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Flight Engineer Certificates

FEDERAL AVIATION AGENCY

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Introductory Note

This manual contains revised Civil Air Regulations Part 35, Flight Engineer Certificates, effective November 15, 1958, and the editorial changes required by Special Regulation SR–430 effective December 31, 1958.

This manual supersedes Civil Aeronautics Manual 35 dated April 30, 1957.

As amendments and other pertinent materials pertaining to Part 35 are issued, they will be included in this manual.

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Flight Engineer Certificates

Applicability and Definitions

35.1 *Applicability of this part.* This part establishes certification and general operating rules for flight engineers.

35.2 *Definitions.* As used in this part, terms are defined as follows:

Administrator. The Administrator is the Administrator of the Federal Aviation Agency.

Appproved. Approved, when used alone or as modifying terms such as means, method, action, equipment, etc., means approved by the Administrator.

Authorized representative of the Administrator. An authorized representative of the Administrator is any employee of the Federal Aviation Agency or any private person, authorized by the Administrator to perform particular duties of the Administrator under the provisions of this part.

Flight engineer. A flight engineer is an individual holding a valid flight engineer certificate issued by the Administrator and whose primary assigned duty during flight is to assist the pilots in the mechanical operation of an aircraft.

Flight time. Flight time is the time from the moment the aircraft first moves under its own power for the purpose of flight until it comes to rest at the next point of landing (block-to-block time).

Month. A month is that period of time extending from the first day of any month as delineated by the calendar through the last day thereof.

Pilot in command. The pilot in command is the pilot responsible for the operation and safety of the aircraft during the time defined as flight time.

Certification Rules

35.5 *Application for certificate.* An application for a certificate shall be made on a form and in a manner prescribed by the Administrator.

35.6 *Issuance.*

(a) A flight engineer certificate shall be issued by the Administrator to an applicant who meets the requirements of this part.

(b) Pending a review of the applicant's application and supplementary documents and the issuance of a certificate by the Administrator, an authorized representative of the Administrator may, subject to such conditions and limitations as the Administrator may prescribe, issue a temporary flight engineer certificate to an applicant who meets the requirements of this part.

35.7 *Duration.*

(a) A flight engineer certificate issued to a United States citizen shall remain in effect until surrendered, suspended, revoked, or otherwise terminated by order of the Administrator. A certificate issued to an applicant other than a United States citizen shall remain in effect for a period no longer than 12 months after the date of issuance; however, it may be reissued without further demonstration of technical competence.

(b) A temporary flight engineer certificate shall remain in effect for a period no longer than 90 days after the date of issuance.

(c) After revocation, and upon request after suspension, the certificate shall be returned to the Administrator.

35.8 *Change of address.* Within 30 days after any change in the permanent mailing address of a certificated flight engineer, he shall notify the Administrator in writing of his new address. This notice shall be mailed to the Federal Aviation Agency, Examinations and Records Division, 621 North Robinson Avenue, Oklahoma City 2, Oklahoma.

General Certificate Requirements

35.21 *Citizenship.* An applicant for a flight engineer certificate may be a citizen of any country or a person without nationality.

35.22 *Age.* 21 years is the minimum age for the issuance of a flight engineer certificate.

35.23 *Education.* An applicant shall be able to read, speak, and understand the English language, or an appropriate limitation shall be placed upon his flight engineer certificate.

35.24 *Examinations and tests.* Examinations and tests shall be conducted by an authorized representative of the Administrator at such times and places as the Administrator may designate. The passing grade for such examinations and tests shall be at least 70 percent.

35.25 *Reexamination after failure.* An applicant who has failed any prescribed written or practical examination or test may not apply for reexamination within a 30-day period from the date of such failure unless he presents a statement signed by a certificated flight engineer, an appropriately rated and certificated ground instructor, or an authorized representative of the Administrator, which attests that the applicant is considered competent for reexamination, and

(a) In the case of the written examination, that the applicant has received an additional 5 hours of instruction in each of the subjects failed; or

(b) In the case of the practical examination, that the applicant has received such additional instruction as may be required by the Administrator in each of the subjects failed.

35.26 *Substantiation of experience.* An applicant shall present to the Administrator satisfactory documentary evidence to substantiate the experience qualifications for a flight engineer certificate.

35.27 *Physical standards.* An applicant shall present evidence that he has, within the 12 months immediately preceding the date of application, met the physical standards of the second class prescribed in Part 29 of this chapter: *Provided,* That an applicant who is unable to distinguish aviation signal red, aviation signal green, and white shall be issued an airman certificate appropriately endorsed to prohibit the holder thereof from exercising the privileges of such certificate except under such conditions, or with the use of such equipment, which would not require the ability to distinguish such aviation signal colors.

Qualifications for a Certificate

35.31 *Experience.* An applicant shall:

(a) Have had at least 3 years of diversified practical experience in the maintenance and repair of aircraft and aircraft engines, of which 1 year shall have been in the maintenance and repair of multiengine aircraft having engines rated at least at 800 h.p. each or the equivalent thereof in the case of turbine-powered aircraft, and have had at least 5 hours of training in flight in the duties of a flight engineer on multiengine aircraft having 4 or more engines rated at least at 800 h.p. each or the equivalent thereof in the case of turbine-powered aircraft; or

(b) Be a graduate of at least a 2-year specialized aeronautical training course in the maintenance, repair, and overhaul of aircraft and aircraft engines, of which at least 6 months shall have been in the maintenance and repair of multiengine aircraft having engines rated at least at 800 h.p. each or the equivalent thereof in the case of turbine-powered aircraft, and have had at least 5 hours of training in flight in the duties of a flight engineer on multiengine aircraft having 4 or more engines rated at least at 800 h.p. each or the equivalent thereof in the case of turbine-powered aircraft; or

(c) Hold a degree in aeronautical, electrical, or mechanical engineering from a recognized college, university, or engineering school and have had 6 months' practical experience in the maintenance and repair of multiengine aircraft having engines rated at least at 800 h.p. each or the equivalent thereof in the case of turbine-powered aircraft, and have had at least 5 hours of training in flight in the duties of a flight engineer on

multiengine aircraft having 4 or more engines rated at least at 800 h.p. each or the equivalent thereof in the case of turbine-powered aircraft; or

(d) Have had at least 200 hours of flight time as pilot in command of aircraft having 4 or more engines rated at least at 800 h.p. each or the equivalent thereof in the case of turbine-powered aircraft; or

(e) Have had at least 100 hours of flight experience in the duties of a flight engineer; or

(f) Within 90 days immediately preceding the date of application, have completed successfully a course of instruction which the Administrator approves as adequate for the training of a flight engineer.

35.32 *Knowledge.* An applicant shall satisfactorily pass a written examination on the following subjects with respect to aircraft having 4 or more engines and certificated in the transport category or an aircraft having 4 or more engines and incorporating a flight engineer station:

(a) The provisions of the Civil Air Regulations applicable to the duties of a flight engineer;

(b) Theory of flight and elementary aerodynamics;

(c) Aircraft performance and aircraft engine operation with respect to limitations;

(d) Mathematical computations of engine operation and fuel consumption;

(e) Basic meteorology with respect to engine operations;

(f) Aircraft loading and center of gravity computations;

(g) General aircraft maintenance and operating procedures; and

(h) Emergency procedures.

Note: The applicant need not have the 5 hours of training in flight in the duties of a flight engineer specified in section 35.31 (a), (b), and (c) prior to taking the written examination required by section 35.32.

35.33 *Skill.* An applicant shall pass a practical examination in the duties of a flight engineer on an aircraft having 4 or more engines and certificated in the transport category or on an aircraft having 4 or more engines and incorporating a flight engineer station, with respect to pre-flight inspection of aircraft, servicing, starting, and pre-take-off run-up, and

(a) In flight, demonstrate competence with respect to normal duties and procedures relating to the aircraft, aircraft engines, propellers, and appliances; and

(b) In flight, or in an approved synthetic trainer which accurately simulates the flight characteristics and performance of the aircraft, demonstrate competence with respect to emergency duties, procedures, and recognition of and the taking of appropriate action with respect to the malfunctioning of aircraft, aircraft engines, propellers, and appliances.

35.34 *Limited certificate.*

(a) An applicant may be certificated as a flight engineer for an aircraft having less than 4 engines: *Provided,* That

(1) The design of the aircraft incorporates a flight engineer station satisfactory to the Administrator.

(2) The applicant meets the requirements of sections 35.21 through 35.32, except that experience need not include flight time in aircraft having more than 2 engines, and

(3) The applicant passes a practical examination as required in section 35.33 in aircraft having less than 4 engines.

(b) A certificate issued under the provisions of this section shall contain an appropriate limitation which may be removed at such time as the holder of the certificate passes the practical test prescribed in section 35.33 for an aircraft having 4 or more engines.

Operating Rules

35.41 *Certificate required.* No individual shall serve as a flight engineer in air commerce on an aircraft of United States registry without, or in violation of the terms of, a certificate issued in accordance with the provisions of this part. He shall have his certificate in his personal possession when performing his duties.

35.42 *Display.* A flight engineer shall, upon request, present his airman and medical certificates for examination by any au-

thorized representative of the Civil Aeronautics Board or the Administrator, or by any State or local law enforcement officer.

35.43 *Medical certificate.* No individual shall exercise the privileges accorded by a flight engineer certificate unless he has in his personal possession while so serving a medical certificate or other evidence satisfactory to the Administrator showing that he has met the physical requirements appropriate thereto within the preceding 12 months.

35.44 *Operation during physical deficiency.* No individual shall exercise the privileges accorded by a flight engineer certificate during any period of known physical deficiency or increase in physical deficiency which would render him unable to meet the physical requirements prescribed for the issuance of his currently effective medical certificate.

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