

crewmember and dispatcher is adequately trained to perform his assigned duties.

(e) Upgrade training as specified in §§121.419 and 121.424 for a particular type airplane may be included in the training program for crewmembers who have qualified and served as second in command pilot or flight engineer on that airplane.

(f) Particular subjects, maneuvers, procedures, or parts thereof specified in §§121.419 through 121.425 for transition or upgrade training, as applicable, may be omitted, or the programmed hours of ground instruction or inflight training may be reduced, as provided in §121.405.

(g) In addition to initial, transition, upgrade, recurrent and differences training, each training program must also provide ground and flight training, instruction, and practice as necessary to insure that each crewmember and dispatcher—

(1) Remains adequately trained and currently proficient with respect to each airplane, crewmember position, and type of operation in which he serves; and

(2) Qualifies in new equipment, facilities, procedures, and techniques, including modifications to airplanes.

[Doc. No. 9509, 35 FR 90, Jan. 3, 1970, as amended by Amdt. 121-130, 41 FR 47229, Oct. 28, 1976; Amdt. 121-281, 66 FR 19043, Apr. 12, 2001; Amdt. 121-329, 72 FR 1881, Jan. 16, 2007]

**§ 121.417 Crewmember emergency training.**

(a) Each training program must provide the emergency training set forth in this section with respect to each airplane type, model, and configuration, each required crewmember, and each kind of operation conducted, insofar as appropriate for each crewmember and the certificate holder.

(b) Emergency training must provide the following:

(1) Instruction in emergency assignments and procedures, including coordination among crewmembers.

(2) Individual instruction in the location, function, and operation of emergency equipment including—

(i) Equipment used in ditching and evacuation;

(ii) [Reserved]

(iii) Portable fire extinguishers, with emphasis on type of extinguisher to be used on different classes of fires; and

(iv) Emergency exits in the emergency mode with the evacuation slide/raft pack attached (if applicable), with training emphasis on the operation of the exits under adverse conditions.

(3) Instruction in the handling of emergency situations including—

(i) Rapid decompression;

(ii) Fire in flight or on the surface, and smoke control procedures with emphasis on electrical equipment and related circuit breakers found in cabin areas including all galleys, service centers, lifts, lavatories and movie screens;

(iii) Ditching and other evacuation, including the evacuation of persons and their attendants, if any, who may need the assistance of another person to move expeditiously to an exit in the event of an emergency.

(iv) [Reserved]

(v) Hijacking and other unusual situations.

(4) Review and discussion of previous aircraft accidents and incidents pertaining to actual emergency situations.

(c) Each crewmember must accomplish the following emergency training during the specified training periods, using those items of installed emergency equipment for each type of airplane in which he or she is to serve (Alternate recurrent training required by §121.433(c) of this part may be accomplished by approved pictorial presentation or demonstration):

(1) One-time emergency drill requirements to be accomplished during initial training. Each crewmember must perform—

(i) At least one approved protective breathing equipment (PBE) drill in which the crewmember combats an actual or simulated fire using at least one type of installed hand fire extinguisher or approved fire extinguisher that is appropriate for the type of actual fire or simulated fire to be fought while using the type of installed PBE required by §121.337 or approved PBE simulation device as defined by paragraph (d) of this section for combatting fires aboard airplanes;

(ii) At least one approved firefighting drill in which the crewmember combats an actual fire using at least one type of installed hand fire extinguisher or approved fire extinguisher that is appropriate for the type of fire to be fought. This firefighting drill is not required if the crewmember performs the PBE drill of paragraph (c)(1)(i) by combating an actual fire; and

(iii) An emergency evacuation drill with each person egressing the airplane or approved training device using at least one type of installed emergency evacuation slide. The crewmember may either observe the airplane exits being opened in the emergency mode and the associated exit slide/raft pack being deployed and inflated, or perform the tasks resulting in the accomplishment of these actions.

(2) Additional emergency drill requirements to be accomplished during initial training and once each 24 calendar months during recurrent training. Each crewmember must—

(i) Perform the following emergency drills and operate the following equipment:

(A) Each type of emergency exit in the normal and emergency modes, including the actions and forces required in the deployment of the emergency evacuation slides;

(B) Each type of installed hand fire extinguisher;

(C) Each type of emergency oxygen system to include protective breathing equipment;

(D) Donning, use, and inflation of individual flotation means, if applicable; and

(E) Ditching, if applicable, including but not limited to, as appropriate:

(1) Cockpit preparation and procedures;

(2) Crew coordination;

(3) Passenger briefing and cabin preparation;

(4) Donning and inflation of life preservers;

(5) Use of life-lines; and

(6) Boarding of passengers and crew into raft or a slide/raft pack.

(ii) Observe the following drills:

(A) Removal from the airplane (or training device) and inflation of each type of life raft, if applicable;

(B) Transfer of each type of slide/raft pack from one door to another;

(C) Deployment, inflation, and detachment from the airplane (or training device) of each type of slide/raft pack; and

(D) Emergency evacuation including the use of a slide.

(d) After September 1, 1993, no crewmember may serve in operations under this part unless that crewmember has performed the PBE drill and the firefighting drill described by paragraphs (c)(1)(i) and (c)(1)(ii) of this section, as part of a one-time training requirement of paragraphs (c)(1) or (c)(2) of this section as appropriate. Any crewmember who performs the PBE drill and the firefighting drill prescribed in paragraphs (c)(1)(i) and (c)(1)(ii) of this section after May 26, 1987, is deemed to be in compliance with this regulation upon presentation of information or documentation, in a form and manner acceptable to the Director, Flight Standards Service, showing that the appropriate drills have been accomplished.

(e) Crewmembers who serve in operations above 25,000 feet must receive instruction in the following:

(1) Respiration.

(2) Hypoxia.

(3) Duration of consciousness without supplemental oxygen at altitude.

(4) Gas expansion.

(5) Gas bubble formation.

(6) Physical phenomena and incidents of decompression.

(f) For the purposes of this section the following definitions apply:

(1) *Actual fire* means an ignited combustible material, in controlled conditions, of sufficient magnitude and duration to accomplish the training objectives outlined in paragraphs (c)(1)(i) and (c)(1)(ii) of this section.

(2) *Approved fire extinguisher* means a training device that has been approved by the Administrator for use in meeting the training requirements of § 121.417(c).

(3) *Approved PBE simulation device* means a training device that has been approved by the Administrator for use in meeting the training requirements of § 121.417(c).

(4) *Combats*, in this context, means to properly fight an actual or simulated

fire using an appropriate type of fire extinguisher until that fire is extinguished.

(5) *Observe* means to watch without participating actively in the drill.

(6) *PBE drill* means an emergency drill in which a crewmember demonstrates the proper use of protective breathing equipment while fighting an actual or simulated fire.

(7) *Perform* means to satisfactorily accomplish a prescribed emergency drill using established procedures that stress the skill of the persons involved in the drill.

(8) *Simulated fire* means an artificial duplication of smoke or flame used to create various aircraft firefighting scenarios, such as lavatory, galley oven, and aircraft seat fires.

[Doc. No. 9509, 35 FR 90, Jan. 3, 1970]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 121.417, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at [www.fdsys.gov](http://www.fdsys.gov).

**§ 121.418 Differences training: Crewmembers and dispatchers.**

(a) Differences training for crewmembers and dispatchers must consist of at least the following as applicable to their assigned duties and responsibilities:

(1) Instruction in each appropriate subject or part thereof required for initial ground training in the airplane unless the Administrator finds that particular subjects are not necessary.

(2) Flight training in each appropriate maneuver or procedure required for initial flight training in the airplane unless the Administrator finds that particular maneuvers or procedures are not necessary.

(3) The number of programmed hours of ground and flight training determined by the Administrator to be necessary for the airplane, the operation, and the crewmember or aircraft dispatcher involved.

Differences training for all variations of a particular type airplane may be included in initial, transition, upgrade, and recurrent training for the airplane.

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

(a) Initial, transition, and upgrade ground training for pilots and 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 his competence.

- (2) For each airplane type—
  - (i) A general description;
  - (ii) Performance characteristics;
  - (iii) Engines and propellers;
  - (iv) Major components;
  - (v) Major airplane systems (i.e., 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;