

CHAPTER 2. AIRLINE TRANSPORT PILOT CERTIFICATES

SECTION 4. CONDUCT OF FLIGHT TESTS IN AN AIRPLANE

123. AIRPLANE TRAINING BEFORE AIRPLANE FLIGHT TESTS. Before conducting a flight test segment in an airplane, the inspector or examiner must review the applicant's training records or a statement from a company official to ensure that the required training has been completed. When the flight test is conducted in two segments, training on certain events must be accomplished in the airplane before the airplane segment of the flight test can be conducted. When training has been conducted in a level 7 or lower flight training device (FTD), there will be certain events that have not been approved for flight training in that particular device. In this case, training on those events must be conducted in the airplane. When training is conducted in a level A or B flight simulator, the category of training determines which events the applicant must be trained in, in an airplane, before the airplane segment of the flight test is conducted. Table 5.2.4.1., at the end of this section, specifies the events in which the applicant must receive training in the airplane. Applicants trained in a level C simulator in a transition curriculum and certain applicants trained in an upgrade curriculum as specified in Federal Aviation Regulations (FAR) Part 121, Appendix H, may not be required to receive the training indicated in table 5.2.4.1. in an airplane (see paragraph 105). It is a common practice for operators to conduct airplane flight training immediately before a flight test on the same flight. In these cases, it is acceptable for the instructor to make oral certification that required training is completed and that the applicant is ready for the test. The training records, however, must be completed with the written certification after the flight test.

125. PLANNING THE FLIGHT. Planning is essential to the efficient and effective conduct of an airplane flight test. When an instructor or a check airman acts as the safety pilot (and pilot-in-command (PIC)), the inspector must coordinate closely with the instructor or check airman in the planning. Ideally, inspectors and examiners should plan to conduct the flight test at a location that provides for visual meteorological flight conditions, an uncongested air traffic environment, a non-noise-sensitive environment, and an airport with a number of navigational aids

(NAVAID) and runways that provide flexibility. Since these ideal conditions are usually not available, the flight test may have to be conducted under less than ideal circumstances. Inspectors and examiners are encouraged to coordinate with the air traffic control (ATC) facility serving the location selected for the flight test to ensure that the test can be conducted in an acceptable manner. If the flight test cannot be conducted under acceptable conditions, the inspector or examiner must reschedule the flight test at a time and location where more satisfactory conditions prevail.

127. EVENTS REQUIRED IN AN AIRPLANE FLIGHT TEST. There are three methods of conducting a flight test in an airplane: (1) a flight test conducted entirely in an airplane; (2) a two-segment flight test conducted in a flight simulator and an airplane; and (3) a two-segment flight test conducted in an FTD and an airplane. Job aids have been prepared for each method of conducting a flight test in an airplane (see figures 5.2.3.1. through 5.2.3.3. at the end of section 3). Inspectors and examiners are encouraged to use the job aids to plan the flight test. For example, if the operator's aircraft operating manual does not allow circling approaches in less than visual flight rules (VFR) conditions, testing of the event is not required, and it may be marked off the job aid. Events not required for the class of airplane may also be marked off. For example, accuracy landings are not required in a multi-engine airplane. These job aids are available on the district office Job Aid Disk.

A. Entire Flight Test in an Airplane. When an operator does not have access to a flight simulator or FTD, the flight test must be completed entirely in the airplane. All events required by FAR Part 61, Appendix A, must be accomplished during the flight test. Figure 5.2.3.1., the "ATP/Type Rating Single-Segment Flight Test Job Aid—Flight Simulator or Airplane," contains the events that are required for all classes of airplanes.

B. Airplane Segment of a Two-Segment Airplane/Flight Simulator Flight Test. All events that are required by Far Part 61, Appendix A, are specified

in figure 5.2.3.2., the “ATP/Type Rating Two-Segment Flight Test Job Aid--Flight Simulator and Airplane.” The events are separated into flight simulator and airplane segments, according to which specific events must be evaluated in the airplane segment. This job aid should be used for all flight tests in which the first segment is conducted in a level A or higher level of flight simulator.

C. Airplane Segment of a Two-Segment Airplane/Flight Training Device Flight Test. All events that are required by FAR Part 61, Appendix A, are printed in figure 5.2.3.3., the “ATP/Type Rating Two-Segment Flight Test Job Aid--Flight Training Device and Airplane.” The events are separated into an FTD segment and an airplane segment. Any event in which the applicant is not tested in the training device segment must be tested in the airplane. The inspector or examiner conducting the airplane segment of the flight test must determine the events in which the applicant was evaluated during the training device segment. The job aid may be used to transmit this information from the inspector or examiner conducting the training device segment of the flight test to the inspector or examiner who conducts the airplane segment of the flight test. The job aid must be signed and dated by the inspector or examiner conducting the training device segment of the test, and the events in which the applicant was not tested must be clearly marked.

129. PREFLIGHT BRIEFING. The inspector or examiner conducting the flight test shall ensure that everyone participating in the flight test is adequately briefed.

A. Supporting Crewmembers. The individual conducting the flight test shall brief the safety pilot and, if applicable, the flight engineer (FE), on the conduct of the flight. If an operator’s instructor or check airman is the safety pilot, that individual must conduct the flight in accordance with the instructions given by the inspector. The safety pilot and, if applicable, the FE must provide normal crew coordination support, but must not be permitted to lead the applicant when the applicant is expected to take the initiative.

B. Applicant. Before beginning the flight test, the inspector or examiner shall brief the applicant on the use of other crewmembers and aircraft equipment, including the autopilot. The applicant must perform the functions of the PIC. The applicant must be briefed to immediately relinquish control and assume second-in-command (SIC) duties if a hazardous condition arises and the safety pilot takes control of the aircraft.

C. Safety Pilot. The safety pilot shall conduct a briefing on procedures to be used. The safety pilot

briefing must cover, but is not limited to, the following:

- Transfer of aircraft control
- Touch-and-go procedures
- Procedures for simulating an inoperative engine
- Simulated abnormal and emergency procedures
- Response to an actual emergency
- Use of vision restriction devices

131. CREW QUALIFICATIONS. The crew, with the exception of the applicant, must be qualified and current. The safety pilot must have completed the operator’s approved instructor or check airman training program and be familiar with the procedures for blocking the controls against incorrect applicant responses.

133. VISION RESTRICTION DEVICES. For instrument flight maneuvers, a vision restriction device acceptable to the inspector must be provided by the operator or applicant. The device must not limit the vision of the safety pilot or other crewmembers, including the inspector. An inspector or examiner shall not accept pillows, charts taped to windows, or other vision restriction devices that could jeopardize flight safety.

135. CONDUCT OF THE FLIGHT TEST IN AN AIRPLANE. Standard procedures, as specified in the operator’s aircraft operating manual, must be followed in the performance of all maneuvers. All emergencies and abnormalities conducted in an airplane shall be simulated. An engine may be shut down and restarted in flight, provided the minimum altitude specified in the operator’s aircraft operating manual is observed. Before a problem is introduced, the safety pilot shall announce to the crew that a simulated problem is being introduced.

A. Procedures for introducing simulated, abnormal, and emergency problems must be in accordance with the operator’s aircraft operating manual, training manual, and other appropriate operator directives. Safety pilots may introduce problems by sounding a warning horn, a fire bell, or by illuminating a warning light, provided the warning can be produced with a test switch that does not activate a system. Circuit breakers will not be opened to introduce problems. When the emergency or abnormal checklist required by a simulated problem specifies that a circuit breaker be opened, the circuit breaker will only be opened if the action cannot be simulated, and the effect of opening the circuit breaker is to enhance

safety. For example, it is permissible to disable the ground proximity warning according to the checklist, on a no-flap approach, because the warning would continue to sound throughout the approach. It would not be permissible, however, to pull a circuit breaker on an electrically driven hydraulic pump that could be turned off by a switch. Deactivated systems shall be fully reactivated immediately after the need for deactivation has been met. For example, in some airplanes a hydraulic system must be depressurized before an alternate landing gear extension can be performed. In this case, the hydraulic system should be repressurized immediately after the landing gear is extended. It is appropriate to use streamers or other devices as reminders that systems have been deactivated.

B. On flight tests conducted entirely in an airplane, inspectors and examiners shall not limit the problems given to applicants to the required engine failures only. Problems should be realistic. The selection of such problems in an airplane is more limited than in a flight simulator, due to both safety and operational limitations. Certain problems, however, can be practically and safely conducted in an airplane. Examples include a simulated instrument failure that leads to the selection of alternate switching, a simulated hydraulic failure requiring a diversion to a takeoff alternate, or a simulated electrical fault requiring alternate landing gear or flap extension.

C. Should an actual malfunction occur while an emergency is being simulated, the flight test shall be immediately suspended, all systems restored to normal, and the problem resolved before the flight test is restarted. If a throttle has been retarded when an actual malfunction occurs, the safety pilot shall immediately restore engine thrust to normal on all engines.

137. SAFETY. Safety is the specific responsibility of the safety pilot. The safety pilot must ensure that a testing event is not allowed to deteriorate to the point where flying safety is compromised. The safety pilot must take early and positive measures to prevent hazardous situations from arising. If the safety pilot takes control of the airplane due to no fault of the applicant, or before it was clear whether the applicant could or could not have recovered successfully, the event shall be repeated. If, however, the safety pilot believes there is a need to instruct, give directions, or take control of the airplane due to the lack of proficiency of an applicant, the event and the entire flight test must be considered unsatisfactory.

139. MODIFICATION OF EVENTS. Inspectors and examiners are authorized by FAR § 61.157 to modify events when the performance characteristics of an airplane used for a flight test make an event unsafe or unpractical. For example, the airplane certification regulations for light twin-engine airplanes may not require that the airplane be capable of climbing with a failed engine. In such airplanes, an engine-out missed approach may not be possible, or may be unsafe. Inspectors and examiners may also modify events to accomplish a flight test when weather, ATC, or traffic requirements make accomplishing a specific event in the conventional manner impossible. For example, if traffic flow prevents flying the published missed approach procedure, the inspector or examiner may (in visual conditions and with ATC concurrence) construct an alternate procedure. The authority to modify events does not extend to modifying aircraft operating procedures.

141. DEBRIEFING. The inspector or examiner shall inform the applicant of the results of the flight test and conduct a debriefing. See subparagraph 33F.

142.-144. RESERVED.

**FIGURE 5.2.4.1.
TRAINING IN AN AIRPLANE REQUIRED BEFORE THE AIRPLANE SEGMENT OF A
TWO-SEGMENT FLIGHT TEST**

TRAINING EVENT	CATEGORY OF TRAINING			
	INITIAL	TRANSITION	UPGRADE	
Normal Takeoff	X	X	X	
Normal Landing	X	X	X	
Crosswind Takeoff & Landing	X	X	X	
Normal Instrument Landing System (ILS)	X	X	X	
Night Landing—Can Be Done on Operating Experience (OE)	X	X	X	
Landing from an ILS	X			
Engine-Out ILS	X			
Engine-Out Landing (To a Full Stop)	X			
Missed Approach	X			
Rejected Landing	X			
Approach and Landing with 50% Powerplants Inoperative	X			
Circling Maneuver (If Required For Carrier)	X			
WHEN REQUIRED BY FSB				
Landing, Stab Out of Trim	X			
Missed Approach with Stab Out of Trim	X			
No-Flap Approach	X			
Partial-Flap Approach	X			
Any Other Required Event	X			

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