



U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

Subject: Ejection Seat Training Programs

Date: 2/26/16

AC No: 91-87

Initiated by: AFS-800 **Change:**

- 1 **PURPOSE.** This advisory circular (AC) describes an acceptable means, but not the only means, of developing an ejection seat training program (ESTP). However, if you use the means described in the AC, you must follow it in all important respects. This AC is to be used as a guide when developing an ESTP as required by certain aircraft's operating limitations. This AC may also be used as a tool to evaluate the content of an ESTP. This AC is not mandatory and does not constitute a regulation.

 - 2 **APPLICABILITY.** This AC applies to the following:
 1. New or existing operators, person(s) acting as pilot in command (PIC), or flightcrew members who require training for their ejection-seat-equipped aircraft.
 2. Existing training providers who already have an expiring, initially-accepted, or approved ESTP. Those training providers should amend their ESTPs to meet the recommendations set forth in this AC within 24 calendar-months from the effective date of this AC.
 3. New training providers, which includes third-party developers/instructors of ESTPs.
 4. Operators that have a Letter of Deviation Authority (LODA) for conducting flight training in experimental category aircraft under Title 14 of the Code of Federal Regulations (14 CFR) part 91, § 91.319(h). Those operators should train in accordance with the contents of this AC for aircraft with an operational ejection seat installed.

 - 3 **POLICY HISTORY.** Section 91.319(i), states that, for aircraft having experimental certificates, the Administrator may prescribe additional limitations that he or she considers necessary, including limitations on the persons that may be carried in the aircraft. On December 21, 2011, the Federal Aviation Administration (FAA) established a requirement that during the process of issuing an airworthiness certificate for an ejection-seat-equipped aircraft, an operating limitation is added. This operating limitation requires that pilots operating aircraft and passengers of aircraft equipped with an ejection propellant system installed, whether armed or not armed, must satisfactorily complete an ESTP. That limitation also states that the accepted training must be aircraft make and model specific. Upon publication of this AC, the FAA will amend the policy for issuing this limitation by removing the approved or accepted verbiage and replacing it with language to explain that meeting the requirements of the AC will provide relief from
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FAA approval or acceptance. In addition, the amended operating limitation requires person(s) acting as PIC and flightcrew members to successfully complete this training within 24 calendar-months prior to operation, and passengers are required to have a safety briefing before each flight.

4 DEFINITIONS.

1. **Training Program.** A system of instruction that includes curricula, facilities, instructors, courseware, instructional delivery methods, and testing and checking procedures.
2. **Curriculum.** A complete training agenda specific to an aircraft type and a pilot and flightcrew member duty position.
3. **Courseware.** Instructional material developed for each curriculum. This is information in lesson plans, instructor guides, computer software programs, audiovisual programs, workbooks, aircraft operating manuals, and handouts. Courseware should accurately reflect curriculum requirements, be effectively organized, and properly integrate with instructional delivery methods.
4. **Instructional Delivery Methods.** Methodology for conveying information to a student. This may include lectures, demonstrations, audiovisual presentations, programmed and directed self-study workshops, and drills.
5. **Testing and Checking.** Methods for evaluating students as they demonstrate a required level of knowledge in a subject and, when appropriate, apply the knowledge and skills learned in instructional situations to practical situations.
6. **Operational Ejection Seat.** An operational ejection seat is one which is equipped with functional rockets, initiators, explosives, and other active devices.
7. **Armed or Disarmed Ejection Seat.** An armed ejection seat has all safety pins removed and all arming levers in the armed position such that the occupant can activate the system through the normal or secondary activation handles or triggers.
8. **Pilot in Command (PIC).** The person who:
 1. Has final authority and responsibility for the operation and safety of the flight;
 2. Has been designated as PIC before or during the flight; and
 3. Holds the appropriate category, class, and type rating, if appropriate, for the conduct of the flight.
9. **Flightcrew Member.** A pilot, Flight Engineer (FE), or flight navigator assigned to duty in an aircraft during flight time.

5 REQUIRED ELEMENTS. The FAA requires the following elements in every training program:

- A revision control process, that may include a table of contents, log of revisions, and a List of Effective Pages (LEP);
- Ejection seat training curricula; and
- A statement requiring training within the 24 calendar-months prior to operation. A training program must include the statement, “Any training conducted more than 24 calendar-months prior to the proposed operation is expired and the PIC or flightcrew member is not qualified for ejection seat operations.”

Note: An instructor who conducts a complete course of training required within this training program will be considered to have completed that course for his or her own training requirement with appropriate documentation.

6 MINIMUM TRAINING CURRICULA. Certain minimum curricula must be included in an ESTP. The training program must contain a description of each training topic, including its objectives and standards. It must also contain separate curricula for person(s) acting as PIC (P) and flightcrew members (C) as they pertain below.

6.1 Classroom Training. The academic curriculum must contain the following training topics *as they relate to ejection seats or the act of ejecting* for each training position:

1. Introduction/Ejection Philosophy (PC).
2. Operational Risk Management Planning and Public Safety (PC).
3. Review of Aircraft Operating Limitations and Requirement for ESTP (PC).
4. Crew Resource Management (PC).
5. Single Pilot Resource Management (P).
6. Making the Ejection Decision and Human Factors (PC).
7. Passenger Qualifications: Medical, Height, and Weight (if applicable) (P).
8. Passenger Practical Aircraft Safety Briefing (PC).
9. Post-Ejection Communications and Survival, including Search and Rescue (SAR) Considerations (PC).
10. Aircraft-Specific Training. The aircraft training specific to each make and model flown must include the following topics:
 1. Overview of Ejection Seat System (PC).
 2. Ejection Sequence through Touchdown (PC).
 3. Operational Limitations and Ejection Envelope: Altitude, Attitude, and Speed (PC).
 4. Allowable Heights and Weights for Occupants (if applicable) (PC).

5. Aircraft and Seat Markings (PC).
6. Ejection Seat Controls/Features/Safety Devices (PC).
7. Ejection Seat Arming/Safe Procedures (PC).
8. Ejection Seat Preflight Procedures (PC).
9. Strap-In (PC).
10. Emergency Procedures Requiring Ejection (PC).
11. Ejection Seat Egress and Emergency Ground Egress Procedures (PC).
12. Body Position for Ejection (PC).
13. Ejection System Failures (PC).
14. Manual Bailout Procedures (if applicable) (PC).
15. Post-Ejection Procedures, Including Common Parachute Malfunctions and Ground Hazards (PC).
16. Injuries Typically Caused by Ejection (PC).

6.2 Testing and Checking. Testing and checking is recommended to measure a student's knowledge and accomplishment at each stage or at the completion of training for each position using these methods:

1. Written and/or Oral Examination (PC).
2. Scenario-Based Practical Evaluation (PC).

7 PASSENGER SAFETY BRIEFING. The practical aircraft safety briefing items required for a passenger briefing prior to every flight are listed below. Passenger briefing must be completed by a pilot who has completed the classroom training, including aircraft-specific training, for that aircraft and must include these topics:

1. Overview of the Ejection System.
2. Aircraft and Seat Markings.
3. Ejection Sequence.
4. Ejection Seat Controls/Features/Safety Devices.
5. Ejection Seat Arming/Safe Procedures.
6. Strap-In.
7. Ejection Seat Egress and Emergency Ground Egress.
8. Body Position for Ejection.
9. Ejection Seat Failure and Manual Bailout (if applicable).
10. Post Ejection Procedures.
11. Injuries Typically Caused by Ejection.

12. Coordination, Communications, and Communications Failure Procedures.

8 INSTRUCTOR QUALIFICATIONS. An instructor teaching the classroom and testing and checking curriculum within a training program must have met certain criteria for eligibility to ensure those person(s) acting as PIC and flightcrew members receive adequate instruction. Each instructor must meet one of the following qualifications:

- Holding a flight instructor certificate or ground instructor certificate issued by the FAA;
- Having passed the fundamentals of instructing knowledge test as required by 14 CFR part 61, § 61.183(e);
- Holding a current teacher's certificate issued by a state, county, city, or municipality that authorizes him or her to teach at an educational level of 7th grade or higher;
- Being employed as a teacher at an accredited college or university; or
- Having completed a U.S. Armed Forces instructor course.

9 RECORDKEEPING REQUIREMENTS. Each training program must contain a procedure for keeping records a minimum of 36 calendar-months. In the unfortunate event of an accident or incident, they will show that the person acting as PIC and the flightcrew member received training. Therefore, it is considered prudent to have each person that receives training in your ESTP sign their training record upon completion. Additionally, the instructor should sign the training record certifying that the training was given. Each person acting as PIC and each flightcrew member training record must include the following:

- The name, signature, and certificate number (if applicable) of the trainee;
- The name, signature, and certificate number of the instructor;
- The date trained;
- The curriculum completed; and
- A copy of any tests/checks (if applicable).

10 ACCEPTANCE AND APPROVAL.

10.1 New Programs. FAA acceptance or approval is no longer required so long as the ESTP meets the requirements of this AC. Any training program not wishing to meet the contents in this AC should submit their request to the General Aviation and Commercial Division (AFS-800) for review.

10.2 Previously Accepted or Approved Programs. Person(s) acting as PIC and flightcrew members operating aircraft that were previously issued an operating limitation that required FAA acceptance or approval of an ESTP will meet the requirement of that operating limitation if they successfully complete training using an ESTP in accordance

with this AC. Any training program not wishing to meet the contents in this AC should submit their request to AFS-800 for review.

- 10.3 Title 14 CFR Part 141 or Part 142 Training Providers.** When an operator or training provider submits an ESTP under one of these parts, part 141, § 141.57 or part 142, § 142.81 will apply, as appropriate. Therefore, if a part 141 pilot school or part 142 training center wishes to conduct this training, they must first apply for approval of an ESTP under the current requirements for part 141 or 142.
- 11 OPERATING LIMITATIONS NOT ADDRESSING TRAINING.** Those operators whose operating limitations do not address ejection seat training are not required to follow this AC. However, the FAA recommends and encourages training programs for aircraft equipped with ejection seats.
- 12 REQUEST FOR INFORMATION.** For further information on ESTPs, contact your local Flight Standards District Office (FSDO).

A handwritten signature in black ink, appearing to read "John Barbagallo". The signature is written in a cursive style with some horizontal lines through the letters.

John Barbagallo
Deputy Director, Flight Standards Service

Advisory Circular Feedback Form

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by contacting General Aviation and Commercial Division (AFS-800) or the Flight Standards Directives Management Officer.

Subject: AC 91-87, Ejection Seat Training Programs

Date: _____

Please check all appropriate line items:

An error (procedural or typographical) has been noted in paragraph _____
on page _____.

Recommend paragraph _____ on page _____ be changed as follows:

In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)

Other comments:

I would like to discuss the above. Please contact me.

Submitted by: _____

Date: _____