot forces prescribed in paragraph (d) of this section.

(2) The maximum loads that can be obtained in normal operation, including the effects of any single power-boost system failure.

(3) Loads that ensure a rugged system for service use, considering the effects of fatigue, jamming, ground gusts, control inertia, and friction. In the absence of a rational analysis, loads resulting from the application of 0.60 of the limit pilot forces prescribed in paragraph (b) of this section are acceptable for this purpose.

(b) Limit pilot forces. The limit pilot forces are as follows:

(1) For foot controls, 130 pounds.

(2) For stick controls, 100 pounds fore and aft, and 67 pounds laterally, a couple of 53D inch-pounds (where D is the wheel diameter).

(c) Reaction to limit pilot loads. The reaction to the loads prescribed in paragraph (b) must be provided by—

(1) The control stops only;

(2) The control locks only;

(3) The irreversible mechanism only (with the mechanism locked and with the control surface in all critical positions for the affected portions of the system within its limit of motion);

(4) The attachment of the control system to the rotor blade pitch control horn only (with the control in all critical positions for the affected portions of the system within the limits of its motion); and

(5) The attachment of the control system to the control surface horn (with the control in all critical positions for the affected portions of the system within the limits of its motion).

(d) Dual primary flight control systems. Each dual primary flight control system must be able to withstand all loads that result when pilot loads not less than 0.75 times those obtained under paragraph (b) of this section are applied—

(1) In opposition; and

(2) In the same direction.

[Revision note: Combines §§ 7.225 and 7.226]

LANDING LOADS

§ 29.175 General.

(a) Loads and equilibrium. For limit landing loads—

(1) All limit landing loads obtained in the landing conditions in this part must be considered to be external loads that would occur in the rotorcraft structure if it were acting as a rigid body; and

(2) In each specified landing condition, all external loads must be placed in equilibrium with all linear and angular inertia loads in a rational or conservative manner.

(b) Critical centers of gravity. All critical centers of gravity within the range for which certification is requested must be selected so that the maximum design loads are obtained in each landing gear element.

(c) Design maximum weight; assumed rotor lift. For all specified landing conditions, a design maximum weight must be used that is not less than the maximum weight. A rotor lift may be assumed to act through the center of gravity throughout the landing impact. This lift may not exceed—

(1) Two-thirds of the design maximum weight; or

(2) Any greater lift proven to be appropriate by tests or other data that are applicable to the particular rotorcraft.

(d) Limit load factor. For each specified landing condition, the rotorcraft must be designed for a limit load factor of not less than the limit inertia load factor substantiated in accordance with § 29.323, unless otherwise prescribed.

(e) Tires and shock absorbers. For each specified landing condition, the tires must be assumed to be in their static position and the shock absorbers to be in their most critical position, unless otherwise prescribed.

(f) Landing gear arrangement. Sections 29.177 through 29.187 apply to landing gears with two wheels aft, and

one or more wheels forward, of the center of gravity.

[Revision note: Based on § 7.230]

§ 29.177 Level landing conditions.

(a) *Attitudes.* Under each of the loading conditions prescribed in paragraph (b) of this section, the rotorcraft must be assumed to be in each of the following level landing attitudes:

(1) An attitude in which all wheels contact the ground simultaneously.

(2) An attitude in which the aft wheels contact the ground with the forward wheels just clear of the ground.

(b) *Loading conditions.* The rotorcraft must be designed for the following landing loading conditions:

(1) Vertical loads applied in accordance with § 29.175.

(2) All loads resulting from a combination of the loads applied under subparagraph (1) of this paragraph with drag loads at each wheel of not less than 25 percent of the vertical load at that wheel.

(3) The vertical load at the instant of peak drag load combined with a drag component simulating the forces required to accelerate the wheel rolling assembly up to the specified ground speed, with—

(i) The ground speed for determination of the spin-up loads being at least 75 percent of the optimum forward flight speed for minimum rate of descent in autorotation; and

(ii) The loading conditions of this subparagraph applied to the landing gear and its attaching structure only.

(4) If there are two wheels forward, a distribution of all loads applied to those wheels under subparagraphs (1) and (2) of this paragraph in a ratio of 40:60.

(c) *Pitching moments.* All pitching moments must be assumed to be resisted by—

(1) In the case of attitude as in paragraph (a) (1), the forward landing gear; and

(2) In the case of attitude as in paragraph (a) (2), the angular inertia forces.

[Revision note: Based on § 7.231]

§ 29.179 Nose-up landing condition.

(a) The rotorcraft must be assumed to be in the maximum nose-up attitude allowing ground clearance by all parts of the rotorcraft.

(b) In this attitude, all ground loads must be assumed to act perpendicular to the ground.

[Revision note: Based on § 7.232]

§ 29.181 One wheel landing condition.

The rotorcraft must be assumed to be in the level attitude and to contact the ground on one aft wheel. In this attitude—

(a) The vertical load must be the same as that obtained on that side under § 29.177(b) (1); and

(b) All unbalanced external loads must be reacted by rotorcraft inertia.

[Revision note: Based on § 7.233]

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§ 29.183 Lateral drift landing condition.

(a) The rotorcraft must be assumed to be in the level landing attitude, with—

(1) Side loads combined with one-half the maximum ground reactions obtained in the level landing conditions of § 29.177 (b) (1); and

(2) All loads obtained under subparagraph (1) of this paragraph applied—

(i) At the ground contact point; or

(ii) For full-swiveling gear, at the center of the axle.

(b) The rotorcraft must be designed to withstand, at ground contact—

(1) When only the aft wheels contact the ground, side loads of 0.8 times the vertical reaction acting inward on one side and 0.6 times the vertical reaction acting outward on the other side, all combined with the vertical loads specified in paragraph (a) of this section; and

(2) When all wheels contact the ground simultaneously—

(i) For the aft wheels, the side loads specified in subparagraph (1) of this paragraph; and

(ii) For the forward wheels, a side load of 0.8 times the vertical reaction combined with the vertical load specified in paragraph (a) of this section.

[Revision note: Based on § 7.234]

§ 29.185 Braked roll conditions.

Under braked roll conditions with the shock absorbers in their static positions—

(a) The limit vertical load must be based on a load factor of at least—

(1) 1.33, for the attitude specified in § 29.177(a) (1); and

(2) 1.0, for the attitude specified in § 29.177 (a) (2); and

(b) The structure must be designed to withstand the application, at the ground contact point of each wheel with brakes, of a drag load of not less than the lesser of—

(1) The vertical load multiplied by a coefficient of friction of 0.8; and

(2) The maximum value based on limiting brake torque.

[Revision note: Based on § 7.235]

§ 29.187 Taxiing condition.

The rotorcraft must be designed to withstand all loads that would occur when the rotorcraft is taxied over the roughest ground that may reasonably be expected in normal operation.

[Revision note: Based on § 7.236]

§ 29.193 Ski landing conditions.

If certification for ski operation is requested, the rotorcraft, with skis, must be designed to withstand the following loading conditions (where P is the maximum static weight on each ski with the rotorcraft at design maximum weight, and n is the limit load factor determined in accordance with § 29.175(d)):

(a) Up-load conditions in which—

(1) A vertical load of Pn and a horizontal load of $Pn/4$ are simultaneously applied at the pedestal bearings; and

(2) A vertical load of $1.33 P$ is applied at the pedestal bearings.

(b) A side load condition in which a side load of $0.35 Pn$ is applied at the pedestal bearings in a horizontal plane perpendicular to the centerline of the rotorcraft.

(c) A torque-load condition in which a torque load of $1.33 P$ (in foot pounds) is applied to the ski about the vertical axis through the centerline of the pedestal bearings.

[Revision note: Based on § 7.240]

§ 29.203 Float landing conditions.

If certification for float operation is requested, the rotorcraft, with floats, must be designed to withstand the following loading conditions (where the limit load factor is determined under § 29.175(d) or assumed to be equal to that determined for wheel landing gear):

(a) Up-load conditions in which—

(1) A load is so applied that, with the rotorcraft in the static level attitude, the resultant water reaction passes vertically through the center of gravity; and

(2) The vertical load prescribed in subparagraph (1) of this paragraph is applied simultaneously with an aft component of 0.25 times the vertical component.

(b) A side load condition in which—

(1) A vertical load of 0.75 times the total vertical load specified in subparagraph (a) (1) of this section is divided equally among the floats; and

(2) For each float, the load share determined under subparagraph (1) of this paragraph, combined with a total side load of 0.25 times the total vertical load specified in subparagraph (b) (1) of this section, is applied to that float only.

[Revision note: Based on § 7.245]

§ 29.205 Ground loading conditions; landing gear with tail wheels.

(a) *General.* Rotorcraft with landing gear with two wheels forward and one wheel aft of the center of gravity must be designed for all loading conditions as prescribed in this section.

(b) *Level landing attitude with only the forward wheels contacting the ground.* In this attitude—

(1) All vertical loads must be applied under § 29.175;

(2) The vertical load at each axle must be combined with a drag load at that axle of not less than 25 percent of that vertical load; and

(3) All unbalanced pitching moments must be assumed to be resisted by angular inertia forces.

(c) *Level landing attitude with all wheels contacting the ground simultaneously.* In this attitude, the rotorcraft must be designed for all landing loading conditions as prescribed in paragraph (b) of this section.

(d) *Maximum nose-up attitude with only the rear wheel contacting the ground.* The attitude for this condition must be the maximum nose-up attitude expected in normal operation, including autorotative landings. In this attitude—

(1) The appropriate ground loads specified in paragraph (b) (1) and (2)

of this section must be determined and applied, using a rational method to account for the moment arm between the rear wheel ground reaction and the rotorcraft center of gravity; or

(2) The probability of landing with initial contact on the rear wheel must be shown to be extremely remote.

(e) *Level landing attitude with only one forward wheel contacting the ground.* In this attitude, the rotorcraft must be designed for ground loads as specified in paragraph (b) (1) and (3) of this section.

(f) *Side loads in the level landing attitude.* In the attitudes specified in paragraphs (b) and (c) of this section, the following rules apply:

(1) All side loads must be combined at each wheel with one-half of the maximum vertical ground reactions obtained for that wheel under paragraphs (b) and (c) of this section. In this condition, the side loads must be—

(i) For the forward wheels, 0.8 times the vertical reaction (on one side) acting inward, and 0.6 times the vertical reaction (on the other side) acting outward; and

(ii) For the rear wheel, 0.8 times the vertical reaction.

(2) The loads specified in subparagraph (1) of this paragraph must be applied—

(i) At the ground contact point with the wheel in the trailing position, (for non-full swiveling landing gear or for full swiveling landing gear with a lock, steering device, or shimmy damper to keep the wheel in the trailing position); or

(ii) At the center of the axle, (for full swiveling landing gear which do not have a lock, steering device, or shimmy damper).

(g) *Braked roll conditions in the level landing attitude.* In the attitudes specified in paragraphs (b) and (c) of this section, and with the shock absorbers deflected to their static positions, the rotorcraft must be designed for braked roll loads as follows:

(1) The limit vertical load must be based on a limit load factor of not less than—

(i) 1.0, for the attitude specified in paragraph (b) of this section; and

(ii) 1.33, for the attitude specified in paragraph (c) of this section.

(2) For each wheel with brakes, a drag load must be applied, at the ground contact point, of not less than the lesser of—

(i) 0.8 times the vertical load; and

(ii) The maximum based on limiting brake torque.

(h) *Rear wheel turning loads in the static ground attitude.* In the static ground attitude, and with the shock absorbers and tires deflected to their static positions, the rotorcraft must be designed for rear wheel turning loads as follows:

(1) A vertical ground reaction equal to the static load on the rear wheel must be combined with an equal side load.

(2) The load specified in subparagraph (1) of this paragraph must be applied to the rear landing gear—

(i) Through the axle, when a swivel is provided (the rear wheel being assumed to be swiveled 90 degrees to the longitudinal axis of the rotorcraft); or

(ii) At the ground contact point, when a lock, steering device or shimmy damper is provided (the rear wheel being assumed to be in the trailing position).

(i) *Taxiing condition.* The rotorcraft and its landing gear must be designed for all loads that would occur when the rotorcraft is taxied over the roughest ground that may reasonably be expected in normal operation.

[Revision note: Based on § 7.246]

MAIN COMPONENT REQUIREMENTS

§ 29.217 Main rotor structure.

(a) Each main rotor assembly (including rotor hubs and blades) must be designed as prescribed in this section.

(b) All hubs, blades, blade attachments, and blade controls subject to alternating stresses must be designed to withstand all repeated loading conditions likely to occur within their established service lives. In addition—

(1) The stresses of critical parts must be determined in flight in all attitudes appropriate to the type of rotorcraft throughout the ranges of limitations prescribed in § 29.127; and

(2) The service life of each critical part must be established by the applicant on the basis of—

(i) Fatigue tests; or

(ii) Any other approved method.

(c) The main rotor structure must be designed to withstand the following loads prescribed in §§ 29.137 through 29.145:

(1) Critical flight loads.

(2) Limit loads occurring under all normal conditions of autorotation.

(d) The main rotor structure must be designed to withstand loads simulating—

(1) For the rotor blades, hubs, and flapping hinges, the impact force of each blade against its stop during ground operation; and

(2) All other critical conditions expected in normal operation.

(e) The main rotor structure must be designed to withstand the design limit torque at all rotational speeds, including zero. In addition:

(1) The design limit torque need not be greater than the torque defined by a torque limiting device (where provided), and must not be less than the greater of—

(i) The maximum torque likely to be transmitted to the rotor structure, in either direction, by the rotor drive or by sudden application of the rotor brake; and

(ii) The design limit engine torque specified in § 29.219(d).

(2) The design limit torque must be equally and rationally distributed to the rotor blades.

[Revision note: Based on § 7.250]

§ 29.219 Fuselage and rotor pylon structures.

(a) Each fuselage and rotor pylon structure must be designed to withstand—

(1) The critical loads prescribed in §§ 29.137 through 29.145;

(2) The applicable ground loads prescribed in §§ 29.175 through 29.203; and

(3) The loads prescribed in § 29.217(d) (1) and (e) (1) (i).

(b) Auxiliary rotor thrust, the torque reaction of each rotor drive system, and all balancing air and inertia loads occurring under accelerated flight conditions, must be considered.

(c) Each engine mount and adjacent fuselage structure must be designed to withstand all loads occurring under accelerated flight and landing conditions, including engine torque.

(d) The design limit engine torque may not be less than—

(1) For turbine engines, the mean torque for maximum continuous power multiplied by a factor of 1.25; and

(2) For reciprocating engines, the mean torque multiplied by—

(i) 1.33, for engines with five or more cylinders; and

(ii) Two, three, and four, for engines with four, three, and two cylinders, respectively.

(e) For critical parts, that is, parts whose sudden failure would threaten the structural integrity of the rotorcraft, the following rules apply:

(1) Each part must be designed to withstand all repeated loading conditions likely to occur within its established service life.

(2) Stresses on parts must be determined in flight—

(i) For all attitudes appropriate to the type of rotorcraft; and

(ii) For each attitude, throughout the ranges of limitations prescribed in § 29.127.

(3) The service life of each part must be established by the applicant on the basis of—

(i) Fatigue tests; or

(ii) Any other approved method.

[Revision note: Based on § 7.251]

§ 29.221 Auxiliary lifting surfaces.

Each auxiliary lifting surface must be designed to withstand—

(a) The critical flight loads in §§ 29.137 through 29.145;

(b) The applicable ground loads in §§ 29.175 through 29.203; and

(c) All other critical conditions expected in normal operation.

[Revision note: Based on § 7.252]

§ 29.229 Emergency landing conditions.

(a) The rotorcraft, although it may be damaged in emergency landing conditions on land or water, must be designed as prescribed in this section to protect all occupants under those conditions.

(b) The structure must be designed to give all occupants every reasonable chance of escaping serious injury in a minor crash landing when—

(1) Proper use is made of seats, belts, and all other safety design provisions;

(2) The wheels are retracted (where applicable); and

(3) All occupants experience the following ultimate inertia forces relative to the surrounding structure:

(i) Upward—1.5 g.

(ii) Forward—4.0 g.

(iii) Sideward—2.0 g.

(iv) Downward—4.0 g, or any lesser force that will not be exceeded when the rotorcraft absorbs the landing loads resulting from impact with an ultimate

descent velocity of five f.p.s. at design maximum weight.

(c) The supporting structure must be designed to restrain, under all loads up to those specified in paragraph (b) (3) of this section, all items of mass that could injure an occupant if they came loose in a minor crash landing.

(d) All fuselage structure in the area of internal fuel tanks below the passenger floor level must be designed to resist all crash impact loads specified in this section, and to protect the fuel tanks from rupture, if rupture is likely when those loads are applied to that area.

[Revision note: Combines §§ 7.260 and 7.261 (less note following)]

Subpart D—Design and Construction

GENERAL

§ 29.251 Design.

(a) The rotorcraft may have no design features or details known to be hazardous or unreliable.

(b) The suitability of all questionable design details and parts must be established by tests.

[Revision note: Based on § 7.300]

§ 29.253 Materials.

The suitability and durability of all materials used in the structure must—

(a) Be established on the basis of experience or tests; and

(b) Conform to approved specifications that ensure their having the strength and other properties assumed in the design data.

[Revision note: Based on § 7.301]

§ 29.255 Fabrication methods.

(a) All methods of fabrication must produce a consistently sound structure.

(b) When compliance with paragraph (a) of this section requires close control of any fabrication process (such as gluing, spot welding, or heat treating), that process must be performed under approved process specifications.

[Revision note: Based on § 7.302]

§ 29.257 Standard fastenings.

(a) Each bolt, pin, screw, and rivet used in the structure must be approved.

(b) Each bolt, pin, and screw used in the structure must use an approved locking device or method.

(c) No self-locking nut may be used on any bolt subject to rotation.

[Revision note: Based on § 7.303]

§ 29.259 Protection of structure.

Each part of the rotorcraft structure must—

(a) Be suitably protected against deterioration or loss of strength in service due to any cause, including—

- (1) Weathering;
- (2) Corrosion; and
- (3) Abrasion; and

(b) Have provisions for ventilation and drainage where necessary to prevent the accumulation of corrosive, flammable, or noxious fluids.

[Revision note: Based on § 7.304]

§ 29.261 Inspection provisions.

Means must be provided to allow the close examination of all parts of the rotorcraft that require—

- (a) Periodic inspection;
- (b) Adjustment for proper alignment and functioning; or
- (c) Lubrication (for moving parts).

[Revision note: Based on § 7.305]

§ 29.263 Material strength properties and design values.

(a) All material strength properties must be based on a sufficient number of tests of material conforming to approved specifications to establish design values on a statistical basis;

(b) All design values must be so chosen that the probability of any structure being understrength because of material variations is extremely remote;

(c) The strength, detail design, and fabrication of the structure must minimize the probability of disastrous fatigue failure, particularly at points of stress concentration;

(d) Unless they are shown to be inapplicable in a particular case, all design values must be those contained in the following publications (which are published by the Department of Defense and the Federal Aviation Agency and may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20401):

MIL-HDBK-5, "Metallic Materials and Elements for Flight Vehicle Structure".

MIL-HDBK-17, "Plastics for Flight Vehicles".

ANC-18, "Design of Wood Aircraft Structures".

MIL-HDBK-23, "Composite Construction for Flight Vehicles".

[Revision note: Based on § 7.306]

§ 29.265 Special factors, tests, and inspection methods.

(a) The special factors prescribed in §§ 29.267 through 29.271 apply to each part of the rotorcraft structure whose strength is—

- (1) Uncertain;
- (2) Likely to deteriorate in service prior to normal replacement; or
- (3) Subject to appreciable variability due to—

- (i) Uncertainties in manufacturing processes; or
- (ii) Uncertainties in inspection methods.

(b) For each part of the rotorcraft to which §§ 29.267 through 29.271 apply, the factor of safety prescribed in § 29.121 (d) must be multiplied by a special factor equal to—

(1) The applicable special factors prescribed in §§ 29.267 through 29.271; or

(2) Any other factor great enough to ensure that the probability of the part being understrength because of the uncertainties specified in paragraph (a) of this section is extremely remote.

[Revision note: Based on § 7.307(a)]

§ 29.267 Casting factors.

(a) *General.* The factors, tests, and inspections specified in paragraphs (b) and (c) of this section must be applied in

addition to those necessary to establish foundry quality control. The inspections must meet approved specifications. Paragraphs (c) and (d) of this section apply to all structural castings except castings that are pressure tested as parts of hydraulic or other fluid systems and do not support structural loads.

(b) *Bearing stresses and surfaces.* The casting factors specified in paragraphs (c) and (d) of this section—

(1) Need not exceed 1.25 with respect to bearing stresses regardless of the method of inspection used; and

(2) Need not be used with respect to the bearing surfaces of a part whose bearing factor is larger than the applicable casting factor.

(c) *Critical castings.* For each casting whose failure would preclude continued safe flight and landing of the rotorcraft or result in serious injury to occupants, the following rules apply:

(1) Each critical casting must—

(i) Have a casting factor of not less than 1.25; and

(ii) Receive 100 percent inspection by visual, radiographic, and magnetic particle (for ferromagnetic materials) or penetrant (for nonferromagnetic materials) inspection methods or approved equivalent inspection methods.

(2) For each critical casting with a casting factor less than 1.50, three sample castings must be static tested and shown to conform with—

(i) The strength requirements of § 29.123 at an ultimate load corresponding with a casting factor of 1.25; and

(ii) The deformation requirements of § 29.123 at a load of 1.15 times the limit load.

(d) *Noncritical castings.* For each casting other than those specified in paragraph (c) of this section, the following rules apply:

(1) Except as provided in subparagraphs (2) and (3) of this paragraph, the casting factors and corresponding inspections must conform to the following table:

Casting factor	Inspection for each casting
2.0 or greater—	100 percent visual.
Less than 2.0, greater than 1.5.	100 percent visual, and magnetic particle (ferromagnetic materials), Penetrant (nonferromagnetic materials), or approved equivalent inspection methods.
1.25 to 1.50 inclusive.	100 percent visual, and magnetic particle (ferromagnetic materials), Penetrant (nonferromagnetic materials), and radiographic or approved equivalent inspection methods.

(2) The percentage of castings inspected by nonvisual methods may be reduced below that specified in subparagraph (1) of this paragraph when an approved quality control procedure is established.

(3) For castings procured to a specification that guarantees the mechanical properties of the material in the casting and provides for demonstration of these

properties by test of coupons cut from the castings on a sampling basis—

(i) A casting factor of 1.0 may be used; and

(ii) The castings must be inspected as provided in subparagraph (1) of this paragraph for casting factors of "1.25 to 1.50 inclusive" and tested in accordance with paragraph (c)(2) of this section.

[Revision note: Based on § 7.307(b)]

§ 29.269 Bearing factors.

(a) Except as provided in paragraph (b) of this section, each part that has clearance (free fit), and that is subject to pounding or vibration, must have a bearing factor large enough to provide for the effects of normal relative motion.

(b) No bearing factor need be used on a part for which any larger special factor is prescribed.

[Revision note: Based on § 7.307(c)]

§ 29.271 Fitting factors.

For each fitting, that is, part or terminal used to join one structural member to another, the following rules apply:

(a) For each fitting whose strength is not proven by limit and ultimate load tests in which actual stress conditions are simulated in the fitting and surrounding structures, a fitting factor of at least 1.15 must be applied to all portions of—

- (1) The fitting;
- (2) The means of attachment; and
- (3) The bearing on the joined members.

(b) No fitting factor need be used—

(1) For joints made in accordance with approved practices and based on comprehensive test data (such as continuous joints in metal plating, welded joints, and scarf joints in wood); and

(2) With respect to any bearing surface for which a larger special factor is used.

(c) For each integral fitting, the part must be treated as a fitting up to the point at which the section properties become typical of the member.

[Revision note: Based on § 7.307 (less (a) through (c))]

§ 29.273 Flutter.

Each part of the rotorcraft must be free from flutter under all appropriate conditions of speed and power.

[Revision note: Based on § 7.140 (less vibration aspect)]

MAIN ROTOR

§ 29.281 Pressure venting and drainage of main rotor blades.

For each main rotor blade—

(a) Means must be provided for venting the internal pressure of the blade;

(b) Drainage holes must be provided for the blade; and

(c) The blade must be designed to prevent water from becoming trapped in any section of the blade.

[Revision note: Based on § 7.310]

§ 29.283 Stops.

For each main rotor blade—

(a) The blade must have stops, appropriate to the design, to limit its travel about its hinges; and

(b) Provision must be made to keep the blade from hitting the droop stops during all operations other than the starting and stopping of the rotor.

[Revision note: Based on § 7.311]

§ 29.285 Rotor and blade balance.

The rotors and blades must be mass balanced as necessary to—

- (a) Prevent excessive vibration; and
- (b) Prevent flutter at all speeds up to the maximum forward speed.

[Revision note: Based on § 7.312]

§ 29.287 Rotor blade clearance.

Sufficient clearance must be provided, between the main rotor blades and all other parts of the structure, to prevent the blades from striking any part of the structure during any operating condition.

[Revision note: Based on § 7.313]

CONTROL SYSTEMS

§ 29.297 General.

(a) Each control and control system must operate with the ease, smoothness, and positiveness appropriate to its function.

(b) Each element of each flight control system must be designed, or distinctively and permanently marked, to minimize the probability of incorrect assembly that could result in the malfunctioning of the system.

[Revision note: Based on § 7.320]

§ 29.299 Control system stops.

(a) Each control system must have stops that positively limit the range of motion of the pilot's controls.

(b) Each stop must be so located in the system that the range of travel of its control is not appreciably affected by—

- (1) Wear;
- (2) Slackness; or
- (3) Takeup adjustments.

(c) Each stop must be able to withstand all loads corresponding to the design conditions for the system.

[Revision note: Based on § 7.321]

§ 29.301 Control system locks.

If a device is provided for locking the control system with the rotorcraft on the ground or water, means must be provided to—

- (a) Automatically disengage the lock when the pilot operates the controls in a normal manner, or limit the operation of the rotorcraft so as to give unmistakable warning to the pilot prior to takeoff; and
- (b) Prevent the lock from becoming engaged in flight.

[Revision note: Based on § 7.322]

§ 29.303 Limit load static tests.

Compliance with the limit load requirements of this Part must be shown in tests in which—

(a) The direction of the test loads produces the most severe loading in the control system;

(b) All fittings, pulleys, and brackets used in attaching the system to the main structure are included; and

(c) Compliance is shown (by analyses or individual load tests) with the special factor requirements for control system joints subject to angular motion.

[Revision note: Based on § 7.323]

§ 29.305 Operation tests.

(a) When the controls are operated from the pilot compartment with the system loaded to correspond with loads specified for the system, the system must be free from—

- (1) Jamming;
- (2) Excessive friction; and
- (3) Excessive deflection.

(b) Compliance with paragraph (a) of this section must be shown in actual tests.

[Revision note: Based on § 7.324]

§ 29.307 Control system details.

(a) All details of each control system must be designed to prevent jamming, chafing, and interference from cargo, passengers, or loose objects.

(b) Means must be provided in the cockpit to prevent the entry of foreign objects into places where they would jam the system.

(c) Provision must be made to prevent the slapping of cables or tubes against other parts.

(d) Cable systems must be designed as follows:

(1) Cables, cable fittings, turnbuckles, splices, and pulleys must be approved.

(2) The design of cable systems must prevent any hazardous change in cable tension throughout the range of travel under all operating conditions and temperature variations.

(3) No cable smaller than $\frac{1}{8}$ inch diameter may be used in any primary control system.

(4) All pulley kinds and sizes must correspond to the cables with which they are used. The pulley-cable combinations and strength values specified in MIL-HDBK-5 must be used unless shown to be inapplicable.

(5) All pulleys must have close fitting guards to prevent the cables from being displaced or fouled.

(6) All pulleys must lie close enough to the plane passing through the cable to prevent the cable from rubbing against the pulley flange.

(7) No fairleads may cause a change in cable direction of more than three degrees.

(8) No clevis pin subject to load or motion and retained only by cotter pins may be used in the control system.

(9) All turnbuckles attached to parts having angular motion must be installed to prevent binding throughout the range of travel.

(10) Provision for visual inspection must be made at all fairleads, pulleys, terminals, and turnbuckles.

(e) Control system joints subject to angular motion must incorporate the following special factors with respect to the ultimate bearing strength of the softest material used as a bearing:

(1) 3.33 for push-pull systems other than ball and roller bearing systems.

(2) 2.0 for cable control systems.

(f) For control system joints, the manufacturer's static, non-Brinell rat-

ing of ball and roller bearings may not be exceeded.

[Revision note: Based on § 7.325]

§ 29.309 Spring devices.

(a) Each control system spring device whose failure could cause flutter or other unsafe characteristics must be reliable.

(b) Compliance with paragraph (a) of this section must be shown in tests simulating service conditions.

[Revision note: Based on § 7.326]

§ 29.311 Autorotation control mechanism.

Each main rotor blade pitch control mechanism must allow rapid entry into autorotation after power failure.

[Revision note: Based on § 7.327]

§ 29.313 Power boost and power-operated control system.

(a) When a power boost or power-operated control system is used, an alternate system must be immediately available that allows the rotorcraft to be flown and landed safely in the event of—

- (1) Any single failure in the power power portion of the system; or
- (2) The failure of all engines.

(b) Each alternate system may be a duplicate power portion or a manually operated mechanical system. The power portion must include the power source (such as hydraulic pumps), and such items as valves, lines, and actuators.

(c) The failure of mechanical parts (such as piston rods and links), and the jamming of power cylinders, must be considered unless they are shown to be extremely improbable.

[Revision note: Based on § 7.328]

LANDING GEAR

§ 29.323 Shock absorption tests.

(a) *General.* The landing inertia load factor and the reserve energy absorption capacity of the landing gear must be substantiated by conducting the tests prescribed in paragraphs (b) and (c) of this section, respectively. These tests must be conducted on the complete rotorcraft or on units consisting of wheel, tire, and shock absorber in their proper relation.

(b) *Limit drop test.* The limit drop test must be conducted as follows:

- (1) The drop height must be—
 - (i) 13 inches from the lowest point of the landing gear to the ground; or
 - (ii) Any lesser height, not less than eight inches, resulting in a drop contact velocity equal to the greatest probable sinking speed likely to occur at ground contact in normal power-off landings.

(2) If considered, the rotor lift specified in § 29.175(c) must be introduced into the drop test by the use of appropriate energy absorbing devices or by the use of an effective mass. When an effective mass is used, the method of computation specified in Appendix A of this part may be used instead of more rational computations.

(3) Each landing gear unit must be tested in the attitude simulating the

landing condition that is most critical from the standpoint of the energy to be absorbed by that unit.

(c) *Reserve energy absorption drop test.* The reserve energy absorption drop test must be conducted as follows:

(1) The drop height must be 1.5 times that specified in paragraph (b)(1) of this section.

(2) Rotor lift, where considered in a manner similar to that prescribed in paragraph (b)(2) of this section, may not exceed 1.5 times the lift allowed under subparagraph (b)(2) of this section.

(3) The landing gear must withstand this test without collapse.

[Revision note: Based on § 7.332 (less note following (a))]

§ 29.325 Retracting mechanism.

(a) *General.* The landing gear, retracting mechanism, wheel well doors, and supporting structure, must be designed—

(1) For the loads occurring in all maneuvering conditions with the gear retracted;

(2) For the combination of friction, inertia, and air loads occurring during retraction and extension at all airspeeds up to the design maximum landing gear operating speed; and

(3) To withstand all flight loads, including those in yawed flight, occurring with the gear extended at all airspeeds up to the design maximum landing gear extended speed.

(b) *Landing gear lock.* A positive means must be provided to keep the gear extended.

(c) *Emergency operation.* When other than manual power is used to operate the gear, emergency means must be provided for extending the gear in the event of—

(1) Any reasonably probable failure in the normal retraction system; or

(2) The failure of any single source of hydraulic, electric, or equivalent energy.

(d) *Operation tests.* The proper functioning of the retracting mechanism must be shown by operation tests.

(e) *Position indicator.* Means must be provided for indicating to the pilot when the gear is secured in the extended and in the retracted positions.

(f) *Control.* The location and operation of the retraction control must meet the provisions of § 29.357.

[Revision note: Based on § 7.334]

§ 29.327 Wheels.

(a) Each landing gear wheel must be approved.

(b) The maximum static load rating of each wheel may not be less than the corresponding static ground reaction with—

- (1) Maximum weight; and
- (2) Critical center of gravity.

(c) The maximum limit load rating of each wheel must equal or exceed the maximum radial limit load determined under the applicable ground load requirements of this part.

[Revision note: Based on § 7.335]

§ 29.329 Brakes.

A braking device must be installed that is—

- (a) Controllable by the pilot;
- (b) Usable during power-off landings; and

(c) Adequate to—

(1) Counteract any normal unbalanced torque when starting or stopping the rotor; and

(2) Hold the rotorcraft parked on a 10 degree slope on a dry, smooth pavement.

[Revision note: Based on § 7.336]

§ 29.331 Tires.

(a) Each landing gear wheel must have a tire—

(1) That is a proper fit on the rim of the wheel; and

(2) Whose approved tire rating is not exceeded.

(b) Compliance with paragraph (a) of this section must be shown with—

- (1) Design maximum weight;
- (2) A load on each main wheel tire equal to the static ground reaction corresponding to the critical center of gravity; and

(3) A load on nose wheel tires (to be compared with the dynamic rating established for those tires) equal to the reaction obtained at the nose wheel, assuming the mass of the rotorcraft to act at the most critical center of gravity and to exert a force of 1.0 *g* downward and 0.25 *g* forward, the reactions being distributed to the nose and main wheels according to the principles of statics with the drag reaction at the ground applied only at wheels with brakes.

[Revision note: Based on § 7.337]

§ 29.333 Skis.

(a) The maximum limit load rating of each ski must equal or exceed the maximum limit load determined in accordance with the applicable ground load requirements of this part.

(b) A stabilizing means must be provided to maintain the ski in an appropriate position during flight. This means must have sufficient strength to withstand the maximum aerodynamic and inertia loads to which the ski is subjected.

[Revision note: Based on § 7.338]

HULLS AND FLOATS

§ 29.339 Buoyancy.

(a) *Main floats.* For main floats—

(1) The buoyancy necessary to support the maximum weight of the rotorcraft in fresh water must be exceeded by—

- (i) 50 percent, for single floats; and
 - (ii) 60 percent, for multiple floats; and
- (2) Each main float must have at least five watertight compartments approximately equal in volume.

(b) *Hulls and auxiliary floats.* For each rotorcraft, with a hull and auxiliary floats, that is to be approved for both taking off from and landing on water, the hull and auxiliary floats must have watertight compartments such that, with any single compartment flooded, the buoyancy of the hull and auxiliary floats (and wheel tires if used) provide a mar-

gin of positive stability sufficient to minimize the probability of capsizing.

[Revision note: Based on § 7.340]

§ 29.341 Float strength.

(a) *Bag floats.* Each bag float must be able to withstand—

(1) The maximum pressure differential that might be developed at the maximum altitude for which certification with that float is requested; and

(2) The vertical loads prescribed in § 29.203(a), distributed along the length of the bag over three-quarters of its projected area.

(b) *Rigid floats.* Each rigid float must be able to withstand the vertical, horizontal, and side loads prescribed in § 29.203. An appropriate load distribution under critical conditions must be used.

[Revision note: Based on § 7.341]

PERSONNEL AND CARGO ACCOMMODATIONS

§ 29.351 Pilot compartments; general.

For each pilot compartment—

(a) The arrangement of the compartment and its appurtenances must allow each pilot to perform all of his duties without unreasonable concentration and fatigue;

(b) When provision is made for a second pilot, the rotorcraft must be controllable with equal safety from both seats;

(c) The vibration and noise characteristics of cockpit appurtenances may not interfere with safe operation;

(d) Inflight leakage of rain or snow that could distract the crew or harm the structure must be prevented;

(e) A passageway must be provided between the pilot compartment and the passenger compartment; and

(f) Suitable means must be provided to prevent passengers from entering the pilot compartment without permission.

[Revision note: Based on § 7.350]

§ 29.353 Pilot compartment visibility.

(a) *Nonprecipitation conditions.* For nonprecipitation conditions, the following rules apply:

(1) Each pilot compartment must be arranged to give the pilots a sufficiently extensive, clear, and undistorted view for safe operation.

(2) Each pilot compartment must be free of glare and reflection that could interfere with the pilot's view. If certification for night operation is requested, this must be shown in night flight tests.

(b) *Precipitation conditions.* For precipitation conditions, the following rules apply:

(1) Each pilot must have a sufficiently extensive view for safe operation—

(i) In heavy rain at forward speeds up to V_H ; and

(ii) In the most severe icing condition for which certification is requested.

(2) The pilots must have a window that—

(i) Is openable under the conditions prescribed in subparagraph (1); and

(ii) Provides the view prescribed in that subparagraph.

[Revision note: Based on § 7.351]

§ 29.355 Pilot windshield and windows.

Nonsplintering safety glass must be used in all pilot windshields and windows.

[Revision note: Based on § 7.352]

§ 29.357 Cockpit controls.

Cockpit controls must be—

(a) Located to provide convenient operation and to prevent confusion and inadvertent operation; and

(b) So located and arranged with respect to the pilot's seats that there is full and unrestricted movement of each control without interference from the cockpit structure or the pilot's clothing when pilots from 5' 2" to 6' 0" in height are seated.

[Revision note: Based on § 7.353]

§ 29.359 Doors.

(a) Each closed cabin must have at least one adequate and easily accessible external door.

(b) No passenger door may be located with respect to any rotor disc so as to endanger persons following appropriate instructions for the use of that door.

(c) Means must be provided for locking crew and external passenger doors and for preventing their opening in flight inadvertently or as a result of mechanical failure. It must be possible to open external doors from inside and outside the cabin with the rotorcraft on the ground. The means of opening must be simple, obvious, and so arranged and marked that it can be readily located and operated.

(d) Reasonable provisions must be made to prevent the jamming of any external door, in a minor crash, as a result of fuselage deformation.

(e) Means must be provided for a direct visual inspection of the locking mechanism by crewmembers to determine whether all external doors (including passenger, crew, service, and cargo doors) are fully locked. Visual means must be provided to signal to appropriate crewmembers when all normally used external doors are closed and fully locked.

(f) For outward opening external doors usable for entrance or egress, an auxiliary safety latching device must be provided to prevent the door from opening when the primary latching mechanism fails. If the door does not meet the requirements of paragraph (c) of this section with this device in place, suitable operating procedures must be established to prevent the use of the device during takeoff and landing.

[Revision note: Based on § 7.354]

§ 29.361 Seats, safety belts, and harnesses.

(a) *General.* For seats, safety belts, and shoulder harnesses—

(1) Each station designated for occupancy during takeoff and landing, and each seat, belt, harness, and adjacent part of the rotorcraft must be such that a person making proper use of these facilities will not suffer serious injury in an emergency landing as a result of inertia forces specified in § 29.229(b); and

(2) All seats must be approved.

(b) *Arrangement.* Seats, belts, and harnesses must be arranged as follows:

(1) All occupants must be protected from head injury by—

(i) A belt and harness that will prevent the head from contacting any injurious object;

(ii) A belt plus the elimination of all injurious objects within striking radius of the head; or

(iii) A belt plus a cushioned rest that will support the arms, shoulders, head, and spine;

(2) For arrangements that do not provide a firm handhold on seat backs, hand grips or rails must be provided along each aisle to enable the occupants to steady themselves while using the aisle in moderately rough air; and

(3) Each projecting object that would injure persons seated or moving about in the rotorcraft in normal flight must be padded.

(c) *Strength.* Each seat and its supporting structure must be designed for a weight of 170 pounds, considering the maximum load factors, inertia forces, and all reactions between the occupant, seat, and belt or harness corresponding with all applicable flight and ground load conditions, including the emergency landing conditions of § 29.229. In addition—

(1) Each pilot seat must be designed for all reactions resulting from the application of the pilot forces prescribed in § 29.165; and

(2) The inertia forces prescribed in § 29.229(b) must be multiplied by a factor of 1.33 in determining the strength of the attachment of—

(i) Each seat to the structure; and

(ii) Each belt or harness to the seat or structure.

[Revision note: Based on § 7.355]

§ 29.363 Cargo and baggage compartments.

(a) Each cargo and baggage compartment must be designed for its placarded maximum weight of contents and for all critical load distributions at the appropriate maximum load factors corresponding with all specified flight and ground load conditions, except the emergency landing conditions of § 29.229.

(b) Provision must be made to prevent the contents in any compartment from becoming a hazard by shifting under the loads specified in paragraph (a) of this section.

(c) Provision must be made to protect the passengers and crew from injury by the contents of any compartment when the ultimate forward inertia force is 4 g.

[Revision note: Based on § 7.356]

§ 29.365 Emergency evacuation.

(a) *General.* Each crew and passenger area must have means for rapid evacuation in a crash landing, with the landing gear extended and retracted, considering the possibility of fire. Passenger entrance, crew, and service doors may be considered as emergency exits if they meet the applicable requirements of this section.

(b) *Flight crew emergency exits.* For rotorcraft with passenger emergency exits that are not convenient to the flight

crew, flight crew emergency exits must be provided in the crew area for rapid evacuation. These exits must be located—

- (1) On both sides of the rotorcraft; or
- (2) As top hatches.

(c) *Passenger emergency exits; type and location.* For the purpose of paragraphs (d), (f), and (i) of this section, the types of exits are as follows:

(1) *Type I.* This type must have a rectangular opening at least 24 inches wide by 48 inches high, with corner radii not greater than four inches, located in the passenger area in the side of the fuselage at floor level and as far away as practicable from areas that might become potential fire hazards in a crash.

(2) *Type II.* This type is the same as Type I, except that the opening must be at least 20 inches wide by 44 inches high.

(3) *Type III.* This type is the same as Type I, except that—

(i) The opening must be at least 20 inches wide by 36 inches high; and

(ii) The exits need not be at floor level.

(4) *Type IV.* This type must have a rectangular opening at least 19 inches wide by 26 inches high, with corner radii not greater than four inches, located in the side of the fuselage with a step-up inside the rotorcraft of not more than 29 inches.

(d) *Passenger emergency exits; side-of-fuselage.* Emergency exits must be accessible to the passengers and must be provided in accordance with the following table:

Passenger seating capacity	Emergency exits for each side of the fuselage			
	Type I	Type II	Type III	Type IV
1 through 19			1	
20 through 39		1		
40 through 69	1			1

(e) *Passenger emergency exits; other than side-of-fuselage.* In addition to the requirements of paragraph (d) of this section, it must be shown that—

(1) Enough openings are provided in the top, bottom, or ends of the fuselage to allow evacuation with the rotorcraft on its side; or

(2) The probability of the rotorcraft coming to rest on its side in a crash landing is extremely remote.

(f) *Emergency exit arrangement.* Emergency exits must be arranged as follows:

(1) Each emergency exit must consist of a movable door or hatch in the external walls of the fuselage and must provide an unobstructed opening to the outside.

(2) Each emergency exit must be operable from the inside and from the outside.

(3) The means of opening each emergency exit must be simple and obvious and may not require exceptional effort.

(4) Means must be provided for locking each emergency exit and for preventing opening in flight inadvertently or as a result of mechanical failure.

(5) Provision must be made to minimize the probability of the jamming of any emergency exit in a minor crash landing as a result of fuselage deformation.

(6) For each emergency exit (other than Type IV exits located above a wing) that is more than six feet from the ground with the rotorcraft on the ground and the landing gear extended, means must be provided to assist the occupants to the ground.

(g) *Emergency exit functioning.* The proper functioning of each emergency exit must be shown by tests.

(h) *Emergency exit marking.* Each emergency exit, its means of access, and its means of opening must be conspicuously marked. In addition—

(1) The identity and location of each emergency exit must be recognizable from a distance equal to the width of the cabin;

(2) The location of each emergency exit operating handle and the instructions for opening must be marked on or adjacent to the emergency exit, and this marking must be readable from a distance of 30 inches;

(3) A source of light, independent of the main lighting system, must be installed to illuminate all emergency exit markings;

(4) Each exit light must be designed to function automatically in a crash landing and to operate manually; and

(5) Each emergency exit and its means of opening must be marked on the outside of the rotorcraft.

(i) *Emergency exit access.* Access to emergency exits must be provided as follows:

(1) Each passageway between passenger compartments, and each passageway leading to Type I and Type II emergency exits, must be unobstructed and at least 20 inches wide.

(2) For each emergency exit covered by paragraph (f) (6) of this section, there must be enough space adjacent to that exit to allow a crewmember to assist in the evacuation of passengers without reducing the unobstructed width of the passageway below that required for that exit.

(j) *Width of main aisle.* The main passenger aisle width between seats must equal or exceed the values in the following table:

Passenger seating capacity	Minimum main passenger aisle width	
	Less than 25 inches from floor	25 inches and more from floor
10 or less	Inches 12	Inches 18
11 through 19	12	20
20 or more	15	20

[Revision note: Based on § 7.357]

§ 29.367 Ventilation.

(a) Each passenger and crew compartment must be ventilated, and each crew compartment must have enough fresh air (but not less than 10 cu. ft. per minute per crewmember) to enable crew-

members to perform their duties without undue discomfort or fatigue.

(b) All crew and passenger compartment air must be free from harmful or hazardous concentrations of gases or vapors.

(c) The concentration of carbon monoxide may not exceed one part in 20,000 parts of air during forward flight. If the concentration exceeds this value under other conditions, suitable operating restrictions must be provided.

(d) Provisions must be made to ensure compliance with paragraphs (b) and (c) of this section under any reasonably probable failure of any ventilating, heating, or other system or equipment.

[Revision note: Based on § 7.358 (less note following (c))]

§ 29.369 Heaters.

Each combustion heater must be approved.

[Revision note: Based on § 7.359 (1st eight words)]

FIRE PREVENTION

§ 29.377 General.

(a) *Hand fire extinguishers.* For hand fire extinguishers the following rules apply:

(1) Each hand fire extinguisher must be approved.

(2) The types and quantities of each extinguishing agent used must be appropriate to the kinds of fires likely to occur where used.

(3) Each extinguisher for use in a personnel compartment must be designed to minimize the hazard of toxic gas concentrations.

(b) *Built-in fire extinguishers.* If a built-in fire extinguishing system is required—

(1) The capacity of each system, in relation to the volume of the compartment where used and the ventilation rate, must be adequate for any fire likely to occur in that compartment.

(2) Each system must be installed so that—

(i) No extinguishing agent likely to enter personnel compartments will be hazardous to the occupants; and

(ii) No discharge of the extinguisher can cause structural damage.

[Revision note: Based on § 7.380]

§ 29.379 Cabin interiors.

For each compartment used by the crew or passengers—

(a) All materials must be at least flash-resistant;

(b) All wall and ceiling linings, and the covering of all upholstery, floors, and furnishings must be at least flame resistant;

(c) Each compartment where smoking is to be allowed must have self-contained, removable, ash trays, and all other compartments must be placarded against smoking;

(d) Each receptacle for towels, paper, or waste must be at least fire-resistant and must have means for containing possible fires;

(e) A hand fire extinguisher must be provided for the flight crewmembers; and

(f) At least the following number of hand fire extinguishers must be conveniently located in passenger compartments:

Passenger capacity:	Minimum number of hand fire extinguishers
7 through 30.....	1
31 through 60.....	2

[Revision note: Based on § 7.381]

§ 29.381 Cargo and baggage compartments.

(a) Each cargo and baggage compartment must be constructed of, or lined with, materials that are at least fire resistant.

(b) No compartment may contain any controls, wiring, lines, equipment, or accessories whose damage or failure would affect safe operation, unless those items are protected so that—

(1) They cannot be damaged by the movement of cargo in the compartment; and

(2) Their breakage or failure will not create a fire hazard.

(c) The design and sealing of inaccessible compartments must be adequate to contain compartment fires until a landing and safe evacuation can be made.

(d) Each cargo and baggage compartment must have a device to ensure detection of fires by a crewmember at his station, and to prevent the entry of harmful quantities of smoke, flame, extinguishing agents, and other noxious gases into any crew or passenger compartment. This must be shown in flight.

(e) For each compartment that is to be accessible in flight, protective breathing equipment must be available for the appropriate crewmember.

[Revision note: Based on § 7.382 (less note following (a))]

§ 29.383 Combustion heater fire protection.

(a) *Combustion heater fire zones.* The following combustion heater fire zones must be protected against fire under the applicable provisions of §§ 29.631 through 29.643, and 29.647:

(1) The region surrounding any heater, if that region contains any flammable fluid system components (including the heater fuel system), that could—

(i) Be damaged by heater malfunctioning; or

(ii) Allow flammable fluids or vapors to reach the heater in case of leakage.

(2) Each portion of any ventilating air passage that—

(i) Surrounds the combustion chamber; and

(ii) Would not contain (without damage to other rotorcraft components) any fire that may occur within the passage.

(b) *Ventilating air ducts.* Each ventilating air duct passing through any fire zone must be fireproof. In addition—

(1) Unless isolation is provided by fireproof valves or by equally effective means, the ventilating air duct downstream of each heater must be fireproof for a distance great enough to ensure that any fire originating in the heater can be contained in the duct; and

(2) Each portion of any ventilating duct passing through any region having a flammable fluid system must be so constructed or isolated from that system that the malfunctioning of any component of that system cannot introduce flammable fluids or vapors into the ventilating airstream.

(c) *Combustion air ducts.* Each combustion air duct must be fireproof for a distance great enough to prevent damage from backfiring or reverse flame propagation. In addition—

(1) No combustion air duct may communicate with the ventilating airstream unless flames from backfires or reverse burning cannot enter the ventilating airstream under any operating condition, including reverse flow or malfunctioning of the heater or its associated components; and

(2) No combustion air duct may restrict the prompt relief of any backfire that, if so restricted, could cause heater failure.

(d) *Heater controls; general.* Provision must be made to prevent the hazardous accumulation of water or ice on or in any heater control component, control system tubing, or safety control.

(e) *Heater safety controls.* For each combustion heater, safety control means must be provided as follows:

(1) Means independent of the components provided for the normal continuous control of air temperature, airflow, and fuel flow, must be provided for each heater to automatically shut off the ignition and fuel supply to that heater at a point remote from that heater, when—

(i) The heat exchanger temperature or ventilating air temperature exceeds safe limits; or

(ii) Either the combustion airflow or the ventilating airflow becomes inadequate for safe operation.

(2) The means of complying with subparagraph (1) of this paragraph for any individual heater must—

(i) Be independent of all components serving any other heater whose heat output is essential for safe operation; and

(ii) Ensure that the heater will remain off until restarted by the crew.

(3) Means must be provided to warn the crew when any heater whose heat output is essential for safe operation has been shut off by the automatic means prescribed in subparagraph (1) of this paragraph.

(f) *Air intakes.* Each combustion and ventilating air intake must be so located that no flammable fluids or vapors can enter the heater system under any operating condition—

(1) During normal operation; or

(2) As a result of the malfunctioning of any other component.

(g) *Heater exhaust.* Each heater exhaust system must conform with § 29.585 (a) and (b). In addition—

(1) Each exhaust shroud must be sealed so that no flammable fluids or hazardous quantities of vapors can reach the exhaust systems through joints; and

(2) No exhaust system may restrict the prompt relief of any backfire that, if so restricted, could cause heater failure.

(h) *Heater fuel systems.* Each heater fuel system must conform with all power-

plant fuel system requirements affecting safe heater operation. Each heater fuel system component within the ventilating airstream must be protected by shrouds so that no leakage from those components can enter the ventilating airstream.

(i) *Drains.* Means must be provided for safe drainage of fuel that might accumulate within the combustion chamber or the heat exchanger. In addition—

(1) Each portion of any drain that operates at high temperatures must be protected in the same manner as heater exhausts; and

(2) Each drain must be protected against hazardous ice accumulation under all operating conditions.

[Revision note: Based on § 7.383]

§ 29.385 Fire protection of structure, controls, and other parts.

All parts of the structure, controls, and the rotor mechanism, and other parts essential to controlled flight and landing that would be affected by powerplant fires must be isolated under § 29.643, or must be—

(a) For category A rotorcraft, fireproof; and

(b) For category B rotorcraft, protected so that they can perform their essential functions for at least five minutes under all foreseeable powerplant fire conditions.

[Revision note: Based on § 7.384]

§ 29.387 Flammable fluid fire protection.

If flammable fluids or vapors might be liberated by the leakage of fluid systems, means must be provided to—

(a) Prevent the ignition of those fluids or vapors by any other equipment; or

(b) Control any fire resulting from that ignition.

[Revision note: Based on § 7.385]

MISCELLANEOUS

§ 29.395 Leveling marks.

Reference marks must be provided for use in leveling the rotorcraft on the ground.

[Revision note: Based on § 7.390]

§ 29.397 Ballast provisions.

All ballast provisions must be so designed and constructed as to prevent the inadvertent shifting of ballast in flight.

[Revision note: Based on § 7.391]

§ 29.399 Ice protection.

The rotorcraft must be able to operate safely throughout the range of icing conditions for which certification is requested.

[Revision note: Based on § 7.392]

Subpart E—Powerplant Installation

GENERAL

§ 29.421 General.

(a) For the purpose of this part, the rotorcraft powerplant installation includes all parts of the rotorcraft (other than the main and auxiliary rotor structures) that—

- (1) Are necessary for propulsion;
- (2) Affect the control of the major propulsive units; or
- (3) Affect the safety of the major propulsive units between normal inspections or overhauls.

(b) For each powerplant installation—
 (1) The installation must conform with all applicable provisions of this subpart and, for turbine powerplant installations, with all other requirements necessary for safety;

(2) All components of the installation must be constructed, arranged, and installed to ensure their continued safe operation between normal inspections or overhauls;

(3) Accessibility must be provided to allow any inspection and maintenance necessary to ensure continued airworthiness; and

(4) Electrical interconnections must be provided to prevent differences of potential between major components of the installation and the rest of the rotorcraft.

[Revision note: Based on § 7.400]

§ 29.423 Engines.

(a) *Engine type certification.* Each engine must be type certificated under Part 33 [New].

(b) *Category A; engine isolation.* For each category A rotorcraft, the powerplants must be arranged and isolated from each other to allow operation, in at least one configuration, so that the failure or malfunctioning of any engine, or the failure of any system that can affect any engine, will not—

(1) Prevent the continued safe operation of the remaining engines; or

(2) Require immediate action by crewmembers for continued safe operation.

(c) *Category A; control of engine rotation.* For each category A rotorcraft, means must be provided for stopping and restarting any engine individually in flight. In addition—

(1) All components for controlling engine rotation in flight that are on the engine side of the firewall and that might be exposed to fire must be at least fire-resistant; or

(2) Duplicate means must be available for this purpose and their controls must be so located that all are not likely to be damaged at the same time in case of fire.

(d) *Category A; engine cooling fan blade protection.* If an engine cooling fan is installed in a category A rotorcraft, means must be provided to ensure that a fan blade failure will not affect the operation of the remaining engines or prevent continued safe operation.

(e) *Category B; engine cooling fan blade protection.* If an engine cooling fan is installed, means must be provided to protect the rotorcraft and to allow a safe landing if a fan blade fails. This must be shown by showing that—

(1) All fan blades are contained in the event of failure;

(2) Each fan is so located that a failure will not jeopardize the safety of the rotorcraft or its occupants; or

(3) Each fan blade is able to withstand an ultimate load of 1.5 times the centrifugal force resulting from engine r.p.m. limited by either—

- (i) The terminal engine r.p.m. under uncontrolled conditions; or
- (ii) An overspeed limiting device.

[Revision note: Based on § 7.401]

§ 29.425 Engine vibration.

(a) Each engine must be installed to prevent the harmful vibration of any engine or rotorcraft part.

(b) The addition of the rotor and the rotor drive system to the engine may not subject the principal rotating portions of the engine to excessive vibration. This must be shown by means of a vibration investigation.

[Revision note: Based on § 7.402]

ROTOR DRIVE SYSTEM

§ 29.435 Rotor drive system.

(a) *General.* The rotor drive system includes all parts necessary to transmit power from the engines to the rotor hubs. This includes gear boxes, shafting, universal joints, couplings, rotor brake assemblies, clutches, supporting bearings for shafting, all attendant accessory pads or drives, and all cooling fans that are not included in the certification of the engine.

(b) *Arrangement.* Rotor drive systems must be arranged as follows:

(1) Each rotor drive system of multi-engine rotorcraft must be so arranged that each rotor necessary for operation and control will continue to be driven by the remaining engines if any engine fails.

(2) For single-engine rotorcraft, each rotor drive system must be so arranged that all rotors necessary for control in autorotation will continue to be driven by the main rotors after disengagement of the engine from the main and auxiliary rotors.

(3) Each rotor drive system must incorporate a unit for each engine that will automatically disengage that engine from the main and auxiliary rotors if that engine fails.

(4) If a torque limiting device is used in the rotor drive system, it must be located to allow continued control of the rotorcraft when it is operating.

(5) If the rotors must be phased for intermeshing, each system must provide constant and positive phase relationship under all operating conditions.

(6) If a rotor dephasing device is incorporated, means must be provided to ensure that the rotors are locked in proper phase prior to operation.

[Revision note: Based on § 7.403]

§ 29.437 Rotor brake.

If a means is provided to control the rotation of the rotor drive system independent of the engine, all limitations on the use of that means must be specified, and the control for that means must be guarded to prevent inadvertent operation.

[Revision note: Based on § 7.404]

§ 29.439 Rotor drive system and control mechanism tests.

(a) *Endurance tests; general.* Each rotor drive system and rotor control mechanism must be tested for not less than 200 hours. These tests must be conducted—

(1) On the rotorcraft, with the power being absorbed by the actual rotors to be installed; and

(2) In compliance with paragraphs (b) through (j) of this section in 10-hour test cycles.

(b) *Endurance tests; takeoff power run.* The takeoff power endurance test run must consist of one hour of alternate runs of five minutes at takeoff power and speed, and five minutes at as low an engine idle speed as practicable. The engine must be declutched from the rotor drive system, and the rotor brake, if furnished and so intended, must be applied during the first minute of the idle run. During the remaining four minutes of the idle run, the clutch must be engaged so that the engine drives the rotors at the minimum practical r.p.m. Acceleration of the engine and the rotor drive system must be accomplished at the maximum rate. When declutching the engine, it must be decelerated at a rate sufficiently rapid to allow the operation of the overrunning clutch. In the absence of a takeoff rating, maximum continuous power and speed must be substituted for takeoff power and speed.

(c) *Endurance tests; maximum continuous run.* Three hours of continuous operation at maximum continuous power and speed must be conducted as follows:

(1) The main rotor controls must be operated at a minimum of 15 times each hour through the main rotor pitch positions of full vertical thrust, maximum forward thrust component, maximum aft thrust component, maximum left thrust component, and maximum right thrust component, except that the control movements need not produce loads or blade flapping motion exceeding the maximum loads or motions encountered in flight.

(2) The directional controls must be operated at a minimum of 15 times each hour through the control extremes of maximum right turning torque, neutral torque as required by the power applied to the main rotor, and maximum left turning torque.

(3) Each maximum control position must be held for at least 10 seconds, and the rate of change of control position must be at least as rapid as that for normal operation.

(d) *Endurance tests; 90 percent of maximum continuous run.* One hour of continuous operation at 90 percent of maximum continuous power must be conducted at maximum continuous speed.

(e) *Endurance tests; 80 percent of maximum continuous run.* One hour of continuous operation must be conducted at 80 percent of maximum continuous power and speed.

(f) *Endurance tests; 60 percent of maximum continuous run.* Two hours of continuous operation at 60 percent of maximum continuous power must be conducted at minimum desired cruising speed or at 90 percent of maximum continuous speed, whichever is less.

(g) *Endurance tests; engine malfunctioning run.* It must be determined whether malfunctioning of such components as the engine fuel or ignition systems, or whether unequal engine

power can result in dynamic conditions detrimental to the drive system. If so, a suitable number of hours of operation must be accomplished under those conditions, one hour of which must be included in each cycle, and the remaining hours of which must be accomplished at the end of the 20 cycles. If no detrimental condition results, an additional hour of operation in compliance with paragraph (b) of this section must be conducted.

(h) *Endurance tests; overspeed run.* One hour of continuous operation at 110 percent of maximum continuous speed must be conducted at maximum continuous power. If the engines are limited by the manufacturer to an overspeed of less than 110 percent of maximum continuous speed for the periods required, the speed used must be the highest speed allowable for those engines.

(i) *Endurance tests; rotor control positions.* When the rotor controls are not being cycled during the tie-down tests, the rotor must be operated, using the procedures prescribed in paragraph (c) of this section, to produce each of the maximum thrust positions for the following percentages of test time (except that the control positions need not produce loads or blade flapping motion exceeding the maximum loads or motions encountered in flight):

- (1) For full vertical thrust, 20 percent.
- (2) For the forward thrust component, 50 percent.
- (3) For the right thrust component, 10 percent.
- (4) For the left thrust component, 10 percent.
- (5) For the aft thrust component, 10 percent.

(j) *Endurance tests; clutch and brake engagements.* A total of at least 400 clutch and brake engagements, including the engagements of paragraph (b) of this section, must be made during the takeoff power runs and, if necessary, at each change of power and speed throughout the test. In each clutch engagement, the shaft on the driven side of the clutch must be accelerated from rest. The clutch engagements must be accomplished at the speed and by the method prescribed by the applicant. During deceleration after each clutch engagement, the engines must be stopped rapidly enough to allow the engines to be automatically disengaged from all rotors and rotor drives. If a rotor brake is installed for stopping the rotor, the clutch, during brake engagements, must be disengaged above 40 percent of maximum continuous rotor speed and the rotors allowed to decelerate to 40 percent of maximum continuous rotor speed at which time the rotor brake must be applied. If the clutch design does not allow stopping the rotors with the engine running, or if no clutch is provided, the engine must be stopped before each application of the rotor brake, and then immediately restarted after the rotors stop.

(k) *Overspeed test.* After completion of the 200-hour tie-down test, and without intervening major disassembly, the rotor drive system must be subjected to

50 overspeed runs, each 30 ± 3 seconds in duration at 120 percent of maximum continuous speed. These runs must be conducted as follows:

(1) Overspeed runs must be alternated with stabilizing runs of from one to five minutes duration each at 60 to 80 percent of maximum continuous speed.

(2) Acceleration and deceleration must be accomplished in a period not longer than 10 seconds, and the time for changing speeds may not be deducted from the specified time for the overspeed runs.

(3) Overspeed runs must be made with the rotors in the flattest pitch for smooth operation.

(4) If the engines are limited by the engine manufacturer to an overspeed of less than 120 percent of maximum continuous speed for the periods required, the speed used must be the highest speed allowable for the engines involved.

(l) All components that are affected by maneuvering and gust loads must be investigated for the same flight conditions as are the main rotors, and their service lives must be determined by fatigue tests or by other approved methods. In addition, a level of safety equal to that of the main rotors must be provided for—

(1) All components in the rotor drive system whose failure would cause an uncontrolled landing;

(2) All components essential to the phasing of rotors on multirotor rotorcraft, or which furnish a driving link for the essential control of rotors in autorotation; and

(3) All components common to two or more engines on multiengine rotorcraft.

(m) *Special tests.* Each rotor drive system designed to operate at two or more gear ratios must be subjected to special testing for durations found necessary to substantiate the safety of the rotor drive system.

[Revision note: Based on § 7.405 (less sentences (4) and (5) of (a)(1))]

§ 29.441 Additional tests.

All additional dynamic, endurance, and operational tests, and all vibratory investigations necessary to determine that the rotor drive mechanism is safe, must be performed.

[Revision note: Based on § 7.406]

§ 29.443 Shafting critical speed.

(a) An investigation must be made to determine whether the critical speeds of all shafting lie outside the range of allowable engine speeds under idling, power on, and autorotative conditions.

(b) All critical vibration existing from (and including) clutch engagement to maximum overspeed, during acceleration or deceleration, must be within safe limits.

(c) If the demonstration required by paragraph (b) of this section is made during the endurance testing, the test schedule may substitute the critical vibratory conditions for equivalent time in appropriate portions of the endurance test procedure.

[Revision note: Based on § 7.407]

§ 29.445 Shafting joints.

All universal joints, slip joints, and other shafting joints whose lubrication is necessary for operation must have provision for lubrication.

[Revision note: Based on § 7.408]

FUEL SYSTEM

§ 29.453 General.

(a) Each fuel system must be constructed and arranged to ensure a flow of fuel at a rate and pressure established for proper engine functioning under all likely operating conditions, including all maneuvers for which certification is requested.

(b) Each fuel system must be arranged so that—

(1) No engine or fuel pump can draw fuel from more than one tank at a time; or

(2) Means are provided to prevent introducing air into the system.

[Revision note: Based on § 7.410]

§ 29.455 Fuel system independence.

(a) For category A rotorcraft—

(1) The fuel system must conform to the requirements of § 29.423(b); and

(2) Unless other provisions are made in compliance with subparagraph (1) of this paragraph, the fuel system must allow fuel to be supplied to each engine through a system independent of all portions of each system supplying fuel to other engines.

(b) Each fuel system for multiengine category B rotorcraft must conform to paragraph (a)(2) of this section. However, separate fuel tanks need not be provided for each engine.

[Revision note: Based on § 7.411]

§ 29.457 Fuel flow.

(a) Each fuel system must provide not less than 100 percent of the fuel flow required under all intended operating conditions and maneuvers. Compliance must be shown as follows:

(1) Fuel must be delivered to each engine at a pressure within the limits specified in the engine type certificate.

(2) The quantity of fuel in the tank being considered may not exceed the sum of the amount established as the unusable fuel supply for that tank under the provisions of § 29.459 and that necessary for showing compliance with this section.

(3) All main pumps must be used that are necessary for each operating condition and attitude for which compliance with this section is shown, and the appropriate emergency pump must be substituted for each main pump so used.

(4) If a fuel flowmeter is provided, operation of the meter must be blocked in determining compliance with this section, and the fuel must flow through the meter or its bypass.

(b) If an engine can feed from more than one fuel tank, the fuel system must feed promptly when the fuel supply becomes low in one tank and another tank is selected.

[Revision note: Based on § 7.413]

§ 29.459 Unusable fuel supply.

The unusable fuel supply for each tank must be selected by the applicant and established as not less than that quantity at which the first evidence of malfunctioning occurs under the most adverse fuel feed condition occurring under all intended operations and flight maneuvers involving that tank.

[Revision note: Based on § 7.416]

§ 29.461 Fuel system hot weather operation.

(a) For each rotorcraft—

(1) The fuel system must be arranged to minimize the probability of vapor formation in the system under all normal operating conditions; and

(2) Each rotorcraft with suction lift fuel systems or systems likely to produce vapor must be free from vapor lock when using fuel at a temperature of at least 110 degrees F. under critical operating conditions.

(b) For each category A rotorcraft, satisfactory hot weather operation must be shown by showing that there is no evidence of vapor lock or other malfunctioning when the rotorcraft is climbed from the altitude of the airport selected by the applicant to an altitude of 5,000 feet above the airport elevation, or to the maximum altitude at which the rotorcraft is expected to operate, whichever is greater.

(c) Compliance with paragraph (b) of this section must be shown in flight or on the ground under conditions closely simulating flight conditions, and with—

(1) All engines at takeoff power at the beginning of the test and for the maximum time approved for takeoff power, and at maximum continuous power thereafter;

(2) The weight including full fuel tanks, minimum crew, and only that ballast necessary to maintain the center of gravity within allowable limits;

(3) The speed for best rate of climb under the test conditions; and

(4) Fuel at a temperature of at least 110 degrees F. at the beginning of the demonstration.

(d) If compliance with paragraph (b) of this section is shown in weather cold enough to interfere with the proper conduct of the test, each fuel tank surface, fuel line, and other fuel system part subject to cold air must be insulated to simulate, insofar as practicable, flight in hot weather.

[Revision note: Based on § 7.417]

§ 29.463 Flow between interconnected tanks.

(a) Where tank outlets are interconnected and allow flow between them due to gravity or flight accelerations, it must be impossible for fuel to flow between tanks in quantities great enough to cause fuel to overflow from the tank vent in any sustained flight condition.

(b) If fuel can be pumped from one tank to another in flight—

(1) The design of the vents and the fuel transfer system must prevent structural damage to tanks from overfilling; and

(2) Means must be provided to warn the crew before overflow through the vents occurs.

[Revision note: Based on § 7.418]

FUEL TANK CONSTRUCTION AND INSTALLATION

§ 29.473 General.

(a) Each fuel tank must be able to withstand, without failure, all vibration, inertia, fluid, and structural loads to which it may be subjected in operation.

(b) Each fuel tank and its installation must be designed or protected to retain fuel without leakage under the emergency landing conditions in § 29.229.

(c) Each flexible fuel tank liner must be approved.

(d) Each integral fuel tank must have facilities for inspection and repair of its interior.

[Revision note: Based on § 7.420]

§ 29.475 Fuel tank tests.

(a) Each fuel tank must be able to withstand the applicable pressure tests in this section without failure or leakage. If practicable, test pressures may be applied in a manner simulating the actual pressure distribution in service.

(b) Each conventional metal tank, each nonmetallic tank with walls that are not supported by the rotorcraft structure, and each integral tank must be subjected to a pressure of 3.5 p.s.i. unless the pressure developed during the maximum limit acceleration or emergency deceleration with a full tank exceeds this value, in which case a hydrostatic head, or equivalent test, must be applied to duplicate the acceleration loads so far as possible. However the pressure need not exceed 3.5 p.s.i. on surfaces not exposed to the acceleration loading.

(c) Each nonmetallic tank with walls supported by the rotorcraft structure must be subjected to the following tests:

(1) A pressure test of at least 2.0 p.s.i. This test may be conducted on the tank alone in conjunction with the test specified in subparagraph (2) of this paragraph.

(2) A pressure test, with the tank mounted in the rotorcraft structure, equal to the load developed by the reaction of the contents, with the tank full, during the maximum limit acceleration or emergency deceleration of the rotorcraft. However, the pressure need not exceed 2.0 p.s.i. on surfaces not exposed to the acceleration loading.

(d) Each tank with large unsupported or unstiffened flat areas, or with other features whose failure or deformation could cause leakage, must be subjected to the following test, or its equivalent:

(1) The complete tank assembly together with its supports must be subjected to a vibration test when mounted in a manner simulating the actual installation.

(2) The tank assembly must be vibrated for 25 hours while two-thirds full of any suitable fluid. The amplitude of vibration may not be less than one

thirty-second of an inch, unless otherwise substantiated.

(3) The frequency of vibration must be 90 percent of the maximum continuous rated speed of the engine, unless some other frequency within the normal speed range of the engine or rotor system is more critical, in which case the latter speed must be used and the time of test must be adjusted to accomplish the same number of vibration cycles.

(4) During the test, the tank assembly must be rocked at the rate of 16 to 20 complete cycles per minute through an angle of 15 degrees on either side of the horizontal (30 degrees total), about the most critical axis, for 25 hours. If motion about more than one axis is likely to be critical, the tank must be rocked about each axis for 12½ hours.

[Revision note: Based on § 7.421]

§ 29.477 Fuel tank installation.

(a) The method of support for fuel tanks must prevent harmful load concentrations, on unsupported tank surfaces, resulting from the weight of the fuel in the tank. In addition:

(1) Pads must be provided, if necessary, to prevent chafing between each tank and its supports.

(2) All padding must be nonabsorbent.

(3) If flexible tank liners are used they must be supported so that they are not required to withstand fluid loads.

(4) Each interior surface of tank compartments must be smooth and free of projections which could cause wear of the liner, unless—

(i) Provisions are made for protection of the liner at those points; or

(ii) The construction of the liner itself provides such protection.

(b) All spaces adjacent to tank surfaces must be adequately ventilated to avoid accumulation of fuel or fumes in these spaces due to minor leakage. If the tank is in a sealed compartment, ventilation may be limited to drain holes that prevent clogging and that prevent excessive pressure resulting from altitude changes. If flexible tank liners are installed, the venting arrangement for the spaces between the liner and its container must maintain the proper relationship to tank vent pressures for all expected flight conditions.

(c) The location of each tank must conform with § 29.633 (b) and (c).

(d) No portion of rotorcraft skin immediately adjacent to a major air outlet from the engine compartment may act as the wall of an integral tank.

(e) Each fuel tank must be isolated from personnel compartments by a fume-proof and fuelproof enclosure.

(f) Each fuel tank close to personnel compartments, engines, or combustion heaters must be designed, or protected and installed, to retain its contents under the loads specified in § 29.229.

[Revision note: Based on § 7.422]

§ 29.479 Fuel tank expansion space.

Each fuel tank must have an expansion space of not less than two percent of the tank capacity. It must be impossible to fill the expansion space inadvertently

with the rotorcraft in the normal ground attitude.

[Revision note: Based on § 7.423]

§ 29.481 Fuel tank sump.

(a) Each fuel tank must have a sump with a capacity of not less than the greater of—

(1) 0.10 percent of the tank capacity; or

(2) $\frac{1}{16}$ gallon.

(b) The capacity prescribed in paragraph (a) of this section must be effective with the rotorcraft in all normal attitudes, and must be located so that the sump contents cannot escape through the tank outlet opening.

(c) Each fuel tank must allow drainage of all hazardous quantities of water from all portions of the tank to its sump with the rotorcraft in the ground attitude.

(d) Each fuel tank sump must have an accessible and easily operable drain that—

(1) Allows complete drainage of the sump on the ground;

(2) Discharges clear of all parts of the rotorcraft; and

(3) Has manual or automatic means for positive locking in the closed position.

[Revision note: Based on § 7.424]

§ 29.483 Fuel tank filler connection.

(a) Each fuel tank filler connection must prevent the entrance of fuel into any portion of the rotorcraft other than the tank itself. In addition—

(1) Each filler must be marked as prescribed in § 29.863(c)(1);

(2) Each recessed filler connection that can retain any appreciable quantity of fuel must have a drain that discharges clear of all parts of the rotorcraft; and

(3) Each filler cap must provide a fuel-tight seal under the pressure expected in normal operation.

(b) For category A rotorcraft, each filler cap or filler cap cover must provide a warning when the cap is not fully locked or seated on the filler connection.

[Revision note: Based on § 7.425]

§ 29.485 Fuel tank vents and carburetor vapor vents.

(a) *Fuel tank vents.* Each fuel tank must be vented from the top of the expansion space so that venting is effective under all normal flight conditions. In addition—

(1) All vents must be arranged to avoid stoppage by dirt or ice formation;

(2) The vent arrangement must prevent the siphoning of fuel during normal operation;

(3) The venting capacity and vent pressure levels must maintain acceptable differences of pressure between the interior and exterior of the tank, during—

(i) Normal flight operation;

(ii) Maximum rate of ascent and descent; and

(iii) Refueling and defueling (where applicable);

(4) All airspaces of tanks with interconnected outlets must be interconnected;

(5) There may be no point in any vent line where moisture can accumulate with

the rotorcraft in either the ground or the level flight attitude, unless drainage is provided; and

(6) No vent or drainage provision may terminate at any point—

(i) Where the discharge of fuel from the vent outlet would constitute a fire hazard; or

(ii) From which fumes could enter personnel compartments.

(b) *Carburetor vapor vents.* Each carburetor with vapor elimination connections must have a vent line to lead vapors back to one of the fuel tanks. In addition—

(1) Each vent system must have means to avoid stoppage by ice; and

(2) If more than one fuel tank is provided and it is necessary to use the tanks in a definite sequence, each vapor vent return line must lead back to the fuel tank used for takeoff and landing.

[Revision note: Based on § 7.426]

§ 29.487 Fuel tank outlet.

A fuel strainer of 8 to 16 meshes per inch must be provided either for the fuel tank outlet or for the booster pump. In addition—

(a) The clear area of each fuel tank outlet strainer must be at least five times the area of the outlet line;

(b) The diameter of each strainer must be at least that of the fuel tank outlet; and

(c) Each finger strainer must be accessible for inspection and cleaning.

[Revision note: Based on § 7.427]

§ 29.489 Pressure refueling and fueling provisions below fuel level in the tank.

(a) Each fueling connection below the fuel level in each tank must have means to prevent the escape of hazardous quantities of fuel from that tank in case of malfunctioning of the fuel entry valve.

(b) For systems intended for pressure refueling, a means in addition to the normal means for limiting the tank content must be installed to prevent damage to the tank in case of failure of the normal means.

[Revision note: Based on § 7.428]

§ 29.501 Fuel pumps.

(a) *Main pumps.* Each fuel pump required for proper engine operation, or required to meet the fuel system requirements of this subpart (other than those in paragraph (b) of this section), is a main pump. For each main pump, provision must be made to allow the bypass of all positive displacement fuel pumps other than fuel injection pumps approved, as part of the engine, that is, other than pumps that supply the proper flow and pressure for fuel injection when the injection is not accomplished in a carburetor.

(b) *Emergency pumps.* Emergency pumps must be provided to feed all engines immediately after the failure of any one main pump (other than fuel injection pump approved as part of the engine).

[Revision note: Based on § 7.430 (less 2d and 3d sentences of note following (a))]

§ 29.503 Fuel pump installation.

(a) Provision must be made to maintain the fuel pressure, at the inlet to the carburetor, within the range of limits established for proper engine operation.

(b) When necessary for the maintenance of the proper fuel pressure—

(1) A connection must be provided to transmit the carburetor air intake static pressure to the proper fuel pump relief valve connection; and

(2) The gauge balance lines must be independently connected to the carburetor inlet pressure to avoid erroneous fuel pressure readings.

(c) The installation of fuel pumps having seals or diaphragms that may leak must have provisions for draining leaking fuel. Each drain line must discharge where it will not create a fire hazard.

[Revision note: Based on § 7.431]

§ 29.505 Fuel system lines and fittings.

(a) Each fuel line must be installed and supported to prevent excessive vibration and to withstand all loads due to fuel pressure and accelerated flight conditions.

(b) Each fuel line connected to components of the rotorcraft between which relative motion could exist must incorporate provisions for flexibility.

(c) Each flexible connection in fuel lines that may be under pressure or subjected to axial loading must use flexible hose assemblies.

(d) All flexible hose must be approved.

(e) No flexible hose which might be adversely affected by high temperatures may be used where excessive temperatures will exist during operation or after engine shutdown.

[Revision note: Based on § 7.432]

§ 29.507 Valves.

In addition to the requirements of § 29.635, each fuel valve must—

(a) Have positive stops or suitable index provisions in the "on" and "off" positions; and

(b) Be supported so that no loads resulting from their operation or from accelerated flight conditions are transmitted to the lines attached to the valve.

[Revision note: Based on § 7.434]

§ 29.509 Fuel strainer.

(a) A strainer incorporating a sediment trap and drain must be provided in the fuel system between the fuel tanks and the engine and must be installed in an accessible location.

(b) Each strainer must protect the fuel pumps, fuel controls, and the engine against any foreign matter that might be in the fuel.

(c) Each screening or straining element must be easily cleanable.

(d) Each strainer must be mounted so that its weight is not supported by any connecting line or by the inlet or outlet connections of the strainer itself.

[Revision note: Based on § 7.435]

§ 29.511 Drains.

(a) Drainage of the fuel system must be accomplished by fuel strainer drains and by the drains prescribed in § 29.481.

(b) Each drain must discharge clear of all parts of the rotorcraft and must incorporate manual or automatic means for positive locking in the closed position.

[Revision note: Based on § 7.436]

§ 29.513 Fuel quantity indicator.

(a) Each fuel quantity indicator must be installed to indicate clearly to the flight crew the quantity of fuel in each tank in flight.

(b) When two or more tanks are closely interconnected by a gravity feed system and vented, and when it is impossible to feed from each tank separately, at least one fuel quantity indicator must be installed.

[Revision note: Based on § 7.437]

OIL SYSTEM

§ 29.523 General.

(a) Each engine must have an independent oil system that can supply that engine with an appropriate quantity of oil at a temperature not exceeding that safe for continuous operation.

(b) The oil system for components of the rotor drive system that require continuous lubrication must be sufficiently independent of the lubrication systems of the engines to ensure the ability to—

(1) Operate with any engine inoperative; and

(2) Autorotate safely.

(c) The usable oil capacity of each system may not be less than the product of the endurance of the rotorcraft under critical operating conditions and the maximum allowable oil consumption of the engine under the same conditions, plus a suitable margin to ensure adequate circulation and cooling. Instead of a rational analysis of endurance and consumption, a total usable oil capacity of one gallon for each 40 gallons of usable fuel may be used for reciprocating engine installations.

(d) Oil-fuel ratios lower than those prescribed in paragraph (c) of this section may be used if they are substantiated by data on the oil consumption of the engine.

(e) The ability of the engine and rotor drive system oil cooling provisions to maintain the oil temperature at or below the maximum established value must be shown in accordance with the applicable requirements of §§ 29.551 through 29.561.

[Revision note: Based on § 7.440]

§ 29.525 Oil tank construction.

(a) *Oil tank expansion space.* Expansion space must be provided as follows:

(1) Each oil tank must have an expansion space of not less than the greater of—

- (i) 10 percent of the tank capacity; or
- (ii) 0.5 gallon.

(2) Each reserve oil tank not directly connected to any engine must have an expansion space of not less than two percent of the tank capacity.

(3) It must be impossible to fill the oil tank expansion space inadvertently with the rotorcraft in the normal ground attitude.

(b) *Oil tank filler connection.* Each recessed oil tank filler connection that can retain any appreciable quantity of oil must incorporate a drain that discharges clear of all portions of the rotorcraft. In addition—

(1) Each oil tank filler cap must provide an oil-tight seal under the pressure expected in operation;

(2) For category A rotorcraft, each oil tank filler cap or filler cap cover must incorporate features that provide a warning when caps are not fully locked or seated on the filler connection; and

(3) Each oil filler must be marked as prescribed in § 29.863(c)(2).

(c) *Oil tank vent.* Oil tanks must be vented as follows:

(1) Each oil tank must be vented from the top of the expansion space so that venting is effective under all normal flight conditions.

(2) Each oil tank vent must be arranged so that condensation of water vapor that might freeze and obstruct the line cannot accumulate at any point.

(d) *Oil tank outlet.* Provision must be made to prevent entrance into the tank itself, or into the tank outlet, of any object that might obstruct the flow of oil through the system. No oil tank outlet may be enclosed by any screen or guard that would reduce the flow of oil below a safe value at any operating temperature.

(e) *Flexible oil tank liners.* Each flexible oil tank liner must be approved.

[Revision note: Based on § 7.441]

§ 29.527 Oil tank tests.

Each oil tank must be designed and installed so that—

(a) It can withstand, without failure, all vibration, inertia, and fluid loads to which it may be subjected in operation; and

(b) It conforms to the provisions of § 29.475, except that the test pressure specified in § 29.475(b) must be five p.s.f.

[Revision note: Based on § 7.442]

§ 29.529 Oil tank installation.

Each oil tank installation must conform to the provisions of § 29.477. However, an engine oil tank may be in a designated fire zone if the tank and its supports are fireproof to the extent that damage by fire to any non-fireproof part will not cause leakage of oil.

[Revision note: Based on § 7.443]

§ 29.531 Oil lines and fittings.

(a) *General.* Each oil line must conform to the requirements of § 29.505.

(b) *Lines and fittings in designated fire zones.* Each oil line and fitting in a designated fire zone must conform to the provisions of § 29.637.

(c) *Breather lines.* Breather lines must be arranged so that—

(1) Condensation of water vapor that might freeze and obstruct the line cannot accumulate at any point;

(2) All breathers discharge where they will not constitute a fire hazard if foaming occurs, and so that emitted oil will not impinge on the pilot's windshield; and

(3) The breather does not discharge into the engine air induction system.

[Revision note: Based on § 7.444]

§ 29.533 Oil valves.

(a) Each oil shutoff must conform to the requirements of § 29.635.

(b) The closing of oil shutoff means may not prevent autorotation.

(c) Each oil valve must have positive stops or suitable index provisions in the "on" and "off" positions and must be supported so that no loads resulting from its operation or from accelerated flight conditions are transmitted to the lines attached to the valve.

[Revision note: Based on § 7.445]

§ 29.535 Oil radiators.

(a) Each oil radiator must be able to withstand all vibration, inertia, and oil pressure loads to which it would be subjected in operation.

(b) Each oil radiator air duct must be located, or so equipped that, in case of fire, and with the airflow as it would be with and without the engine operating, flames cannot impinge directly upon the radiator.

[Revision note: Based on § 7.446]

§ 29.537 Oil filters.

Each filter or strainer in the powerplant installation must be constructed and installed so that oil will flow at the normal rate through the rest of the system with the filter or strainer element completely blocked.

[Revision note: Based on § 7.447]

§ 29.539 Oil drains.

Accessible drains must be provided that—

(a) Allow safe drainage of the entire oil system; and

(b) Have manual or automatic means for positive locking in the closed position.

[Revision note: Based on § 7.448]

COOLING SYSTEM

§ 29.551 General.

(a) All powerplant cooling provisions must be able to maintain the temperatures of all powerplant components, engine fluids, and the carburetor intake air within safe values under all critical surface (ground or water) and flight operating conditions.

(b) Cooling provisions must be provided to maintain all fluids in any power transmission within safe values under all critical surface (ground or water) and flight operating conditions.

(c) Compliance with paragraphs (a) and (b) of this section must be shown by flight tests in which the temperatures of selected powerplant component, engine, and transmission fluids are obtained under the conditions prescribed in paragraphs (a) and (b) of this section.

[Revision note: Combines §§ 7.450 and 7.451 (1st sentence)]

§ 29.553 Cooling tests.

(a) *General.* For the tests prescribed in § 29.551(c), the following rules apply:

(1) If the tests are conducted under conditions deviating from the maximum

anticipated air temperature specified in paragraph (b) of this section, all recorded powerplant temperatures must be corrected under paragraphs (c) and (d) of this section, unless a more rational correction method is applicable.

(2) No corrected temperature determined under subparagraph (1) of this paragraph may exceed established limits.

(3) All fuel used during the cooling tests must be of the minimum grade approved for the engines, and all mixture settings must be those used in normal operation.

(4) The test procedures must be as prescribed in §§ 29.555 through 29.561.

(b) *Maximum anticipated air temperature.* For cooling tests, the maximum anticipated temperature (hot-day condition) is 100 degrees F. at sea level, decreasing from this value at the rate of 3.6 degrees F. per thousand feet of altitude above sea level up to the altitude at which a temperature of -67 degrees F. is reached, above which altitude the temperature is constant at -67 degrees F.

(c) *Correction factor for cylinder head, oil inlet, carburetor air, and engine and transmission coolant outlet temperatures.* The cylinder head, oil inlet, carburetor air, and engine coolant outlet temperatures must be corrected by adding to those temperatures the difference between the maximum anticipated air temperature and the temperature of the ambient air at the time of the first occurrence of the maximum head, oil, air, or coolant temperatures recorded during the cooling test.

(d) *Correction factor for cylinder barrel temperatures.* Cylinder barrel temperatures must be corrected by adding to those temperatures 0.7 times the difference between the maximum anticipated air temperatures and the temperature of the ambient air at the time of the first occurrence of the maximum cylinder barrel temperature recorded during the cooling test.

[Revision note: Based on § 7.451]

§ 29.555 Climb cooling test procedures.

(a) Climb cooling tests must be conducted in accordance with this section for—

- (1) All category A rotorcraft; and
- (2) All multiengine category B rotorcraft for which certification is desired under the category A powerplant installation requirements, and under the requirements of § 29.385(a) at the steady rate of climb or descent established under § 29.53(c).

(b) The climb or descent cooling test must be conducted with the engine inoperative that produces the most adverse cooling conditions for the remaining engines and powerplant components.

(c) Each operating engine must be at maximum continuous power or at full throttle when above the critical altitude.

(d) After temperatures have stabilized in flight, the climb must be—

- (1) Begun from an altitude not greater than the lower of—
 - (i) 1,000 feet below the engine critical altitude; and

(ii) 1,000 feet below the maximum altitude at which the rate of climb is 150 f.p.m.; and

(2) Continued for at least five minutes after the occurrence of the highest temperature recorded, or until the rotorcraft reaches the maximum altitude for which certification is requested.

(e) For category B rotorcraft without a positive rate of climb, the descent must begin at the all-engine-critical altitude and end at the higher of—

- (1) The maximum altitude at which level flight can be maintained with one engine operative; and
- (2) Sea level.

(f) The climb or descent must be conducted at an airspeed representing a normal operational practice for the configuration being tested. However, if the cooling provisions are sensitive to rotorcraft speed, the most critical airspeed must be used, but need not exceed the speeds established in accordance with §§ 29.51(b) or 29.53(c). The climb cooling test may be conducted in conjunction with the takeoff cooling test of § 29.557.

[Revision note: Based on § 7.452]

§ 29.557 Takeoff cooling test procedures; category A.

For category A rotorcraft, cooling must be shown during takeoff and subsequent climb as follows:

(a) All temperatures must be stabilized while hovering in ground effect with—

- (1) All engines at the power necessary for hovering;
- (2) The appropriate cowl flap and shutter settings; and
- (3) The maximum weight.

(b) After all temperatures have stabilized, the climb must be started at the lowest practicable altitude and must be conducted with one engine inoperative.

(c) All operating engines must be at takeoff r.p.m. and power (or at full throttle when above the takeoff critical altitude) for the same time interval as takeoff power is used for determining the takeoff flight path under § 29.47(c).

(d) At the end of the time interval prescribed in paragraph (c) of this section, the power must be reduced to maximum continuous power and the climb must be continued for at least five minutes after the occurrence of the highest temperature recorded.

(e) All speeds must be those used during determination of the takeoff flight path in accordance with § 29.47(c).

[Revision note: Based on § 7.453]

§ 29.559 Cooling test procedures; category B.

For category B rotorcraft, cooling must be shown during takeoff and subsequent climb, using the following procedures:

(a) All temperatures must be stabilized while hovering in ground effect with—

- (1) The power necessary for hovering;
- (2) The appropriate cowl flaps and shutter settings; and
- (3) The maximum weight.

(b) After all temperatures have stabilized, the climb must be started at the

lowest practicable altitude with takeoff power.

(c) Takeoff power must be used for the same time interval as takeoff power is used for determining the takeoff flight path under § 29.49.

(d) At the end of the time interval prescribed in paragraph (c) of this section the power must be reduced to maximum continuous power and the climb must be continued for at least five minutes after the occurrence of the highest temperature recorded.

(e) The cooling test must be conducted at an airspeed corresponding to normal operational practice for the configuration being tested. However, if the cooling provisions are sensitive to rotorcraft speed, the most critical airspeed must be used, but need not exceed the speed for best rate of climb with maximum continuous power.

[Revision note: Based on § 7.454]

§ 29.561 Hovering cooling test procedures.

The hovering cooling provisions must be shown—

(a) At maximum weight or at the greatest weight at which the rotorcraft is capable of hovering (if less), at sea level, using the power required to hover but not exceeding maximum continuous power, in the ground effect in still air, until at least five minutes after the occurrence of the highest temperature recorded; and

(b) With all engines at maximum continuous power, maximum certificated weight, and at the altitude resulting in zero rate of climb for this configuration, until at least five minutes after the occurrence of the highest temperature recorded.

[Revision note: Based on § 7.455]

INDUCTION AND EXHAUST SYSTEMS

§ 29.571 General.

(a) The air induction system for each engine must supply all the air required by that engine under all operating conditions for which certification is requested.

(b) Each engine air induction system must provide air for proper fuel metering and mixture distribution with the induction system valves in any position.

(c) No air intake may open within the engine accessory section or within other areas of any powerplant compartment where emergence of backfire flame would constitute a fire hazard.

(d) Each engine must have an alternate air source.

(e) Each alternate air intake must be located to prevent the entrance of rain, ice, or other foreign matter.

[Revision note: Based on § 7.460]

§ 29.573 Induction system icing protection.

Each engine air induction system must have means to prevent and eliminate icing. Unless this is accomplished by other means, it must be shown that, in air free of visible moisture at a temperature of 30 degrees F., and with the engines at 60 percent of maximum continuous power—

(a) Each rotorcraft with sea level engines using conventional venturi carburetors has a preheater that can provide a heat rise of 90 degrees F.;

(b) Each rotorcraft with sea level engines using carburetors tending to prevent icing has a preheater that can provide a heat rise of 70 degrees F.;

(c) Each rotorcraft with altitude engines using conventional venturi carburetors has a preheater capable of providing a heat rise of 120 degrees F.;

(d) Each rotorcraft with altitude engines using carburetors tending to prevent icing has a preheater that can provide a heat rise of 100 degrees F.

[Revision note: Based on § 7.461]

§ 29.575 Carburetor air preheater design.

Each carburetor air preheater must be designed and constructed to—

(a) Ensure ventilation of the preheater when the engine is operated with cold air;

(b) Allow inspection of all exhaust manifold parts that it surrounds; and

(c) Allow inspection of critical portions of the preheater itself.

[Revision note: Based on § 7.462]

§ 29.577 Induction system ducts.

(a) Each induction system duct upstream of the first stage of the supercharger must have a drain to prevent the hazardous accumulation of fuel and moisture in the ground attitude. No drain may discharge where it might cause a fire hazard.

(b) Sufficient strength must be incorporated in each duct to prevent induction system failure from normal back-fire conditions.

(c) Each duct connected to components between which relative motion could exist must have provisions for flexibility.

(d) Each duct within any fire zone for which a fire-extinguishing system is required must be at least—

(1) Fireproof, if it passes through any firewall; or

(2) Fire resistant, for other ducts.

[Revision note: Based on § 7.463]

§ 29.579 Induction system screens.

If induction system screens are used—

(a) Each screen must be upstream of the carburetor;

(b) No screen may be in any portion of the induction system that is the only passage through which air can reach the engine, unless it is so located that it can be deiced by heated air;

(c) No screen may be deiced by alcohol alone; and

(d) It must be impossible for fuel to impinge upon any screen.

[Revision note: Based on § 7.464]

§ 29.581 Carburetor air cooling.

It must be shown under § 29.553 that each installation using two-stage superchargers has means to maintain the air temperature, at the carburetor inlet, at or below the maximum established value.

[Revision note: Based on § 7.465]

§ 29.583 Inter-coolers and after-coolers.

Each inter-cooler and after-cooler must be able to withstand all vibration, inertia, and air pressure loads to which it would be subjected in operation.

[Revision note: Based on § 7.466]

§ 29.585 Exhaust system and installation components.

(a) *General.* Each exhaust system must be constructed and arranged to ensure safe disposal of exhaust gases without a fire hazard or carbon monoxide contamination in any personnel compartment, and to conform with the following:

(1) Unless appropriate precautions are taken, no exhaust system part may be in hazardous proximity to any portion of a system carrying flammable fluids or vapors, nor may it be located under any portion of such system that is subject to leakage.

(2) Each component upon which hot exhaust gases could impinge, or which could be subjected to high temperatures from exhaust system parts, must be fireproof. Exhaust system components must be separated by means of fireproof shields from adjacent portions of the rotorcraft that are outside the engine compartment.

(3) No exhaust gases may discharge so as to cause a fire hazard with respect to any flammable fluid vent or drain.

(4) No exhaust gases may discharge where they will cause a glare seriously affecting pilot vision at night.

(5) Each exhaust system component must be ventilated to prevent points of excessively high temperature.

(6) Each exhaust shroud must be ventilated or insulated to avoid, during normal operation, a temperature high enough to ignite any flammable fluids or vapors external to the shroud.

(b) *Exhaust piping.* All exhaust piping must be resistant to heat and corrosion, and must have provisions to prevent failure due to expansion by operating temperatures. In addition—

(1) All piping must be supported to withstand all vibration and inertia loads to which it would be subjected in operation; and

(2) Each portion of piping that is connected to components between which relative motion could exist must have provisions for flexibility.

(c) *Exhaust heat exchangers.* Each exhaust heat exchanger must be constructed and installed to withstand all vibration, inertia, and other loads to which it would be subjected in operation. In addition—

(1) Each exchanger must be suitable for continued operation at high temperatures and resistant to corrosion from exhaust gases;

(2) Provision must be made for the inspection of all critical portions of each exchanger;

(3) Each exchanger must incorporate cooling provisions wherever it is subject to contact with exhaust gases; and

(4) No exhaust heat exchanger or muff may incorporate any stagnant areas or liquid traps that would increase the possibility of ignition of flammable fluids

or vapors that might be present in case of the failure or malfunction of components carrying flammable fluids.

(d) *Exhaust heating of ventilating air.* If an exhaust heat exchanger is used for heating ventilating air used by personnel—

(1) A secondary heat exchanger must be provided between the primary exhaust gas heat exchanger and the ventilating air system; or

(2) Other means must be used to preclude the harmful contamination of the ventilating air.

[Revision note: Based on § 7.467]

POWERPLANT CONTROLS AND ACCESSORIES

§ 29.601 Powerplant controls; general.

(a) Powerplant controls must be located and arranged in accordance with § 29.357 and marked in accordance with § 29.861.

(b) Each control must be located so that it cannot be inadvertently operated by personnel entering, leaving, or making normal movements in the cockpit.

(c) Each flexible powerplant control must be approved.

(d) Each control must be able to maintain any set position without constant attention by flight personnel and without creep due to control loads or vibration.

(e) Each control must have sufficient strength and rigidity to withstand all operating loads without excessive deflection.

[Revision note: Based on § 7.470]

§ 29.603 Throttle and antidetonant injection system controls.

(a) A separate throttle control must be provided for each engine.

(b) All throttle controls must be arranged to allow ready synchronization of all engines by—

(1) The separate control of each engine; and

(2) The simultaneous control of all engines.

(c) Each throttle control must provide a positive and immediately responsive means of controlling its engine.

(d) Each antidetonant injection system control must be incorporated in the throttle controls. However, the antidetonant injection pump may have a separate control.

[Revision note: Based on § 7.471]

§ 29.605 Ignition switches.

(a) The ignition switches must provide for the control of each ignition circuit on each engine.

(b) Means must be provided for quickly shutting off all ignition by the grouping of switches or by a master ignition switch.

(c) Each master ignition switch must have a guard to prevent its inadvertent operation.

[Revision note: Based on § 7.472]

§ 29.607 Mixture controls.

(a) If mixture controls are provided, a separate control must be provided for each engine, and the controls must be arranged to allow—

(1) The separate control of each engine; and

(2) The simultaneous control of all engines.

(b) Each intermediate position of the mixture controls that corresponds to a normal operating setting must be identifiable by feel and sight.

[Revision note: Based on § 7.473]

§ 29.609 Carburetor air preheat controls.

The carburetor air temperature of each engine must be controlled by separate controls.

[Revision note: Based on § 7.474]

§ 29.611 Supercharger controls.

Each supercharger control must be accessible to the pilots or, if a separate flight engineer station with a control panel is provided, to the flight engineer.

[Revision note: Based on § 7.475]

§ 29.613 Rotor brake controls.

It must be impossible to inadvertently apply the rotor brake in flight, and there must be means to warn the crew if the rotor brake has not been completely released before takeoff.

[Revision note: Based on § 7.476]

§ 29.615 Powerplant accessories.

(a) Each engine mounted accessory must be approved for mounting on the engine concerned and use the provisions on the engine for mounting.

(b) Each item of electrical equipment subject to arcing or sparking must be installed to minimize the probability of igniting flammable fluids or vapors that might be present.

(c) If, in the case of its malfunction, the continued rotation of an engine-driven cabin supercharger or any remote accessory driven by the engine will be a hazard, there must be means to prevent its hazardous rotation without interference to the continued operation of the engine.

[Revision note: Based on § 7.477 (less note following)]

§ 29.617 Engine ignition systems.

(a) Each battery ignition system must be supplemented with a generator that is automatically available as an alternate source of electrical energy to allow continued engine operation in case of depletion of any battery.

(b) Each battery and generator must have enough capacity to meet the simultaneous demands of the engine ignition system and the greatest demands of any rotorcraft electrical system component drawing energy from the same source.

(c) The design of the engine ignition system must consider the effect of an inoperative generator, and the effect of a depleted battery with the generator running at normal speed.

(d) If only one battery is provided, the design of the engine ignition system must consider the effect of a depleted battery with the generator running at idling speed.

(e) Magneto ground wires for separate ignition circuits that lie on the engine side of the firewall must be installed,

or protected, to minimize the probability of the simultaneous failure of two or more wires as a result of mechanical damage, electrical fault, or other cause.

(f) No ground wire for any engine may be routed through a fire zone of another engine unless all parts of that wire within that zone are fireproof.

(g) Each ignition system must be independent of any electrical circuit not used for analyzing the operation of that system.

(h) Means must be provided to warn flight personnel if the malfunctioning of any part of the electrical system is causing the continuous discharging of any battery necessary for engine ignition.

[Revision note: Based on § 7.478]

POWERPLANT FIRE PROTECTION

§ 29.631 Designated fire zones; regions included.

(a) Designated fire zones are—

- (1) The engine power section;
- (2) The engine accessory section;
- (3) Any complete powerplant compartment in which no isolation is provided between the engine power section and the engine accessory section;
- (4) Any auxiliary power unit compartment; and
- (5) Any fuel-burning heater and other combustion equipment installations described in § 29.383.

(b) Each designated fire zone must meet the requirements of §§ 29.633 through 29.647.

[Revision note: Based on § 7.480]

§ 29.633 Flammable fluids.

(a) No tanks or reservoirs that are a part of any system containing flammable fluids or gases may be located in a designated fire zone unless the fluid contained, the design of the system, the materials used in the tank and its supports, the shutoff means, and all connections, lines, and controls provide an equal degree of safety.

(b) Each fuel tank must be isolated from the engines by a firewall or shroud.

(c) At least one-half inch of clear airspace must be provided between any tank or reservoir and any firewall or shroud isolating a designated fire zone, unless equivalent means are used to protect against heat transfer from the fire zone to the flammable fluid.

(d) Any absorbent material close to flammable fluid system components that might be subject to leakage must be covered or treated to prevent the absorption of hazardous quantities of fluids.

[Revision note: Based on § 7.481]

§ 29.635 Shutoff means.

(a) Except for lines forming an integral part of any engine, and except for engine oil systems in category B rotorcraft using engines of less than 500 cubic inches displacement, means must be provided to shut off or otherwise prevent hazardous quantities of fuel, oil, oil, oil, and other flammable fluids from flowing into, within, or through any designated fire zone.

(b) The closing of any fuel shutoff valve for any engine may not affect any other engine.

(c) For category A rotorcraft, it must be shown that no hazardous quantity of flammable fluid can drain into any designated fire zone after shutoff has been accomplished, and that the closing of any fuel shutoff valve for an engine does not make any fuel unavailable to any other engine.

(d) The operation of any shutoff may not interfere with the later emergency operation of any other equipment, such as the means for declutching the engine from the rotor drive.

(e) Each shutoff must be located outside of a designated fire zone, unless an equal degree of safety is otherwise provided.

(f) Provision must be made to prevent the inadvertent operation of each shutoff and to make it possible for the crew to reopen it in flight.

[Revision note: Based on § 7.482]

§ 29.637 Lines and fittings.

(a) Except as provided in paragraph (b), each line and fitting carrying flammable fluids in any area subject to engine fire conditions must conform to the following:

(1) The line and fitting must be at least fire resistant;

(2) If flexible hose is used, all assemblies of hose and end fittings must be approved.

(b) Paragraph (a) of this section does not apply to—

(1) Lines and fittings forming an integral part of an engine; and

(2) Vent and drain lines, and their fittings, whose failure will not result in, or add to, a fire hazard.

[Revision note: Based on § 7.483]

§ 29.639 Fire-extinguishing systems.

(a) *General.* Each rotorcraft, other than category B rotorcraft with engines of 1,500 cubic inches displacement or less, must have fire extinguishing systems for all designated fire zones. The fire-extinguishing system for each powerplant must be able to simultaneously protect all zones of the powerplant compartment for which protection is provided. For multiengine rotorcraft, the fire-extinguishing system, the quantity of extinguishing agent, and the rate of discharge must provide at least two adequate discharges, or, in the case of auxiliary power units and combustion equipment, at least one adequate discharge. For multiengine rotorcraft, it must be possible to direct both discharges of any engine fire-extinguishing system to any main engine installation. For single engine rotorcraft, the quantity of extinguishing agent and the rate of discharge must provide at least one adequate discharge for the engine compartment.

(b) *Fire-extinguishing agents.* Each extinguishing agent used must be methyl bromide, carbon dioxide, or an agent that has equal extinguishing action. In addition—

(1) If methyl bromide, carbon dioxide, or any other toxic extinguishing agent is used, it must be shown by test that entry of harmful concentrations of fluid or fluid vapors into any personnel compartment (due to leakage during normal

operation of the rotorcraft or discharge on the ground or in flight) is prevented, even though a defect may exist in the extinguishing system; and

(2) All methyl bromide containers must be charged with a dry agent and sealed by the fire extinguisher manufacturer or by any other person using appropriate recharging equipment.

(c) *Extinguishing agent container pressure relief.* Each extinguishing agent container must have a pressure relief to prevent bursting of the container by excessive internal pressures. In addition—

(1) Each discharge line from a relief connection must terminate outside the rotorcraft in a location convenient for inspection on the ground; and

(2) A visual discharge indicator must be provided at the discharge end of each discharge line.

(d) *Extinguishing agent container compartment temperature.* The temperature of all extinguishing agent containers must be maintained, under all intended operating conditions, to ensure that the pressure in the containers does not—

(1) Fall below that level necessary to provide an adequate rate of discharge; or

(2) Rise to a level high enough to create a hazard of premature discharge.

(e) *Fire-extinguishing system materials.* For each fire extinguishing system—

(1) No materials in the system may react chemically with any extinguishing agent so as to constitute a hazard; and

(2) Each system component in an engine compartment must be fireproof.

[Revision note: Based on § 7.484]

§ 29.641 Fire-detector systems.

(a) For rotorcraft other than category B rotorcraft with engines of 900 cubic inches displacement or less, approved quick-acting fire detectors meeting the requirements of this section must be provided in all designated fire zones in numbers and locations that ensure prompt detection of fire in those zones.

(b) Each fire detector must be constructed and installed to ensure its ability to withstand any vibration, inertia, and other loads to which it would be subjected in operation.

(c) No fire detector may be affected by any oil, water, other fluids, or fumes that might be present.

(d) Means must be provided to allow crewmembers to check, in flight, the functioning of each fire-detector system electrical circuit.

(e) All wiring and other components of all fire-detector systems located in engine compartments must be at least fire resistant.

(f) No fire-detector system component for any fire zone may pass through another fire zone, unless—

(1) It is protected against the possibility of false warnings resulting from fires in zones through which it passes; or

(2) All zones involved are simultaneously protected by the same detector and extinguishing systems.

[Revision note: Based on § 7.485]

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§ 29.643 Firewalls.

(a) Each engine must be isolated by a firewall, shroud, or other equivalent means, from all personnel compartments, structures, controls, rotor mechanisms, and other parts that are—

(1) Essential to a controlled landing; and

(2) Not protected under § 29.385.

(b) Each auxiliary power unit, combustion heater, and other combustion equipment to be used in flight, must be isolated from the rest of the rotorcraft by firewalls, shrouds, or other equivalent means.

(c) Each firewall or shroud must be constructed so that no hazardous quantity of air, fluid, or flame can pass from any engine compartment to any other portions of the rotorcraft.

(d) Each opening in the firewall or shroud must be sealed with close-fitting fireproof grommets, bushings, or firewall fittings.

(e) Each firewall and shroud must be fireproof and protected against corrosion.

(f) In complying with this section, account must be taken of the probable path of a fire as affected by the airflow in normal flight and in autorotation.

[Revision note: Based on § 7.486]

§ 29.645 Engine cowling and engine compartment covering.

(a) Each cowling and engine compartment covering must be constructed and supported so that it can resist all vibration, inertia, and air loads to which it would be subjected in operation.

(b) All cowling must meet the drainage and ventilation requirements of § 29.647.

(c) On rotorcraft with a diaphragm isolating the engine power section from the engine accessory section, each portion of the accessory section cowling that might be subject to flame in case of fire in the engine power section of the powerplant must—

(1) Be fireproof; and

(2) Meet the requirements of § 29.643.

(d) Each portion of the cowling or engine compartment covering that would be subjected to high temperatures due to its proximity to exhaust system parts or exhaust gas impingement must be fireproof.

(e) Each category A rotorcraft must—

(1) Be designed and constructed so that no fire originating in any fire zone can enter, either through openings or by burning through external skin, into any other zone or region where it would create additional hazards;

(2) Conform with subparagraph (1) of this paragraph with the landing gear retracted (if applicable); and

(3) Have fireproof skin in areas that might be subjected to flame in the event of a fire originating in the engine power or accessory sections.

[Revision note: Based on § 7.487]

§ 29.647 Drainage and ventilation of fire zones.

(a) Complete drainage of all portions of each designated fire zone must be provided to minimize the hazards resulting from failure or malfunctioning of any

component containing flammable fluids. Drainage must be effective under conditions expected to prevail when drainage is needed and arranged so that no discharged fluid will cause an additional fire hazard.

(b) Each designated fire zone must be ventilated to prevent the accumulation of flammable vapors.

(c) No ventilation opening may be where it would allow the entry of flammable fluids, vapors, or flame from other zones.

(d) Each ventilation means must be arranged so that no discharged vapors will cause an additional fire hazard.

(e) For category A rotorcraft, provision must be made to allow the crew to shut off all sources of forced ventilation in any fire zone (other than the engine power section of the powerplant compartment) unless the amount of extinguishing agent and the rate of discharge are based on the maximum airflow through that zone.

[Revision note: Based on § 7.489]

Subpart F—Equipment

GENERAL

§ 29.671 Scope.

The basic equipment prescribed in this subpart must be installed in the rotorcraft for certification under this Part.

[Revision note: Based on § 7.600 (1st sentence)]

§ 29.673 Function and installation.

Each item of installed equipment must—

(a) Be of a kind and design appropriate to its intended function;

(b) Be labeled as to its identification, function, or operating limitations, or any combination of these, as applicable;

(c) Be installed in accordance with limitations specified for that equipment; and

(d) Function properly in the rotorcraft.

[Revision note: Based on § 7.601]

§ 29.675 Required basic equipment.

(a) *General.* Each rotorcraft must contain all basic equipment prescribed in paragraphs (b) through (d) of this section.

(b) *Flight and navigational instruments.* The required flight and navigational instruments include the following:

(1) Airspeed indicating system.

(2) Sensitive altimeter.

(3) Clock (sweep-second).

(4) Free-air temperature indicator.

(5) Non-tumbling gyroscopic bank and pitch indicator.

(6) Gyroscopic rate-of-turn indicator with bank indicator.

(7) Gyroscopic direction indicator.

(8) Magnetic direction indicator.

(9) Rate-of-climb (vertical speed) indicator.

(c) *Powerplant instruments.* The required powerplant instruments include the following:

(1) For each rotorcraft—

(i) A carburetor air temperature indicator for each engine;

(ii) A cylinder head temperature indicator for each air-cooled engine, or

coolant temperature indicator for each liquid-cooled engine;

(iii) A fuel quantity indicator for each fuel tank;

(iv) If an engine can be supplied with fuel from more than one tank, a warning device to indicate low fuel in each tank, that is, to indicate when a five-minute usable fuel supply remains when the rotorcraft is in the most adverse fuel feed condition for that tank, regardless of whether that condition can be sustained for the five minutes;

(v) A manifold pressure indicator for each engine, if altitude engines are used;

(vi) An oil pressure warning device for each pressure-lubricated gearbox to indicate when the oil pressure falls below a safe value;

(vii) An oil quantity indicator for each oil tank and each rotor drive gearbox, if lubricant is self contained;

(viii) An oil temperature indicator for each engine;

(ix) An oil temperature warning device to indicate when the oil temperature exceeds a safe value in each main rotor drive gearbox (including all gearboxes essential to rotor phasing) that has an oil system independent of the engine oil system;

(x) A tachometer for each engine which, if combined with an instrument required by subdivision (xi) of this subparagraph, indicates rotor r.p.m. during autorotation; and

(xi) At least one tachometer to indicate, as applicable, the r.p.m. of the single main rotor, the common r.p.m. of all main rotors whose speeds cannot vary appreciably with respect to each other, or the r.p.m. of each main rotor whose speed can vary appreciably with respect to that of another main rotor.

(2) For each category A rotorcraft—

(i) An individual oil pressure indicator for each engine, and either an independent warning device for each engine or a master warning device for all engines with means for isolating the individual warning circuit from the master warning device;

(ii) An individual fuel pressure indicator for each engine, and either an independent warning device for each engine or a master warning device for all engines with means for isolating the individual warning circuit from the master warning device; and

(iii) Fire warning indicators.

(3) For all category B rotorcraft—

(i) An individual oil pressure indicator for each engine;

(ii) An individual fuel pressure indicator for each engine; and

(iii) Fire warning indicators, when fire detection is required.

(d) *Miscellaneous equipment.* The required miscellaneous equipment includes the following:

(1) An approved seat for each occupant.

(2) An approved individual safety belt for each occupant.

(3) A master switch arrangement for all electrical circuits other than ignition.

(4) Sufficient sources of electrical energy.

(5) Electrical protective devices.

(6) Hand fire extinguishers.

(7) A windshield wiper or equivalent device for each pilot station.

(8) A two-way radio communication system.

(9) An ignition switch for each, and for all, engines.

[Revision note: Combines §§ 7.602 through 7.605]

§ 29.677 Equipment, systems, and installations.

(a) *General.* All equipment, systems, and installations whose functioning is necessary to show compliance with any regulation in this subchapter must be designed and installed to—

(1) Ensure that they will reliably perform their intended functions under all reasonably foreseeable operating conditions; and

(2) Guard against hazards to the rotorcraft in the event of their malfunctioning or failure under the same conditions.

For electrical systems, equipment, and installations, critical environmental conditions must be considered in showing compliance with this paragraph.

(b) *Category A; power supply.* Each installation whose functioning is required by this subchapter and that requires a power supply is considered for the purpose of this section to be an "essential load" on the power supply. The power sources and the system must be able to supply the following power loads in probable operating combinations and for probable durations:

(1) All loads connected to the system with the system functioning normally.

(2) All essential loads, after failure of any one prime mover, power converter, or energy storage device.

(3) All essential loads, after—

(i) Failure of any one engine, on two- or three-engine rotorcraft; or

(ii) Failure of any two engines, on rotorcraft with four or more engines.

(c) *Category A; assumptions.* In determining compliance with paragraphs (b) (2) and (3) of this section, the power loads may be assumed to be reduced in accordance with a monitoring procedure that is consistent with safety in the kinds of operations authorized. Loads not required for controlled flight need not be considered for the two-engine-inoperative condition on rotorcraft with four or more engines as prescribed in paragraph (b) (3) of this section.

[Revision note: Combines §§ 7.606 and 7.625]

(a)]

INSTRUMENTS; INSTALLATION

§ 29.691 Arrangement and visibility.

(a) Each flight, navigation, and powerplant instrument for use by any pilot must be easily visible to him from his station with the minimum practicable deviation from his normal position and line of vision when he is looking forward along the flight path.

(b) Each instrument necessary for safe operation, including the airspeed indicator, gyroscopic direction indicator, gyroscopic bank and pitch indicator, gyroscopic turn and bank indicator, altimeter, rate-of-climb indicator, rotor ta-

chometers, and manifold pressure indicator, must be grouped and centered as nearly as practicable about the vertical plane of the pilot's forward vision.

(c) All other required powerplant instruments must be closely grouped on the instrument panel.

(d) All identical powerplant instruments for the engines must be located to prevent any confusion as to the engines to which they relate.

(e) Each powerplant instrument vital to safe operation must be plainly visible to appropriate crewmembers.

(f) Instrument panel vibration may neither damage, nor seriously impair, the readability or accuracy of any instrument.

[Revision note: Based on § 7.611]

§ 29.693 Flight and navigation instruments.

(a) *Airspeed indicating system.* Each airspeed indicating system must conform to the following:

(1) Each airspeed indicating instrument must be calibrated to indicate true airspeed at sea level in standard atmosphere with a minimum practicable instrument calibration error when the corresponding pitot and static pressures are applied to the instrument.

(2) Each system must be calibrated to determine the system error, that is, the relation between IAS and CAS. This calibration must be determined, over an appropriate range of speeds—

(i) In flight, for the flight conditions of climb, level flight, and autorotation; and

(ii) In ground effect, during the accelerated takeoff run.

(3) For multiengine rotorcraft, the airspeed error of the installation, including the airspeed indicator instrument calibration error, may not exceed three percent, or five m.p.h., whichever is greater—

(i) Throughout the speed range in level flight at all forward speeds of 10 m.p.h. or over; and

(ii) Throughout the speed range in climb from 10 m.p.h. below the takeoff climbout safety speed to 10 m.p.h. above the best rate-of-climb speed.

(4) For single engine rotorcraft, calibration of the airspeed indicator must be made in flight at all forward speeds of 10 m.p.h. or over. The airspeed error of the installation, including the airspeed indicator instrument calibration error, may not exceed three percent, or five m.p.h., whichever is greater, at any forward speed above 80 percent of the climbout speed.

(5) Each system must be arranged so far as practicable to prevent malfunctioning or serious error due to the entry of moisture, dirt, or other substances.

(6) Each system must have a heated pitot tube or an equivalent means of preventing malfunctioning due to icing.

(b) *Static air vent and pressure altimeter systems.* Each static air vent and pressure altimeter system must conform to the following:

(1) Each instrument with static air case connections must be vented to the outside atmosphere through an appropriate piping system.

(2) Each vent must be where its orifices will be least affected by airflow variation, moisture, or other foreign matter.

(3) Each system must be airtight, except for the vent into the atmosphere.

(4) Each pressure altimeter must be approved and calibrated to indicate pressure altitude in standard atmosphere with a minimum practicable calibration error when the corresponding static pressures are applied.

(5) The design and installation of each altimeter system must be such that the error in indicated pressure altitude at sea level in standard atmosphere, excluding instrument calibration error, does not result in a reading more than 30 feet high nor more than 30 feet low in the level flight speed range from 0 m.p.h. to 0.9 V_n.

(c) *Magnetic direction indicator.* The magnetic direction indicator must be installed so that its accuracy is not excessively affected by the rotorcraft's vibration or magnetic fields. The calibrated installation must be such that the deviation in level flight does not exceed 10 degrees on any heading. A suitable calibration placard must be provided as specified in § 29.853.

(d) *Automatic pilot system.* If an automatic pilot system is installed, it must be approved and must conform to the following:

(1) Each system must be designed so that the automatic pilot can—

(i) Be quickly and positively disengaged by the human pilots to prevent it from interfering with their control of the rotorcraft; or

(ii) Be sufficiently overpowered by one human pilot to enable him to control the rotorcraft.

(2) A means must be provided to indicate readily to the pilot the alignment of the actuating device in relation to the control system it operates, except when automatic synchronization is provided.

(3) Each manually operated control for the system's operation must be readily accessible to the pilots.

(4) The system must be designed and adjusted so that, within the range of adjustment available to the human pilot, it cannot produce hazardous loads on the rotorcraft or create hazardous deviations in the flight path under any condition of flight appropriate to its use, either during normal operation or in the event of malfunctioning, assuming that corrective action is initiated within a reasonable period of time.

(e) *Category A; instruments using a power supply.* For category A rotorcraft, each required flight instrument using a power supply must have two independent sources of power, a means of selecting either power source, and a means of indicating the adequacy of the power being supplied. The installation and power supply system must be such that failure of any flight instrument connected to one source, or of the energy supply from one source, or a fault in any part of the power distribution system, will not interfere with the proper supply of energy from the other source.

(f) *Duplicate instrument systems.* If duplicate flight instruments are required by any operating rule in this chapter—

(1) Each operating system for flight instruments used by the first pilot and required to be duplicated at other flight crew stations must be independent of the operating system provided for other flight crew stations;

(2) Only the required flight instruments and duplicates of required instruments provided for the first pilot need be connected to the operating system provided for the first pilot; and

(3) If instruments other than required instruments and their duplicates are connected to systems other than the first pilot's operating system, provision must be made to disconnect or isolate them in flight.

[Revision note: Based on § 7.612]

§ 29.695 Powerplant instruments.

(a) *Instrument lines.* Instrument lines must conform to the provisions of §§ 29.505 and 29.637. Each line carrying flammable fluids or gases under pressure must have restricted orifices or equivalent safety devices at the source of the pressure to prevent the escape of excessive fluid or gas in case of line failure.

(b) *Fuel quantity indicator.* Means must be provided to indicate to the flight crew the quantity, in gallons or in equivalent units, of usable fuel in each tank during flight. In addition—

(1) All tanks with interconnected outlets and airspaces must be treated as one tank for the purpose of providing separate indicators;

(2) Each exposed sight gauge must be protected against damage; and

(3) Each fuel quantity indicator must be calibrated to read "zero" during level flight when the quantity of fuel remaining in the tank is equal to the unusable fuel supply determined under § 29.459.

(c) *Fuel flowmeter system.* If a fuel flowmeter system is installed, each metering component must include a means for by-passing the fuel supply if malfunctioning of that component severely restricts fuel flow.

(d) *Oil quantity indicator.* A stick gauge or equivalent means must be provided to indicate the quantity of oil—

(1) In each tank, and

(2) In each transmission gearbox.

[Revision note: Based on § 7.613]

ELECTRICAL SYSTEMS AND EQUIPMENT

§ 29.705 Electrical system capacity.

The required generating capacity and the number and kind of power sources must—

(a) Be determined by an electrical load analysis; and

(b) Conform with § 29.677.

[Revision note: Based on § 7.621]

§ 29.707 Generating system.

(a) The generating system includes all electrical power sources, main power busses, and transmission cables, and all associated control, regulation, and protective devices.

(b) Each system must be designed so that—

(1) All power sources function properly when independent and when connected in combination;

(2) The failure or malfunctioning of any power source cannot create a hazard or impair the ability of the remaining sources to supply essential loads;

(3) The system voltage and frequency (as applicable) at the terminals of all essential load equipment can be maintained within the limits for which the equipment is designed, during all probable operating conditions;

(4) System transients initiated by switching, fault clearing, or other causes, do not make essential loads inoperative, and do not cause a smoke or fire hazard;

(5) Means accessible in flight to appropriate crewmembers are provided for the individual and collective disconnection of all electrical power sources from the main bus; and

(6) Means are provided to indicate to appropriate crewmembers all generating system quantities that are essential for the safe operation of the system, such as the voltage and current supplied by each generator.

[Revision note: Based on § 7.622]

§ 29.709 Distribution system.

(a) The distribution system includes all distribution busses, their associated feeders, and all control and protective devices.

(b) Each system must be designed so that—

(1) For category A rotorcraft, individual distribution systems ensure that essential load circuits can be supplied in the event of reasonably probable faults or open circuits; and

(2) Where two independent sources of electrical power for particular equipment or systems are required by this subchapter, their energy supply is ensured.

[Revision note: Based on § 7.623 (less note following)]

§ 29.711 Electrical protection.

Automatic protective devices must be provided to minimize distress to the electrical system and hazard to the rotorcraft in the event of wiring faults or serious malfunctioning of the system or connected equipment. In addition—

(a) For category A rotorcraft, means must be provided in the generating system to automatically de-energize and disconnect from the main bus any power source developing hazardous overvoltage;

(b) Each resettable circuit protective device must be designed so that, when an overload or circuit fault exists, it will open the circuit irrespective of the position of the operating control;

(c) If the ability to reset a circuit breaker or to replace a fuse is essential to safety in flight, that circuit breaker or fuse must be so located and identified that it can be readily reset or replaced in flight;

(d) Each circuit for essential loads must have individual circuit protection; and

(e) If fuses are used, there must be spare fuses for use in flight equal to at

least 50 percent of the number of fuses of each rating required for complete circuit protection.

[Revision note: Based on § 7.624 (less note following (a))]

§ 29.713 Electrical equipment and installations.

(a) All electrical equipment, controls, and wiring must be installed so that the operation of any one unit or system of units will not adversely affect the simultaneous operation of any other electrical unit system essential to safe operation.

(b) All cables must be grouped, routed, and spaced so that damage to essential circuits will be minimized in the event of faults in heavy current-carrying cables.

(c) Storage batteries must be designed and installed as follows:

(1) Safe cell temperatures and pressures must be maintained during all probable charging and discharging conditions. No uncontrolled increase in cell temperature may result when the battery is recharged (after previous complete discharge)—

(i) At maximum regulated voltage;

(ii) During a flight of maximum duration; and

(iii) Under the most adverse cooling condition likely to occur in service.

(2) Compliance with subparagraph (1) of this paragraph must be shown in tests unless experience with similar batteries and installations has shown that maintaining safe cell temperatures and pressures presents no problem.

(d) No explosive or toxic gases emitted by any battery in normal operation, or as the result of any probable malfunction in the charging system or battery installation, may accumulate in hazardous quantities within the rotorcraft.

(e) No corrosive fluids or gases that may escape from the battery may damage surrounding rotorcraft structures or adjacent essential equipment.

[Revision note: Based on § 7.625 (less (a))]

§ 29.715 Electrical system fire and smoke protection.

All electrical cables, terminals, and equipment that are necessary in emergency procedures, and that are in a designated fire zone, must—

(a) Be at least fire resistant; and

(b) Conform to the applicable provisions of §§ 29.367(d) and 29.387.

[Revision note: Based on § 7.626]

§ 29.717 Electrical system tests.

(a) When laboratory tests of the electrical system are conducted—

(1) The tests must be performed on a mock-up using the same generating equipment complement as in the rotorcraft;

(2) All equipment must simulate the electrical characteristics of the distribution wiring and connected loads necessary for valid test results; and

(3) All laboratory generator drives must simulate the actual prime movers on the rotorcraft with respect to their reaction to generator loading, including loading due to faults.

(b) For each flight condition that cannot be simulated adequately in the laboratory

or by ground tests on the rotorcraft, flight tests must be conducted.

[Revision note: Based on § 7.627]

LIGHTS

§ 29.727 Instrument lights.

The instrument lights must—

(a) Provide enough illumination to make all instruments, switches, and other devices for which they are provided easily readable; and

(b) Be installed so that—

(1) Their direct rays are shielded from the pilot's eyes; and

(2) No objectionable reflections are visible to the pilot.

[Revision note: Based on § 7.630]

§ 29.729 Landing lights.

(a) Each installed landing or hovering light must be approved.

(b) Each landing light must be installed so that—

(1) No objectionable glare is visible to the pilot;

(2) The pilot is not adversely affected by halation; and

(3) It provides the necessary illumination for night operation, including hovering and landing.

(c) At least one separate switch must be provided, as applicable—

(1) For each separately installed light; and

(2) For each group of lights installed at a common location.

[Revision note: Based on § 7.631]

§ 29.731 Position light system installation.

(a) *General.* Each part of each position light system must conform to the applicable requirements of this section and each system as a whole must conform to the requirements of §§ 29.733 through 29.743.

(b) *Forward position lights.* Forward position lights must consist of a red and a green light spaced laterally as far apart as practicable and installed forward on the rotorcraft in such a location that, with the rotorcraft in the normal flying position, the red light is on the left side and the green light is on the right side. Each light must be approved.

(c) *Rear position light.* The rear position light must be a white light mounted as far aft as practicable, and must be approved.

(d) *Circuit.* The two forward position lights and the rear position light must constitute a single circuit.

(e) *Light covers and color filters.* Each light cover or color filter must be at least flame resistant and must be constructed so that it will not change color or shape or suffer any appreciable loss of light transmission during normal use.

[Revision note: Based on § 7.632]

§ 29.733 Position light system dihedral angles.

(a) Each forward and rear position light must, as installed, show unbroken light within the dihedral angles described in this section.

(b) Dihedral angle *L* (left) is formed by two intersecting vertical planes, the

first parallel to the longitudinal axis of the rotorcraft, and the other at 110 degrees to the left of the first, as viewed when looking forward along the longitudinal axis.

(c) Dihedral angle *R* (right) is formed by two intersecting vertical planes, the first parallel to the longitudinal axis of the rotorcraft, and the other at 110 degrees to the right of the first, as viewed when looking forward along the longitudinal axis.

(d) Dihedral angle *A* (aft) is formed by two intersecting vertical planes making angles of 70 degrees to the right and to the left, respectively, to a vertical plane passing through the longitudinal axis, as viewed when looking aft along the longitudinal axis.

[Revision note: Based on § 7.633]

§ 29.735 Position light distribution and intensities.

(a) *General.* The Intensities prescribed in this section must be provided by new equipment with all light covers and color filters in place. All intensities must be determined with the light source operating at a steady value equal to the average luminous output of the source at the normal operating voltage of the rotorcraft. The light distribution and intensity of each position light must conform to the provisions of paragraph (b) of this section.

(b) *Forward and rear position lights.* The light distribution and intensities of forward and rear position lights must be expressed in terms of minimum intensities in the horizontal plane, minimum intensities in any vertical plane, and maximum intensities in overlapping beams, within dihedral angles, *L*, *R*, and *A*, and must conform to the following provisions:

(1) *Intensities in the horizontal plane.* Each intensity in the horizontal plane, that is, the plane containing the longitudinal axis of the rotorcraft and perpendicular to the plane of symmetry of the rotorcraft, must equal or exceed the values in § 29.737.

(2) *Intensities in any vertical plane.* Each intensity in any vertical plane, that is, plane perpendicular to the horizontal plane, must equal or exceed the appropriate value in § 29.739, where *I* is the minimum intensity prescribed in § 29.737 for the corresponding angles in the horizontal plane.

(3) *Intensities in overlaps between adjacent signals.* No intensity in any overlap between adjacent signals may exceed the values given in § 29.741, except that higher intensities in overlaps are acceptable with the use of main beam intensities substantially greater than the minima specified in §§ 29.737 and 29.739 if the overlap intensities in relation to the main beam intensities do not adversely affect signal clarity.

[Revision note: Based on § 7.634]

§ 29.737 Minimum intensities in the horizontal plane of forward and rear position lights.

Each position light intensity must equal or exceed the applicable values in the following table.

Dihedral angle	Angle from right or left of longitudinal axis, measured from dead ahead	Intensity (candles)
L and R (forward red and green).	0° to 10°	40
	10° to 20°	30
A (rear white)	20° to 110°	5
	110° to 180°	20

[Revision note: Based on Figure 7-1]

§ 29.739 Minimum intensities in any vertical plane of forward and rear position lights.

Each position light intensity must equal or exceed the applicable values in the following table.

Angle above or below horizontal:	Intensity
0°	1.00 I.
0° to 5°	0.90 I.
5° to 10°	0.80 I.
10° to 15°	0.70 I.
15° to 20°	0.50 I.
20° to 30°	0.30 I.
30° to 40°	0.10 I.
40° to 90°	0.05 I.

[Revision note: Based on Figure 7-2]

§ 29.741 Maximum intensities in overlapping beams of forward and rear position lights.

No position light intensity may exceed the applicable values in the following table, except as provided in § 29.735(b) (3).

Overlaps	Maximum intensity	
	Area A (candles)	Area B (candles)
Green in dihedral angle L	10	1
Red in dihedral angle R	10	1
Green in dihedral angle A	5	1
Red in dihedral angle A	5	1
Rear white in dihedral angle L	5	1
Rear white in dihedral angle R	5	1

Where—

(a) Area A includes all directions in the adjacent dihedral angle that pass through the light source and intersect the common boundary plane at more than 10 degrees but less than 20 degrees; and

(b) Area B includes all directions in the adjacent dihedral angle that pass through the light source and intersect the common boundary plane at more than 20 degrees.

[Revision note: Combines Figure 7-3 and note following]

§ 29.743 Color specifications.

Each position light color must have the applicable International Commission on Illumination chromaticity coordinates as follows:

(a) Aviation red—

y is not greater than 0.335; and
 z is not greater than 0.002.

(b) Aviation green—

x is not greater than 0.440—0.320;
 x is not greater than y —0.170; and
 y is not less than 0.390—0.170.

(c) Aviation white—

x is not less than 0.350; and
 x is not greater than 0.540.

$y - y_0$ is not numerically greater than 0.01, y_0 being the y coordinate of the Planckian radiator for which $x_0 = x$.

[Revision note: Based on § 7.635]

§ 29.745 Riding light.

(a) Each installed riding light must be able to—

(1) Show a white light for at least two miles at night under clear atmospheric conditions; and

(2) Show a maximum practicable unbroken light with the rotorcraft on the water.

(b) Externally hung lights are allowed.

[Revision note: Based on § 7.636]

§ 29.747 Anticollision light system.

(a) General. If certification for night operation is requested, the rotorcraft must have an anticollision light system that—

(1) Consists of one or more approved anticollision lights so located that their emitted light will not adversely affect the crew's vision or detract from the conspicuity of the position lights; and

(2) Conforms with the provisions of paragraphs (b) through (f) of this section.

(b) Field of coverage. The system must consist of enough lights to illuminate all vital areas around the rotorcraft, with due consideration of the physical configuration and flight characteristics of the rotorcraft. The field of coverage must extend in all directions within at least 30 degrees above and 30 degrees below the horizontal plane of the rotorcraft, except that there may be solid angles of obstructed visibility totaling not more than 0.5 steradians.

(c) Flashing characteristics. The arrangement of the system, that is, the number of light sources, beam width, speed or rotation, and other characteristics, must give an effective flash frequency of not less than 40, nor more than 100, cycles per minute. The effective flash frequency is the frequency at which the rotorcraft's complete anticollision light system is observed from a distance, and applies to all sectors of light including all overlaps that exist when the system consists of more than one light source. In overlaps, flash frequencies may exceed 100, but not 180, cycles per minute.

(d) Color. The color of each anticollision light must be aviation red and must conform to § 29.743(a).

(e) Light intensity. The minimum light intensities in all vertical planes, measured with the red filter and expressed in terms of "effective" intensities, must conform to paragraph (f) of this section. The following relation must be assumed:

$$I_e = \frac{\int_{t_1}^{t_2} I(t) dt}{0.2 + (t_2 - t_1)}$$

where:

I_e = effective intensity (candles).

$I(t)$ = instantaneous intensity as a function of time.

$t_2 - t_1$ = flash time interval (seconds).

Normally, the maximum value of effective intensity is obtained when t_1 and t_2

are so chosen that the effective intensity is equal to the instantaneous intensity at t_1 and t_2 .

(f) Minimum effective intensities for anticollision lights. Each anticollision light effective intensity must equal or exceed the applicable values in the following table.

Angle above or below the horizontal plane:	Effective intensity (candles)
0° to 5°	100
5° to 10°	60
10° to 20°	20
20° to 30°	10

[Revision note: Combines § 7.637 and Figure 7-4]

SAFETY EQUIPMENT

§ 29.761 Accessibility.

All required safety equipment to be used by the crew in an emergency, such as flares and automatic liferaft releases, must be readily accessible.

[Revision note: Based on § 7.640]

§ 29.763 Flares.

(a) If parachute flares are installed—

(1) Each flare must be approved; and

(2) The rotorcraft structure must be able to withstand all recoil loads involved in the ejection of the flares.

(b) Each flare must be installed so that—

(1) It is releasable from the pilot compartment;

(2) The probability of accidental discharge is minimized; and

(3) Ejection does not endanger the rotorcraft or its occupants.

Compliance with paragraph (b) (3) of this section must be shown in flight.

[Revision note: Combines §§ 7.641 and 7.642]

§ 29.765 Safety belts; passenger warning device.

(a) Each safety belt must be approved.

(b) When means are provided to indicate to the passengers when safety belts should be fastened, the device must be installed so that it can be operated from either pilot seat.

[Revision note: Based on § 7.643]

§ 29.767 Emergency flotation and signaling equipment.

(a) General. All emergency flotation and signaling equipment required by any operating rule of this chapter must conform with this section.

(b) Liferafts. Each liferaft must be approved. In addition—

(1) Unless excess rafts of enough capacity are provided, the buoyancy and seating capacity beyond the rated capacity of the rafts must accommodate all occupants of the rotorcraft in the event of a loss of one raft of the largest rated capacity;

(2) Each raft must have a trailing line, and must have a static line designed to hold the raft near the rotorcraft but to release it if the rotorcraft becomes totally submerged; and

(3) Each raft must have obviously marked operating instructions.

(c) Liferaft equipment. Approved survival equipment must be attached to each liferaft and marked for identification and method of operation.

(d) *Long-range signaling device.* An approved long-range signaling device must be provided for use in one liferaft.

(e) *Life preservers.* Each life preserver must be approved.

[Revision note: Based on § 7.644 (less note following (b))]

§ 29.769 Stowage of safety equipment.

(a) *General.* Stowage provisions for all required emergency equipment must be furnished and must—

(1) Be arranged so that the equipment is directly accessible and its location is obvious;

(2) Protect all safety equipment from inadvertent damage; and

(3) Be marked conspicuously to identify the contents and facilitate removal of the equipment.

(b) *Emergency exit descent device.* The stowage provisions for the emergency exit descent device required by § 29.365(f)(6) must be at the exits for which they are intended.

(c) *Liferafts.* Liferafts must be stowed near exits through which the rafts can be launched during an unplanned ditching. Rafts automatically or remotely released on the outside of the rotorcraft must be attached to the rotorcraft by the static line prescribed in § 29.767(b)(2).

(d) *Long-range signaling device.* The stowage provisions for the long-range signaling device required by § 29.767(d) must be near an exit available during an unplanned ditching.

(e) *Life preservers.* Each life preserver must be within easy reach of each occupant while seated.

[Revision note: Based on § 7.645]

§ 29.771 Protective breathing equipment; oxygen supply.

If protective breathing equipment is required by any operating rule of this chapter—

(a) That equipment must be designed to protect the crew from smoke, carbon dioxide, and other harmful gases while on flight deck duty;

(b) The equipment must include—

(1) Masks covering the eyes, nose, and mouth; or

(2) Masks covering the nose and mouth, plus accessory equipment to cover the eyes; and

(c) A supply of protective oxygen of 10 minutes duration per crewmember must be provided at a pressure altitude of 8,000 feet with a respiratory minute volume of 30 liters per minute BTPD.

[Revision note: Based on § 7.646]

MISCELLANEOUS EQUIPMENT

§ 29.781 Hydraulic systems; strength.

(a) *Structural loads.* Each element of the hydraulic system must be designed to withstand, without detrimental, permanent deformation, all structural loads that may be imposed simultaneously with the maximum operating hydraulic loads.

(b) *Proof pressure tests.* Each element of the system must be tested to a proof pressure of 1.5 times the maximum pressure to which that element will be subjected in normal operation, without

failure, malfunction, or detrimental deformation of any part of the system.

(c) *Burst pressure strength.* Each hydraulic system element must be designed to withstand pressures sufficiently greater than those prescribed in paragraph (b) of this section to show that the system will not rupture under service conditions.

[Revision note: Based on § 7.650 (less note following)]

§ 29.783 Hydraulic systems; design.

(a) *General.* In addition to the requirements of § 29.677, each hydraulic system must conform with the applicable requirements of this section.

(b) *Pressure indication.* Means must be provided to indicate the pressure in each main hydraulic power system.

(c) *Pressure limiting provisions.* Means must be provided to ensure that no pressure in any part of the system will exceed the maximum safe operating pressure of the system, and to prevent excessive pressures resulting from fluid volumetric changes in all lines likely to remain closed long enough for such changes to take place. Consideration must be given to the possibility of detrimental pressures (transient or surge) during operation.

(d) *Installation.* Each hydraulic line, fitting, and component must be installed and supported to prevent excessive vibration and to withstand inertia loads. Each element of the installation must be protected from abrasion, corrosion, and mechanical damage.

(e) *Connections.* Means for providing flexibility must be used to connect points in a hydraulic fluid line between which relative motion or differential vibration exists.

[Revision note: Based on § 7.651]

§ 29.785 Hydraulic systems; fire protection.

Each hydraulic system using flammable hydraulic fluid must conform with the applicable provisions of §§ 29.385 and 29.633 through 29.637.

[Revision note: Based on § 7.652]

§ 29.787 Radio installation.

(a) All radio communication and navigation equipment installations in the rotorcraft must be free from hazards in themselves, in their method of operation, and in their effects on other components of the rotorcraft, under all critical environmental conditions.

(b) All radio communication and navigation equipment, controls, and wiring must be installed so that operation of any one unit or system of units will not adversely affect the simultaneous operation of any other radio or electronic unit, or system of units, required by any regulation in this chapter.

[Revision note: Based on § 7.653 (less note following)]

§ 29.789 Vacuum systems.

(a) Means, in addition to the normal pressure relief, must be provided to automatically relieve the pressure in the discharge lines from the vacuum air pump

when the delivery temperature of the air becomes unsafe.

(b) Each vacuum air system line and fitting on the discharge side of the pump that might contain flammable vapors or fluids must conform with § 29.637 if they are in a designated fire zone.

(c) All other vacuum air system components in designated fire zones must be at least fire resistant.

[Revision note: Based on § 7.654]

Subpart G—Operating Limitations and Information

GENERAL

§ 29.811 Operating limitations and information.

Each operating limitation, and all other information concerning the rotorcraft that is necessary for safe operation, must be—

(a) Included in the rotorcraft flight manual;

(b) Expressed in markings and placards; and

(c) Made available to each crewmember.

[Revision note: Based on § 7.700 (less (a))]

OPERATING LIMITATIONS

§ 29.821 Airspeed limitations; general.

When airspeed limitations are a function of weight, weight distribution, altitude, rotor speed, power, or other factors, airspeed limits corresponding with all critical combinations of these factors must be established.

[Revision note: Based on § 7.710]

§ 29.823 Never-exceed speed V_{NE} .

(a) The never-exceed speed V_{NE} must be established so that it is—

(1) Not less than V_Y with all engines at maximum continuous power; and

(2) Not greater than the lesser of—

(i) 0.9 V established under § 29.127; and

(ii) 0.9 times the maximum speed shown under § 29.99.

(b) V_{NE} may not vary with altitude and rotor r.p.m., unless the ranges of these variables are large enough to allow an operationally practical and safe variation of V_{NE} .

[Revision note: Based on § 7.711]

§ 29.825 Operating speed range.

An operating speed range must be established.

[Revision note: Based on § 7.712]

§ 29.827 Rotor speed.

(a) *Maximum power off (autorotation).* The maximum power-off rotor speed must be established so that it does not exceed 95 percent of the lesser of—

(1) The maximum design r.p.m. determined under § 29.127(b); and

(2) The maximum r.p.m. shown during the type tests.

(b) *Minimum power off.* The minimum power-off rotor speed must be established so that it is not less than 105 percent of the greater of—

(1) The minimum shown during the type tests; and

(2) The minimum determined by design substantiation.

(c) *Minimum power on.* The minimum power-on rotor speed must be established so that it is—

(1) Not less than the greater of—
(i) The minimum shown during the type tests; and

(ii) The minimum determined by design substantiation; and

(2) Not higher than a value determined in compliance with § 29.27(a) (1) and (c) (1).

[Revision note: Based on § 7.713 (less introductory paragraph)]

§ 29.829 Powerplant limitations.

(a) *General.* The powerplant limitations prescribed in this section must be established so that they do not exceed the corresponding limits for which the engines are type certificated.

(b) *Takeoff operation.* The powerplant takeoff operation must be limited by—

(1) The maximum rotational speed, which may not be greater than—

(i) The maximum value determined by the rotor design; or

(ii) The maximum value shown during the type tests;

(2) The maximum allowable manifold pressure;

(3) The time limit for the use of the power corresponding to the limitations established in subparagraphs (1) and (2) of this paragraph; and

(4) If the time limit in subparagraph (3) of this paragraph exceeds two minutes, the maximum allowable cylinder head, coolant outlet, and oil temperatures.

(c) *Continuous operation.* The continuous operation must be limited by—

(1) The maximum rotational speed, which may not be greater than—

(i) The maximum value determined by the rotor design; or

(ii) The maximum value shown during the type tests;

(2) The maximum allowable manifold pressure;

(3) The maximum allowable cylinder head or coolant outlet and oil temperatures; and

(4) The minimum rotational speed shown in compliance with the rotor speed requirements in § 29.827(c).

(d) *Fuel grade or designation.* The minimum fuel grade (for reciprocating engines) or fuel designation (for turbine engines) must be established so that it is not less than that required for the operation of the engines within the limitations in paragraphs (b) and (c) of this section.

(e) *Cooling limitations.* The maximum sea level temperature established for satisfactory cooling must be shown.

[Revision note: Based on § 7.714]

§ 29.831 Limiting height-speed envelope.

If a range of heights exists at any speed, including zero, within which it is not possible to make a safe landing following power failure, the range of heights and its variation with forward speed must be established, together with all

other pertinent information, such as kind of landing surface.

[Revision note: Based on § 7.715]

§ 29.832 Weight and center of gravity.

The weight and center of gravity limitations determined under §§ 29.23 and 29.25, respectively, must be established as operating limitations.

[Revision note: Based on § 7.716]

§ 29.833 Minimum flight crew.

The minimum flight crew for which certification is requested must be sufficient for safe operation, considering—

(a) The workload on individual crewmembers;

(b) The accessibility and ease of operation of all necessary controls by the appropriate crewmember, and

(c) The kinds of operation authorized under § 29.835.

[Revision note: Based on § 7.717]

§ 29.835 Limitations on operation.

The kinds of operation to which a rotorcraft is limited are established on the basis of flight characteristics and installed equipment.

[Revision note: Based on § 7.718]

§ 29.837 Maintenance manual.

Each rotorcraft must have a maintenance manual with all information that the applicant considers essential for proper maintenance, including recommended limits on service life or retirement periods for major components. These components must be identified by serial number or equivalent means.

[Revision note: Based on § 7.719]

MARKINGS AND PLACARDS

§ 29.847 General.

(a) The rotorcraft must contain—

(1) All markings and placards specified in §§ 29.849 through 29.863; and

(2) All additional information, instrument markings, and placards required for the safe operation of rotorcraft with unusual design, operating or handling characteristics.

(b) Each marking and placard prescribed in paragraph (a) of this section—

(1) Must be displayed in a conspicuous place; and

(2) May not be easily erased, disfigured, or obscured.

[Revision note: Based on § 7.730]

§ 29.849 Instrument markings; general.

For each instrument—

(a) When markings are placed on the cover glass of the instrument, provision must be made to maintain the correct alignment of the glass cover with the face of the dial; and

(b) Each arc and line must be of sufficient width, and so located, that it is clearly visible to the pilot.

[Revision note: Based on § 7.731]

§ 29.851 Airspeed indicator.

(a) Each airspeed indicator must be marked to show indicated airspeed and to conform with paragraphs (b) through (d) of this section.

(b) A red radial line must be used to indicate the limit beyond which operation is dangerous.

(c) A yellow arc must be used to indicate the precautionary operating range.

(d) A green arc must be used to indicate the safe operating range.

[Revision note: Based on § 7.732]

§ 29.853 Magnetic direction indicator.

(a) A placard conforming to this section must be installed on, or close to, the magnetic direction indicator.

(b) The placard must show the calibration of the instrument in level flight with all engines operating.

(c) The placard must state whether the calibration was made with radio receivers on or off.

(d) Each calibration reading must be in terms of magnetic headings in not greater than 45 degree increments.

[Revision note: Based on § 7.733]

§ 29.855 Powerplant instruments.

For each required powerplant instrument—

(a) Each maximum and, if applicable, minimum safe operating limit must be marked with a red radial line;

(b) Each normal operating range must be marked with a green arc not extending beyond the maximum and minimum safe operating limits;

(c) Each takeoff and precautionary range must be marked with a yellow arc; and

(d) All engine and rotor speed ranges that are restricted because of excessive vibration must be marked with red arcs.

[Revision note: Based on § 7.734]

§ 29.857 Oil quantity indicator.

Each oil quantity indicator must be marked in sufficient increments to indicate readily and accurately the quantity of oil.

[Revision note: Based on § 7.735]

§ 29.859 Fuel quantity indicator.

If the unusable fuel supply for any tank exceeds one gallon, or five percent of the tank capacity, whichever is greater, a red arc must be marked on its indicator extending from the calibrated zero reading to the lowest reading obtainable in level flight.

[Revision note: Based on § 7.736 (less last sentence)]

§ 29.861 Control markings.

(a) Each cockpit control must be plainly marked as to its function and method of operation.

(b) For powerplant fuel controls—

(1) Each tank selector control must be marked to indicate, for all crossfeed positions, the position corresponding to each tank controlled;

(2) If safe operation requires the use of any tanks in a specific sequence, that sequence must be marked on, or adjacent to, the selector for those tanks;

(3) Each valve control for each engine of multiengine rotorcraft must be marked to indicate the position corresponding to each engine controlled; and

(4) The capacity of each tank must be marked on, or adjacent to, each selector controlling that tank.

(c) For accessory, auxiliary, and emergency controls—

(1) Each essential visual position indicator, such as those showing rotor pitch or landing gear position, must be marked so that each crewmember can determine at any time the position of the unit to which it relates; and

(2) Each emergency control must be colored red and marked as to method of operation.

[Revision note: Based on § 7.737]

§ 29.863 Miscellaneous markings and placards.

(a) *Baggage and cargo compartments, and ballast location.* Each baggage and cargo compartment, and each ballast location must have a placard stating all limitations on contents, including weight, that are necessary under the loading requirements.

(b) *Seats.* If the maximum allowable weight to be carried in a seat is less than 170 pounds, a placard stating such lesser weight must be permanently attached to the seat structure.

(c) *Fuel and oil filler openings.* The following must be marked on, or adjacent to, each appropriate filler cover:

(1) The word "fuel", the minimum fuel grade or designation for the engines, and the usable fuel capacity of the tank.

(2) The word "oil" and the oil tank capacity.

(d) *Emergency exit placards.* Each placard and operating control for each emergency exit must be colored red. A placard must be located adjacent to each emergency exit control and must clearly indicate the location of that exit and its method of operation.

(e) *Operating limitation placard.* A placard must be provided in clear view of the pilot stating: "This (helicopter, gyroplane, etc.) must be operated in compliance with the operating limitations specified in the FAA approved rotorcraft flight manual."

(f) *Safety provisions.* Safety provisions must be marked as follows:

(1) Each safety equipment control to be operated by the crew in emergency, such as flares and automatic liferaft releases, must be plainly marked as to its method of operation.

(2) Each location, such as a locker or compartment, that carries any fire extinguishing, signaling, or other life saving equipment must be marked accordingly.

(g) *Tail rotor.* Each tail rotor must be marked so that its disc is conspicuous under all normal ground conditions.

[Revision note: Based on § 7.738]

ROTORCRAFT FLIGHT MANUAL

§ 29.873 General.

(a) A rotorcraft flight manual must be furnished with each rotorcraft.

(b) All portions of the manual listed in §§ 29.875 through 29.879 that are appropriate to the rotorcraft must be verified and approved, and must be segregated, identified, and clearly distinguished from portions not approved.

(c) All information not specified in §§ 29.875 through 29.879 that is required for safe operation because of unusual design, operating, or handling characteristics, must be furnished.

[Revision note: Based on § 7.740]

§ 29.875 Operating limitations.

(a) *Airspeed and rotor limitations.* All information necessary for the marking of airspeed and rotor limitations on, or adjacent to, their respective indicators must be furnished. In addition, the significance of each limitation and of the color coding must be explained.

(b) *Powerplant limitations.* Information must be furnished to explain all powerplant limitations, and to allow marking the instruments as required by §§ 29.855 through 29.859.

(c) *Weight and loading distribution.* The weight and center of gravity limits required by §§ 29.23 and 29.25 must be furnished, together with all items included in the empty weight in § 29.29(a). If the variety of possible loading conditions warrants, instructions must be included to allow ready observance of the limitations.

(d) *Flight crew.* When a flight crew of more than one is required, the number and functions of the minimum flight crew determined in accordance with § 29.833 must be described.

(e) *Kinds of operation.* Each kind of operation for which the rotorcraft and its equipment installations are approved must be listed.

(f) *Limiting heights.* Enough information must be furnished to allow compliance with § 29.831.

(g) *Unusable fuel.* If the unusable fuel in any tank exceeds one gallon, or five percent of tank capacity, whichever is greater, warning must be provided to indicate to the flight personnel that the fuel remaining in that tank when the quantity indicator reads "zero" cannot be used safely in flight.

[Revision note: Based on § 7.741]

§ 29.877 Operating procedures.

The portion of the manual containing operating procedures must have information concerning all normal and emergency procedures, and other pertinent information, necessary for safe operation, including all applicable procedures to be followed if an engine fails.

[Revision note: Based on § 7.742]

§ 29.879 Performance information.

(a) *Category A.* For each category A rotorcraft, the rotorcraft flight manual must contain a summary of all performance data, including data necessary for the application of any operating rule of this chapter, together with descriptions of all conditions, such as airspeeds, under which these data were determined, and must contain—

(1) All indicated airspeeds corresponding with those determined for takeoff, and the procedures to be followed if the critical engine fails during takeoff;

(2) All airspeed calibrations;

(3) All techniques, associated airspeeds, and rates of descent for autorotative landings; and

(4) The maximum allowable wind for safe operation near the ground.

(b) *Category B.* For each category B rotorcraft, the rotorcraft flight manual must contain—

(1) The takeoff distance and the takeoff safety airspeed together with all pertinent information defining the flight path with respect to autorotative landing if an engine fails, including the calculated effects of altitude and temperature;

(2) The steady rates of climb and hovering ceiling together with the corresponding airspeeds and other pertinent information, including the calculated effects of altitude and temperature;

(3) The landing distance, appropriate glide airspeed, and kind of landing surface, together with any pertinent information that might affect this distance, including the calculated effects of altitude and temperature;

(4) The maximum safe wind for operation near the ground;

(5) All airspeed calibrations; and

(6) All additional performance data necessary for the application of any operating rule in this chapter.

[Revision note: Based on § 7.743]

APPENDIX A—LIMIT DROP TEST

When an effective mass is used in showing compliance with § 29.323, the following formula may be used in lieu of more rational computations.

$$W_e = W \left[\frac{h + (1-L)d}{h+d} \right]; \text{ and } n = n_f \frac{W_e}{W} + L$$

where:

W_e = the effective weight to be used in the drop test (lbs.).

$W = W_M$ for main gear units (lbs.), equal to the static reaction on the particular unit with the rotorcraft in the most critical attitude. A rational method may be used in computing a main gear static reaction, taking into consideration the distance between the direction of the main wheel reaction and the aircraft c.g.

$W = W_N$ for nose gear units (lbs.), equal to the vertical component of the static reaction which would exist at the nose wheel, assuming the mass of the rotorcraft acting at the center of gravity and exerting a force of 1.0g downward and 0.25g forward.

$W = W_T$ for tailwheel units (lbs.) equal to whichever of the following is critical—

- (1) The static weight on the tailwheel with the rotorcraft resting on all wheels; or
- (2) The vertical component of the ground reaction which would occur at the tailwheel assuming the mass of the rotorcraft acting at the center of gravity and exerting a force of 1g downward with the rotorcraft in the maximum nose-up attitude considered in the nose-up landing conditions.

h = specified free drop height (inches).

L = ratio of assumed rotor lift to the rotorcraft weight.

d = deflection under impact of the tire (at the approved inflation pressure) plus the vertical component of the axle travel relative to the drop mass (inches).

n = limit inertia load factor.

n_f = the load factor during impact developed on the mass used in the drop test (i.e., the acceleration dv/dt in g's recorded in the drop test plus 1.0).

[Revision note: Combines note following §§ 7.332(a) and 7.333]

PART 29

DISTRIBUTION TABLE

Present section	Revised section
7.0 (1st sentence)-----	29.1.
7.0 (less 1st sentence)---	Surplusage.
7.1(a) (1)-----	Part 1 [New].
7.1(a) (2)-----	Surplusage.
7.1(a) (less (1) and (2))	Part 1 [New].
7.1(b) (1)-----	Part 1 [New].
7.1(b) (2)-----	Part 1 [New].
7.1(b) (3)-----	Part 1 [New].
7.1(b) (less (1)-(3))---	Part 1 [New].
7.1(c) (1)-----	Part 1 [New].
7.1(c) (2)-----	Surplusage.
7.1(c) (3)-----	To be trfd. to Part 1 [New].
7.1(c) (4)-----	Part 1 [New].
7.1(c) (5)-----	Surplusage.
7.1(c) (7)-----	Surplusage.
7.1(c) (less (1)-(7))---	Surplusage.
7.1(d) (1)-(d) (2)-----	Executed.
7.1(d) (3)-----	Surplusage.
7.1(d) (4)-(5)-----	Executed.
7.1(d) (less (1)-(5))---	To be trfd. to Part 1 [New].
7.1(e) (1) (1st sentence (less symbol "IAS"))	Part 1 [New].
7.1(e) (1) (less 1st sentence).	Surplusage.
Symbol "IAS"-----	To be trfd. to Part 1 [New].
7.1(e) (2)-----	Part 1 [New].
7.1(e) (3) (less symbol "EAS"))	Part 1 [New].
Symbol "EAS"-----	To be trfd. to Part 1 [New].
7.1(e) (4) (less symbol "TAS"))	Part 1 [New].
Symbol "TAS"-----	To be trfd. to Part 1 [New].
7.1(e) (5)-(7)-----	To be trfd. to Part 1 [New].
7.1(e) (less (1)-(7))---	To be trfd. to Part 1 [New].
7.1(f) (1)-(6)-----	To be trfd. to Part 1 [New].
7.1(f) (less (1)-(6))---	Executed.
7.1(g) (1)-(3)-----	Part 1 [New].
7.1(g) (4)-----	To be trfd. to Part 1 [New].
7.1(g) (5)-----	Part 1 [New].
7.1(g) (less (1)-(5))---	To be trfd. to Part 1 [New].
7.1(h) (1)-(5)-----	To be trfd. to Part 1 [New].
7.1(h) (less (1)-(5))---	29.141.
7.1(i)-----	Part 1 [New].
7.1 (less (a)-(i))-----	Surplusage.
7.10-7.19-----	To be trfd. to proposed Part 21 [New].
7.20 (a) and (b) (1st sentence).	29.1.
7.20(b) (less 1st sentence).	Surplusage.
7.100(a)-(c)-----	29.21.
7.100 (less (a)-(c))---	Trfd. to proposed Part 21 [New].
7.101-----	29.23.
7.102-----	29.25.
7.103-----	29.27.
7.104-----	29.29.
7.105-----	29.31.
7.110 (less note following).	29.41.
Note following 7.110---	Not a rule.
7.111-----	29.43.
7.112(a)-----	29.47.
7.112 (less (a))-----	29.45.
7.113-----	29.47.
7.114(a)-----	29.47.
7.114 (less (a))-----	29.49.
7.115 (less (b))-----	29.51.
7.115(b) (less (3))-----	29.53.
7.115(b) (3)-----	29.55.
7.116-----	29.57.
7.117 (less (a))-----	29.58.
7.117(a)-----	29.59.
7.118 (a) and (b)-----	29.59.

PART 29—Continued

DISTRIBUTION TABLE—continued

Present section	Revised Section
7.118 (less (a) and (b)).	29.61.
7.120-----	29.69.
7.121-----	29.71.
7.122-----	29.73.
7.123-----	29.75.
7.130-----	29.85.
7.131-----	29.87.
7.132-----	29.89.
7.140 (vibration aspect).	29.99.
7.140 (less vibration aspect).	29.273.
7.200-----	29.121.
7.201-----	29.123.
7.202 (less (c))-----	29.125.
7.202(c)-----	Surplusage.
7.203-----	29.125.
7.204-----	29.127.
7.210-----	29.137.
7.211-----	29.139.
7.212-----	29.141.
7.213-----	29.143.
7.214-----	29.145.
7.220-----	29.155.
7.221-----	29.157.
7.222-----	29.159.
7.223-----	29.161.
7.224-----	29.163.
7.225-----	29.165.
7.226-----	29.165.
7.230-----	29.175.
7.231-----	29.177.
7.232-----	29.179.
7.233-----	29.181.
7.234-----	29.183.
7.235-----	29.185.
7.236-----	29.187.
7.240-----	29.193.
7.245-----	29.203.
7.246-----	29.205.
7.250-----	29.217.
7.251-----	29.219.
7.252-----	29.221.
7.260-----	29.229.
7.261 (less note following).	29.229.
Note following § 7.261---	Not a rule.
7.300-----	29.251.
7.301-----	29.253.
7.302-----	29.255.
7.303-----	29.257.
7.304-----	29.259.
7.305-----	29.261.
7.306-----	29.263.
7.307(a)-----	29.265.
7.307(b)-----	29.267.
7.307(c)-----	29.269.
7.307 (less (a)-(c))---	29.271.
7.310-----	29.281.
7.311-----	29.283.
7.312-----	29.285.
7.313-----	29.287.
7.320-----	29.297.
7.321-----	29.299.
7.322-----	29.301.
7.323-----	29.303.
7.324-----	29.305.
7.325-----	29.307.
7.326-----	29.309.
7.327-----	29.311.
7.328-----	29.313.
7.330-----	Executed.
7.331-----	Surplusage.
7.332 (less note following (a)).	29.323.
Note following § 7.332 (a).	Appendix A.
7.333-----	Appendix A.
7.334-----	29.325.
7.335-----	29.327.
7.336-----	29.329.
7.337-----	29.331.
7.338-----	29.333.
7.340-----	29.339.
7.341-----	29.341.
7.350-----	29.351.

PART 29—Continued

DISTRIBUTION TABLE—continued

Present section	Revised section
7.351-----	29.353.
7.352-----	29.355.
7.353-----	29.357.
7.354-----	29.359.
7.355-----	29.361.
7.356-----	29.363.
7.357-----	29.365.
7.358 (less note following (c)).	29.367.
Note following § 7.358 (c).	Not a rule.
7.359 (1st 8 words)-----	29.369.
7.359 (less 1st 8 words)---	Surplusage.
7.380-----	29.377.
7.381-----	29.379.
7.382 (less note following (a)).	29.381.
Note following § 7.382 (a).	Not a rule.
7.383-----	29.383.
7.384-----	29.385.
7.385-----	29.387.
7.390-----	29.395.
7.391-----	29.397.
7.392-----	29.399.
7.400-----	29.421.
7.401-----	29.423.
7.402-----	29.425.
7.403-----	29.435.
7.404-----	29.437.
7.405 (less sentences (4) and (5) of (a) (1)).	29.439.
7.405(a) (1) (sentence (4)).	Transferred to Part 83 [New].
7.405(a) (1) (sentence (5)).	Surplusage.
7.406-----	29.441.
7.407-----	29.443.
7.408-----	29.445.
7.410-----	29.453.
7.411-----	29.455.
7.413-----	29.457.
7.416-----	29.459.
7.417-----	29.461.
7.418-----	29.463.
7.420-----	29.473.
7.421-----	29.475.
7.422-----	29.477.
7.423-----	29.479.
7.424-----	29.481.
7.425-----	29.483.
7.426-----	29.485.
7.427-----	29.487.
7.428-----	29.489.
7.430 (less 2d and 3d sentences of note following (a)).	29.501.
(2d and 3d sentences of note following 7.430 (a)).	Not a rule.
7.431-----	29.503.
7.432-----	29.505.
7.433-----	Surplusage.
7.434-----	29.507.
7.435-----	29.509.
7.436-----	29.511.
7.437-----	29.513.
7.440-----	29.523.
7.441-----	29.525.
7.442-----	29.527.
7.443-----	29.529.
7.444-----	29.531.
7.445-----	29.533.
7.446-----	29.535.
7.447-----	29.537.
7.448-----	29.539.
7.450-----	29.551.
7.451 (1st sentence)-----	29.551.
7.451 (less 1st sentence).	29.553.
7.452-----	29.555.
7.453-----	29.557.
7.454-----	29.559.
7.455-----	29.561.
7.460-----	29.571.
7.461-----	29.573.

PROPOSED RULE MAKING

PART 29—Continued

DISTRIBUTION TABLE—continued

Present section	Revised section
7.462 -----	29.575.
7.463 -----	29.577.
7.464 -----	29.579.
7.465 -----	29.581.
7.466 -----	29.583.
7.467 -----	29.585.
7.470 -----	29.601.
7.471 -----	29.603.
7.472 -----	29.605.
7.473 -----	29.607.
7.474 -----	29.609.
7.475 -----	29.611.
7.476 -----	29.613.
7.477 (less note follow- ing).	29.615.
Note following 7.477 --	Not a rule.
7.478 -----	29.617.
7.480 (less note fol- lowing).	29.631.
Note following 7.480 --	Not a rule.
7.481 -----	29.633.
7.482 -----	29.635.
7.483 -----	29.637.
7.484 -----	29.639.
7.485 -----	29.641.
7.486 -----	29.643.
7.487 -----	29.645.
7.489 -----	29.647.
7.600 (1st sentence) --	29.671.
7.600 (less 1st sen- tence).	Not a rule.
7.601 -----	29.673.
7.602-7.605 -----	29.675.
7.606 -----	29.677.
7.610 -----	Surplusage.
7.611 -----	29.691.
7.612 -----	29.693.
7.613 -----	29.695.
7.620 -----	Surplusage.
7.621 -----	29.705.
7.622 -----	29.707.
7.623 (less note fol- lowing).	29.709.

PART 29—Continued

DISTRIBUTION TABLE—continued

Present section	Revised section
Note following 7.623 --	Not a rule.
7.624 (less note fol- lowing (e)).	29.711.
Note following 7.624	Not a rule.
(e).	
7.625(a) -----	29.677.
7.625 (less (a)) -----	29.713.
7.626 -----	29.715.
7.627 -----	29.717.
7.630 -----	29.727.
7.631 -----	29.729.
7.632 -----	29.731.
7.633 -----	29.733.
7.634 -----	29.735.
Figure 7-1 -----	29.737.
Figure 7-2 -----	29.739.
Figure 7-3 and note following.	29.741.
7.635 -----	29.743.
7.636 -----	29.745.
7.637 -----	29.747.
Figure 7-4 -----	29.747.
7.640 -----	29.761.
7.641 -----	29.763.
7.642 -----	29.763.
7.643 -----	29.765.
7.644 (less note fol- lowing (b)).	29.767.
Note following 7.644	Not a rule.
(b).	
7.645 -----	29.769.
7.646 (less note fol- lowing).	29.771.
Note following 7.646 --	Not a rule.
7.650 (less note fol- lowing).	29.781.
Note following 7.650 --	Not a rule.
7.651 -----	29.783.
7.652 -----	29.785.
7.653 (less note fol- lowing (a)).	29.787.
Note following 7.653	Not a rule.
(a).	

PART 29—Continued

DISTRIBUTION TABLE—continued

Present section	Revised section
7.654 -----	29.789.
7.700 (a) -----	Surplusage.
7.700 (less (a)) -----	29.811.
7.710 -----	29.821.
7.711 -----	29.823.
7.712 -----	29.825.
7.713 (less intro. para- graph).	29.827.
7.713 (intro. para- graph).	Surplusage.
7.714 -----	29.829.
7.715 -----	29.831.
7.716 -----	29.832.
7.717 -----	29.833.
7.718 -----	29.835.
7.719 -----	29.837.
7.730 -----	29.847.
7.731 -----	29.849.
7.732 -----	29.851.
7.733 -----	29.853.
7.734 -----	29.855.
7.735 -----	29.857.
7.736 (less last sen- tence).	29.859.
Last sentence of § 7.736.	Surplusage.
7.737 -----	29.861.
7.738 -----	29.863.
7.740 -----	29.873.
7.741 -----	29.875.
7.742 -----	29.877.
7.743 -----	29.879.
7.744 -----	Surplusage.
Appendix A:	
SR 392C -----	Expired.
SR 392D -----	Expired.
SR 425C -----	Transferred to pro- posed Part 21 [New].

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