

conversion, upgrade, and recurrent training for the airplane.

(b) *Related aircraft differences training.*

(1) In order to seek approval of related aircraft differences training for flightcrew members, a certificate holder must submit a request for related aircraft designation to the Administrator, and obtain approval of that request.

(2) If the Administrator determines under paragraph (b)(1) of this section that a certificate holder is operating related aircraft, the certificate holder may submit to the Administrator a request for approval of a training program that includes related aircraft differences training.

(3) A request for approval of a training program that includes related aircraft differences training must include at least the following:

(i) Each appropriate subject required for the ground training for the related aircraft.

(ii) Each appropriate maneuver or procedure required for the flight training and crewmember emergency training for the related aircraft.

(iii) The number of programmed hours of ground training, flight training and crewmember emergency training necessary based on review of the related aircraft and the duty position.

(c) *Approved related aircraft differences training.* Approved related aircraft differences training for flightcrew members may be included in initial, transition, conversion, upgrade and recurrent training for the base aircraft. If the certificate holder's approved training program includes related aircraft differences training in accordance with paragraph (b) of this section, the training required by §§121.419, 121.420, 121.424, 121.425, 121.426, and 121.427, as applicable to flightcrew members, may be modified for the related aircraft.

[Doc. No. 9509, 35 FR 90, Jan. 3, 1970, as amended by Amdt. 121–366, 78 FR 67839, Nov. 12, 2013; Amdt. 121–382, 85 FR 10922, Feb. 25, 2020]

**§ 121.419 Pilots and flight engineers: Initial, transition, conversion and upgrade ground training.**

(a) Except as provided in paragraph (b) of this section, initial and conversion ground training for pilots and ini-

tial and transition ground training for flight engineers, must include instruction in at least the following as applicable to their assigned duties:

(1) General subjects—

(i) The certificate holder's dispatch or flight release procedures;

(ii) Principles and methods for determining weight and balance, and runway limitations for takeoff and landing;

(iii) Enough meteorology to insure a practical knowledge of weather phenomena, including the principles of frontal systems, icing, fog, thunderstorms, and high altitude weather situations;

(iv) Air traffic control systems, procedures, and phraseology;

(v) Navigation and the use of navigation aids, including instrument approach procedures;

(vi) Normal and emergency communication procedures;

(vii) Visual cues prior to and during descent below DA/DH or MDA;

(viii) Approved crew resource management initial training; and

(ix) Other instructions as necessary to ensure pilot and flight engineer competence.

(2) For each airplane type—

(i) A general description;

(ii) Performance characteristics;

(iii) Engines and propellers;

(iv) Major components;

(v) Major airplane systems (e.g., flight controls, electrical, hydraulic); other systems as appropriate; principles of normal, abnormal, and emergency operations; appropriate procedures and limitations;

(vi) Procedures for—

(A) Recognizing and avoiding severe weather situations;

(B) Escaping from severe weather situations, in case of inadvertent encounters, including low-altitude windshear, and

(C) Operating in or near thunderstorms (including best penetrating altitudes), turbulent air (including clear air turbulence), icing, hail, and other potentially hazardous meteorological conditions;

(vii) Operating limitations;

(viii) Fuel consumption and cruise control;

(ix) Flight planning;

(x) Each normal and emergency procedure;

(xi) For pilots, stall prevention and recovery in clean configuration, take-off and maneuvering configuration, and landing configuration.

(xii) For pilots, upset prevention and recovery; and

(xiii) The approved Airplane Flight Manual.

(b) Initial and conversion ground training for pilots who have completed the airline transport pilot certification training program in §61.156 of this chapter, and transition ground training for pilots, must include instruction in at least the following as applicable to their assigned duties:

(1) Ground training specific to the certificate holder's—

(i) Dispatch or flight release procedures;

(ii) Method for determining weight and balance and runway limitations for takeoff and landing;

(iii) Meteorology hazards applicable to the certificate holder's areas of operation;

(iv) Approved departure, arrival, and approach procedures;

(v) Normal and emergency communication procedures; and

(vi) Approved crew resource management training.

(2) The training required by paragraph (a)(2) of this section for the airplane type.

(c) Beginning on April 27, 2022, and in addition to the requirements in paragraph (a) or (b) of this section, as applicable, initial ground training for pilots in command must include instruction and facilitated discussion on the following:

(1) Leadership and command, including flightcrew member duties under §121.542; and

(2) Mentoring, including techniques for instilling and reinforcing the highest standards of technical performance, airmanship, and professionalism in newly hired pilots.

(d) Initial ground training for pilots and flight engineers must consist of at least the following programmed hours of instruction in the required subjects specified in paragraph (a) of this section and in §121.415(a) unless reduced under §121.405:

(1) Group I airplanes—

(i) Reciprocating powered, 64 hours; and

(ii) Turbopropeller powered, 80 hours.

(2) Group II airplanes, 120 hours.

(e) Initial ground training for pilots who have completed the airline transport pilot certification training program in §61.156 must consist of at least the following programmed hours of instruction in the required subjects specified in paragraph (b) of this section and in §121.415(a) unless reduced under §121.405:

(1) Group I airplanes—

(i) Reciprocating powered, 54 hours; and

(ii) Turbopropeller powered, 70 hours.

(2) Group II airplanes, 110 hours.

(f) *Compliance and pilot programmed hours.* (1) Compliance with the requirements identified in paragraphs (a)(2)(xi) and (a)(2)(xii) of this section is required no later than March 12, 2019.

(2) Beginning March 12, 2019, initial programmed hours applicable to pilots as specified in paragraphs (d) and (e) of this section must include 2 additional hours.

(g) Before April 27, 2022, upgrade ground training must include either the instruction specified in paragraph (a) of this section or the instruction specified in §121.420. Beginning on April 27, 2022, upgrade ground training must include the instruction specified in §121.420.

[Doc. No. FAA-2010-0100, 78 FR 42377, July 15, 2013, as amended by Amdt. 121-366, 78 FR 67839, Nov. 12, 2013; Amdt. 121-382, 85 FR 10922, Feb. 25, 2020]

#### § 121.420 Pilots: Upgrade ground training.

(a) Upgrade ground training must include instruction in at least the following subjects as applicable to the duties assigned to the pilot in command:

(1) Seat dependent procedures, as applicable;

(2) Duty position procedures, as applicable; and

(3) Crew resource management, including decision making, authority and responsibility, and conflict resolution.

(b) In addition to the requirements in paragraph (a) of this section, upgrade