3-1891 PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3633.

B. Avionics: 5633.

C. Air Transportation Oversight System (ATOS). ATOS Safety Attribute Inspection (SAI) or Element Performance Inspection (EPI) Data Collection Tool (DCT), as appropriate, for the Maintenance Training Program 4.2.1.

3-1892 OBJECTIVE. This section provides guidance for evaluating and accepting an operator/applicant’s or fractional program manager’s (hereafter referred to as the program manager) maintenance/inspection training program.

3-1893 GENERAL. Effective training is the basis for a successful maintenance/inspection program. Although many procedures for maintaining and inspecting aircraft may be similar, the equipment, procedures, and task documentation used may all be unique to the operator/program manager/applicant’s specific programs.

A. Maintenance/Inspections. Title 14 of the Code of Federal Regulations (14 CFR) part 91 subpart K (part 91K) and part 135 may require, and parts 121 and 145 do require, that maintenance/inspections be performed in accordance with the operator/applicant’s or program manager/applicant’s manual.

B. Maintenance/Inspection Training Programs. Maintenance/inspection training programs are the most efficient manner to inform personnel of the requirements of the operator/applicant’s or program manager’s program.

3-1894 COORDINATION REQUIREMENTS AND SCHEDULING. Aviation safety inspectors (ASI) should encourage applicants to discuss pending maintenance/inspection training program development with the certification team before the program is submitted for final acceptance. It is especially important that programs be reviewed for conformity with appropriate regulatory requirements. This review can reduce the number of major changes an operator will have to make after a program has been printed and distributed.

3-1895 SCHEDULING MAINTENANCE TRAINING PROGRAMS. Delays in program acceptance result in delays in the certification process, or in the case of fractional ownership programs, delays in issuance of management specifications (MSpecs). To facilitate the evaluation of the training programs, the applicant should be encouraged to schedule a classroom training session in a timely manner.
3-1896 CONTENT OF MAINTENANCE/INSPECTION TRAINING PROGRAMS. The program manager’s Continuous Airworthiness Maintenance Program (CAMP) or operator/applicant’s training program should include company indoctrination and technical training (formal and on-the-job training (OJT)). The program should contain a list of tasks to be taught and a method for recording the training. Completion of the training must be entered in the individual’s training record.

A. Company Indoctrination. Each maintenance/inspection employee should receive instruction in the use of the operator/program manager/applicant’s manuals, policies, procedures, and forms. The training program should contain a policy statement that emphasizes the importance of following the air carrier’s documented maintenance procedures without deviation. Additionally, the program should include information pertaining to the air carrier’s procedures for identifying errors or deficiencies in maintenance procedures and actions to be taken to ensure safe Federal Aviation Administration (FAA)-acceptable practices and Airworthy aircraft.

B. Maintenance/Inspection Technical Training.

1) Training may consist of a combination of formal (classroom) instruction and OJT. The operator/program manager/applicant may give training credit to individuals for experience gained while employed by other operators/program managers.

2) Procedures unique to the operator/program manager/applicant should be taught. Training records should indicate the amount of formal training, OJT, and experience each individual receives.

3) Technical training may be contracted to another operator or manufacturer, or in the case of a specialized process, to a person knowledgeable in that specialized process. The operator/program manager/applicant is responsible for the content and quality of such training.

4) The FAA does not establish a fixed amount of time for indoctrination or technical training courses, but the courses should use a minimum time proportional to the operator/program manager/applicant’s complexity.

C. Responsibilities for Persons Other than an Operator/Program Manager’s Employees. Part 121 requires each certificate holder to be primarily responsible for having a training program and to ensure that the training received throughout the operator’s system is of equal quality and effectiveness. This covers all personnel, such as the certificate holder’s employees and contract personnel for emergency maintenance and servicing.

1) Part 91, § 91.1433; part 121, § 121.375; and part 135, § 135.433 are similar in that each certificate holder or person who performs maintenance shall have a training program. The training program ensures that each person, including inspection personnel, is fully informed about procedures, techniques, new equipment in use and is competent to perform the applicable duties.

2) Sections 91.1429(a), 121.371(a), and 135.429(a) are similar in that no person may use any person to perform required inspections unless the person performing the inspections is appropriately certificated, properly trained, qualified, and authorized to do so.
NOTE: Title 14 CFR part 1 defines a “person” as an individual, firm, partnership, corporation, company, association, joint-stock association, or governmental unit.

D. Category II/III Maintenance Personnel Training. Each applicant for Category II/III must establish an initial and recurrent training program. This program must be acceptable to the Administrator and cover all personnel performing quality control inspection and maintenance work on Category II/III airborne systems and equipment. Training records for such personnel are to be kept current and made available to the FAA for inspection.

E. Recurrent Training. The operator/program manager/applicant’s training program should ensure that deficiencies discovered through continuous analysis and surveillance are corrected during recurrent training. Fractional ownership program manager’s personnel who are responsible for maintenance are required to receive annual training. Additionally, recurrent training should include at least the following:

- Review, reinforcement, and upgrade of all training given in both indoctrination and technical subjects;
- Input from maintenance bulletins and/or maintenance newsletters; and
- Tasks, such as run-up/taxi, Required Inspection Items (RII), and nondestructive inspection (NDI).

F. Training Records. Training records must be retained by the operator/program manager/applicant to document that personnel are adequately trained. Training records should be maintained at a central location, but may be maintained at other locations, provided these locations are listed in the operator/program manager/applicant’s manual. The format for recordkeeping may be electronic, or any other media acceptable to the Administrator.

G. Special Emphasis Training. Special maintenance/inspection training programs are required when new or different types of aircraft and/or equipment are introduced.

H. Fractional Ownership Training Requirements. Fractional ownership programs require aircraft-specific technical training for those persons who are responsible for maintenance. This training is intended for persons within the fractional ownership program who oversee and/or schedule maintenance and inspections and are responsible for creating or amending the manager’s inspection or maintenance program(s). The training, which is required both initially and annually (recurrent), ensures that those personnel are technically knowledgeable of the aircraft. This specific training requirement does not extend to the persons performing the maintenance. However, all maintenance personnel must still meet the requirements of the applicable regulations, such as 14 CFR parts 43, 65, and 145.

I. Fractional Ownership CAMP. Program managers who maintain their aircraft in accordance with a CAMP have additional training requirements. Section 91.1433 requires that the program manager, or person performing maintenance for the program manager, has a training program. This program must ensure that each person, including inspection personnel, who determines the adequacy of work performed is fully informed about the procedures, techniques, and new equipment in use and is competent to perform the work. Section 91.1429 also requires
any person who performs required inspections to be properly trained. This is in addition to his or her certification, authorization, and qualification requirements.

3-1897 ACCEPTING THE MAINTENANCE/INSPECTION TRAINING PROGRAM.
The task of acceptance differs from approval in that no specific procedure or vehicle is used to accept a training program. The program is approved by the authorized manager upon FAA acceptance. A List of Effective Pages (LEP) will show acceptance dates of the maintenance/inspection training program.

3-1898 COORDINATION REQUIREMENTS. This task requires coordination with maintenance, avionics, and regional specialists.

3-1899 REFERENCES, FORMS, AND JOB AIDS.

A. References (current editions):
   - Title 49 of the United States Code (49 U.S.C.), § 44705;
   - Title 14 CFR Parts 65, 91K, 121, 135, and 145;
   - Title 49 of the Code of Federal Regulations (49 CFR) Part 173; and
   - ATOS Element: Maintenance Training Program 4.2.1.

B. Forms. None.


3-1900 PROCEDURES.

A. Review Operator/Program Manager File.

B. Review Schedule of Events (SOE). If this task is performed as part of an original certification or issuance of MSPECs, review the SOE to ensure that this task can be accomplished in accordance with the schedule.

C. Review Maintenance/RII Training Programs. The program should include the following elements in both the maintenance training program and the RII training program.

   1) The name of the person responsible for the overall administration of the maintenance/RII training program.

   2) The name(s) of the person(s) responsible for other processes within the maintenance/RII training program (e.g., recordkeeping, revisions to training programs, and security of the program).

   3) Designated maintenance/RII training instructors.

   4) A description of how instructors are determined to be qualified.

   5) Procedures used to authorize instructors.
6) A file on the instructors consisting of qualifications, authorizations, and other documents pertaining to instructor assignments.

7) A list describing what type of training is required for new employees or RII candidates (indoctrination, OJT, etc.).

8) Procedures for evaluating, crediting, and documenting a new employee’s previous training.

9) Procedures for determining what additional training is required for a new employee.

10) A schedule for recurrent training, a description of recurrent training, and procedures for determining requirements for other training.

11) Recordkeeping procedures, including records of the following:
   - Training dates,
   - Who performed the training (instructor should indicate by signing),
   - The number of hours of training performed, and
   - The content of the training performed.

12) Criteria for determining the quality of the training program (training standards).

13) Evaluation of the need to revise training programs.

14) A training syllabus that describes the following:
   - Content of each training course,
   - Format of training (classroom, OJT),
   - Duration of training courses,
   - Standards for grading students, and
   - Training aids.

15) Criteria to determine acceptability of contract training, to include:
   - Qualifications of instructors,
   - Criteria to establish appropriateness of reference material being taught,
   - Reporting procedures to inform the operator/program manager of student progress,
   - Criteria to determine adequacy of facilities, and
   - Criteria to evaluate contractor’s training syllabus.

D. Review RII Training. The operator/program manager/applicant must provide RII original and recurrent training, including:
1) A statement that RII students are appropriately certificated, qualified, trained, authorized, and current as airframe and/or powerplant mechanics or appropriately certificated repairmen.

NOTE: Part 91K does not allow repairmen to be used for RII purposes.

2) A method for notifying the RII candidate of the successful completion of the course.

3) A method for receiving confirmation by the candidate of acceptance of RII authorizations and responsibilities.

E. Observe Operator/Program Manager/Applicant Performing Training. This observation is performed regardless of whether the operator/program manager performs the training or contracts with another company.

1) Ensure that facilities are adequate, including classrooms, training aids, and reference materials.

2) Evaluate the instructor’s presentation and knowledge.

3) Ensure that course content and instruction is in accordance with the training syllabus.

4) Ensure that training recordkeeping is performed in accordance with the maintenance/RII inspection program.

F. Analyze Findings. Evaluate all deficiencies to determine what changes will be required.

G. Debrief the Operator/Program Manager/Applicant.

1) If deficiencies are discovered during the interview, return the program to the operator/program manager/applicant with a letter describing the problem areas. If the review is being performed as part of a certification, inform the operator/program manager/applicant that the issue of the certificate will be withheld until deficiencies are corrected.

2) Schedule a meeting with the operator/program manager/applicant to discuss the problem areas if it may be helpful in resolving deficiencies. Discuss how to resolve deficiencies.

3-1901 TASK OUTCOMES.

A. Complete the PTRS Record.

B. Complete ATOS. Complete ATOS SAI or EPI DCT, as appropriate for the Maintenance Training Program 4.2.1.
C. **Complete the Task.** Successful completion of this task will result in the following:

1) A letter to the operator/program manager/applicant indicating acceptance of the program.

2) The original accepted program sent to the operator/program manager/applicant, along with instructions to provide a copy of the program to the certificate-holding district office (CHDO).

3) ATOS successful completion of this task will result in the acceptance of the maintenance training program or revision and/or a determination that the training is being performed properly and is producing the desired results.

D. **Document the Task.** File all supporting paperwork in the operator/program manager/applicant’s file.

3-1902 **FUTURE ACTIVITIES.** Normal surveillance.

**RESERVED.** Paragraphs 3-1903 through 3-1917.
3-1996 GENERAL. This section contains information and guidance for principal operations inspectors (POI) and aviation safety inspectors (ASI) who have oversight responsibility of certificate holders conducting Title 14 of the Code of Federal Regulations (14 CFR) part 121 flag operations, supplemental operations outside the contiguous United States, and extended overwater operations. The following general provisions apply to extended overwater operations.


B. Land Airplanes. A part 121 certificate holder may not operate a land airplane (except certain two-engine reciprocating-engine-powered airplanes listed in part 121, § 121.161(b)) in extended overwater operations unless the airplane is certified for ditching under 14 CFR part 25. When an aircraft is certified for extended overwater operations, these operations will appear as authorized operations in the limitations section of the approved Airplane Flight Manual (AFM).

3-1997 DESTINATION WEATHER MINIMUMS. Section 121.615(a) states the following: “No person may dispatch or release an aircraft for a flight that involves extended overwater operation unless appropriate weather reports or forecasts or any combination thereof, indicate that the weather conditions will be at or above the authorized minimums at the estimated time of arrival at any airport to which dispatched or released or to any required alternate airport.” This regulation has been interpreted by the Federal Aviation Administration’s (FAA) Office of the Chief Counsel (AGC) to mean that weather conditions must be forecasted to be above the required minimums at the estimate time of arrival (ETA), but that the weather conditions do not necessarily have to be above the required minimums at the time of dispatch or release.

A. OpSpecs Requirements. Weather minimums for departure, destination and alternate airports minimums are prescribed in a certificate holder’s OpSpecs.

B. Weather Forecasting for Extended Flight Operations. Extended overwater operations may require flight times of 10 or more hours. Since the certainty of weather forecasts deteriorates as the period of the forecast lengthens, meteorologists usually add conditional phrases to the remarks of these forecasts to alert the users to this uncertainty. As a result of these conditional remarks, some certificate holders may find it difficult to dispatch or release to the desired destination and to find acceptable alternate airports. Aircraft dispatchers and persons authorized to exercise operational control (flight followers) have a number of methods at their disposal, however, to overcome these limitations.
1) The installation of Category (CAT) II and CAT III approach aids have resulted in
destination weather minimums as low as a ceiling of zero and a Runway Visual Range (RVR) of
300 feet. Modern facilities have also resulted in alternate weather minimums authorized by
OpSpecs being reduced to as low as 400 feet and 1 mile.

2) Certificate holders may release a flight to an intermediate destination and then
redispatch or rerelease the flight to the actual destination while the flight is en route. The
redispatch or rerelease can be based on current weather reports and short-term forecasts.

3) Under an approved Enhanced Weather Information System (EWINS), a qualified
aircraft dispatcher employed by a certificate holder may issue a flight movement forecast (FMF)
based on a detailed analysis of the conditions surrounding the specific flight. An FMF may be
used for operational control of the specific flight (see Volume 3, Chapter 26, Section 4).

3-1998 DESIGNATION OF DESTINATION ALTERNATE AIRPORTS.
Sections 121.621 and 121.623 contain alternate requirements for flag and supplemental
operations. In accordance with §§ 121.625 and 121.631, weather reports, forecasts or any
combination thereof, must indicate that the weather conditions will be at or above the authorized
minimums at the ETA at any required alternate airport.

A. Destinations Without an Available Alternate Airport. Sections 121.621(a)(2) and
121.623(b) provide a certificate holder with the ability to dispatch or release flag or supplemental
flights to a destination for which no alternate is available. This provision was originally provided
for reciprocating aircraft operations en route to island destinations. The introduction of turbojet
aircraft has largely negated the need for the rule; however, there are still some remote islands
(such as Easter Island) for which the provision is still necessary. Operations to an airport without
an available alternate typically require authorization in a certificate holder’s OpSpecs.

1) For flag operations, § 121.621(a)(2) requires a route to a destination without an
available alternate to be approved. POIs will use OpSpec C067, Special Airplane Authorizations,
Provisions, and Limitations for Certain Airports, to authorize a destination airport that does not
have an available alternate. For the purposes of C067 authorization, the only portion of the route
that is required is the destination airport.

2) For supplemental operations, § 121.623 does not require specific approval for a
route to an airport without an available alternate. However, OpSpec C067 is specifically
designed to list airports for which there is no available alternate. Therefore, certificate holders
conducting supplemental operations should list these airports in C067 for increased flightcrew
awareness.

3) For all part 121 operations, certificate holders must list the airports for which
there is no available alternate, in their manual in accordance with the requirements of §§ 121.133
and 121.135.

4) Sections 121.641(b) and 121.643(c) require that turbopropeller and
reciprocating-powered airplanes have enough fuel remaining upon arrival over the destination
for the flight to continue for an additional 3 hours under normal cruise conditions.
5) Section 121.645(c) requires that turbojet-powered airplanes have enough fuel remaining upon arrival over the destination for the flight to continue for an additional 2 hours under normal cruise conditions.

B. All Other Supplemental Operations. Section 121.623 requires that certificate holders designate an alternate airport for all supplemental flights except for those conducted in accordance with § 121.623(b) and described in subparagraph 3-1998A.

C. Flag Flights of 6 Hours or Less. Section 121.621 permits certificate holders operating under flag rules to dispatch flights that are no longer than 6 hours in duration without designating an alternate airport. This is allowable if, for 1 hour before to 1 hour after the ETA, weather reports or forecasts, or any combination thereof, indicate the weather will be as follows:

1) The ceiling will be at least 1,500 feet above the lowest circling minimum descent altitude (MDA) if a circling approach is required and authorized for the airport, or

2) The ceiling will be at least 1,500 feet above the lowest published instrument approach minimum or 2,000 feet above the airport elevation, whichever is greater; and

3) The visibility at that airport will be at least 3 miles, or 2 miles more than the lowest applicable visibility minimums, whichever is greater, for the instrument approach procedures (IAP) to be used at the destination airport.

D. Flag Flights of More Than 6 Hours. Section 121.621(a) requires that certificate holders list an alternate airport for all flag flights of more than 6 hours’ duration, except those operations described in subparagraph 3-1998A.

E. Listing of Alternate Airports. Sections 121.621 and 121.623 require that certificate holders list each required alternate airport on the dispatch or flight release.

F. Weather Requirements for Designated Alternate Airports. In accordance with § 121.625 weather reports and forecasts, or any combination thereof, must indicate that the weather will be at or above the minimums stated in the certificate holder’s OpSpec C055, Alternate Airport IFR Weather Minimums, at the time the aircraft is due to arrive at the alternate airport.

3-1999 REQUIRED FUEL SUPPLY—NONTURBINE AND TURBOPROP-POWERED AIRPLANES. Certificate holders conducting part 121 flag or supplemental operations with reciprocating or turbopropeller-powered airplanes, must comply with the fuel requirements of §§ 121.641 or 121.643 (as applicable to the kind of operation) and the requirements of § 121.647.

A. Fuel Required—Flag and Supplemental Operations. For flag and supplemental operations, the following fuel is required to be onboard the airplane at takeoff:

1) En Route Fuel. In accordance with §§ 121.641(a)(1) and 121.643(a)(1), each airplane must have enough fuel to fly to and land at the airport to which it was dispatched.
2) **Alternate Fuel.** In accordance with §§ 121.641(a)(2) and 121.643(a)(2), each airplane must have enough fuel to fly from the destination airport (after an initial or missed approach), to the most distant alternate airport specified in the dispatch or flight release, and land at that airport.

3) **Reserve Fuel—Flag Operations and Supplemental Operations Outside the Contiguous United States.**

   a) International Reserve Fuel. In addition to the fuel required to fly to and land at the destination and alternate airports, §§ 121.641(a)(3) and 121.643(b) require the airplane to have enough fuel to fly for an additional 30 minutes.

   b) En Route Reserve Fuel. In addition to the en route fuel, alternate fuel, and the 30 minute international reserve fuel, §§ 121.641(a)(3) and 121.643(b) require the airplane to have enough fuel to fly for 15 percent of the total time required to fly at normal cruising fuel consumption to the destination and alternate airports, or to fly for 90 minutes at normal cruising fuel consumption, whichever is less.

4) **Reserve Fuel—Supplemental Operations Within the Contiguous United States.**

   a) Domestic Fuel Reserve. In accordance with § 121.643(a)(3), for supplemental operations conducted within the contiguous United States, in addition to the en route fuel and alternate fuel, the airplane must have enough fuel to fly for 45 minutes at normal cruising fuel consumption or,

   b) Day VFR Operations with Nontransport Category Airplanes Type-Certificated (TC) after December 31, 1964. Each nontransport category airplane TC’d after December 31, 1964 that is operated by a certificate holder who is authorized in its OpSpecs to conduct day VFR operations must have enough fuel to fly for 30 minutes at normal cruising fuel consumption for day VFR operations.

B. **Required Contingency Fuel—All Part 121 Operations.** In addition to the fuel required by §§ 121.641 and 121.643 (as applicable), § 121.647 requires contingency fuel to be carried onboard the airplane to account for several scenarios. Contingency fuel is required to be onboard the airplane at any phase of flight during which it may be required. Required contingency fuel must be carried in addition to any unusable fuel. Section 121.647 requires the following:

1) Fuel to account for wind and other forecast weather conditions;

2) The fuel necessary to conduct one instrument approach and a possible missed approach.

3) Fuel for known or anticipated traffic delays; and

4) Fuel for any other conditions that may delay the landing of the aircraft.
NOTE: The certificate holder’s General Operations Manual (GOM) should contain policies and instructions to aircraft dispatchers, flight followers, and pilots in command (PIC) for computing the appropriate amount of contingency fuel based on the circumstances likely to be encountered during flight (including taxi).

C. Fuel Required for Flag or Supplemental Flights to Airports for which an Alternate Airport is Not Available within the Fuel Range of the Aircraft. A nonturbine or turbopropeller-powered airplane dispatched or released to an airport for which an alternate airport is not available must have the following fuel onboard:

1) En Route Fuel. In accordance with §§ 121.641(b) and 121.643(c), the airplane must have enough fuel, considering wind and forecast weather conditions, to fly to the destination airport and thereafter to fly for 3 hours at normal cruising fuel consumption.

2) Required Contingency Fuel. The airplane must have fuel onboard to comply with the requirements of § 121.647.

3-2000 REQUIRED FUEL SUPPLY—TURBOJET-POWERED AIRPLANES. Certificate holders conducting part 121 flag and/or supplemental operations with turbojet-powered airplanes, outside of the contiguous United States, must comply with the fuel requirements of §§ 121.645 and 121.647.

A. Fuel Required for Takeoff. Unless otherwise authorized by deviation, § 121.645(b) requires each airplane to have the following fuel onboard at takeoff:

1) En Route Fuel. In accordance with § 121.645(b)(1), each airplane must have enough fuel to fly to and land at the airport to which it was released.

2) Alternate Fuel. In accordance with § 121.645(b)(3), each airplane must have enough fuel to fly from the destination airport (after an initial or missed approach), to the most distant alternate airport specified in the dispatch or flight release, and land at that airport.

3) En Route Reserve. In addition to the fuel required to fly to and land at the destination and alternate airports, § 121.645(b)(2) requires the airplane to have enough fuel to fly for a period of 10 percent of the total time required to fly from the airport of departure to the airport to which it was released and land at that airport.

4) International Reserve Fuel. In addition to the en route fuel, alternate fuel and the 10 percent en route reserve fuel, § 121.645(b)(4) requires the airplane to have enough fuel to fly for 30 minutes at holding speed at 1,500 feet above the alternate airport, or the destination airport if no alternate is required by § 121.621(a)(2) or 121.623(b). International fuel reserves are computed under standard temperature conditions.

B. Required Contingency Fuel. In addition to the requirements of § 121.645, § 121.647 requires fuel to be carried onboard the airplane to account for several scenarios. Contingency fuel is required to be onboard the airplane at any phase of flight during which it may be required.
Required contingency fuel must be carried in addition to any unusable fuel. Section 121.647 requires the following:

1) Fuel to account for wind and other forecast weather conditions;

2) The fuel necessary to conduct one instrument approach and a possible missed approach;

3) Fuel for known or anticipated traffic delays; and

4) Fuel for any other conditions that may delay the landing of the aircraft.

NOTE: The certificate holder’s GOM should contain policies and instructions to aircraft dispatchers, flight followers, and PICs for computing the appropriate amount of contingency based on the circumstances likely to be encountered during flight (including taxi).

C. Fuel Required for Flights for which an Alternate Airport is Not Available within the Fuel Range of the Aircraft. In accordance with § 121.645(c), a turbojet-powered airplane that is released to an airport for which an alternate is not specified under § 121.621(a)(2) or § 121.623(b) must have the following fuel onboard:

1) En Route Fuel. The flight must have enough fuel onboard, considering wind and other weather conditions expected, to fly to the destination airport and thereafter to fly for at least two hours at normal cruising fuel consumption.

2) Required Contingency Fuel. The airplane must have fuel onboard to comply with the requirements of § 121.647.

3-2001 SPECIAL FUEL RESERVES. The FAA Administrator may grant a deviation from § 121.645(b)(2) to certificate holders conducting flag or supplemental operations. The FAA grants the deviation by issuing OpSpec B043, Special Fuel Reserves in International Operations. Inspectors reviewing flights dispatched or released under the provisions of OpSpec B043 should carefully review this paragraph, along with Volume 3, Chapter 18, Section 4, OpSpec B043. POIs should note the method by which, both the en route reserve fuel and the international reserve fuel is computed, along with the special limitations and provisions being imposed. Inspectors should also be aware that § 121.647 applies to all flights conducted under part 121, including those conducted under the provisions of OpSpec B043. For example, if anticipated traffic delays or other anticipated conditions are expected to result in an increase in the amount of fuel planned for the flight, an appropriate quantity of contingency fuel must be added.

A. Computing En Route Reserve Fuel. When a certificate holder dispatches or releases a flight under OpSpec B043, the required en route reserve fuel is not computed for the entire time required to fly from the departure point to the destination. The en route reserve fuel is only applied to that portion of the flight in which the aircraft’s position cannot be determined once each hour by a Class I International Civil Aviation Organization (ICAO) airways navigational facility. For example, a flight from New York to Frankfurt, Germany takes approximately 7 hours. The flight is conducted over airways by Class 1 station reference navigation from
New York to the point at which the flight departs the standard service volume off the coast of northern Canada. The flight then proceeds by Class II navigation until again reaching the standard service volume of the Class I ICAO airways navigational facility serving the standard entry point of the European airways system. The flight then proceeds over airways by Class I station reference navigation to Frankfurt, Germany. The portion of the flight conducted by Class II navigation is approximately 3 hours.

Table 3-103. Illustration of Operations Specification B043

<table>
<thead>
<tr>
<th>Operational Analysis</th>
<th>Part 121, § 121.645</th>
<th>OpSpec B043</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Increment</td>
<td>Time</td>
<td>Pounds</td>
</tr>
<tr>
<td>En Route</td>
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</tr>
<tr>
<td>En Route Reserve</td>
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<td>11,200</td>
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<tr>
<td>Alternate</td>
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<td>:30</td>
<td>10,000</td>
</tr>
<tr>
<td>Required Fuel</td>
<td></td>
<td>149,900</td>
</tr>
</tbody>
</table>

1) Under § 121.645, 42 minutes of en route reserve fuel is required ([7 hours x 60 minutes = 420 minutes] x 10 percent = 42 minutes). For the 7-hour flight, the average fuel burn was 18,000 pounds per hour. At the end of the flight, however, the hourly fuel burn is 16,000 pounds per hour (42 minutes at 16,000 pounds per hour is 11,200 pounds [42/60 x 16,000]). The international reserve fuel is computed at 1,500 feet over the alternate. Since low-altitude holding results in relatively high fuel consumption, for the purpose of this illustration, 20,000 pounds per hour is used. (See Table 3-103, Illustration of Operations Specification B043.)

2) When the same flight is conducted under OpSpec B043, a somewhat smaller fuel load is required. Even though the time en route is equal for both flights, the lower takeoff weight of the OpSpec B043 flight results in a lower en route fuel burn. The en route reserve fuel is 18 minutes ([3 hours x 60 minutes = 180 minutes] x 10 percent = 18 minutes). At 16,000 pounds per hour, 18 minutes is 4,800 pounds [18/60 x 16,000]. The international reserve fuel for the OpSpec B043 flight is 45 minutes at normal cruising fuel consumption (for the weight and altitude at which the flight reaches the alternate); therefore, 45 minutes at 16,000 pounds per hour is 12,000 pounds.

B. **OpSpec B043 Special Limitations and Provisions.** POIs must ensure that certificate holders conducting operations under the OpSpec B043 authorization comply with each special limitation and provision contained in the OpSpec. POIs of part 121 certificate holders must also ensure that OpSpec B043 is not combined with OpSpec B044, Planned Redispatch or Rerelease En Route, since OpSpec B044 provides its own relief from the en route fuel reserves required by § 121.645(b)(2).
3-2002  PLANNED REDISPATCH AND RERELEASE. Section 121.631 permits the redispatch of flights conducted under flag rules and the rerelease of flights conducted under supplemental rules. For the planned redispatch and rerelease of long range flights conducted under these rules, authorization is required. The means of providing such authorization is through the issuance of OpSpec B044.

NOTE: In accordance with part 121 flag and supplemental rules, the terms “dispatch,” “dispatched,” “redispatch,” and “redispatched” apply to flights operated under flag rules, while the terms “release,” “released,” “rerelease,” and “rereleased” apply to flights operating under supplemental rules.

A. En Route Reserve Fuel. All flights operating in accordance with flag and supplemental rules are required by regulation to carry an en route fuel supply in addition to that needed to get from the origin airport to the destination airport. Section 121.645(b)(2) through (4) requires the additional fuel supply to provide for an aircraft to fly to the most distant alternate airport, if required, and to hold for 30 minutes at holding speed, at 1,500 feet above the alternate airport (or destination airport if no alternate is required), and to fly for a period of “10 percent of the total time required to fly from the airport of departure to, and land at, the airport to which it was released.” The fuel requirement based on 10 percent of the total trip time is typically known as the “en route reserve fuel.” See Figure 3-108, En Route Fuel Reserves Required by § 121.645(b)(2) for Flight Planned on Straight Dispatch/Release.

1) Long range flag and supplemental operations typically involve long flight times. The longer the flight time, the greater the opportunity for changes to the conditions en route. This type of changing environment is what necessitated the en route fuel reserves required by § 121.645(b)(2) to be based on total flight time, or a percentage thereof. The longer the flight time, the greater the amount of en route reserve fuel that is required. A flight that is 4 hours in duration would need 24 minutes of reserve fuel (10 percent of 4 hours), while a flight that is 8 hours in duration would need 48 minutes of reserve fuel (10 percent of 8 hours).

2) In most cases, the en route fuel reserve is not actually burned in flight. This fuel is on the aircraft to account for circumstances other than normal. Therefore, if no abnormal events occur, the aircraft will arrive with the en route fuel reserve still onboard. Since the en route fuel reserves are based on a percentage of total trip time, longer flights will arrive at the destination with more fuel than shorter flights due to the carriage of greater en route fuel reserves.

Figure 3-108. En Route Fuel Reserves Required by § 121.645(b)(2) for Flight Planned on Straight Dispatch/Release

From New York, USA (KJFK) to Rome, Italy (LIRF).

KJFK ______________(9 hours) ____________LIRF

- Total time en route from KJFK to LIRF is 9 hours. Ten percent of the total trip time is 54 minutes. (Approximately 18,000 pounds of fuel based on a fuel burn of 20,000 pounds/hour.)
B. En Route Reserve Fuel Based on Redispatch/Rerelease. Planned redispatch and rerelease, as authorized by OpSpec B044, allow the en route fuel reserve required by § 121.645(b)(2) to be based on the time it would take to get to an intermediate destination, which is known as the “initial destination.”

1) A flight that is conducted utilizing planned redispatch/rerelease is actually dispatched or released to the initial destination and is then redispatched or rereleased from a predetermined point along the route of flight, known as the “redispatch” or “rerelease point,” to the airport of intended landing (which is referred to as the “intended destination airport” in the OpSpec). The en route fuel reserves are then based on two time periods:

- The time it takes to get from the origin airport to the initial destination.
- The time it takes to get from the redispatch/rerelease point to the intended destination airport.

2) By breaking up the en route fuel reserves into two sections, based on the time periods above, the fuel needed to operate a flight utilizing planned redispatch/rerelease can be less than the fuel needed to operate a flight based on a straight dispatch or release from origin to destination. This is because a planned redispatch or rerelease assumes that the en route fuel reserves needed to get from the origin airport to the initial destination are not going to be used. Therefore, when the aircraft gets to the redispatch/rerelease point, which is typically just before or even abeam the initial destination, the unused en route reserve fuel can be used in the fuel calculation to complete the flight from the redispatch/rerelease point to the intended destination. See Figure 3-108A, En Route Fuel Reserves Required by § 121.645(b)(2) for Flight Planned Utilizing Planned Redispatch/Rerelease.

3) Since the total fuel required for the departure for an aircraft operating a flight utilizing redispatch/rerelease would be less than it would be if the flight were conducted without one, the takeoff gross weight of that aircraft will be reduced, which can also allow for additional payload to be carried.

**Figure 3-108A. En Route Fuel Reserves Required by § 121.645(b)(2) for Flight Planned Utilizing Planned Redispatch/Rerelease**

The flight is planned from KJFK to Paris, France (LFPG) with an Alternate of Orly (LFPO) and a redispatch/rerelease from point NTS, which is a waypoint along the flight planned route, to LIRF.

```
KJFK       (7.5 hours)   NTS (1.5 hours)LIRF
           |     LIRF
           |    LFPO/LFPG
```

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• Total time en route from KJFK to LFWG is 7.5 hours. Ten percent of the total trip time is 45 minutes. (Approximately 15,000 pounds of fuel based on a fuel burn of 20,000 pounds/hour.)

• Total time en route from the redispach/rerelease point, NTS to LIRF, is 1.5 hours. Ten percent of this time is 9 minutes. (Approximately 3,000 pounds based on 20,000 pounds/hour fuel burn.)

• If the 10 percent en route fuel reserve needed to get to NTS is not used up until that point, it can then be used as the en route fuel reserve needed to get from NTS to the intended destination of LIRF. Based on this principle, a flight is able to reach its intended destination of LIRF by carrying only the en route fuel reserves required to get to LFPG.

• If at the point of redispach/rerelease (NTS) the flight has burned some of the en route fuel reserves due to circumstances such as fuel over-burn, weather reroutes, or excessive vectoring by air traffic control (ATC), there may not be enough en route fuel reserves onboard to meet the minimum fuel requirements of the redispach/rerelease. In this case, continuation to the intended destination may not be possible and the flight would then need to land at the initial destination airport or alternate airport.

C. Fuel Requirements of Part 121. Before a flight can be released from the departure point to the initial destination airport, all the fuel and weather requirements of part 121 subpart U and the performance requirements of part 121 subpart I must be met. Those same requirements have to be met for the redispach or rerelease from the planned redispach/rerelease point to the actual destination as well. The dispatch/release to the initial destination and the redispach/rerelease to the intended destination are treated as separate, individual flight segments. Each flight segment requires its own dispatch or flight release. All of the fuel and weather requirements of part 121 subpart U and the performance requirements of part 121 subpart I apply to both flight segments and, therefore, both releases. In addition, the fuel requirements of § 121.647 must also be considered when determining the required fuel for dispatch/release to the initial destination airport as well as for the redispach/rerelease to the intended destination airport.

D. Flight Planning.

1) Process Steps. In order to plan a redispach or rerelease, the following basic steps must be accomplished:

   a) An initial destination and an alternate for that destination, if required by § 121.621 or § 121.623, must be selected. For flag operations, airports utilized as an initial or intended destination must be listed as a regular, provisional, or refueling airport in the certificate holder’s OpSpec C070, Airports Authorized for Scheduled Operations.

   b) A route of flight from origin to intended destination must be selected.

   c) Then, a point along the route of flight that is common to the initial and intended destination airports must be selected as the point at which the redispach or rerelease will occur. This point is typically located closest to the initial destination.
2) **Additional Considerations.** Once the airports and route of flight have been selected, items such as weather along the route, Notices to Airmen (NOTAM), and the applicability of weather minimums from the origin airport to the initial destination airport and from the redispach/rerelease point to the intended destination airport must be considered.

3) **Performance Limitations.**

   a) The flight must be planned so that the aircraft is not too heavy to land at the initial destination or alternate airports, or the intended destination or alternate airports, in accordance with the performance limitations contained in §§ 121.185, 121.187, 121.195, and 121.197, as applicable.

   b) Circumstances may warrant an initial destination to be located at such a distance that the landing weight at that airport would be in excess of the weight set forth by these regulations, as well as the limitations set forth by the AFM, if the aircraft were to fly directly there and land. In order to prevent this condition, a redispach/rerelease point may have to be chosen at a distance that would allow an aircraft to fly far enough to be able to land at the initial destination within regulatory and AFM limitations. This means that in some cases, the redispach/rerelease point may have to be located at a point beyond the initial destination rather than ahead or abeam of it to allow the aircraft to fly past the initial destination and burn enough fuel to ensure landing within regulatory and AFM limitations.

E. **Operational Reanalysis and the Redispach/Rerelease Message.** Once the flight is en route, conditions such as weather, winds aloft, and fuel burn are reevaluated by a dispatcher for flights conducted under flag rules or by a person authorized to exercise operational control for flights conducted under supplemental rules. Specifically, OpSpec B044 requires that a new operational analysis must be conducted within 2 hours prior to the flight’s arrival at the planned redispach or rerelease point.

   1) In preparing the new operational analysis, the dispatcher or person designated to exercise operational control (other than the PIC) must:

      a) Conduct an updated fuel (operational) analysis based on the current route of flight, wind conditions, and aircraft weight, on the route from the planned redispach or rerelease point to the intended destination airport, and any required alternate airports; and

      b) Inform the PIC of the results of the updated operational fuel analysis and all current information concerning weather conditions, navigation and ground facilities, known air traffic delays, and services at the intended destination and alternate airports specified in the redispach or rerelease, as required by § 121.601(c) for flag operations or § 121.603(b) for supplemental operations.

   2) If the operation indicates that there is sufficient fuel onboard to complete the redispach or rerelease to the intended destination, the dispatcher or person designated to exercise operational control (other than the PIC) must issue a dispatch or flight release from the planned redispach or rerelease point to the intended destination airport.
3) While a flight is en route, the new dispatch or flight release is typically provided in a message, known as the redispatch or rerelease message, which is transmitted to the PIC either verbally by voice communication or via a messaging system, such as the Aircraft Communications Addressing and Reporting System (ACARS).

4) One of the conditions of OpSpec B044 requires the dispatcher or person authorized to exercise operational control to record the redispatch or rerelease by listing their name and the time of redispatch or rerelease in the redispatch/rerelease message. In other words, the record of the redispatch or rerelease is part of the release itself.

5) Once the PIC receives the message, he or she must review the information and determine if concurrence to continue to the intended destination airport is warranted. If the PIC determines that safe continuation can be made, he or she will specifically accept the planned redispatch or rerelease and proceed to the intended destination. OpSpec B044 requires that the PIC’s decision be recorded as part of the redispatch or rerelease. OpSpec B044 also requires the redispatch/rerelease to be retained for at least 3 months in accordance with § 121.695 or § 121.697, as applicable. PICs often provide their concurrence to the dispatcher or person authorized to exercise operational control through ACARS. POIs must ensure that all of the elements of the redispatch or rerelease, as required by OpSpec B044, are retained by the certificate holder through their FAA-approved method of recordkeeping.

6) If the PIC or dispatcher determines that the current conditions do not allow for safe continuation to the intended destination, then the flight must land at the initial destination or alternate, as appropriate.

NOTE: It is important that POIs and certificate holders understand that a flight is not initially released to the intended destination airport. Subparagraph b2)a) of OpSpec B044 specifically states that the flight will be released to the initial destination. In order to continue to the intended destination airport, the flight will specifically have to be redispatched or rereleased based on the operational reanalysis required by subparagraphs b(4) and b(5)(a)–(f) of OpSpec B044.

NOTE: Section 121.122 does not specify communication requirements for certificate holders conducting all-cargo supplemental operations. However, OpSpec B044 specifically requires communication between the PIC and the person authorized to exercise operational control. Therefore, a certificate holder conducting all-cargo supplemental operations must ensure that a two-way radio communications system or other means of communication approved by the FAA is available for all flights being conducted under the authorizations contained in OpSpec B044.

NOTE: Section 121.631(f) allows a destination or alternate airport to be changed as long the airport is authorized for that type of aircraft and all of the appropriate requirements of §§ 121.173 and 121.593 through 121.661 are met at the time of redispatch/rerelease or amendment to the release. Therefore, if conditions do not allow for safe continuation to the intended destination, initial destination, and/or
alternate, a flight can be redispachted or rereleased to another airport as long as
the requirements of § 121.631(f) and (g) are met.

F. Loss of Communication. In the event of a total loss of communication en route:

1) OpSpec B044 requires the PIC to follow the lost communications procedures, as
outlined in the Aeronautical Information Manual (AIM), or the provisions specified in ICAO
Annex 2, as applicable to the airspace in which communication is lost.

2) OpSpec B044 requires that the aircraft dispatcher or persons designated to
exercise operational control follow the emergency procedures set forth in § 121.557(b) and (c)
for flag operations, and § 121.559(b) and (c) for supplemental operations.

G. Conditions and Limitations. OpSpec B044 contains 11 specific conditions and
limitations that must be complied with in order for a redispach or rerelease, as described in this
section, to be safely accomplished in accordance with all applicable Federal aviation regulations.
See the OpSpec B044 job aid contained in the Web-based Operations Safety System (WebOPSS)
for detailed information regarding each condition and limitation. In addition, Volume 3,
Chapter 18, Section 4, contains a list of each of the conditions and limitations, as well as
information for POIs on how to issue OpSpec B044.

H. Certificate Holder En Route Fuel Monitoring Procedures. In accordance with
OpSpec B044, POIs must ensure that the certificate holder develops en route fuel monitoring
procedures for monitoring, analyzing, and responding to a fuel over-burn (when the actual fuel
burn exceeds the fuel planned) during the en route phase of a flight. POIs should review the
certificate holder’s procedures and ensure that they contain at least the following:

1) Policies and Procedures. A certificate holder’s policies and procedures for
en route fuel monitoring should include at least the following:

   a) A description of the certificate holder’s method of monitoring fuel for each
      flight operated in accordance with OpSpec B044 for the purpose of verifying the accuracy of
      flight plan fuel burn.

   b) The certificate holder’s method of analyzing when actual fuel burn exceeds
      the fuel planned.

   c) A description of the actions the certificate holder will take in the event that the
      actual flight plan fuel burn is greater than that planned for a given flight.

   d) The certificate holder’s definition and/or description of what is considered to
      be minimum fuel for the purpose of accepting a planned redispach or rerelease.

   e) A method of tracking flights that land at an airport other than the intended
      destination during redispach/rerelease operations.
2) Responsibility and Authority.

a) POIs must ensure that certificate holders designate and document the persons with the responsibility and authority to implement, maintain, and improve the en route fuel monitoring process.

b) Certificate holders are responsible for ensuring that the persons involved in the en route fuel monitoring process have the knowledge and skills to exercise their responsibilities.

I. Training. POIs must ensure that certificate holders conducting planned redispach/rerelease flight operations have information and instructions for flightcrew members, dispatchers (flag operations), or persons designated to exercise operational control (supplemental operations) regarding the use and application of OpSpec B044 contained in their FAA-approved training program. The training program should include instruction in at least the following areas:

1) Specific instruction on each of the conditions and limitations contained in OpSpec B044.

2) The certificate holder’s flight planning system, including the method(s) of calculating/computing redispach/rerelease flight plans and operational reanalysis.

3) Selection of routes and initial destination and alternate airports.

4) Fuel planning, including minimum fuel requirements for initial dispatch/release and redispach/rerelease.

5) Criteria for determining minimum fuel for acceptance of redispach/rerelease.

GENERAL.

A. Purpose. This chapter contains policy, guidance, and information regarding Title 14 of the Code of Federal Regulations (14 CFR) regulatory requirements for weather. This chapter also provides information concerning the sources for obtaining weather reports and forecasts that are used by program managers, certificate holders, and Letter of Deviation Authority (LODA) holders conducting aircraft operations in accordance with 14 CFR parts 91 subpart K (part 91K), 121, 125, and 135.

B. Chapter Layout. This chapter comprises five sections. Volume 3, Chapter 26, Sections 1 through 4 are designed as a suite of documents that are meant to be viewed sequentially. Volume 3, Chapter 26, Sections 1 and 2 contain both general and specific regulatory requirements, while Volume 3, Chapter 26, Sections 3 and 4 discuss specific systems of obtaining weather information. Volume 3, Chapter 26, Section 5 is currently reserved for future use.

C. Scope. This chapter applies to principal operations inspectors (POI) and aviation safety inspectors (ASI) with oversight responsibility of part 91K program managers and certificate holders conducting operations in accordance with parts 121, 125, and 135, as well as part 125 LODA holders. This section focuses on a certificate holder’s, LODA holder’s, and program manager’s means of complying with the 14 CFR requirements for aviation weather and weather sources. A list of commonly used aviation weather acronyms is also provided. See Table 3-106, Acronyms Common to Aviation Weather.

REFERENCES (current editions):

- Title 14 CFR Parts 91K, 121, 125, and 135.
- Federal Aviation Administration (FAA) Order 8900.1, Flight Standards Information Management System.
- Volume 3, Chapter 26, Section 1, General – Parts 91K, 121, 125 and 135.
- Volume 3, Chapter 26, Section 2, Regulatory Sources of Aviation Weather Information and Aviation Weather Information Systems – Parts 91K, 121 and 135.
- Volume 3, Chapter 26, Section 3, Adverse Weather Phenomena Reporting and Forecast Systems.
- Volume 3, Chapter 26, Section 4, Enhanced Weather Information Systems.
- Advisory Circular (AC) 00-06, Aviation Weather.
- AC 00-24, Thunderstorms.
- AC 00-30, Atmospheric Turbulence Avoidance.
- AC 00-45, Aviation Weather Services.
• AC 00-54, Pilot Wind Shear Guide.
• AC 00-62, Internet Communications of Aviation Weather and NOTAMs.

3-2048 BACKGROUND. Title 14 CFR contains regulatory requirements for certificate holders and program managers to have adequate weather reporting facilities and to use approved sources of weather reports and forecasts to control flight operations. There are also requirements for certificate holders and program managers to have a system or method of obtaining reports and forecasts of adverse weather phenomena.

NOTE: When used in this chapter, the terms “dispatcher” and “aircraft dispatcher” are considered synonymous and may be used interchangeably.

A. Sources of Weather. Title 14 CFR typically refers to three sources of weather reporting facilities, weather reports, and weather forecasts.

1) U.S. National Weather Service (NWS). The NWS provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters, and ocean areas. Operations outside of the jurisdiction of the NWS require a weather source approved by the Administrator (see Volume 3, Chapter 26, Section 2, paragraphs 3-2073B and 3-2073C).

   a) The Weather Bureau. Some regulations contained in 14 CFR (e.g., part 121, § 121.119) contain references to “the Weather Bureau.” After these regulations were written, the U.S. Weather Bureau became the NWS. The term “Weather Bureau” is not used in the present day; however, 14 CFR still contains the term in some instances. All references to “the Weather Bureau” are in fact referring to the NWS.

   b) The National Oceanic and Atmospheric Administration (NOAA). NOAA is a scientific agency within the U.S. Department of Commerce (DOC). NOAA focuses on the conditions of the ocean and the atmosphere. NOAA is comprised of several organizations referred to as “line offices.” The NWS is one such line office. Title 14 CFR does not refer to NOAA directly; however, the FAA considers information provided by NOAA as being the equivalent of that provided by the NWS for the purpose of satisfying the requirements of 14 CFR.

2) Sources Approved by the NWS. The sources approved by the NWS are actually approved in agreement with and maintained in collaboration with the FAA. The collaboration between the FAA and the NWS is outlined in the current edition of FAA Order 7000.2, FAA/NWS Memorandum of Understanding for Policy Agreements. The NWS/FAA-approved and/or maintained sources are listed below and are discussed further in Volume 3, Chapter 26, Section 2.

   • NWS offices (including contract observatories).
   • Flight Service Stations (FSS).
   • Automated Surface Observing System (ASOS).
   • Automated Weather Observing System (AWOS).
   • Supplementary Aviation Weather Reporting System (SAWRS).
• Limited Aviation Weather Reporting stations (LAWRS).

3) Sources Approved By the Administrator. Examples of sources approved by the Administrator appear below. Several of these sources are discussed in greater detail throughout this chapter.

• The NWS for those United States and its territories located outside of the 48 contiguous United States.
• U.S. and North Atlantic Treaty Organization (NATO) military observing and forecasting sources.
• Members of the World Meteorological Organization (WMO) (http://www.wmo.int/pages/index_en.html).
• Active meteorological offices operated by a foreign state that subscribes to the standards and practices of the International Civil Aviation Organization (ICAO) conventions. (These meteorological offices are normally listed in the meteorology information (MET) tables located in ICAO Regional Air Navigation Plans. The Aeronautical Information Publication (AIP) of individual states also lists active meteorological offices for that state).
• ICAO member state, authorized meteorological station, or automated observation.
• Weather products produced by an Enhanced Weather Information System (EWINS).

B. Reports and Forecasts of Adverse Weather Phenomena. Adverse weather phenomena are meteorological conditions that, if encountered during flight or ground operations, could reduce and even threaten the safety of those operations. Examples of adverse weather phenomena include, but are not limited to:

• Thunderstorms,
• Icing,
• Low-altitude wind shear,
• Turbulence,
• Natural hazards such as volcanic ash, and
• Any meteorological condition that could cause contamination of a runway or other takeoff surface and directly affect aircraft performance.

3-2049 SPECIFIC REGULATORY REQUIREMENTS.

A. Regulatory Requirements—Part 91K. Program managers conducting part 91K operations have regulatory requirements for weather reporting facilities and obtaining reports and forecasts of adverse weather phenomena.

1) Weather Reporting Facilities. Part 91, § 91.1039 generally requires pilots operating aircraft involved in part 91K operations under instrument flight rules (IFR) to use weather reporting facilities that are operated by the following entities:
• The NWS,
• A source approved by the NWS, or
• A source approved by the Administrator.

2) Reports and Forecasts of Adverse Weather Phenomena. Part 91K program managers are subject to the general requirement, contained in part 91, to ensure that no aircraft is operated into known or forecast icing conditions beyond the limitations of the aircraft. Part 91K provides some additional requirements for large transport category aircraft listed in subparagraph 3-2049A2)b) (below). POIs of part 91K program managers should ensure that each program manager has a method in place to ensure the safety of flight by recognizing and avoiding adverse weather phenomena.

a) Icing. Section 91.527 generally contains the requirements for ensuring that no airplane takes off with frost, ice, or snow adhering to a critical surface, and that no aircraft is operated into known or forecast icing conditions. For all operations conducted in accordance with part 91K, program managers must have a system for obtaining reports and forecasts of icing conditions on the ground and en route.

b) Large Transport Category Aircraft. In accordance with § 91.1037(c), part 91K program managers that operate large transport category, turbine-engine-powered airplanes in excess of the weight allowed by § 91.1037(b) must have in their operating manuals destination airport analysis in accordance with § 91.1025(o). The airport analysis must contain, in part:

• Runway conditions (including contamination),
• Airport or area weather reporting,
• Environmental conditions, and
• Any criteria that affect aircraft performance.

c) Manual and Airport Analysis Requirements. In order to satisfy the manual and airport analysis requirements for large transport category, turbine-engine-powered airplanes in accordance with § 91.1025(o), each part 91K program manager operating these aircraft must have a system for obtaining forecasts and reports of adverse weather phenomena that could affect aircraft performance (e.g., low pressure, downdrafts, and microburst associated with thunderstorms) and cause runway contamination (e.g., snow (dry and wet), ice, slush, or standing water).

B. Regulatory Requirements—Part 121 Domestic and Flag Operations.

1) Weather Reporting Facilities. Section 121.101(a) requires each certificate holder conducting domestic or flag operations to show that enough weather reporting services are available along each route to ensure weather reports and forecasts necessary for each flight are available.

2) Sources of Weather Reports and Forecasts. Section 121.101 requires a certificate holder to use the following sources for weather reports and forecasts.
a) For operations within the 48 contiguous United States and the District of Columbia, § 121.101(b)(1) requires a certificate holder to use weather reports prepared by the NWS or a source approved by the NWS.

b) For operations outside the 48 contiguous United States and the District of Columbia, § 121.101(b)(2) requires a certificate holder to use weather reports prepared by a source approved by the Administrator.

c) For reports and forecasts of adverse weather phenomena, § 121.101(d) requires each certificate holder conducting domestic or flag operations to have an approved system for obtaining forecasts and reports of adverse weather phenomena that may affect the safety of flight. Weather sources used in that system must be approved by the Administrator.

d) For forecasts to control flight movement, § 121.101(c) requires each certificate holder who conducts domestic or flag operations and uses forecasts to control flight movement to base those forecasts on the following sources:

- Weather reports prepared by the NWS or a source approved by the NWS;
- Weather reports prepared by a source approved by the Administrator if operating outside the United States; and
- Weather reports prepared by a source approved as part of a certificate holder’s system of obtaining reports and forecasts of adverse weather phenomena.

3) Approved System of Obtaining Reports and Forecasts of Adverse Weather Phenomena. Each FAA-approved adverse weather phenomena reporting and forecast system required by § 121.101(d) must contain procedures for collecting and disseminating information regarding adverse weather phenomena that could affect the safety of flight. Adverse weather phenomena reporting and forecast systems are discussed in greater detail in Volume 3, Chapter 26, Section 3.

a) Icing. All certificate holders conducting part 121 domestic and flag operations must have an FAA-approved system of obtaining reports and forecasts of adverse weather phenomena that includes information regarding conditions that could result in icing conditions on the ground or en route. Section 121.629 generally prohibits any person from dispatching, releasing, or operating an aircraft when icing conditions on the ground or in flight may adversely affect the safety of the aircraft. Certificate holders conducting part 121 operations are required to have an FAA-approved ground deicing/anti-icing program (with limited exception (refer to § 121.629(d)). The program must include a detailed description of how the certificate holder determines that conditions are such that frost, ice, or snow may reasonably be expected to adhere to the aircraft, and that ground deicing/anti-icing operational procedures must be in effect.

b) Operational Requirement to Restrict or Suspend Operations. Section 121.551 requires a certificate holder conducting domestic or flag operations to restrict or suspend operations when it knows of conditions (including airport and runway conditions) that are a hazard to safe operations. The operations must be restricted or suspended until the hazardous conditions have been corrected.
c) Manual Requirements for Information Regarding Adverse Meteorological Conditions. Section 121.135(b)(15) requires each certificate holder conducting part 121 operations to have procedures contained in its manual system for operating in periods of ice, hail, thunderstorms, turbulence, or any potentially hazardous meteorological condition.

C. Regulatory Requirements Part 121—Supplemental Operations.

1) Weather Reporting Facilities. Section 121.119 requires each certificate holder who conducts supplemental operations to use specific sources for weather reports and forecasts.

2) Sources of Weather Reports and Forecasts. Section 121.119.

   a) Operations Within the United States. Each certificate holder conducting part 121 supplemental operations within the United States must use weather reports prepared by the NWS or a source approved by the Weather Bureau. (The Weather Bureau is the NWS. See subparagraph 3-2048A1(a)).

   b) Operations Outside of the United States or at U.S. Military Airports. Certificate holders conducting part 121 supplemental operations outside of the United States or at U.S. Military airports may use a source approved by the Administrator, but only at those locations where the NWS reports are not available.

   c) Forecasts to Control Flight Movement. Section 121.119(b) requires certificate holders who conduct supplemental operations and use forecasts to control flight movements to base those forecasts on the following sources:

      • Weather reports prepared by the NWS or a source approved by the NWS.
      • Weather reports prepared by a source approved by the Administrator when operating outside the United States or at U.S. Military airports.

3) Reports and Forecasts of Adverse Weather Phenomena.

   a) Icing. All certificate holders conducting part 121 supplemental operations must have a system of obtaining reports and forecasts of adverse weather phenomena that includes information regarding conditions that could result in icing conditions on the ground or en route. Certificate holders conducting part 121 supplemental operations are subject to the same requirements, with respect to icing, as certificate holder who conduct part 121 domestic and flag operations: Section 121.629 generally prohibits any person from dispatching, releasing, or operating an aircraft when icing conditions on the ground or in flight may adversely affect the safety of the aircraft. All certificate holders conducting part 121 operations are required to have an FAA-approved ground deicing/anti-icing program (with limited exception (refer to § 121.629(d)). The program must include a detailed description of how the certificate holder determines that conditions are such that frost, ice, or snow may reasonably be expected to adhere to the aircraft, and that ground deicing/anti-icing operational procedures must be in effect.

   b) Operational Requirement to Restrict or Suspend Operations. Section 121.553 requires each certificate holder or pilot in command (PIC) conducting supplemental operations to restrict or suspend operations when he or she knows of conditions (including airport and runway...
conditions) that are a hazard to safe operations. The operations must be restricted or suspended until the hazardous conditions have been corrected.

c) Manual Requirements for Information Regarding Adverse Meteorological Conditions. Section 121.135(b)(15) requires each certificate holder conducting part 121 operations to have procedures contained in its manual system for operating in periods of ice, hail, thunderstorms, turbulence, or any potentially hazardous meteorological condition.

d) In order to satisfy the manual requirements of § 121.135(b)(15) and the operational requirements of § 121.553, each certificate holder conducting part 121 supplemental operations must have an adverse weather phenomena reporting and forecast system to obtain reports and forecasts of adverse weather phenomena.

D. Regulatory Requirements Part 125. Part 125 does not contain any specific requirements for weather reporting facilities or sources of weather reports and forecasts.

1) Weather Reports and Forecasts. In general, part 125 requires weather reports or forecasts to indicate that weather conditions at a destination and/or alternate airport will be at or above the authorized minimums at the time of arrival. Some examples of these requirements are contained in the following regulations:

- Section 125.359, Flight Release under VFR.
- Section 125.361, Flight Release under IFR or Over-The-Top.
- Section 125.363, Flight Release over Water.
- Section 125.369, Alternate Airport Weather Minimums.

2) Reports and Forecasts of Adverse Weather Phenomena. Section 125.321 requires a PIC who encounters a meteorological condition to report that condition to the appropriate ground station as soon as practicable if the pilot feels that the knowledge of the condition is essential to the safety of other flights. Section 125.403 requires the airplane flight release to contain, or have attached to it, weather reports, available weather forecasts, or a combination thereof; this includes reports or forecasts of adverse weather phenomena that could affect the safety of flight. POIs of part 125 certificate holders and LODA holders should ensure that each certificate/LODA holder includes these reports and forecasts in, or as an attachment to, the airplane flight release. In addition, POIs should ensure that pilots conducting part 125 operations are able to use the information provided in these reports and forecasts to recognize and avoid adverse weather phenomena.

3) Icing. Section 125.221 contains regulatory requirements regarding the operation of an airplane in icing conditions. Part 125 certificate and LODA holders must have a method of obtaining reports and forecasts of icing conditions on the ground and en route in order to satisfy these regulatory requirements.
E. Regulatory Requirements for Part 135.

1) Sources of Weather Reports and Forecasts. Section 135.213 requires a person (refer to 14 CFR part 1 for the definition of “person”) operating an aircraft to use the following sources for aviation weather reports and forecasts.

- The NWS,
- A source approved by the NWS, or
- A source approved by the Administrator.

2) Reports and Forecasts of Adverse Weather Phenomena.

   a) Icing. Section 135.227 contains requirements for generally ensuring that no aircraft is taken off with frost, ice, or snow adhering to a critical surface, and no aircraft is operated into known or forecast icing conditions. POIs should review this regulation carefully for further details. For all operations conducted in accordance with part 135, certificate holders must have a system that provides, at least, information regarding icing conditions on the ground and en route.

   b) Restriction or Suspension of Operations. Section 135.69 requires each certificate holder or PIC to restrict or suspend operations when conditions, including airport and runway conditions, exist that present a hazard to safety. The certificate holder or pilot (as appropriate) must restrict or suspend operations as necessary until conditions presenting the hazard have concluded or been corrected. Adverse weather phenomena can be a hazard and threaten the safety of flight and ground operations. In order to satisfy the operational requirements of § 135.69, certificate holders conducting part 135 operations must have a system for obtaining reports and forecasts of adverse weather phenomena.

3-2050 REGULATORY INTENT.

A. Requirement for Weather Reports, Forecasts, or a Combination Thereof. There are many regulations in 14 CFR that contain requirements for weather reports, forecasts, or a combination thereof to indicate that the weather at a destination or alternate airport will be at or above the authorized landing minima at the estimated time of arrival (ETA). The regulatory intent of these regulations is that each certificate holder, PIC, dispatcher, or person authorized to exercise operational control must consider all available weather information pertaining to a particular airport when making the decision on whether or not to dispatch, release, or operate (continue) a flight. There may be times when a combination of reports and forecasts indicate that weather will be at or above minimums, and there may be times when the opposite is true and a flight will have to be delayed or in some cases cancelled.

1) Combination of Weather Reports and Forecasts—The Worst Weather Conditions. When regulations regarding the selection of destination and alternate airports require “weather reports or forecasts, or any combination thereof” to indicate that weather conditions will be at or above the authorized minimums at the ETA, the worst weather conditions take precedence. The FAA Office of Chief Counsel has consistently interpreted regulatory text requiring “any combination” of weather reports or forecasts to mean that the worst weather
conditions contained in any combination of weather reports or forecasts must be considered, and are therefore the controlling factor. These interpretations also make the remarks portion of a forecast as operationally significant as the main body of the forecast. Therefore, it is FAA policy that the worst weather condition in the main body or the remarks portion of a terminal forecast, as well as any weather report (see Volume 3, Chapter 26, Section 2 for more information regarding weather reports) used, is the controlling factor when selecting a destination or alternate airport. The burden of proof is on the certificate holder to show compliance with regulatory requirements and FAA legal interpretations. Therefore each certificate holder should be able to show at all times that any combination of available weather reports and forecasts indicate that the weather at the destination and any alternate airport will be at or above the authorized minimums at the ETA. (See also Volume 3, Chapter 26, Section 4, paragraph 3-2122 and subparagraph 3-2123B7)). This applies when determining compliance with the following regulations:

- Section 91.169 – Flight plan; information required: IFR alternate airport weather.
- Section 121.613 – Dispatch or flight release under IFR or over the top.
- Section 121.615 – Dispatch or flight release over water: Flag and supplemental air carriers and commercial operators.
- Section 121.619 – Alternate airport for destination: IFR or over the top: Domestic air carriers.
- Section 121.621 – Alternate airport for destination: Flag air carriers.
- Section 121.623 – Alternate airport for destination; IFR or over the top: Supplemental air carriers and commercial operators.
- Section 121.625 – Alternate airport weather minimums.
- Section 135.219 – IFR: Destination airport weather minimums.
- Section 135.223(b) – IFR: Alternate airport requirements.

2) Weather Reports and Forecasts are Required for Part 121 Operations. As previously stated, 14 CFR contains regulatory requirements for “weather reports or forecasts, or a combination thereof” to indicate that weather will be at or above the authorized minimums at the ETA. Part 121 contains several regulations (e.g., §§ 121.613, 121.615, and 121.625) with this type of regulatory text. In some cases, the appearance of the word “or” in this regulatory text has led to confusion and the belief that a flight can be dispatched, released, and/or operated (continued) using just a report or just a forecast. However, this is not the case. There are several part 121 regulations that require both reports and forecasts to be available for flight operations; therefore, in order to comply with all of the part 121 regulatory weather requirements, both weather reports and forecasts must be available for all part 121 flight operations.

a) Section 121.101 requires a certificate holder conducting domestic and/or flag operations to show that enough weather reporting services are available along each route to ensure weather reports and forecasts necessary for the operation.
b) Section 121.599 states that, for domestic and flag operations, no aircraft dispatcher may release a flight and, for supplemental operations, no PIC may begin a flight unless he [she] is thoroughly familiar with reported and forecast weather conditions on the route to be flown.

c) Section 121.601 requires a dispatcher for a certificate holder conducting domestic and/or flag operations to provide the PIC with all available weather reports and forecasts of weather phenomena that may affect the safety of flight.

B. “Current,” “Latest,” and “Available” Weather. Throughout 14 CFR, there are requirements to have the “current,” “available,” or “latest” weather reports or forecasts. The purpose of regulations that establish weather minimums, or that require flightcrews and dispatchers to consider weather conditions, is to prevent unsafe flight operations. The phrases “current weather,” “latest weather report,” and “available forecasts” have occasionally been interpreted inappropriately, resulting in noncompliance with 14 CFR and in diminished safety during flight operations. In order to ensure the highest degree of safety and regulatory compliance, the FAA defines the following terms within the context of weather reports and forecasts, as applicable:

- “Current,” with respect to a weather report, means present and actual.
- “Available,” with respect to a weather report and/or forecast, means for immediate use, obtainable, and accessible.
- “Latest,” with respect to a weather report and/or forecast means just completed, most current, and up-to-the-minute.

NOTE: These definitions are limited to weather reports and forecasts and should not be construed as being applicable to other sections of the regulations.
### Table 3-106. Acronyms Common to Aviation Weather

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>ADDS</td>
<td>Aviation Digital Data Service (Web site at <a href="http://www.aviationweather.gov">www.aviationweather.gov</a> (Aviation Weather Center))</td>
</tr>
<tr>
<td>AFSS</td>
<td>Automated Flight Service Station</td>
</tr>
<tr>
<td>AIREP</td>
<td>Aircraft Reports</td>
</tr>
<tr>
<td>AIRMET</td>
<td>Airmen’s Meteorological Information</td>
</tr>
<tr>
<td>AMS</td>
<td>American Meteorological Society</td>
</tr>
<tr>
<td>ASOS</td>
<td>Automated Surface Observing System</td>
</tr>
<tr>
<td>ASWON</td>
<td>Aviation Surface Weather Observation Network</td>
</tr>
<tr>
<td>AWC</td>
<td>Aviation Weather Center (Web site at <a href="http://www.aviationweather.gov">www.aviationweather.gov</a>)</td>
</tr>
<tr>
<td>AWOS</td>
<td>Automated Weather Observing System (FAA system)</td>
</tr>
<tr>
<td>AWRP</td>
<td>Aviation Weather Research Program</td>
</tr>
<tr>
<td>AWSS</td>
<td>Automated Weather Sensor System</td>
</tr>
<tr>
<td>CWA</td>
<td>Central Weather Advisory</td>
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<tr>
<td>CWIP</td>
<td>Commercial Weather Information Provider</td>
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<tr>
<td>CWO</td>
<td>Contract Weather Observer</td>
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<tr>
<td>EWINS</td>
<td>Enhanced Weather Information Systems</td>
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<tr>
<td>FICON</td>
<td>Field Condition</td>
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<tr>
<td>FMF</td>
<td>Flight Movement Forecast</td>
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<tr>
<td>GOES</td>
<td>Geostationary Operational Environmental Satellites</td>
</tr>
<tr>
<td>ICAO</td>
<td>International Civil Aviation Organization</td>
</tr>
<tr>
<td>LAWRS</td>
<td>Limited Aviation Weather Reporting Station (usually a control tower)</td>
</tr>
<tr>
<td>LLWAS</td>
<td>Low-Level Wind Shear Alert System</td>
</tr>
<tr>
<td>METAR</td>
<td>Aviation Routine Weather Report</td>
</tr>
<tr>
<td>NCEP</td>
<td>National Centers for Environmental Prediction</td>
</tr>
<tr>
<td>NESDIS</td>
<td>National Environmental Satellite, Data, and Information Service</td>
</tr>
<tr>
<td>NOAA</td>
<td>National Oceanic and Atmospheric Administration</td>
</tr>
<tr>
<td>NOTAM</td>
<td>Notices to Airmen</td>
</tr>
<tr>
<td>NWA</td>
<td>National Weather Association</td>
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<tr>
<td>NWS</td>
<td>National Weather Service (Part of NOAA)</td>
</tr>
<tr>
<td>PIREP</td>
<td>Pilot Weather Report</td>
</tr>
<tr>
<td>QICP</td>
<td>Qualified Internet Communications Provider (Refer to AC 00-62, Internet Communications of Aviation Weather and NOTAMs, current edition)</td>
</tr>
<tr>
<td>SAWRS</td>
<td>Supplemental Aviation Weather Reporting System (usually a weather observation station operated by certificate holder or a private entity)</td>
</tr>
<tr>
<td>SAWS</td>
<td>Stand-Alone Weather Sensors</td>
</tr>
<tr>
<td>SIGMET</td>
<td>Significant Meteorological Information</td>
</tr>
<tr>
<td>SPECI</td>
<td>Aviation Selected Special Weather Report</td>
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<tr>
<td>TAF</td>
<td>Terminal Aerodrome Forecast</td>
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<tr>
<td>TDWR</td>
<td>Terminal Doppler Weather Radar</td>
</tr>
<tr>
<td>VAA</td>
<td>Volcanic Ash Advisory</td>
</tr>
<tr>
<td>VAAC</td>
<td>Volcanic Ash Advisory Center</td>
</tr>
<tr>
<td>WMO</td>
<td>World Meteorological Organization</td>
</tr>
<tr>
<td>WMSCR</td>
<td>Weather Message Switching Center Replacement</td>
</tr>
</tbody>
</table>

**RESERVED.** Paragraphs 3-2051 through 3-2070.
3-2981 GENERAL. This chapter contains information and guidance to be used by principal operations inspectors (POI) when evaluating an operator’s recordkeeping system (see Volume 3, Chapter 32, Section 1, paragraph 3-3128 for definitions of accepted and approved material). This section contains a general overview of proprietary information, the regulatory requirements for recordkeeping under Title 14 of the Code of Federal Regulations (14 CFR) parts 121, 125, and 135, and definitions of terms as they relate to operator recordkeeping. Section 2 contains information and guidance about the acceptance or approval of an operator’s recordkeeping system. Section 3 contains information and guidance about currency periods for records. Section 4 contains information about computer-based recordkeeping and digital and/or electronic signature use.

3-2982 CHARACTERISTICS OF INFORMATION AND RECORDS. Operators collect and use both information and records in the conduct of operations.

A. Information Versus Record. Inspectors should be aware of the difference between a recordkeeping system and a Management Information System (MIS). A record is defined as an account which preserves evidence of the occurrence of an event. In general, a record must show what event occurred, to whom, by whom, when, and proof of the event’s occurrence, such as a certification by signature or by electronic means. A system that collects related information for making operational decisions but does not preserve evidence of the event’s occurrence is not a recordkeeping system.

B. Proprietary Information. Proprietary information is information which is the sole property of the operator. Inspectors do not have a right to compel an operator to divulge proprietary information. Questions about what information the operator must provide and what information the operator may withhold should be referred to Regional Counsel. Inspectors frequently acquire proprietary information in the process of conducting inspections and investigations. Inspectors may use such information for official purposes, but may not divulge such information to third parties (e.g., if an operator chooses to maintain flight and rest records on a payroll form, the operator must make the record available for inspection). Inspectors must take care not to divulge information such as rates of pay or dollar amounts.

3-2983 REGULATORY REQUIREMENTS. Parts 121, 125, and 135 require that operators maintain certain records on crewmembers and dispatchers participating in flight operations. Parts 121, 125, and 135 also specify certain regulatory requirements for recordkeeping.

A. Part 121. 14 CFR part 121, § 121.683 requires that operators maintain current records to show that each crewmember and dispatcher, as applicable, complies with proficiency and qualification requirements as stated in this chapter. Section 121.683 also requires that operators record each action taken concerning the release from employment or physical or professional disqualification of any flight crewmember or dispatcher, and retain that record for
6 months. Section 121.683 does not specify time periods that qualification records must be kept other than those in § 121.683(a)(2). This section also provides for approval of computer-based record systems by the Administrator to comply with the recordkeeping requirements of that section (see operations specification (OpSpec) A025). Sections 121.695 and 121.697 specify retention periods for load manifests, flight or dispatch releases, and flight plans. Section 121.711 specifies the retention period of en route contact between the operator and the operator’s pilots.

**B. Part 135.** 14 CFR part 135, § 135.63 requires that operators keep certain records at either the principal business office or another place approved by the Administrator, and establish retention periods for certain required records.

**C. Part 125.** 14 CFR part 125, § 125.401(c) requires that operators maintain current records to show that each crewmember complies with proficiency and qualification requirements. Part 125 Subpart L, Records and Reports, specifies requirements for other forms, reports, logs, records, and signature authorities.

**D. Other.** In order for an operator to show regulatory compliance and to allow the Federal Aviation Administration (FAA) to conduct surveillance to determine this compliance, the operator may elect to maintain other types of records, such as Extended Operations (ETOPS) and navigation records, even though they are not specifically mentioned in parts 121 and 135.

### 3-2984 DEFINITIONS. The following definitions are used throughout this chapter:

**A. Authentication.** The means by which a system validates the identity of an authorized user. These may include a password, a Personal Identification Number (PIN), a cryptographic key, a badge, or a stamp.

**B. Calendar-Month.** The first day through the last day of a particular month.

**C. Computer-Based Recordkeeping System.** A system of record processing in which records are entered, stored, and retrieved electronically by a computer system rather than in traditional hard copy form.

**D. Computer Hardware.** A computer and the associated physical equipment directly involved in the performance of communications or data processing functions.

**E. Computer Software.** Written or printed data, such as programs, routines, and symbolic languages essential to the operation of computers.

**F. Control.** A person has control of a transferable record if a system employed for evidencing the transfer of interests in the transferable record reliably establishes that person as the person to which the transferable record was issued or transferred.

**G. Conditions.** A system satisfies “control,” and a person is deemed to have control of a transferable record, if the transferable record is created, stored, and assigned in such a manner that:
1) A single authoritative copy of the transferable record exists which is unique, identifiable, and except as otherwise provided in subparagraphs 3-2984G 4), 5), and 6), unalterable;

2) The authoritative copy identifies the person asserting control as:

- The person to whom the transferable record was issued; or
- The person to which the transferable record was most recently transferred, if the authoritative copy indicates that the transferable record has been transferred.

3) The authoritative copy is communicated to and maintained by the person asserting control or its designated custodian;

4) Copies or revisions that add or change an identified assignee of the authoritative copy can be made only with the consent of the person asserting control;

5) Each copy of the authoritative copy and any copy of a copy is readily identifiable as a copy that is not the authoritative copy; and

6) Any revision of the authoritative copy is readily identifiable as authorized or unauthorized.

H. Data Backup. Use of one of several recognized methods of providing a secondary means for storing records. This backup can be used to reconstruct the format and content of electronically stored records in case of loss of, failure of, or damage to the primary recordkeeping system.

I. Data Base Management System (DBMS). A computer software program capable of maintaining stored information in an ordered format, manipulating that data by mathematical methods, and performing data processing functions such as retrieval of data.

J. Data Entry. The process by which data or information is entered into a computer memory or storage medium. Sources include manually written records, real-time information, and computer-generated data.

K. Data Verification. A process of assuring accuracy of data records by systematically or randomly comparing electronic records with manual data entry documents.

L. Digital Signature. Digital signature technology is the foundation of a variety of security, e-business, and e-commerce products. Based on public/private key cryptography, digital signature technology is used in secure messaging, Public Key Infrastructure (PKI), virtual private networks (VPN), web standards for secure transactions, and digital signatures.

M. Electronic Mail. The transmittal of messages, documents, or other communications between computer systems or other telecommunication channels.
N. **Electronic Record.** A contract, OpSpec paragraph, or other record created, generated, sent, communicated, received, or stored by electronic means.

O. **Electronic Signature.** An electronic sound, symbol, or process attached to, or logically associated with, a contract or other record and executed or adopted by a person with the intent for electronically identifying individuals entering, verifying, or auditing computer-based records, and checking for authenticity. An electronic signature combines cryptographic functions of a digital signature with the image of a person’s handwritten signature or some other form of visible mark that would be considered acceptable in a traditional signing process, authenticates data, and provides permanent secure user authentication.

P. **Electronic Technology.** Relating to or having electrical, digital, magnetic, wireless, optical, electromagnetic or similar capabilities.

Q. **Modem.** A device that can use existing telephone transmission circuits to transfer information between either two or more computer systems, or computers and remote terminals.

R. **Password.** An identification code required to access stored material. A device intended to prevent information from being viewed, edited, or printed by unauthorized persons.

S. **Proprietary Information.** Information that is the private property of the operator.

T. **Real-Time Record.** Information that is entered into a computer-based recordkeeping system immediately following the completion of an event or fulfillment of a condition, without first relying on the manual recording of the information on a data entry form.

U. **Records.** Information in a predetermined format that shows that the operator or its personnel have accomplished a particular event, have met certain criteria, or have fulfilled specific conditions required by the regulations.

V. **System Security.** Policies, procedures, and system structures designed to prevent users from gaining access to sections of a database to which they are not authorized access.

W. **Telephone Dial-In Access.** A means of gaining access to a computer system from a remote location through a telephone modem and existing telephone circuits.

X. **User Identification.** A series of alphabetic and/or numeric characters assigned to one or more individuals or organizations for the purpose of gaining access to a computer system and accounting for time usage.

3-2985 **MERGERS AND ACQUISITIONS.** When two or more computer-based recordkeeping systems are being consolidated because of a merger or acquisition, the consolidation of the training programs and the recordkeeping systems which correlate to those programs is of particular importance. Accurate consolidation of those systems must be given priority by the POI. Training records of the acquired company’s flight operations personnel must comply with the basic 14 CFR requirements before being accepted. Once the surviving system has been approved, the operator should transfer data from the existing system into the surviving system.
A. Unavailable Records. Due to variances in recordkeeping methods of individual operators, some records may not be available or usable for inclusion in the surviving computer-based recordkeeping system. In this case, the operator must reconstruct records from available resources. If there are no resources from which to reconstruct records, assumptions that experienced personnel have accomplished required training may be required. In these cases, the POI and operator should agree on a method of identifying portions of a record that are based on these assumptions. The method used to identify this information should be discussed in the operator’s user manual.

B. Changes to Existing Recordkeeping System. The POI is responsible for evaluating any request for a change to an operator’s existing recordkeeping system. Minor changes such as modifications to display formats may not require a formal evaluation and approval. Major changes affecting system operation or capability may require an in-depth evaluation and approval process.

C. Transition from Existing System to Surviving System. The transition procedures from the operator’s existing system to the surviving system must be approved by the POI. During this transition, the POI shall determine the time period required for maintaining the two systems in parallel operation. The surviving system should have at least the same backup capability as the existing system. The integration of the existing and surviving systems may be accomplished by electronically combining the databases of the two systems or by other methods, as long as the accuracy of the data is maintained.

NOTE: A change in computer hardware which does not affect functions or capabilities of the system does not constitute a system transition, and does not require approval.

RESERVED. Paragraphs 3-2986 through 3-3000.
VOLUME 3 GENERAL TECHNICAL ADMINISTRATION
CHAPTER 37 EVALUATE A PART 121/135.411(A)(2) CERTIFICATE HOLDER’S SHORT-TERM ESCALATION PROCEDURES

Section 1 Evaluating Short-Term Escalation Procedures

3-3706 PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3320.

B. Avionics: 5320.


3-3708 GENERAL. A certificate holder’s time limitations, maintenance intervals, and instructions and procedures to conduct inspections, which include the necessary tests and checks, are an integral part of their maintenance and inspection program. This program is a fundamental component of the certificate holder’s Continuous Airworthiness Maintenance Program (CAMP). On average, the inspection intervals in the certificate holder’s manual include a degree of safety to maximize aircraft reliability. Due to unanticipated circumstances, a certificate holder might need to temporarily adjust the interval for an individual aircraft, system, or component.

A. Use of a Short-Term Escalation Authorization.

1) By authorizing the use of the certificate holder’s short-term escalation procedures, the Federal Aviation Administration (FAA) is allowing the certificate holder to apply the limitations of OpSpec D076 to aircraft maintenance intervals, airframe component and appliance maintenance intervals, and powerplant component and accessory maintenance intervals. The limitations imposed by OpSpec D076 and the certificate holder’s procedures should not allow a short-term escalation that would compromise the airworthiness of an aircraft or any safety of flight issue. Unanticipated situations arise, such as contractor scheduling, conflicts in weather, parts availability, or other unscheduled maintenance; during which the short-term escalation of a maintenance interval may be used.

2) Principal inspectors (PI) must closely monitor the use of short-term escalation authorizations to ensure certificate holders are not abusing or using the escalation authorizations indiscriminately and that they do not conceal unsound maintenance practices, maintenance program deficiencies, or poor management decisions.

3) Short-term escalations for aircraft, aircraft systems, or components not subject to a reliability program may only be authorized by the issuance of OpSpec D076 or by a FAA certificate-holding district office (CHDO)/certificate management office (CMO) authorization on a case-by-case basis.
4) Certificate holders operating aircraft, aircraft systems, or components under the controls of an approved reliability program may issue short-term escalations, provided that short-term escalation procedures have been incorporated into their reliability program.

5) The certificate holder must provide policy, procedures, instructions, and/or information in the manual, which allows personnel concerned with short-term escalations to perform their duties and responsibilities to a high degree of safety.

6) A short-term escalation should only be used after the certificate holder thoroughly evaluates all of the alternatives and gives careful consideration to the operating performance and the continued airworthiness of the aircraft, systems, and components. A review of the proposed escalation should include the following:

a) If the short-term escalation authorization applies to powerplants; powerplant accessories and components; propellers and gearboxes; and airframe accessories and components, the certificate holder must provide previous inspection results or justifiable data from previous teardown reports.

b) If supplemental inspections are warranted during the escalation period to ensure continued airworthiness of the airframe, system, or component, the certificate holder must provide the CHDO/CMO with a supplemental inspection schedule.

7) Short-term escalations cannot be issued after an item has exceeded an established maintenance program time limitation. PIs should monitor each short-term escalation to ensure that the certificate holder is not using the short-term escalation to hide non-compliance with the certificate holder’s time limitations. PIs should look at the current time limitation, the current time, and the proposed escalation to properly monitor for these situations.

NOTE: The short-term escalation must not be construed as a permanent escalation to the task or check interval.

8) Maximum short-term escalation intervals may be a percentage of an existing time interval for a particular task, or designated in hours of time in service, cycles, or some other identifiable increment. Except under certain conditions, the maximum time allowable for a short-term escalation is 10 percent (not to exceed 500 hours/cycles) time in service. Maintenance tasks or checks controlled by calendar days or years would also have a limit of 10 percent, not to exceed the amount of days it would take the aircraft to reach the 500-hour time in service limit. For example, if a certificate holder’s use is 10 hours a day, the maximum time allowable for short-term escalation of a particular calendar task is 10 percent, but may not exceed 50 days (500 hours ÷ 10 hours a day = 50 days). Certificate holders must describe the methods and procedures for calculating short-term escalation intervals in their manual.

9) The certificate holder must notify the CHDO/CMO no later than the next working day following the certificate holder’s issuance of the short-term escalation. To ensure continuity between the FAA and the certificate holder, the FAA recommends that the certificate holder’s program includes procedures to notify the CHDO/CMO by telephone within 24 hours after the authorization is issued, followed by written notification no later than 72 hours after issuance of the authorization.
B. Extension of Short-Term Escalations. The 10 percent, which is not to exceed the 500-hour maximum time limit for a short-term escalation, is usually sufficient for a certificate holder to accomplish required tasks. Under special conditions, a certificate holder may extend the maximum limit of an individual item. The certificate holder must perform sufficient analysis and provide adequate justification to the CHDO to substantiate the extension request. All extension requests beyond the maximum limit require prior approval by the PI.

C. Prohibitions. Short-term escalation procedures do not apply to the following:

- Intervals specified by FAA Airworthiness Directives (AD);
- Life limits specified by Type Certificate Data Sheets (TCDS);
- Limitations specified by minimum equipment lists (MEL) or Configuration Deviation Lists (CDL);
- Structural sampling periods imposed by Maintenance Review Boards (MRB);
- Certification Maintenance Requirements (CMR) (unless specifically allowed and designated by the CMR document); and
- Fuel system airworthiness limitations (AL) and critical design configuration control limitations (CDCCL).

NOTE: Do not confuse short-term escalations with exceptional short-term extensions. Volume 6, Chapter 11, Section 23, provides guidance concerning exceptional short-term extensions. An operator may extend certain fuel system ALs up to the maximum number of days specified in the applicable Airworthiness Limitation Section (ALS) for a specific airplane without FAA Oversight Office approval.

D. Buying Back of Time.

1) Do not assume that all short-term escalation time granted must be “bought back” at the next inspection. Each carrier must evaluate its program during development and revisions to determine if and when a “buying back” of time may be required.

2) Carriers routinely combine individual maintenance tasks with common intervals into letter checks. These letter checks normally run in a series (e.g., C1, C2, C3, etc.). The use of a short-term escalation authorization to extend a letter check that is part of a series of letter checks will also impact the compliance times of individual maintenance tasks that compile the checks.

EXAMPLE: A particular maintenance task is due every 4,000 hours and is added to the C check series. The C1 is due at 1,000 hours, the C2 at 2,000 hours, and so forth. In this scenario, the particular task was placed on the C4 for completion. The certificate holder exercises its short-term escalation process on the C2 check by escalating it 100 hours. After this escalation, the normal repeat interval of 1,000 hours is continued through the rest of the C check series. Now the certificate holder does an individual maintenance task compliance audit and discovers that this particular task, which was required by their maintenance program to be completed at 4,000 hours, was actually completed at 4,100 hours.
(because of the short-term escalation exercised by the carrier for the C2). Even though this particular task was not part of the C2 package, it is acceptable for the task to have exceeded the maintenance program requirement in the amount equal to the short-term escalation authorized (maximum of 10 percent).

3) While constructing their check packages, carriers should take particular care to avoid the possibility of including maintenance tasks that are prohibited from being short-term escalated (refer to subparagraph 3-3708C above). If a carrier wishes to include those prohibited tasks, then the PI and the carrier must evaluate the effects of the short-term escalation and determine if buying back of time granted during the short-term escalation is required.

4) If the above scenario used a particular 4,000-hour task that was unacceptable for short-term escalation, then the carrier would be in violation unless the time was bought back after the C2 short-term escalation to avoid exceeding the 4,000-hour requirement of the task.

NOTE: For the purposes of this chapter, short-term escalation applies to both inspections and any other maintenance requirements (operational check, functional check, restoration, and discard) of the aircraft, aircraft appliances, and components. Subparagraph 3-3708C lists the only items not allowed to be subject to short-term escalation.

E. U.S. Military Contracts.

1) Certificate holders may not use short-term escalation procedures to conduct operations under a U.S. military contract. Such operations using short-term escalation procedures must be authorized under the provisions of 14 CFR part 119, § 119.55.

2) The FAA has always intended short-term escalation for use only when events outside the control of the air carrier prevent the air carrier from performing scheduled maintenance. Consistent with the regulatory requirement to maintain operational control, flight scheduling is always under the control of the air carrier. Therefore, air carriers may not use short-term escalations to satisfy flight scheduling requirements. Furthermore, when an air carrier conducts flight operations under a U.S. military contract, there is no longer an unanticipated situation. The use of short-term escalations to conduct flight operations under a U.S. military contract is contrary to the policy in this order and OpSpec D076.

3) OpSpec D076 does not permit short-term escalations for events that are within the air carrier’s control such as flight scheduling; therefore, air carriers may use § 119.55 to request a deviation from any of the requirements of part 119, 121, or 135. In these cases, after all the conditions in § 119.55(c) have been satisfied, the FAA will issue a non-standard OpSpecs under § 119.55(d) authorizing a deviation from any scheduled maintenance time limit.

3-3709 COORDINATION REQUIREMENTS. This task requires coordination between the airworthiness PI and the certificate holder.
3-3710 REFERENCES, FORMS, AND JOB AIDS.


B. Forms. None.

C. Job Aids:
   - Automated OpSpecs checklists and worksheets.
   - Job Task Analysis (JTA): 3.3.44.

3-3711 PROCEDURES. Review the air carrier certificate holder’s manual and ensure that:

A. Duties, Responsibilities, and Authority. The general policies section of the applicable manual contains the duties, responsibilities, and authority for part 119, § 119.65 personnel (refer to § 119.65(e)), and for any other management personnel and appropriate members of the ground organization (i.e., quality assurance (QA), quality control (QC), maintenance planning, and recordkeeping; refer to part 121, § 121.135(b)(2)).

B. Duties, Responsibilities, and Instructions. The manual contains duties, responsibilities, and instructions to keep each of its employees and other persons used in its operations informed of the provisions of its OpSpec D076 that applies to that employee’s or person’s duties and responsibilities (refer to § 119.43(c)).

C. Policies, Procedures, and Instructions. There are clear policies, procedures, instructions, and/or information to allow personnel concerned with the OpSpec D076-authorized short-term escalation process to perform duties and responsibilities to a high degree of safety (refer to §§ 121.135(a)(1) and 121.135(b)(1), OpSpec D072, and OpSpec D076).

D. OpSpec D076. The certificate holder has inserted pertinent excerpts of its OpSpec D076 (or additional references) in its manual (refer to § 119.43(b)), identified each such excerpt as a part of its OpSpecs (refer to § 119.43(b)(1)), and has stated that compliance with each OpSpec D076 requirement is mandatory (refer to § 119.43(b)(2)).

E. Maximum Limitations. It defines the maximum limitations for a short-term escalation.

F. Short-Term Escalation. It contains criteria defining the type of data acceptable for justifying a short-term escalation and procedures to ensure that no short-term escalations are authorized without supporting data.

G. Correspondence Maintenance Program. It corresponds with the overall maintenance program. The procedures must ensure that an escalation will not create an unsafe condition.

H. Restrictions Repetitive Escalations. It restricts the occurrence of repetitive short-term escalations that indicate a need for a change in the maintenance program.
I. Method for Recording Escalations. It provides a method for recording all escalations, with provisions for submitting/reporting each request/use of an escalation to the CHDO.

J. Interaction with the Continuing Analysis Surveillance System (CASS). There must be policies and procedures to ensure the short-term escalation program interacts with the CASS. The CASS must provide performance measurements to ensure the program is producing desired results.

K. Procedures and Controls. There are procedures and controls in place to prevent the use of short-term escalation on aircraft that are operating under the provisions of a U.S. military contract.

NOTE: The operator may include a list of items that it restricts from short-term escalation.

3-3712 TASK OUTCOMES.

A. Complete the PTRS Record.


C. Complete the Task. Successful completion of this task will result in one of the following:

- A letter to the certificate holder indicating denial of the short-term escalation authorization; or
- An amendment to the certificate holder’s OpSpecs, if applicable, authorizing short-term escalation authorization.

D. Document the Task. File all supporting paperwork in the certificate holder’s office file.

3-3713 FUTURE ACTIVITIES. Monitor the operation closely as follows:

- Ensure authorization is not being abused,
- Ensure manual procedures are being followed,
- Monitor the aircraft’s records for inspection compliance, and
- Review the projected inspection schedule and ensure that the short-term escalation authorization requirements have been applied.

RESERVED. Paragraphs 3-3714 through 3-3730.
Chapter 51 Part 133 External-Load Operations

Section 1 Introduction to Part 133 Related Tasks

3-4081 External-Load Operations. See the following documents for guidelines for certification and surveillance of Title 14 of the Code of Federal Regulations (14 CFR) part 133:

- Volume 2, Chapter 7, Section 1;
- Volume 3, Chapter 51, Sections 2–6;
- Volume 5, Chapter 10, Section 1; and
- Volume 6, Surveillance, Chapter 5, Sections 1–3.

3-4082 Web-Based Operations Safety System (WebOPSS) Authorizations. This guidance change requires aviation safety inspectors (ASI) to use WebOPSS to issue authorizations to rotorcraft external-load operators. ASIs may comply with this requirement immediately or may elect to issue the authorizations the next time an operator renews his or her certificate. All part 133 operators must have all required and applicable optional authorization paragraphs documented in WebOPSS within 25 months of the date of this change.

NOTE: Authorizations issued to part 133 operators are not subject to 14 CFR part 119 requirements and therefore are not referred to as “operations specifications.”

3-4083 Part 133 Highlights.

A. Civil Operators. All civil rotorcraft external-load operators must have certification.

B. Restricted Category Rotorcraft. Part 133 permits external-load operations with restricted category rotorcraft except over certain areas.

C. Certificate Expiration. Certificates issued under part 133 are valid for a period of 24 calendar-months per part 133, § 133.13.

D. Congested Area Operations. Operators must have an approved Congested Area Plan (CAP) before operating over congested areas.

E. Instrument Flight Rules (IFR) Operations. The Administrator must specifically approve IFR external-load operations per § 133.33(f). List IFR authorizations in WebOPSS.

F. Operations Flight Characteristic Demonstration. New operators need not comply with the requirements for an operational flight characteristic demonstration if the manufacturer already performed a demonstration. The Rotorcraft Flight Manual (RFM) for each rotorcraft contains this information.
3-4084 CLASSES OF AUTHORIZATION.

A. Class A External Loads. Class A is a non-jettisonable external load that cannot move freely and does not extend below the landing gear. An example of a Class A operation is the carriage of supplies in an approved cargo rack, bin, or fixture affixed to the exterior of the rotorcraft. A cargo rack certification may or may not include a cargo envelope. The Federal Aviation Administration (FAA)-approved Rotorcraft Flight Manual Supplement (RFMS) required for the cargo rack installation specifies the approved configuration. If the cargo carried is within the envelope specified in the RFMS, the rotorcraft operator may operate in accordance with 14 CFR part 91 or 135. Rotorcraft operators must conduct flight operations in accordance with part 133 when the cargo rack certification does not include a cargo envelope or the cargo carried exceeds the specified envelope.

B. Class B External Loads. Class B is a jettisonable external load, carried above or below the skids, that a cargo hook or winch lifts free of land and/or water. An example of a Class B operation is the placement of an air conditioning unit on the roof of a tall building.

C. Class C External Loads. Class C is a jettisonable external load where a portion of the load remains in contact with land or water. Examples of Class C operations are wire stringing, dragging a long pole, or towing a boat or barge.

D. Class D External Loads. Class D is an external load other than Class A, B, or C and approved on an individual basis through the issuance of a WebOPSS authorization (paragraph A044). Class D allows the external carriage of a person other than a crewmember or a person who is essential to and directly connected with the external load operation, in an FAA-approved personnel lifting device with a transport Category A multiengine helicopter.

3-4085 OPERATING RULES.

A. Rotorcraft-Load Combination Flight Manual (RLCFM). Conduct rotorcraft external load operations in accordance with the RLCFM prescribed in § 133.47. The rotorcraft operation must comply with § 133.45; the operating certificate authorizes the rotorcraft and rotorcraft-load combination.

B. Carriage of Persons. Part 133 does not provide for “passenger-carrying” operations, but does provide for the “carriage of persons” in accordance with § 133.35. If conducting passenger-carrying operations, the operation must comply with part 91 or 135. No Class A, B, or C external-load operator may allow passenger carrying during external-load operations unless the person carried is a flightcrew member, is a flightcrew member trainee, performs an essential function in connection with the external-load operation, or is necessary to accomplish the work activity directly associated with the external-load operation. An operator with Class D external-load approval may receive authorization to transport persons externally who are other than a crewmember or not directly associated with the external-load operation.

1) The carriage of snow skis as a Class A external-load when skiers are onboard the rotorcraft is clearly a passenger-carrying operation that is not permitted under the provisions of § 133.35. Carrying passenger baggage in a Class A external-load attaching means (such as racks
on top of fixed floats) with passengers aboard is another example of an operation not permitted by § 133.35.

NOTE: However, if using approved cargo racks (Supplemental Type Certificate (STC) or other approval), then the operator could conduct the operation under part 91 or 135, which both allow for carrying passengers.

2) The carriage of a sensor package as a Class B external-load when technicians are onboard the rotorcraft is clearly a carriage of persons operation that is permitted under the provisions of § 133.35. This applies if they are operating the equipment en route, assisting with placing the equipment upon arrival, or operating the equipment after positioning.

3) Under § 133.35, an operator with a Class B approval is authorized to externally carry a crewmember, or a person essential to the external-load operation, with a single-engine or multi-engine rotorcraft, in accordance with applicable operating limitations. If RFM or RFMS operating limitations, markings, or placards contain language prohibiting use for Human External Cargo (HEC), operators of civil rotorcraft must comply with those limitations in accordance with 14 CFR § 91.9(a) (e.g., an RFMS limitation such as, “the cargo hook is approved for non-human cargo, class B rotorcraft load combinations only”). The RFM or RFMS may also include additional limitations indicating certification for HEC such as, “the external load system meets the 14 CFR part 27 certification requirements for Human External Cargo (HEC).” The operator may carry the persons in the following examples as a Class B external load, which must be jettisonable.

a) Power line patrol/maintenance personnel.

b) Rescue personnel who are performing emergency medical and rescue services.

4) A Class D rotorcraft load combination is the only external-load class that permits the carriage of persons other than crewmembers or persons essential and directly connected with the external-load operation (refer to § 133.1(d)). Examples of persons who would have to be carried as a Class D external-load are harbor pilots who are being transported from the land to a ship, or ship-to-ship, in a personnel lifting device; or a person being rescued using a personnel lifting device. Conduct a Class D external-load operation only in accordance with the following:

a) The rotorcraft used must be type certificated (TC) in accordance with transport Category A requirements for its operating weight. It must provide hover capability with one engine inoperative at that operating weight and altitude when carrying a Class D load.

b) The rotorcraft must be equipped for direct radio intercommunication among required crewmembers.

c) The personnel lifting device must be FAA-approved and have an emergency release that requires two distinct actions to achieve release (e.g., a hoist must have a cable cutter with one guarded switch that requires the pilot to raise the guard before activating the switch. The guard must prevent the pilot from activating the switch inadvertently).
5) The test for determining whether it is appropriate to externally carry a person as a Class B versus a Class D external-load combination is considering the standard industry practices for the work activity carried out. If the person performs an essential function in connection with the external-load operation, or is necessary to accomplish the work activity directly associated with that external-load operation, the operator is authorized to transport the person as a Class B external-load combination. If the person does not perform an essential function in connection with the external-load operation, or is not necessary to accomplish the work activity directly associated with that external-load operation, then the operator is required to transport the person as a Class D external-load combination (refer to § 133.35(a)(3) or (4)). Regardless of the operational load class, in accordance with 14 CFR § 91.9(a), operators of civil rotocraft must comply with operating limitations specified in the RFM or RFMS, markings, and placards, including those applicable to HEC.

6) In an emergency involving the safety of persons or property, the certificate holder may deviate from the rules of part 133 to the extent required to meet that emergency. The test to determine whether a deviation is necessary is the availability of alternate means of resolving the situation.

   a) Rescue of property must be clearly in the public interest in order to warrant deviation from the operating rules and related requirements.

   b) Under the emergency operating authority (§ 133.31(b)), the FAA may request a complete report for each deviation from part 133. This may be necessary to determine whether there has been a violation of the rule and to ensure that the operator has not misused the authority granted by the provisions of § 133.31(a) to use an emergency situation to circumvent the rules. The report should give a thorough, detailed account of the operation, a description of the act of deviation, and a justification for the deviation. File the report within 10 days of the request by the Administrator.

3-4086 FOREIGN-REGISTERED ROTORCRAFT.

A. Canadian-Registered Rotorcraft. U.S. operators may add Canadian-registered rotocraft to a Rotorcraft External-load Operating Certificate in accordance with the following conditions:

1) Operators and new applicants for a part 133 Rotorcraft External-load Operator Certificate must have and maintain the exclusive use of at least one rotocraft that is U.S.-registered and meets the requirements of § 133.19.

2) Any Canadian-registered rotocraft added to a part 133 Rotorcraft External-load Operating Certificate and used in part 133 operations must:

   a) Be TC’d under part 27 or 29, the regulations preceding those parts, or 14 CFR part 21, § 21.25.

   b) Hold a U.S. TC in the normal or restricted category.

   c) Meet the original type design or properly altered condition.
d) Have records showing maintenance in accordance with the manufacturer’s instructions for continued airworthiness (ICA) and the regulations of the country of registry.

e) Undergo an airworthiness inspection prior to addition to a part 133 certificate.

B. North American Free Trade Agreement (NAFTA). Certain Specialty Air Services (SAS) authorized by NAFTA require use of rotorcraft external loads. NAFTA operators do not require part 133 certification because they hold equivalent authorization from their respective NAFTA Civil Aviation Authority (CAA). However, the rotorcraft authorized by a NAFTA Certificate of Authority (COA) must have an original FAA or Transport Canada Civil Aviation (TCCA) civil TC. Ex-military aircraft that have restricted-category certification based on military experience only are not eligible. For more information, see Volume 12, Chapter 1, Section 4.

3-4087 RENEWAL, AMENDMENT, CANCELLATION. A rotorcraft external-load operator certificate expires at the end of the 24th month after the month it was issued or renewed (§ 133.13). In the event the operator’s certificate was lost or destroyed, the operator may get a replacement upon written request to the certificate-holding district office (CHDO). The duplicate certificate is a copy of the currently effective certificate and is marked “duplicate” with the date of reissuance.

A. Renewal. The applicant must send FAA Form 8710-4, Rotorcraft External-load Operator Certificate Application, to the CHDO to apply for renewal of a rotorcraft external-load operator certificate. The certificate holder should apply for renewal at least 30 days before expiration of the certificate.

1) Process an application for renewal of a certificate in the same manner as for original issuance.

2) Compare the renewal application with the expiring certificate. If no substantial changes are noted and the operator has a good record of compliance, the responsible inspector may issue a new certificate without conducting a comprehensive inspection.

B. Amendment. The CHDO generally processes amendments to a part 133 operator’s certificate. The FAA may also amend an operator’s certificate, in the interest of safety in air commerce, as the result of actions taken under Title 49 of the United States Code (49 U.S.C.) § 44709, and 14 CFR part 13.

1) Examples of amendments or approval of operator amendments:

- WebOPSS authorizations: additional authorization, no longer qualified for authorization.
- RLCFM: a change in procedures, add a class of operation.
- Certificate: add or delete class authorization, a change to the rotorcraft list attached to the certification, a change of name (not ownership).
- Training program: a change in equipment (winch, rotorcraft, or other lifting device) or type of operations, including change in type of winch.
2) An operator desiring to amend a rotorcraft external-load certificate must apply using the appropriate section of FAA Form 8710-4.

3) The inspector determines if the amendment requires any additional inspections and/or tests.

4) External-load operators seldom confine their operations to one geographic area. To prevent imposing undue hardship on industry, a local Flight Standards District Office (FSDO) that does not hold the certificate may approve additional authorizations. However, the local FSDO must coordinate this activity with the CHDO.

   a) Preferably, the local FSDO will contact the CHDO to have the authorization entered into WebOPSS. The local FSDO can then print and have the operator sign the authorization. Forward the original authorization and supporting documentation to the CHDO.

   b) Alternatively, the local FSDO may issue (after coordination with the CHDO) the operator a letter of authorization (LOA), valid for 60 days, stating the operator met the requirements for the particular authorization sought. The operator must carry the LOA or a facsimile aboard the rotorcraft, along with a copy of the original external-load certificate and the list of authorized rotorcraft. The local FSDO forwards a copy of the LOA, the completed original FAA Form 8710-4, and any other supporting documentation to the CHDO. Amend the certificate or WebOPSS authorizations to include the additional authorization. Send the amendments to the operator within 60 days.

5) To add or delete a rotorcraft from the list of approved rotorcraft, the operator should fill out the appropriate section on FAA Form 8710-4. The authorization must reflect the addition or deletion of a rotorcraft.

   a) The assigned inspector must perform all necessary inspections prior to adding a rotorcraft.

   b) The FSDO issues a new list of approved rotorcraft. A new certificate is not required.

6) If the application, additional documents, and demonstrations indicate compliance with the appropriate regulations, issue an amended certificate and/or list of approved rotorcraft.


1) An inspector may amend, suspend, or revoke the certificate for the same reasons that would have been cause for denying application of the original certificate (refer to the current edition of FAA Order 2150.3, FAA Compliance and Enforcement Program). The requirements for continuing to hold a certificate are never less than the requirements for original certification. Use discretion. For example, an operator may have only one rotorcraft. If that rotorcraft is temporarily out of service for maintenance or replacement, etc., that may not be grounds for revoking the certificate because they do not have “the exclusive use of at least one rotorcraft.”
2) An operator may voluntarily elect to discontinue operations. The operator must voluntarily surrender the operating certificate by correspondence which should state that the operator understands that he or she will have to meet all initial certification requirements in order to reapply. In any case, if the operator does not resume operations within 2 years, the operator must surrender the operating certificate to the CHDO (§ 133.27(c)).

RESERVED. Paragraphs 3-4088 through 3-4105.
4-1641 GENERAL. This section contains specific policy, guidance, and procedures to be used by principal operations inspectors (POI) when processing an operator’s request for “authorization to use” an Electronic Flight Bag (EFB). The POI should coordinate the review of an operator’s EFB program with the principal maintenance inspector (PMI), principal avionics inspector (PAI), cabin safety inspector (CSI), and dispatch safety inspector (DSI), as appropriate. Once the POI has completed the review of an EFB application and determined the request is valid, authorization to use an EFB will be made by issuing the appropriate operations specifications (OpSpecs)/management specifications (MSpecs) or letter of authorization (LOA). The final result will be an authorization to use an EFB without issuing any sort of approval to any particular hardware system or software application. The Federal Aviation Administration (FAA) evaluation process for an EFB follows the general process for approval and acceptance as described in Volume 3, Chapter 1, Section 1, General.

4-1642 APPLICABILITY. This process for EFB authorization is to be used in combination with the current edition of Advisory Circular (AC) 120-76, Guidelines for the Certification, Airworthiness, and Operational Use of Electronic Flight Bags, and the issuance of an OpSpec, MSpec, or LOA A061, as described in this order. The processes described in this section may also be used to determine if an EFB may be substituted for aeronautical charts and data used within aircraft operated under Title 14 of the Code of Federal Regulations (14 CFR) part 91. No written authorization is required for part 91 operators except those conducted under part 91 subpart K (part 91K).

A. Evaluation Process for Class 1 or 2 EFBs Using Type A and/or B Software Applications. The evaluation process described in this section is applicable to Class 1 or 2 EFBs using Type A and/or B software applications. Aircraft Evaluation Group (AEG) involvement in the authorization to use Class 1 or 2 EFBs is at the AEG’s discretion. AEG involvement may be expected when an EFB has new or novel functions not addressed in this guidance and/or when there are concerns about EFB use and standardization. When an AEG report exists for a particular Class EFB or Type A and/or B software application, then the AEG report is controlling for the determination of operational suitability.

B. Evaluation Process for (Class 3) Hardware and/or Approved (Type C) software Applications. Installed (Class 3) hardware and/or approved (Type C) software applications are evaluated by the AEG in conjunction with type certificate (TC), amended TC, Supplemental Type Certificate (STC), or Technical Standard Order Authorization (TSOA) processes. The AEG determines operational suitability and pilot training, checking, and currency requirements. The AEG determination of suitability for installed (Class 3) EFB hardware may be referenced in the Flight Standardization Board (FSB) report for the particular model aircraft or other AEG report of operational suitability. If installed (Class 3) EFB hardware is not addressed in an AEG report, the FSB chairman for the affected aircraft should be contacted to determine if the AEG has accomplished an operational suitability evaluation. Authorization for EFB installed (Class 3)
with approved software (Type C) is subject to existing operator requirements for implementing new or modified certificated equipment, including compliance with FSB reports for differences training, checking, and currency. For approved (Type C) software, operators should seek authorization as they would for any other approved avionics software application.

4-1643 EFB HARDWARE CLASSES. Figure 4-75, Flowchart for Determining Electronic Flight Bag Hardware Class, is provided to aid in the determination of the EFB hardware classes. The EFB must meet the following hardware specifications to be used in an aircraft during flight operations. It is the user’s/operator’s responsibility to document compliance with these specifications for each EFB and aircraft operating combination.

A. Class 1 “Portable”. These EFBs are portable, commercial off-the-shelf (COTS) devices that are part of a pilot/crewmembers flight kit. Class 1 EFBs are not mounted to the aircraft, connected to the aircraft systems for data, or connected to a dedicated aircraft power supply. An EFB attached to a kneeboard, suction cup(s), or other temporary securing solution by a means acceptable to the Administrator, is still considered a Class 1 EFB because it is not mounted to the aircraft. For the purposes of this section, mounted is defined as any portable device attached to a permanently installed mounting device. A permanently installed mounting device requires an installation approval (refer to the current edition of AC 20-173, Installation of Electronic Flight Bag Components, for additional information). Class 1 EFBs which have Type B software applications for aeronautical charts, approach charts, or electronic checklists (ECL) must be secured to a temporary securing solution, viewable during critical phases of flight, and must not interfere with flight control movement. This requirement does not preclude a pilot crewmember from temporarily removing the EFB from its secured and viewable location to aid in complying with operational requirements or to review other authorized Type B software applications (e.g., pilot/crewmember temporarily holding the Class 1 EFB to review the electronic Airplane Flight Manual (AFM)). The need for aeronautical charts, approach charts, and ECLs to be immediately available for viewing in all phases of flight is essential for an electronic format to be equivalent to the paper format being replaced. The ability to have departure and arrival charts, approach charts, and airport diagrams continuously in view is essential for situational awareness (SA) during critical phases of flight and very important to runway incursion prevention during takeoff, landing, and taxi operations. This viewability requirement is consistent with current FAA policy stating pilot/crewmembers have approach charts and airport diagrams viewable during those respective operations. For the purposes of this section, critical phases of flight include all ground operations involving taxi, takeoff and landing, and all other flight operations conducted below 10,000 ft above ground level (AGL) except cruise flight. Note: taxi is defined as “movement of an aircraft under its own power on the surface of an airport.”

B. Class 2 “Portable”. These EFBs are portable, COTS devices that are part of a pilot’s/crewmember’s flight kit. Class 2 EFBs are typically mounted to a permanently installed mounting device and may be connected to a data source (wired or wireless), hardwired power source, or an installed antenna. A permanently installed mounting device requires an installation approval (refer to AC 20-173 for additional information). For 14 CFR parts 25, 27, and 29 aircraft, yoke mounting of an EFB is not recommended and all of the yoke mounting components (e.g., mounts, brackets, clips, etc.) for the EFB must be incorporated into the aircraft type design. To be considered portable, tools must not be required to remove a Class 2 EFB from the
permanently installed mount in the flight deck. Class 2 EFBs which have Type B software applications for aeronautical charts, approach charts, or ECL must be secured and viewable during critical phases of flight, and must not interfere with flight control movement. This requirement does not preclude a pilot crewmember from temporarily removing the EFB from its secured and viewable location to aid in complying with operational requirements or to review other authorized Type B software applications (e.g., pilot temporarily holding the Class 2 EFB to perform quick reference handbook (QRH) operational tasks). Any EFB hardware not accessible to pilot/crewmembers and not considered portable must have an installation approval (refer to AC 20-173 for additional information).

NOTE: Normally, portable EFBs are limited to hosting Type A and B software applications or Technical Standard Order (TSO) functions limited to a minor failure effect classification. However, approved (Type C) software applications associated with the provision of own-ship position on airport moving map displays (AMMD) may be hosted on a Class 2 portable EFB or installed EFB (Class 3).

C. “Installed” EFB (Class 3). These hardware devices are installed with design approval (refer to AC 20-173 for additional information) and are discussed further in subparagraph 4-1646C. The hosted Type A or B software applications are not subject to FAA certification on an installed EFB (Class 3). Type A or Type B software applications must not interfere with aircraft systems or other FAA-approved software applications (Type C) holding design approval by the Aircraft Certification Service (AIR).

4-1644 HARDWARE SPECIFICATIONS—CLASS 1 AND CLASS 2 EFBs. Major components such as motherboards, processors, Random-Access Memory (RAM), video cards, hard drives, power supplies, and connections (modem, wireless, etc.) must be configuration controlled. Any change to these components will require the EFB to be reevaluated to demonstrate the EFB still meets its intended function, non-interference, and reliability requirements. Figure 4-76, Hardware Description Template, is a template provided to facilitate the documentation of these components.

NOTE: For permanently sealed devices, use the manufacturer and model or manufacturer and part number from Figure 4-76 for configuration control of these devices.

A. Display. The following display requirements are specified when a Type B software application is available on an EFB during certain critical phases of flight (e.g., taxi, takeoff, approach, and landing).

1) Legibility. The screen size and resolution must be proven to display information in a comparable manner to the aeronautical charts and data it is intended to replace. The screen must display an approach chart in an acceptable aeronautical chart format similar to a published paper approach chart. The screen must be large enough to show an entire instrument approach procedure (IAP) chart at once with the equivalent degree of legibility and clarity as a paper chart. This requirement is not meant to preclude panning and zooming features but is intended to prevent a workload increase during the approach phase of flight. Alternate representations of
approach charts will need to be evaluated and approved by the FSB process for functionality and human factors.

2) **Brightness.** The display must be proven to be readable in all anticipated lighting conditions by each pilot/crewmember and in each aircraft in which it is to be used. The display must have a dimming capability to prevent the EFB from being a distraction or impairment to night vision in a night flight deck environment. The display must also be demonstrated to be readable on the flight deck in direct sunlight. Display brightness must be equally adjustable whether the EFB is operating on battery or aircraft power. Users should be able to adjust the screen brightness of an EFB independently of the brightness of other displays on the flight deck. When automatic brightness adjustment is incorporated, it should operate independently for each EFB on the flight deck. Buttons and labels should be adequately illuminated for night use. All controls must be properly labeled for their intended function.

3) **Viewing Angle.** The display must be viewable from an offset angle to preclude difficulty in positioning the EFB on the aircraft flight deck. When screen protectors are used, they must be maintained and be proven not to impede viewing of the screen. (Refer AC 120-76 for additional information on viewing angle.)

4) **Stylus.** For a stylus screen, there must be an easily accessible stowage position for the stylus and an accessible spare stylus (or substitute stylus) must be available.

5) **Digitizer Pen.** When a digitizer pen is used to operate the EFB, the digitizer pen must have an easily accessible stowage position and be tethered. A spare digitizer must be immediately available and adjusted for use on each EFB.

6) **Touch Screen.** If a touch screen is used, it must be evaluated for ease of operation. The touch screen must be responsive and not require multiple attempts to make a selection, but not be so sensitive to cause erroneous selections to occur.

**B. Rapid Decompression (RD) Testing.** RD testing is required to determine an EFB’s functional capability when Type B software applications are used in pressurized aircraft where no alternate procedures or paper backup are available. RD testing is not required when only Type A software applications are used on the EFB. The information from the RD test is used to establish the procedural requirements for the use of EFBs in a pressurized aircraft. RD testing should follow the guidelines in RTCA, Inc., (previously Radio Technical Commission for Aeronautics) DO-160, Environmental Conditions and Test Procedures for Airborne Equipment, up to the maximum operating altitude of the aircraft in which the EFB is to be used. It is the operator’s responsibility to provide the POI with documented results of the RD testing.

**NOTE:** RD testing must be accomplished on at least one representative sample of each make and model of hardware device used as an EFB. Representative testing is an appropriate level of testing for modern solid state devices. The testing of operational EFBs should be avoided when possible to preclude the infliction of unknown damage to the unit during testing.

1) **Pressurized Aircraft.** RD testing for Class 1 and/or 2 EFBs must be conducted when Type B software applications are used in lieu of paper-based aeronautical charts in
pressurized aircraft in-flight. When a Class 1 or 2 EFB is turned on and operates reliably during the RD test, no mitigating procedures need to be developed beyond redundancy. When a Class 1 or 2 EFB is turned off during the RD test and is fully functional following the RD, then procedures must be in place to ensure one of the two EFBs onboard the aircraft remains off or configured so no damage will be incurred should an RD occur in-flight above 10,000 feet.

2) Unpressurized Aircraft. RD testing is not required for a Class 1 or 2 EFB used in an unpressurized aircraft. The EFB must be demonstrated to reliably operate up to the maximum operating altitude of the aircraft. If EFB operation at maximum operating altitude is not attainable, procedures must be established to preclude operation of the EFB above the maximum demonstrated EFB operation altitude while still maintaining availability of required aeronautical information.

C. Electromagnetic Interference (EMI)/Non-Interference Testing. It is the aircraft operator’s responsibility to determine the operation of a portable electronic device (PED) will not interfere with navigation, communication and other aircraft systems. The current edition of AC 91.21-1, Use of Portable Electronic Devices Aboard Aircraft, addresses non-interference testing for noncritical phases of flight only and is not adequate when Type B software applications are used for all phases of flight. AC 91.21-1 and the additional guidance for EMI/Non-Interference contained in this order are required for Class 1 and 2 EFBs.

1) PEDs. In order to operate a PED in other than a noncritical phase of flight, the aircraft operator is responsible for ensuring the PED will not interfere with navigation, communication and other aircraft systems. The following methods are applicable to Class 1 and 2 EFBs with Type B software applications required for use during all phases of flight. Either Method 1, Method 2, or Method 3 may be used for EMI/Non-Interference Testing. When an aircraft operator elects to use Method 3 to determine PED EMI/non-interference, transmitting and non-transmitting PEDs have been addressed in this method and no further testing or analysis is required for transmitting portable electronic devices (T-PEDs).

a) Method 1 for compliance with PED non-interference testing for all phases of flight is completed in the two following steps.

- Step 1 is to conduct an EMI test in accordance with RTCA DO-160, section 21, paragraph M. This Step 1 test can be conducted for an EFB user/operator by an EFB vendor or other source. The results of the RTCA DO-160 EMI test must be evaluated to determine an adequate margin exists between the EMI emitted by the PED and the interference susceptibility threshold of aircraft equipment. If Step 1 testing determines adequate margins exist for all interference (both “front door” and “back door” susceptibility), then Method 1 is complete. If Step 1 testing identifies inadequate margins for interference (either “front door” or “back door” susceptibility), then Step 2 testing must be completed; and
- Step 2 testing is specific to each aircraft model in which the PED will be operated, but it is testing only the specific equipment and/or equipment operation. Step 2 testing must be conducted in an actual aircraft and may be credited to similarly equipped aircraft of the same make/model as
tested. Step 2 testing must show no interference of aircraft equipment occurs from the operation of the PED.

b) Method 2 for compliance with PED non-interference testing for all phases of flight is a complete test in each aircraft using an industry standard checklist. This industry standard checklist must be of the extent normally considered acceptable for non-interference testing of a PED in an aircraft for all phases of flight. Testing for a particular aircraft make/model may be credited to other similarly equipped aircraft of the same make/model.

NOTE: In support of Method 2, a PED as EFB - Electromagnetic Compatibility Assessment Checklist has been developed and is located in the Flight Standards Information Management System (FSIMS), Publications, Other documents, Electronic Flight Bag Checklists and Job Aids section. The use of this checklist is not mandatory.

c) Method 3 for compliance with PED non-interference testing for all phases of flight is the methodology described in FAA InFO 13010 - Expanding Use of Passenger Portable Electronic Devices (PED), and its supplement FAA InFO 13010SUP - FAA Aid to Operators for the Expanded Use of Passenger PEDS. This guidance is an acceptable means of assessing and mitigating risk pertaining to the use of PEDs in all phases of flight. If an aircraft has been determined to be eligible for all phases of operation, without restriction, for passenger PEDs, then the same determination of electromagnetic compatibility may apply to PEDs that have been authorized for use as EFBs in accordance with OpSpec/MSpec/LOA A061 - Use of Electronic Flight Bag. InFO 13010SUP can be downloaded from the following hyperlink: http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/info/all_infos/.

2) Transmitting Portable Electronic Devices (T-PED). In order to operate a T-PED in other than a noncritical phase of flight, the user/operator is responsible to ensure the T-PED will not interfere with the operation of the aircraft equipment in any way. The following method is applicable to all Class 1 or 2 EFBs with Type B software applications required for use during all phases of flight. Non-interference testing for T-PEDs consists of two separate test requirements.

a) Test Requirement 1. Each T-PED must have a frequency assessment based on the frequency and power output of the T-PED. This frequency assessment must consider Federal Communications Commission (FCC) frequency standards and be in accordance with applicable processes set forth in RTCA DO-294, Guidance on Allowing Transmitting Portable Electronic Devices (T-PEDs) on Aircraft. This frequency assessment must confirm no interference of aircraft or ground equipment will occur as a result of intentional transmissions from these devices.

b) Test Requirement 2. Once a frequency assessment determines there will be no interference from the T-PED’s intentional transmissions, each T-PED must then be tested while operating using either Method 1 or Method 2 for basic non-interference testing requirements described above. This basic non-interference testing is applicable to both a T-PED integrated into an EFB device and a T-PED remote to an EFB. When a T-PED is integrated into an EFB, the basic non-interference testing must be completed both with and without the T-PED function.
being operative. If a T-PED is located remote from the EFB, the T-PED basic non-interference testing is independent from the EFB non-interference testing. T-PED position is very critical to T-PED non-interference testing; therefore, the operating/testing locations of a T-PED must be clearly defined and adhered to in T-PED operating procedures.

NOTE: When an aircraft operator elects to use Method 3 in subparagraph 4-1644C1) to determine PED EMI/non-interference, transmitting and non-transmitting PEDs have been addressed in this method and no further testing or analysis is required for T-PEDs.

D. Antennas.

1) **Satellite Weather Antennas.** A satellite weather antenna may be built into a Class 1 or 2 EFB or external to the EFB. A portable satellite antenna is considered ancillary PED equipment and must be included in EFB evaluation and testing. Installed antennas for satellite weather may be used to provide signal reception for EFB intended functions. When a satellite receiver is installed separate from the portable EFB, it must meet appropriate installation requirements.

2) **Global Positioning System (GPS) Antennas.** A GPS antenna may be built into a Class 1 or 2 EFB or external to an EFB. A portable GPS antenna is considered ancillary PED equipment and must be included in EFB evaluation and testing. An installed GPS antenna may be used to provide signal reception to an EFB and must support the intended function of the EFB.

NOTE: GPS data may be used for map centering or page turning when en route charts are displayed on an EFB. Map centering may be used as an en route chart feature only and may not be used when an approach chart is displayed. Display of own-ship position on a Class 1 or 2 EFB in-flight is not authorized. If a portable GPS is used to provide position information to an EFB, the portable GPS is subject to the same requirements as the EFB. The EFB must demonstrate its intended functions with the GPS both enabled and disabled. In addition, the EFB must be non-interference tested with the portable GPS attached and operative, as well as with the portable GPS not attached (unless the EFB is considered inoperative without the portable GPS).

E. Power Sources.

1) **Battery Primary.** Useful battery life must be established and documented for battery powered EFBs. Aircraft operators must be able to determine the useful life of the EFB battery. Each battery powered EFB providing aeronautical information or software applications pertinent to the safe operation of the aircraft must have at least one of the following before departing the gate:

   a) An established procedure to recharge the battery from aircraft power during flight operations; or
b) A battery or batteries with a combined useful battery life to ensure EFB is operational during taxi and flight operations to include diversions and expected delays; or

c) An acceptable mitigation strategy, authorized by the principal inspector (PI) with certificate oversight responsibility with concurrence by Flight Standards Air Transportation Division (AFS-200), to ensure products that contain aeronautical charts, checklists, or other data required by the operating rules are available. The certificate holder must submit a plan to the FAA PI assigned with oversight responsibility for subsequent coordination and review with geographically responsible AFS Regional Office (RO) and AFS-200.

2) Battery Maintenance. EFB battery maintenance needs to be addressed as either a maintenance or operating procedure to ensure battery life, change intervals, and safety. EFB batteries, including those carried as spares, must be maintained in an appropriate state of charge. Batteries must be replaced at the EFB manufacturer’s recommended interval.

3) Lithium Battery Capacity. EFBs employing rechargeable lithium batteries are more vulnerable to overcharging and over-discharging, which can result in overheating, thermal runaway, and eventually fire. In support of safe aircraft operations, rechargeable lithium batteries should never exceed 300 watt-hours (Wh) in a portable (Class 1 or Class 2) EFB or battery backup device. This 300 Wh limit is the maximum capacity allowed per battery by Department of Transportation (DOT) regulations for carriage in air travel found in Title 49 of the Code of Federal Regulations (49 CFR) part 175, § 175.10. Most rechargeable lithium batteries marketed to consumers are well below 100 Wh, which is generally sufficient for most operational uses. To calculate the number of watt-hours a battery provides, divide the milliamp hours (mAh) by 1000 and multiply the amount of voltage (V) (e.g., 5400 mAh/1000 x 11.1V = 60 Wh). If unsure of the watt-hour rating of a battery, contact the manufacturer.

4) Lithium Battery Testing. The aircraft operator must have documented evidence of required testing for portable (Class 1 or Class 2) EFBs utilizing lithium batteries, as well as procedures for their maintenance, storage, and functional checks. These procedures should meet or exceed Original Equipment Manufacturer (OEM) recommendations. Procedures must address battery lifespan, proper storage, handling, and safety. There should be methods to ensure the rechargeable lithium type batteries are sufficiently charged at proper intervals and have periodic functional checks to ensure they do not experience degraded charge retention capability or other damage due to prolonged storage. Battery lifespan must be addressed to ensure replacement at proper intervals (i.e., specified time period for replacement, battery no longer holds minimum voltage after charge, minimum percentage of charge retention compared to original capacity, etc.) per the OEM’s recommendations. Procedures should include precautions to prevent mishandling of the battery, which could cause a short circuit or other unintentional exposure or damage resulting in personal injury or property damage. All replacements for rechargeable lithium batteries must be sourced from the OEM and repairs must not be made. It is the aircraft operator’s responsibility to provide the PI with documentation concerning lithium battery testing compliance, purchase documents linked to each battery to demonstrate battery life compliance, and documented lithium battery maintenance, storage, and functional check procedures meeting or exceeding the OEM recommendations (refer to AC 120-76 for additional information on lithium battery safety, testing standards, maintenance, storage, and functional checks).
5) Aircraft Power Primary (Class 2 Only). When an EFB uses aircraft power as the primary power source, design approval is required for this connection and power source by TC, amended TC, or STC. This type of EFB power source will normally be hardwired to the EFB mounting device or directly to aircraft power source through a connector.

F. Data Connectivity (Class 2 Only). EFB data connections to aircraft data sources require design approval by TC, amended TC, or STC to ensure the aircraft systems are protected from any EFB failure modes. These data connections should be “read only,” except for nonessential Airline Administrative Communication (AAC) or Airline Operational Communication (AOC) systems. Data connection from the aircraft navigation system may not be used to display own-ship position on a Class 1 or 2 EFB in-flight. Aircraft navigation system source data or portable GPS sources require evaluation in order to support display of an own-ship symbol limited to the airport surface as a Type B software application.

G. Data Loading/Database Changes. Class 1 or 2 EFBs must have a reliable means for revising the EFB databases. Database currency is determined by what required aeronautical information the EFB is replacing. Each method of data revision must ensure integrity of the data being loaded and not negatively impact the reliability of EFB operation. Procedures must exist to protect the EFB from corruption, especially when Internet and/or wireless means are used. Database revisions must not include software application or operating system changes. Application software and/or operating system program changes must be controlled and tested prior to use in-flight. Database and/or application software changes may not be performed during operations (taxi, takeoff, in-flight, and landing).

NOTE: External drives for data loading are considered ancillary EFB equipment and not subject to specific requirements beyond those identified for data loading/database revision above.

H. Mounting Devices. The EFB, when attached to its appropriately designed mounting device, must be evaluated to ensure operational suitability in all ground and flight operations and conditions. When attached to its mounting device, the EFB must not interfere with pilot/crewmember duties and must be easily and safely stowed when not in use. In addition, the attached EFB must not obstruct the pilot/crewmember primary and secondary fields of view, extensively block any portion of the pilot compartment windows, and must be free of glare and reflection. The attached EFB and provisions must not impede safe egress from the aircraft (refer to AC 120-76).

4-1645 EFB SOFTWARE APPLICATION SPECIFICATIONS. Figure 4-77, Flowchart for Determining Electronic Flight Bag Software Application Type, is provided to aid in the determination of the EFB software application type. A description of failure classifications referenced in this section can be found in the current edition of RTCA DO-178, Software Considerations in Airborne Systems and Equipment Certification.

A. Type A Software Applications. Type A software applications are those paper replacement software applications primarily intended for use on the ground or during noncritical phases of flight when pilot/crewmember workload is reduced. Type A software applications are considered to have a failure condition classified as “minor” or “no safety effect” for all phases of
Flight. In the current edition of AC 120-76, Appendix 1 lists examples of Type A software applications.

1) Type A software applications for Weight and Balance (W&B) present existing information found in the applicable AFM or POH. Type A W&B software applications may accomplish basic mathematics but must not use algorithms to calculate results. Type A W&B software applications must retrieve and apply existing published information.

2) Type A software applications for aircraft performance present existing information found in the applicable AFM or POH. Type A software applications for performance may retrieve and apply existing published information. Type A performance software applications must not use algorithms to calculate results.

B. Type B Software Applications. Type B software applications are those paper replacement software applications primarily intended for use during critical phases of flight or have software applications and/or algorithms which must be tested for accuracy and reliability. Type B software applications are considered to have a failure condition classified as “minor” or “no safety effect” for all phases of flight. Type B software applications include miscellaneous, non-required software applications (e.g., aircraft cabin and exterior surveillance video displays, maintenance software applications), as well as software applications with display of own-ship position limited to airport surface operations having a failure condition classified as “minor” or “no safety effect”, and only as an aid to situational awareness (i.e., not appropriate for surface navigation, surface alerting, time-based operations, guidance, maneuvering, and control functions, etc.). AC 120-76, Appendix 2, lists examples of Type B software applications.

1) Type B aeronautical chart software applications display aeronautical charts in electronic format. These software applications must be available for use during all phases of flight. These software applications do not require paper printing of aeronautical charts and the viewable electronic format allows chart manipulation.

2) Type B software applications which display own-ship position limited to airport surface operations may be utilized pending successful evaluation of the application software for operational suitability and must be tested and proven accurate by the applicant utilizing the Type B EFB Software Application(s) Displaying Own-ship Position Limited to Airport Moving Map for Surface Operations: Aircraft Operator Checklist and FAA PI Job Aid which can be downloaded from the FAA’s Web-based Operations Safety System (WebOPSS) paragraph A061 guidance tab, or FSIMS, Publications, Other documents, Electronic Flight Bag Checklists and Job Aids section. Use of an installed Global Navigation Satellite System (GNSS) position source is recommended to support display of own-ship position limited to airport surface operations. However, a portable (internal or external) GNSS source may be authorized pending completion of an operational evaluation to document and prove its accuracy utilizing the Airport Moving Map Job Aid referenced above.

3) Type B ECL software applications provide cockpit checklists in compliance with regulatory requirements. These software applications must be available for use during all phases of flight. ECL (systems) must be tested for flight operations suitability and must not adversely impact pilot/crewmember workload.
4) Type B W&B software applications use algorithms or approved data to calculate W&B results. Type B W&B software applications are produced for a specific aircraft and, therefore, must be tested and proven accurate by the applicant.

5) Type B aircraft performance software applications use algorithms or approved data to calculate performance results. Type B aircraft performance software applications are produced for a specific aircraft and, therefore, must be tested and proven accurate by the applicant.

C. Approved (Type C) Software Applications. Approved (Type C) software applications are for airborne and surface functions with a failure condition categorized as “major”, “hazardous” or “catastrophic”. These are “non-EFB” software applications found in avionics and include intended functions for communications, navigation, and surveillance requiring FAA design, production, and installation approval. Type C software applications for airborne and surface functions with a failure condition classification of “major” or higher must be installed on equipment as part of aircraft type design by TC, amended TC, or STC.

4-1646 OPERATIONAL SUITABILITY REQUIREMENTS. The user/operator is responsible for ensuring a Class 1 or 2 EFB, along with Type A and B software applications, will reliably perform its intended function while not interfering with other aircraft equipment or operations.

A. Application Documentation. The user/operator must present application documentation to the POI demonstrating the EFB meets its intended function. The attached flowcharts illustrated in Figure 4-75 and Figure 4-77 will assist the user/operator with the identification and documentation of EFBs. Determining the operational suitability of a particular EFB is the responsibility of the user/operator and may be subject to specific guidelines from the applicable AEG reports.

1) When an operator has completed the evaluation of a Class 1 or 2 EFB, the operator must submit an application requesting authorization to use the EFB. The POI will review the application submitted by the operator and authorize/not authorize the use of the EFB based on the findings of the POI Review Checklist 3, illustrated in Figure 4-78, Principal Operations Inspector Review Checklist.

2) When a new aircraft model is added to an existing EFB authorization, the suitability of the EFB for the aircraft must be addressed as part of aircraft conformity using this evaluation process. When a new EFB is added to an existing EFB authorization, the suitability of the new EFB must be addressed using this same evaluation process.

B. Operational Evaluation of Class 1 or 2 Hardware/Type A or B Software Applications. The user/operator must evaluate the EFB for suitability of intended functions in each aircraft model.

1) The user/operator must use the checklist as illustrated in Figure 4-79, Checklist 1—Tabletop Electronic Flight Bag Evaluation, to evaluate the operational suitability of the proposed EFB intended functions and aircraft model suitability. The intended functions of software applications must be appropriate to the individual aircraft make and model.
• Electronic documents,
• ECL software applications,
• W&B software applications,
• Performance software applications,
• Electronic aeronautical chart software applications,
• Display of own-ship position limited to airport surface operations; and
• Weather information.

2) For Type B software applications which display own-ship position limited to airport surface operations, the user/operator must utilize the Type B EFB Software Application(s) Displaying Own-ship Position Limited to Airport Moving Map for Surface Operations: Aircraft Operator Checklist and FAA PI Job Aid which can be downloaded from the FAA’s WebOPSS paragraph A061 guidance tab, or FSIMS, Publications, Other documents, EFB Checklists and Job Aids section to conduct a 6-month operational validation testing and evaluation of the application software functionality, intended database accuracy, and/or use of a portable GNSS position source to test and prove its accuracy. Use of an installed GNSS position source will require no evaluation.

3) The user/operator should use the checklist shown in Figure 4-80, Checklist 2—Electronic Flight Bag Operational Evaluation, to develop a flight scenario for final EFB testing when initial EFB use is being evaluated. Operators requesting initial EFB authorization must include their POI in the flight/simulator evaluation of an initial EFB implementation. Operational evaluations for subsequent additions of EFBs or aircraft models need not conduct flight/simulator evaluations, provided intended functions remain substantively the same as previously evaluated EFBs.

C. Operational Suitability of Installed EFB Hardware (Class 3)/Approved Software (Type C) Applications. Installed EFB (Class 3) hardware and/or approved software (Type C) applications are evaluated by the AEG in conjunction with a TC, amended TC, or STC certification process. The AEG determines operational suitability and pilot training, checking, and currency requirements. The AEG determination of suitability for installed EFB (Class 3) hardware may be referenced in the FSB report for the particular model aircraft or other AEG report of operational suitability (FSB reports are located in the FAA’s FSIMS) via the following hyperlink: http://fsims.avs.faa.gov). If installed EFB (Class 3) hardware is not addressed in an AEG report, the FSB Chairman for the aircraft should be contacted to determine if the AEG has completed an operational suitability evaluation. Installed EFB (Class 3) and approved software (Type C) application authorization is subject to existing operator requirements for certified equipment. For AC 20-159 approved software (Type C) applications, the operator must address the development of procedures and training associated with EFB use prior to receiving authorization. For approved software (Type C) applications not associated with AC 20-159, operators should seek authorization as they would for any other approved avionics software application.

4-1647 EFB PROCEDURES. The operator’s operations and maintenance procedures must be specific to each EFB and the operations conducted. The operator’s manual must identify each model of EFB authorized and each model of aircraft.
A. EFB Configuration Control. Standard EFB configuration control must be established and baselined (i.e., initial hardware and software application version at time of application) along with procedures to ensure the EFB configuration control is maintained during system updates/revolutions. Class 1 or 2 EFB configuration affects usability and battery life through setup of suspend/sleep modes. All classes of EFBs must have established standard operating procedures (SOP) to ensure reliable use of hardware and software applications. Procedures must be established for EFB database revision. This should include verification of continued intended function prior to use in-flight operations following an EFB database revision.

NOTE: Software application updates, especially in the EFB operating system, must have extensive test procedures prior to use in-flight operations. Software application revision procedures must be comprehensive to ensure continued reliability of the EFB and verification of reliable intended function.

B. Normal and Abnormal Operating Procedures.

1) Normal procedures for flight operations must be developed for all flight operations with EFBs. Pre-flight must address battery charging, EFB database revision and data currency, EFB configuration control, and SOP for EFB setup. In-flight procedures must include standard application operating procedures and EFB standard flight operating procedures for use.

2) Abnormal procedures must be established to address likely EFB function failures. Procedures for single and dual EFB failure must be established.

3) Class 1 or 2 EFB operating procedures and limitations must be established if the EFB being used has not demonstrated RD testing while on and operating. (See subparagraph 4-1644B.)

4) Checklists must be established or revised to include normal and abnormal EFB procedures to be used by pilots/crewmembers in-flight. This may be accomplished by amending checklists when approved operator-customized cockpit checklists are used or by creating an EFB checklist supplement when aircraft manufacturer cockpit checklists are used.

C. Minimum Equipment List (MEL). When MEL relief is requested, the MEL must be amended in compliance with the aircraft’s Master Minimum Equipment List (MMEEL). An inoperative Class 1 EFB may be removed from the aircraft without MEL relief being utilized, provided redundancy is maintained or paper backups for all Type B software applications are available.

D. Maintenance. Regular maintenance procedures are required for Class 1 and 2 EFBs, including measures to ensure the continued readability of the viewing screen. EFB battery maintenance needs to be addressed to ensure battery life, change intervals, and safety. Installed EFB (Class 3)/approved (Type C) software application maintenance must comply with the aircraft instructions for continued airworthiness (ICA).

E. Risk Mitigation. Procedures must be established for a transition to paperless authorization. Initial procedures establish an independent backup during the EFB validation period. Procedures must be established for continuous reporting of problems with EFBs. There
must be procedures in place for the user/operator to review these reports periodically to mitigate potential unreliability issues and correct operating procedures where necessary. Procedures must be established to notify pilot/crewmembers of EFB problems or use issues. (For more information on risk mitigation, see Volume 10, Chapter 1.)

NOTE: When certain Type B software applications (e.g., approach charts, aeronautical charts, ECLs, and flight manuals) are utilized on Class 1 or 2 EFBs to replace aeronautical charts or data required by regulation, risk mitigation is required per AC 120-76. Such mitigation methods may be satisfied by use of multiple EFB hardware and software applications or backup paper aeronautical charts and data. Two or more operational EFBs are required to remove paper products that contain Type B software applications for in-flight use (e.g., aeronautical charts, checklists, emergency procedures, etc.) Type A software applications are not subject to this requirement. When determining the need for redundancy, take into consideration no single failure or common mode error can cause the loss of required aeronautical information or data. The need for redundancy should also consider independent power sources or battery backup for the EFB. (Refer to AC 120-76, paragraph 9.) The AFS field office with oversight responsibility (FSDO/CMO) is ultimately responsible to determine if the EFB backup mitigation strategy proposed by the aircraft operator is acceptable to the Administrator.

F. Training. The operator must develop EFB training for all personnel involved with EFB use, database servicing, and maintenance. EFB training must comply with training identified in AC 120-76 and be FAA-approved where applicable.

4-1648 AIRWORTHINESS REQUIREMENTS. This paragraph outlines the airworthiness and return to service requirements for installed components or provisions of Class 1 or 2 EFBs. These airworthiness requirements are applicable to all installed provisions capable of supporting EFB functions at crewmember stations, regardless of any other stated intended function. The installer remains responsible to ensure all certification and airworthiness requirements are met for each installation. For provisional installations, each installer remains responsible for compliance with EFB airworthiness requirements, and each operator is responsible for EFB operational use requirements of the installed provisions capability. All installed EFB (Class 3) installation approvals require certification under TC, amended TC, or STC.

A. EFB Power Source.

1) Battery Primary Power Source. This is defined as utilizing an EFB battery only or aircraft power being used to recharge the EFB battery during flight operation, but the EFB battery remains the primary EFB power supply. Airworthiness criteria for Class 1 or Class 2 EFB aircraft power sources are accomplished in accordance with existing airworthiness requirements for PED outlets installation. Such outlets, if installed, must be labeled to enable use of the EFB by identifying the electrical characteristics (e.g., 28 volts direct current (VDC), 115 volts alternating current (VAC), 60 or 400 hertz (Hz), etc.) in order to address equipment sensitivity to voltage, current, or frequency parameters and to provide awareness to the crewmember or
maintenance personnel, reducing the likelihood of connecting incompatible devices to the power port (refer to the current edition of AC 20-173 for additional guidance).

NOTE: Special consideration must be given to the type of electrical power provided for the recharging of lithium batteries. Lithium batteries pose a safety hazard if overcharged or excessively discharged. Operators should have lithium battery charging procedures that are in total accordance with the battery manufacturer’s charging instructions and prevent aggravation of lithium ion battery thermal hazards (refer to AC 120-76 for guidance on lithium battery authorization).

2) Aircraft Power Primary EFB Power Source (Class 2 EFB Only). This is aircraft power used as the primary EFB power supply and requires the power supply to be hardwired or connected with certified connectors to ensure reliability. This is an EFB continuously depending on connection to aircraft power to perform its intended function (no sustaining battery power). The aircraft power for Class 2 EFB power supplies must be designed to remain available, at an acceptable level for required flight information, in the event of aircraft electrical malfunctions. Class 2 EFB power supplies require installation approval addressing applicable airworthiness regulations (refer to AC 20-173 for additional information), and the power port must be appropriately labeled to enable use of the EFB by identifying the electrical characteristics (e.g., 28 VDC, 115 VAC, 60 or 400 Hz, etc.) in order to address equipment sensitivity to voltage, current, or frequency parameters and to provide awareness to the crewmember or maintenance personnel to reduce the likelihood of connecting incompatible devices to the power port.

B. EFB Data Connectivity. This read-only data is provided to an EFB from the aircraft’s systems (e.g., flight management system (FMS), GPS, air data, fuel system) through a certified ARINC 429, RS-232, RS-485, or other compatible interfaces or certified router. EFB data connectivity does not include raw antenna reception data from an installed antenna going directly to the EFB. EFB data connectivity must include partition/protection to preclude the EFB from interfering with any aircraft system, and all associated wiring must be protected from damage and secured. EFB data connectivity requires design approval accomplished under TC, amended TC, or STC by AIR and excludes the installation from eligibility for field approval (refer to AC 20-173, for additional information).

NOTE: Data converters (e.g., ARINC 429 to RS-232) capable of supporting EFB functions at crewmember stations must have design approval issued by the FAA.

C. EFB Mounting Devices.

1) Yoke-mounted EFBs must be certificated by a design approval by AIR under TC, amended TC, or STC. All the structural and dynamic, as well as wiring protection and security requirements affecting the flight controls (including autopilot, stall warning, stick pusher, crashworthiness, human factors, etc.), must be addressed prior to installation. Field approval or Designated Engineering Representative (DER) approval without a design approval from AIR by TC, amended TC, or STC is not permitted for yoke-mounted EFBs (refer to AC 20-173, for additional information).
2) Cockpit-mounted EFBs are Class 2 EFBs mounted in the cockpit other than on the control yoke. The EFB mounting device requires installation approval (refer to the current edition of AC 20-173, for additional information).

D. Installed Antennas. Installed antennas are those antennas permanently installed in the aircraft. Portable antennas attached to a portable EFB, but not attached to the aircraft, are not subject to these airworthiness requirements. Portable antennas and temporary antenna holders, like suction cups, are subject to EFB evaluation requirements only. Installation of antennas capable of supporting EFB functions at pilot/crewmember stations must be accomplished using existing guidance for antenna airworthiness considerations.

1) Antennas combining reception for both aircraft navigation and EFB must be TSO approved for this intended function, providing isolation to preclude the EFB from interfering with antenna reception for aircraft navigation.

2) TSO- or STC-approved antennas may be used to independently provide GPS and/or satellite weather for an EFB in accordance with existing installation airworthiness requirements.

3) Portable EFB-only antennas without a TSO may be used to provide a GPS or satellite weather signal for EFB-only use. Non-interference testing by the installer is required.

E. Installed Satellite Receivers (e.g., Weather Radar (WX) Worx, XM Weather, WSI In-flight). If any component of a weather receiver is installed in an aircraft separate from a portable EFB on the flight deck, it is subject to avionics installation requirements and may not be considered a PED. If the result of the received weather data is capable of being displayed on an EFB, the individual components of the weather receiver system cannot be installed as STC provisions only because the installation cannot meet 14 CFR part 43 requirements for testing of non-interference without performing its intended function. (Refer to the current edition of FAA Order 8110.4, Type Certification, for more information on this subject.) The weather receiver must be non-interference tested with the intended EFB installed and operative even though the installation only applies to the weather receiver. The airworthiness for the weather receiver installation is independent of EFB/PED suitability responsibility of the user/operator. The user/operator is responsible for EFB non-interference as a PED and the installer is responsible for non-interference for the weather receiver as part of installation requirements. This installation requires design approval under TC, amended TC, or STC, which excludes the installation from eligibility for field approval.

4-1649 AUTHORIZATION PROCESSES. The operator is responsible for ensuring all operational requirements are met for an EFB. The operator must submit documentation demonstrating compliance with all operational requirements for EFBs to their POI. The FAA evaluation process for an EFB follows the general process for approval and acceptance as described in Volume 3, Chapter 1.

A. Phase One—Initiation. Phase one of the process begins when the operator requests authorization to use the EFB from the FAA. During this phase, the FAA and the operator reach a
common understanding of the role of the FAA and what documents and actions the operator is responsible for during each phase of the authorization process.

**B. Phase Two—Required Application Information.** Phase two begins when the operator submits a formal EFB plan to the POI for evaluation. The plan is reviewed for completeness, and the POI facilitates coordination with other inspectors and FAA offices, as necessary. During phase two, the POI may coordinate with the appropriate AEG for guidance on EFBs having functions not addressed in this guidance. Once the plan is accepted, the operator follows the plan to produce a complete EFB program. The operator must submit the following information in the application package:

- EFB hardware and application specification (Figure 4-76 and Figure 4-81, Evaluation Report Information Template),
- EFB operator procedures/manual revisions,
- EFB cockpit procedures checklists,
- EFB training program,
- EFB evaluation report (Figure 4-79 and Figure 4-80),
- RD test data (when required),
- Completed non-interference test results, and
- Airworthiness documents for Class 2 equipment (mounting device, aircraft data connection, aircraft power primary, and remote antenna).

**C. Phase Three—PI Review.** The POI must use the checklist found in Figure 4-78 to conduct a review of the application submitted by an operator. The PIs (POI, PAI, PMI) should coordinate the review of an operator’s EFB program with Cabin Safety and Dispatch Inspectors as appropriate. The POI should participate in the simulator evaluation or flight evaluation of an EFB when a user/operator is requesting initial EFB authorization. Additional simulator/flight evaluations are not required for adding a new EFB to an existing authorization unless there is a substantial change in EFB intended functions. When a new aircraft is added to a certificate with existing EFB authorization, the suitability of the EFB for the aircraft must be addressed as part of aircraft conformity and configuration control process. Inspectors should examine the technical content and quality of the proposed EFB program and other supporting documents and procedures. The user’s/operator’s program for EFB management is critical to EFB reliability and must be well-documented for EFB users.

**D. Phase Four—Temporary Authorization to Use an EFB.** An interim EFB authorization is granted to allow the certificate holder/operator/program manager to proceed with the required EFB 6-month operational validation testing. During validation testing, the certificate holder/operator/program manager must maintain a paper backup of all electronic information. For tracking and standardization purposes, the Flight Standards Service (AFS) field office principal inspector (PI) assigned oversight responsibility will temporarily issue the certificate holder/operator/program manager OpSpec/MSpec/letter of authorization (LOA) A061. The “Restrictions and Limitations” column in Table 1 of A061 should include the remark “Temporary Authorization to conduct 6-month operational validation testing.” All text added to OpSpec/MSpec/LOA A061 through the use of nonstandard text entered in the nonstandard text block (sometimes referred to as “Text 99”) must be approved by the appropriate headquarters.
For detailed guidance on the process for obtaining HQ approval for nonstandard authorizations, PIs must read the guidance contained in Volume 3, Chapter 18, Section 2, Automated Operations Safety System. A reduction to the required EFB 6-month operational validation testing may be considered if the certificate holder has previous experience with EFBs. A request to reduce the 6-month operational validation testing requires approval from AFS-200. The certificate holder must submit a plan with justification to reduce the 6-month operational validation testing to the FAA PI assigned with oversight responsibility for subsequent coordination and review with the geographically responsible AFS RO and AFS-200.

NOTE: The 6-month validation test formally begins when the certificate holder/operator/program manager is issued this A061 temporary authorization. Use Figure 4-82, Checklist 4—Electronic Flight Bag Line Evaluation Job Aid, for data collection during the validation phase. Validation testing should follow the guidelines in AC 120-76.

1) Unacceptable Validation Results. If the PI finds the proposed EFB reliability and/or function to be unacceptable by the conditions of this EFB guidance, then the PI should contact the operator for corrective action. EFB deficiencies must be corrected and the EFB function revalidated before proceeding to phase five.

2) Acceptable Validation Results. If at the completion of the EFB 6-month validation test, the PI finds the proposed EFB reliability and/or function to be acceptable based on validation data, then the certificate holder/operator/program manager can proceed to phase five of the EFB A061 authorization process.

E. Phase Five—Authorization to Use an EFB. The certificate holder/operator/program manager subject to regulations under 14 CFR parts 91K, 121, 125 (including 125 Letter of Deviation Authority (LODA) holders (125M)), and 135 is granted authorization to use an EFB through OpSpec/MSpec/LOA A061 after acceptable completion of validation testing in phase four. The PI will remove the “temporary authorization” annotated in the restrictions and limitations column of Table 1. Any subsequent change to EFB hardware or intended functions must be validated at a level appropriate to the effect of the change on the EFB program.
Figure 4-75. Flowchart for Determining Electronic Flight Bag Hardware Class

NOTE: If you wish to print this diagram, A3 size paper must be used.
Figure 4-76. Hardware Description Template

Major components such as a motherboard, processor, Random-Access Memory (RAM), video card, hard drive, power supply, and connections (modem, wireless, etc.) must be identified. Any change to these components subsequent to initial evaluation and authorization will require the Electronic Flight Bag (EFB) device to be evaluated again to demonstrate the EFB still meets all requirements, including reliability. The template below has been provided to facilitate the documentation of these components.

a) Aircraft Owner or Applicant’s Name:

b) Aircraft Make/Model:

c) Operating Rule Title 14 of the Code of Federal Regulations (14 CFR) parts 121, 125, 129, 135, and 91 Subpart K (Part 91K), 91 Subpart F, and Other Applicable Part 91 Subparts:

d) EFB Manufacturer/Model/Part Number:

e) The following major components are included with this make/model of EFB:

   NOTE: Identify the manufacturer and model or manufacturer and part number for configuration control of these devices. This table is not applicable to permanently sealed devices (e.g., e-readers, tablets etc.).

<table>
<thead>
<tr>
<th>Component</th>
<th>Manufacturer</th>
<th>Model</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motherboard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video Card</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hard Drive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD-ROM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DVD Drive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wireless Connection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Supply</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

f) Operating System and Version: (insert operating system name), version (insert version number), service pack (insert service pack number), build (insert build number):

g) Identify the classification of hardware proposed (Class 1, 2, or 3):

h) List all proposed Type A, Type B, and Type C software applications on this EFB device:

i) EFB Mounting System:
• Has the mounting device or system been certificated under 14 CFR part 23, 25, 27, or 29:
  ☐ Yes ☐ No (check one)
• Type certificate (TC), amended TC, or Supplemental Type Certificate (STC) number:
• Manufacturer and model number of mounting device or system:
• Mounting description:

j) Identify if the EFB will use the aircraft as the primary power supply:

k) Identify any/all aircraft systems connected to the EFB device:
Figure 4-77. Flowchart for Determining Electronic Flight Bag Software Application Type

NOTE: If you wish to print this diagram, A3 size paper must be used.
Figure 4-78. Principal Operations Inspector Review Checklist

Used by POI for Review of Electronic Flight Bag (EFB) Applications

This section contains questions for use by POIs to review an EFB application. In general, these questions are specific to initial installations and training for a given aircraft. References to other checklists of this document may be helpful in understanding the intent of specific subject areas of this checklist.

Before using this checklist, the POI will review the results of Checklist 1 and Checklist 2 with the operator to ensure the operator has conducted a complete evaluation of the proposed EFB.

I. GENERAL EFB.

A. General Considerations.

Research if any of the EFB hardware or software applications are covered by an existing Aircraft Evaluation Group (AEG) report.

Workload:

1. Is an in-flight evaluation necessary? (An in-flight evaluation may be necessary if you are not able to adequately evaluate each function intended for this specific operation while on the ground.) If so, verify the in-flight evaluation confirms the overall workload is acceptable.

2. Review user/operator responses to evaluation questions for “Workload” from Figure 4-80, Checklist 2—Electronic Flight Bag Operational Evaluation.

3. Verify procedures are published and available to all EFB users and maintainers.

4. Verify preflight procedures and checklists are revised to include EFB.

5. Verify procedures are established for single and dual failure of EFB.

B. Physical Placement.

Design and Placement of Structural Cradle:

1. Verify user/operator procedures specify locations for both EFB stowage and use.

2. Verify EFB specified locations do not obstruct visual or physical access to flight controls and/or displays.

3. Verify EFB locations do not obstruct the emergency egress path.

4. Verify EFB locations provide for security in-flight.

5. Does mounting device have appropriate airworthiness documentation per EFB requirements?

6. Does mounting device lock in position easily?

7. Is the mounting device adjustable enough to accommodate a range of pilot/crewmember preferences and does range of adjustment accommodate the expected range of user’s physical abilities?
8. Locking mechanisms should be durable enough to minimize slippage after extended periods of normal use.

9. Crashworthiness considerations must be addressed as well as appropriate restraint of EFB when in use.

C. Training/Procedures Considerations.

EFB Documentation and Policy:

1. Verify written policy adequately addresses each specific EFB application and any published AEG recommendations have been incorporated into the operator’s EFB program.

2. Verify procedures are in place to communicate upgrades or malfunctions of EFBs to users in a timely manner.

3. Verify the EFB information from the manufacturer is incorporated into operating procedures.

EFB Training:

1. Verify the initial EFB training includes evaluation of knowledge and skill requirements. The training should include demonstration of key tasks.

2. Verify the recurrent training includes evaluation of proficiency with the EFB.

3. Verify minimum training, checking, and currency requirements are specified in training programs.

4. Verify EFB training is customized to EFB applications being used.

D. Validation Phase and Continued Data Collection.

Validation Phase Data Collection:

1. Verify the EFB 6-month operational validation testing phase requires pilots/crewmembers to document evaluations and there is a formal process for gathering feedback about the EFB and its performance.

2. Verify procedures specify personnel responsible for maintenance and database management.

3. Ensure the operator has an ongoing data collection and feedback/correction process ensures the suitability/reliability of the data. The data collection processes in place should be factored into the operator’s Safety Management System (SMS).

E. SMS Interface.

Currently no regulatory requirement exists for any aviation certificate holder in the United State to have a Safety Management System (SMS). The FAA’s SMS Program Office does provide a Voluntary Program for eligible Certificate Holders who wish to establish an SMS in their organization. When Certificate Holders are required by regulation to have an SMS they will no longer be eligible for the FAA Voluntary Program.

1. Verify the hazards associated with the use and integration of the EFB have been identified, eliminated, or controlled to an acceptable level throughout the life cycle. Consider such hazards as: misuse, hazardous misleading information due to failure or malfunction, loss of information when needed, miscalculation, masking of information, confusion, corruption of data, excessive complexity of use, accidental damage, and human error in use, setup, and operation.
2. Verify the applicant’s SMS has procedures to mitigate identified hazards availability, and reliability of design, cross-checking of calculation/data, crew training, and misuse potential.

3. Verify the applicant’s SMS incorporates EFB hazard analysis, risk assessment, and related safety reports.

**F. Software Applications Considerations.**

1. Verify procedures are established for testing of each software applications revision or database update prior to operational use.

**G. Hardware Considerations.**

1. Verify display lighting and reflectivity has been evaluated for acceptability in each aircraft model.

2. Verify EFB maintenance procedures are in place for batteries, displays, display interaction devices (pens, etc.), display pixel burnout, and component condition.

**II. ELECTRONIC DOCUMENTS.**

1. Verify electronic documents are easily accessed and clearly controlled as to revision and currency.

2. Verify use of electronic documents is incorporated in training program for initial qualification (initial new-hire, initial equipment, transition, and upgrade) and recurrent.

**III. ELECTRONIC CHECKLIST (ECL) SYSTEMS.**

1. Verify the ECL system is customized to aircraft being operated.

2. If checklist is “interactive,” verify the checklist is subject to a 6-month validation phase.

3. If checklist is “automatically linked,” ensure AEG involvement and concurrence is obtained.

4. Verify the use of ECL system is incorporated into the training program for initial qualification (initial new-hire, initial equipment, transition, and upgrade) and recurrent.

**IV. WEIGHT AND BALANCE (W&B).**

1. Verify EFB procedures provide means to comply with load manifest recordkeeping requirements.

2. Verify procedures clearly identify if the EFB W&B program is for “planning purposes only” when not an approved means for calculating W&B.

3. Verify the use of W&B is incorporated into the training program for initial qualification (initial new-hire, initial equipment, transition, and upgrade) and recurrent.

**V. FLIGHT PERFORMANCE CALCULATIONS.**

1. Verify EFB procedures provide means to comply with load manifest/flight plan recordkeeping requirements.

2. Verify procedures clearly identify if EFB aircraft performance program is for “planning purposes only” when not an approved means for calculating aircraft performance.
3. Verify the use of aircraft performance is incorporated into the training program for initial qualification (initial new-hire, initial equipment, transition, and upgrade) and recurrent.

VI. ELECTRONIC CHARTS.

1. Verify the Electronic Charts Application does not display “own-ship position” except when properly evaluated for use on the ground.

2. Verify preflight procedures are established to ensure currency of electronic chart information.

3. Verify EFB display. The screen must be large enough to show an entire instrument approach procedure (IAP) chart at once, with the equivalent degree of legibility and clarity as a paper chart.

4. Verify the use of electronic charts is incorporated into training program for initial qualification (initial new-hire, initial equipment, transition, and upgrade) and recurrent.

VII. VALIDATION PHASE.

1. Verify procedures are established to collect user data for both normal and abnormal EFB functions during the validation phase and to provide a written report of reliability and problem resolution prior to authorization for paperless operation.
**Figure 4-79. Checklist 1—Tabletop Electronic Flight Bag Evaluation**

Checklist 1 contains a list of questions for operators to use during a tabletop evaluation of the Electronic Flight Bag (EFB) focusing on the EFB hardware and software applications. The checklist starts with EFB hardware questions, then presents general user interface questions, and ends with specific application questions (if applicable). The checklist is designed so any question answered as “No” requires a comment, and in some cases may be “Not Applicable.”

After the operator has completed this checklist, the results should be documented so the principal operations inspector (POI) can review the results with the operator.

### EFB Hardware

<table>
<thead>
<tr>
<th>Question</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. If the EFB is to be used outside of the flight deck, can the EFB display be read under direct sunlight?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Is the display brightness and contrast adjustable?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Is the display brightness acceptable when it adjusts automatically?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Are there any display artifacts such as jagged lines impairing functionality?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Are controls labeled appropriately to describe their intended function?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Are buttons and labels visible and readable under all flight deck illumination conditions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Can EFB inputs be made quickly and accurately in any operational environment?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Does the input device provide sufficient tactile feedback in all environmental conditions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Are inadvertent or multiple activation of controls minimized?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Does the EFB start up in a predictable state?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Can the EFB be rebooted when power is cut to the EFB?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Does the EFB function correctly when rebooted?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Are all the EFB failure modes easy to see and identify?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Is the failure annunciation/message appropriate for the EFB function which failed?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Are EFB recovery means easy to remember and apply when the EFB fails?</td>
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</tbody>
</table>

Provide the Number and a Comment for Each EFB Hardware Question Checked as “No.”

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

### General User Interface

<table>
<thead>
<tr>
<th>Question</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. Is the revision information and currency expiration date available and presented clearly?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Does the device respond immediately to user inputs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Is the processing speed always appropriate for normal use?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Are appropriate busy or progress indicators displayed when processing is delayed?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Is the user interface, including functions and navigation, consistent throughout the EFB?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
21. Is all information needed displayed and easily accessible? Is there missing or difficult to find information?  

<table>
<thead>
<tr>
<th>Question</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>21. Is all information needed displayed and easily accessible?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Are common actions and time-critical functions easy to access?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Are there standard ways to perform common actions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Are the displays and controls used on the EFB similar across applications? Are a common set of controls and graphical elements used?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. Can all colors be distinguished under the various lighting conditions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. Is color coding implemented with a secondary code such as shading or highlighting when used to display critical information?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. Are the colors red and yellow used appropriately only for warnings and cautions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. Is the text easily readable?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. Do the characters stand out against the display background?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. Are upper case and italic text used infrequently?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31. Is text used in low-visibility conditions appropriate in size and easy to read?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32. Is it easy to zoom in on text or graphics when they are too small?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33. Is it obvious when information is out of view and can it easily be brought into view?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34. Is the spacing between characters appropriate?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35. Is the vertical spacing between lines appropriate?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36. Are icons and symbols legible?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37. Are icon and symbol functions obvious?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38. Are the icons and symbols distinguishable from one another?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39. Is each icon’s meaning explained by a label or other means?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40. Are the EFB icons and symbols consistent with their paper equivalents?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41. Do EFB alerts and reminders meet the requirements in the appropriate regulations as noted in the current edition of Federal Aviation Administration (FAA) Advisory Circular (AC) 120-76, Guidelines for the Certification, Airworthiness, and Operational Use of Electronic Flight Bags, paragraph 10 (i.e., The Human Factors Considerations for EFBs)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42. Are alerts and reminders consistent across all applications?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>43. Are alerts and reminders implemented so as not to distract?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44. Is there control over when, and whether, the audio or video is activated?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45. Is it easy to reset parameters to their default when they have been customized?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46. Is EFB customization controlled through an administrative control process?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Provide the Number and a Comment for Each General User Interface Question Checked as “No.”

_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________

General Software Applications

47. Can required information be found quickly and accurately within all applications?  

<table>
<thead>
<tr>
<th>Question</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>47. Can required information be found quickly and accurately within all applications?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
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<td></td>
</tr>
<tr>
<td>48. Is the information within applications organized consistently?</td>
<td>No Yes</td>
<td></td>
</tr>
<tr>
<td>49. Is information layout consistent with the paper equivalent?</td>
<td>No Yes</td>
<td></td>
</tr>
<tr>
<td>50. Is the layout of information appropriate for all applications?</td>
<td>No Yes</td>
<td></td>
</tr>
<tr>
<td>51. Is high priority information easy to read?</td>
<td>No Yes</td>
<td></td>
</tr>
<tr>
<td>52. Is it easy to tell which application is currently open/active?</td>
<td>No Yes</td>
<td></td>
</tr>
<tr>
<td>53. Is it easy to switch between applications?</td>
<td>No Yes</td>
<td></td>
</tr>
<tr>
<td>54. Is extra acknowledgement required to open applications when not flight related?</td>
<td>No Yes</td>
<td></td>
</tr>
<tr>
<td>55. Do all open applications function as intended on an individual basis?</td>
<td>No Yes</td>
<td></td>
</tr>
<tr>
<td>56. Is access or links to related information appropriately supported?</td>
<td>No Yes</td>
<td></td>
</tr>
<tr>
<td>57. Are similar types of information accessed in the same way?</td>
<td>No Yes</td>
<td></td>
</tr>
<tr>
<td>58. Is it easy to return to the place where the user started from?</td>
<td>No Yes</td>
<td></td>
</tr>
<tr>
<td>59. Is printing supported, and if so, is the hard copy usable?</td>
<td>No Yes</td>
<td></td>
</tr>
<tr>
<td>60. Can a portion of a document be selected to be printed?</td>
<td>No Yes</td>
<td></td>
</tr>
<tr>
<td>61. Can a print job be terminated immediately?</td>
<td>No Yes</td>
<td></td>
</tr>
</tbody>
</table>

Provide the Number and a Comment for Each General Software Applications Question Checked as “No.”

---

**Electronic Documents (If Applicable)**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>62. Is it easy to tell where one is in relation to the full document?</td>
<td>No Yes</td>
</tr>
<tr>
<td>63. Is it easy to move between documents quickly?</td>
<td>No Yes</td>
</tr>
<tr>
<td>64. Is it easy to tell what document is currently in view?</td>
<td>No Yes</td>
</tr>
<tr>
<td>65. Is there a list of available documents to choose from?</td>
<td>No Yes</td>
</tr>
<tr>
<td>66. Is the document search function appropriate?</td>
<td>No Yes</td>
</tr>
<tr>
<td>67. Are tables, especially complex ones, readable and usable?</td>
<td>No Yes</td>
</tr>
<tr>
<td>68. Are figures readable and usable?</td>
<td>No Yes</td>
</tr>
</tbody>
</table>

**Electronic Charts (If Applicable)**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>69. Is there a way to pre-select specific charts for easy access during a particular flight?</td>
<td>No Yes</td>
</tr>
<tr>
<td>70. Is there more than one way to search for a chart?</td>
<td>No Yes</td>
</tr>
<tr>
<td>71. Is it easy to access charts when a last-minute change is necessary?</td>
<td>No Yes</td>
</tr>
<tr>
<td>72. If the chart application uses aircraft location to facilitate access to charts, is this function appropriate (i.e., either approved by Aircraft Certification or explicitly allowed by AC 120-76)?</td>
<td>No Yes</td>
</tr>
<tr>
<td>73. Is it easy to switch between a decluttered and normal display if decluttering is supported?</td>
<td>No Yes</td>
</tr>
<tr>
<td>74. Is there a clear indication when any chart elements are suppressed?</td>
<td>No Yes</td>
</tr>
</tbody>
</table>
### Electronic Checklists (ECL) (If Applicable)

<table>
<thead>
<tr>
<th>Question</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>75. Are normal checklists available in the appropriate order of use?</td>
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<tr>
<td>76. Can checklists be accessed individually for review or reference?</td>
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<tr>
<td>77. During abnormal conditions, are relevant checklists easy to access?</td>
<td></td>
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<tr>
<td>78. During abnormal conditions, does the device indicate which checklists and/or checklist items are required and which are optional?</td>
<td></td>
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<tr>
<td>79. Is it clear where to find all checklists, whether on the EFB or on paper?</td>
<td></td>
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<tr>
<td>80. Is the location of a paper document provided when it is referred to by the ECL?</td>
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<tr>
<td>81. Does each checklist have a constantly visible title distinct from other checklists?</td>
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<tr>
<td>82. Is it easy to select a checklist from a set of open checklists?</td>
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<tr>
<td>83. Is there a reminder to review incomplete items when closing an incomplete checklist?</td>
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<tr>
<td>84. Can an incomplete checklist be closed after acknowledging it is not complete?</td>
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<tr>
<td>85. Does the ECL discourage two or more checklists from being used simultaneously?</td>
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<tr>
<td>86. Is progress through the ECL clear?</td>
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<tr>
<td>87. It is easy to reset the ECL to start over again?</td>
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<tr>
<td>88. Does the checklist provide appropriate reminders for tasks requiring a delayed action?</td>
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<tr>
<td>89. Does the checklist clearly highlight decision branches?</td>
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<tr>
<td>90. Can you return to the checklist from links or related information in one step?</td>
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<tr>
<td>91. Is there an indicator of which item in the checklist you are working on?</td>
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<tr>
<td>92. Is the checklist’s active item clearly indicated?</td>
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<tr>
<td>93. Can the status of an item be easily changed?</td>
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<tr>
<td>94. Does the next item automatically become active when the previous one is complete?</td>
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<tr>
<td>95. Can the current item be deferred without completing it?</td>
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<tr>
<td>96. Is it easy to view other items, even in a long checklist, without changing the active item?</td>
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<tr>
<td>97. Is it easy to move between items within a checklist?</td>
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<tr>
<td>98. Does the active item change to the next after an item is completed?</td>
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<tr>
<td>99. Is there a clear indication all items as well as the whole checklist are complete when finished?</td>
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</table>

Provide the Number and a Comment for Each ECL Question Checked as “No.”

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### Performance Calculations (If Applicable)

100. Does the device identify entries having an incorrect format or type and does it generate an appropriate error message?  

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
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</table>

101. Does the error message clarify the type and range of data expected?  

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
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</thead>
</table>

102. Are units for performance data clearly labeled?  

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
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</table>

103. Do the labels used in the EFB match the language of other operator documents?  

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
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</thead>
</table>

104. Is all the information necessary for a given task presented together or easily accessible?  

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
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</table>

105. Can the crews modify performance calculations easily, especially when making last-minute changes?  

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
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</table>

106. Are outdated results of performance calculations deleted when modifications are entered?  

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
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</table>

107. Does the display and/or crew training provide information to the crew on the assumptions on which the calculations are based?  

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
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</table>

108. Are crews trained to identify and review default values and assumptions about the aircraft status or environmental conditions?  

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
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</table>

109. Are the assumptions made about any calculation as clear to pilots as similar information would be on a tabular chart?  

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
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Provide the Number and a Comment for Each Performance Calculations Question Checked as “No.”

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Figure 4-80. Checklist 2—Electronic Flight Bag Operational Evaluation

Checklist 2 contains a list of questions for operator consideration during an operational evaluation of the Electronic Flight Bag (EFB), its documentation, procedures, and training. The first four pages contain questions to be answered in a training or operational environment by pilots/crewmembers, instructor/evaluators, or other operational personnel. The last page contains sample crew performance questions addressed in a simulation environment. The checklist is designed so any question answered as “No” requires a comment and in some cases may be “Not Applicable.”

After the operator has completed this checklist, the principal operations inspector (POI) will review the results with the operator.

General EFB Hardware

1. Is there a backup source in the flight deck for EFB information?  □ No  □ Yes
2. Is the EFB display readable under all typical flight-deck lighting conditions?  □ No  □ Yes
3. Does each type of EFB failure have minimum impact to crew tasks and workload?  □ No  □ Yes
4. Is the EFB installation appropriate for use in high-workload phases of flight?  □ No  □ Yes
5. Are there appropriate Master Minimum Equipment List (MMEL)/minimum equipment list (MEL) items to handle EFB failures?  □ No  □ Yes
6. Have EFB failure items been incorporated into Federal Aviation Administration (FAA) – required/accepted checklists?  □ No  □ Yes
7. Does the EFB mount allow appropriate access to flight controls and displays?  □ No  □ Yes
8. Does the EFB mount allow appropriate access to the emergency egress path?  □ No  □ Yes
9. Are crews able to adjust and lock the EFB for optimal viewing?  □ No  □ Yes
10. Is there appropriate access to all flight controls during both ground and in-flight operations when the EFB is positioned for optimal viewing?  □ No  □ Yes
11. Is there appropriate room to manipulate the EFB controls and to view its display?  □ No  □ Yes
12. Are all routinely used EFB hardware components easy to access?  □ No  □ Yes
13. Are the EFB hardware components usable and suitably durable for the flight deck?  □ No  □ Yes

Provide the Number and a Comment for Each General EFB Hardware Question Checked as “No.”
_______________________________________________________________________________________
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Stowage (If Applicable)

14. Is there a stowage area for the EFB?  □ No  □ Yes
15. Is the stowage securing mechanism simple to operate?  □ No  □ Yes
16. Is the stowage securing mechanism unobtrusive when not in use?  □ No  □ Yes
17. Does the stowage system allow appropriate access to flight controls/displays and egress routes?  □ No  □ Yes
18. Is the design of the stowage area acceptable?  □ No  □ Yes
19. Can the EFB be moved easily to and from the stowage area without blocking access to flight displays/controls?  □ No  □ Yes
20. Are the device and/or the stowage area unlikely to be damaged under normal use?  □ No  □ Yes
Unsecured EFB (If Applicable)

21. Is there appropriate access to flight controls/displays when the unsecured EFB is in use?  □ No  □ Yes
22. Is there an acceptable place to put an unsecured EFB when in use?  □ No  □ Yes
23. Is there an acceptable place to put an unsecured EFB when not in use?  □ No  □ Yes
24. Can the kneeboard EFB be positioned so the pilot has full control authority?  □ No  □ Yes
25. Is the kneeboard EFB comfortable for the pilot to wear under normal conditions?  □ No  □ Yes

Provide the Number and a Comment for Each Stowage and Unsecured EFB Question Checked as “No.”

General User Interface

26. Is the workload using the EFB the same or less than the current process?  □ No  □ Yes
27. Is the workload acceptable when there is an EFB failure?  □ No  □ Yes
28. Are other than critical EFB messages inhibited during high workload phases of flight?  □ No  □ Yes
29. Is the EFB user interface consistent with other flight deck systems?  □ No  □ Yes
30. Does the EFB use terms, icons, colors and symbols consistent with other flight deck systems?  □ No  □ Yes

Software Applications

31. Is the workload acceptable when configuring electronic charts while flying a procedure?  □ No  □ Yes
32. Does using the electronic checklist (ECL) produce the same crew actions the paper equivalent would?  □ No  □ Yes

Provide the Number and a Comment for Each User Interface and Application Question Checked as “No.”

EFB Procedures

33. Are there procedures for starting up and shutting down the EFB?  □ No  □ Yes
34. Are there appropriate procedures for all the EFB failure modes?  □ No  □ Yes
35. Are there EFB procedures for when other aircraft system failures could render the EFB unusable?  □ No  □ Yes
36. Are there procedures for using EFB backup information?  □ No  □ Yes
37. Are there procedures to mitigate EFB workload?  □ No  □ Yes
38. Are there procedures for establishing which source of information is primary?  □ No  □ Yes
39. Are there appropriate procedures for using EFB in high workload phases of flight?  □ No  □ Yes
40. Are there procedures specifying what data to use when data is redundant or different from the EFB?  □ No  □ Yes

41. Are there procedures for removal of a kneeboard EFB during emergency landing or egress (If Applicable)?  □ No  □ Yes

Provide the Number and a Comment for Each EFB Procedures Question Checked as “No.”

<table>
<thead>
<tr>
<th>Number</th>
<th>Comment</th>
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Procedures for Keeping EFB Content/Data Current

42. Are there procedures to ensure data is accurate and current for each software application?  □ No  □ Yes

43. Are changes to content/data appropriately documented?  □ No  □ Yes

44. Are there procedures to notify crews of EFB updates?  □ No  □ Yes

45. Are there procedures to ensure the correct information is installed when EFBs use information specific to the aircraft type or tail number?  □ No  □ Yes

46. Are operational control procedures consistent with regulations concerning preventative maintenance?  □ No  □ Yes

47. Is there a procedure to avoid corruption/errors during changes to the EFB device?  □ No  □ Yes

48. Is there a procedure to ensure all EFBs have the appropriate content/data installed when there are multiple EFBs on the flight deck?  □ No  □ Yes

49. Is there a procedure to ensure EFB data in use is approved for use in-flight?  □ No  □ Yes

50. Is there a procedure for when the database is not approved for use in-flight?  □ No  □ Yes

51. Is there a procedure to ensure all customized values are cleared from the EFB?  □ No  □ Yes

Procedures for User Feedback

52. Is there a procedure for EFB users to provide feedback?  □ No  □ Yes

53. Is there a procedure for the operator to monitor feedback, correct EFB deficiencies, and/or notify the EFB manufacturer?  □ No  □ Yes

54. Are there procedures or built-in limits preventing the setting of customized color schemes conflicting with flight deck color conventions?  □ No  □ Yes

55. Is there a policy regarding the use of supplemental audio and/or video in-flight?  □ No  □ Yes

56. Is the EFB audio set to minimize any interference with higher priority communications?  □ No  □ Yes

Procedures for Specific Applications (If Applicable)

57. Are there specific policy/procedures for using the electronic charts application?  □ No  □ Yes

58. Does the policy specify what other EFB applications can be used while a procedure using the electronic charts is actively being flown?  □ No  □ Yes

59. Are there procedures on how to use the electronic charts when the EFB uses aircraft status data to configure chart elements?  □ No  □ Yes

60. Are there procedures to ensure navigation/approach charts required for the flight are installed and available?  □ No  □ Yes
<table>
<thead>
<tr>
<th>Question</th>
<th>1 - No</th>
<th>1 - Yes</th>
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<tbody>
<tr>
<td>61. Is there a procedure to identify the controlling copy of W&amp;B?</td>
<td></td>
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<tr>
<td>62. Is there a procedure to establish responsibility for W&amp;B software?</td>
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<tr>
<td>63. Are there procedures to maintain required W&amp;B records?</td>
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<tr>
<td>64. Is there a procedure to ensure EFB performance data can be stored?</td>
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<tr>
<td>Provide the Number and a Comment for Each of the above EFB Procedure Question Checked as “No.”</td>
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**EFB Training**

<table>
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<tr>
<th>Question</th>
<th>1 - No</th>
<th>1 - Yes</th>
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<tbody>
<tr>
<td>65. Are there appropriate training, checking, and currency requirements?</td>
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<tr>
<td>66. Does the EFB training program address all EFB intended functions?</td>
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<tr>
<td>67. Is there training on how to use unique features of the software?</td>
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<tr>
<td>68. Are crews proficient on the EFB at the completion?</td>
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<tr>
<td>69. Is EFB training customized for new users?</td>
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<tr>
<td>70. Is the manufacturer’s documentation sufficient?</td>
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<tr>
<td>71. Does the EFB training device provide an appropriate degree of fidelity when the actual EFB is not used?</td>
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<tr>
<td>72. Does the EFB training device simulate the key aspects of the task?</td>
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<tr>
<td>73. Does the EFB training appropriately address the meaning of icons?</td>
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**Training for Charts (If Applicable)**

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<tr>
<th>Question</th>
<th>1 - No</th>
<th>1 - Yes</th>
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<tbody>
<tr>
<td>74. Is training on the use of electronic charts appropriate?</td>
<td></td>
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<tr>
<td>75. Is there training on unique features of the electronic charts?</td>
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<tr>
<td>76. Is there training on differences in map scale, orientation, and data quality between the electronic charts and other flight deck displays?</td>
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<tr>
<td>77. Is there training on the limitations of own aircraft position?</td>
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<tr>
<td>78. Is there training on policies pertaining to use of the charts?</td>
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<tr>
<td>79. Can crews use the electronic charts as well as paper charts?</td>
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<tr>
<td>80. Can crews use the electronic charts to orient themselves and track their progress as they fly required procedures?</td>
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</table>

**Training for ECL Systems (If Applicable)**

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<tr>
<th>Question</th>
<th>1 - No</th>
<th>1 - Yes</th>
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</thead>
<tbody>
<tr>
<td>81. Is there appropriate training on how to use ECL?</td>
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<tr>
<td>82. Is there training on how to use unique features of the ECLs (e.g., how the EFB indicates a checklist item has been deferred)?</td>
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<tr>
<td>83. Is there training on which checklists are supported electronically and which are not?</td>
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</tbody>
</table>
84. Is there training on the limitations of ECL automation when it uses aircraft status data? □ No □ Yes

Training for Flight Performance Calculations (If Applicable)

85. Is there appropriate training on how and when to use the flight performance software application? □ No □ Yes

86. Is there training on critical performance calculation assumptions (e.g., runway length, W&B)? □ No □ Yes

87. Is there training to review default values for aircraft status and environmental conditions? □ No □ Yes

88. Is there training on how to enter information required by the performance software applications? □ No □ Yes

89. Is there training on how to interpret and use results of the flight performance calculations? □ No □ Yes

90. Is there training on where to obtain values when their normal sources are not available? □ No □ Yes

91. Is there training on coordinating the roles of dispatchers and pilot/crewmember? □ No □ Yes

Provide the Number and a Comment for Each Training Question Checked as “No.”

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Crew Performance: Preflight Planning

Do crews with the EFB perform as well or better than crews with paper documents when—

92. Calculating aircraft W&B, takeoff, climb, and maneuvering speeds? □ No □ Yes

93. Crews maintain critical data for immediate reference? □ No □ Yes

94. There is a runway change and a need to reference deicing fluid requirements or an MEL item? □ No □ Yes

95. There are time critical adjustments prior to block out/taxi and takeoff? □ No □ Yes

Crew Performance: Takeoff

Do crews with the EFB perform as well or better than crews with paper documents when—

96. There is a takeoff on a runway requiring a briefing for a special operator engine-out procedure? □ No □ Yes

97. There is complex Standard Instrument Departure (SID) with an abnormal or an emergency during the departure climb-out? □ No □ Yes

98. There is an emergency requiring a return to the departure or alternate departure airport? □ No □ Yes

99. One EFB fails, requiring one pilot to rely on the EFB of the other pilot immediately after takeoff? □ No □ Yes

Provide the Number and a Comment for Each Preflight and Takeoff Question Checked as “No.”

____________________________________________________________________________________
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Crew Performance: Cruise
Do crews with the EFB perform as well or better than crews with paper documents when—
100. There is an engine failure/fire with possible condition of destination below weather minimums?  □ No  □ Yes
101. There is electrical smoke in the cockpit requiring use of smoke mask/goggles while completing checklists or using EFB for approach briefing?  □ No  □ Yes

Crew Performance: Descent
Do crews with the EFB perform as well or better than crews with paper documents when—
102. There are conditions requiring reference to Surface Movement Guidance and Control System (SMGCS) taxi routing or a complex clearance?  □ No  □ Yes
103. Reported runway conditions require reference to operational limitations?  □ No  □ Yes

Crew Performance: Approach/Landing
Do crews with the EFB perform as well or better than crews with paper documents when—
104. There is runway change or the need to recompute landing weight and V speeds during approach?  □ No  □ Yes
105. There are poor weather conditions or airports with complex taxi routes?  □ No  □ Yes
106. There is a request for a specific taxiway turn during rollout after landing?  □ No  □ Yes

Crew Performance: Destination Ground Operations
Do crews with the EFB perform as well or better than crews with paper documents when—
107. There is an EFB partial failure or erroneous output requiring maintenance discrepancy to be entered?  □ No  □ Yes

Provide the Number and a Comment for Each Crew Performance Question Checked as “No.”

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Figure 4-81. Evaluation Report Information Template
This outline is used by the user/operator to ensure the minimum content requirements of the evaluation report have been met. The format of the report is optional, however, the information below must be included, as a minimum:

1. Electronic Flight Bag (EFB) evaluation identified by EFB make/model and aircraft make/model.
2. The manufacturer’s name and model number of the mounting system evaluated.
3. EFB location and stowage suitability.
4. EFB display lighting and reflectivity.
5. Suitability of procedures for EFB use during all phases of flight.
6. Suitability of procedures to follow when one unit fails and when both units fail to include alternate means of accessing data.
7. A revision process procedure/method ensuring appropriate database accuracy and currency.
8. Training effectiveness and typical acceptable training course completion.
9. Usability of each software application (for example):
   a. Electronic documents’ functional suitability;
   b. Aircraft performance, Weight and Balance (W&B), and speeds reference functional suitability;
   c. Electronic charts’ functional suitability; and
   d. Display of own-ship position limited to airport surface operations functional suitability.
10. Usability of multiple software applications at one time.
11. Crew workload and currency for proficient use.
12. Effectiveness of procedures governing the distribution of application software updates to the aircraft and confirmation of the aircraft EFB configuration.
13. Flight report—when and how reports of malfunctions or anomalies are reported and resolved.
Figure 4-82. Checklist 4—Electronic Flight Bag Line Evaluation Job Aid
USED FOR DATA COLLECTION DURING VALIDATION PERIOD

This tool provides a starting point for Electronic Flight Bag (EFB) line operations evaluations. The questions are primarily designed to aid the principal operations inspector (POI) but may also be useful to the operator for the collection of a structured set of observations about the use of the EFB before and during the 6-month operational validation phase. Use of this tool can be customized as appropriate for the situation. This is a final check to ensure there are no problems with the EFB design/interface, training, or procedures prior to the authorization for use.

The questions below encompass the operations and safety evaluation. In cases where a system shows weaknesses or limitations, mitigations must be developed in consultation with the applicant.

In some cases, an EFB may add to the complexity of flight operations. The key questions to be answered are:

1) Can the flight be conducted as safely with an EFB as with the methods/products it is intended to replace?
2) Does the EFB add an unacceptable level of complexity for any critical activity or phase of flight?

In order to answer these questions, it is helpful to consider more specific aspects of EFB usage, which are covered in Sections II through V below. Space is also provided in Section I to record general notes about the system and the evaluation.

I. Describe system configuration description and flight conditions:

II. Overview. The main aspects to be assessed are encompassed by the following questions:

1. Was training adequate to ensure the pilot/crewmember(s) could perform in a safe and efficient manner?
   - Were individual pilot/crewmember knowledge and skills adequate to allow normal coordinated flight deck activities?
   - Was pilot/crewmember knowledge regarding observed software applications adequate?
   - No  Yes

2. Are adequate procedures in place to ensure the EFB is integrated into the crew’s/operator’s system (e.g., normal and abnormal/emergency operations and maintenance functions)?
   - No  Yes

3. Were the EFB hardware or software applications adequate and appropriate during the flight? If there were any problems, particularly in a critical phase of flight, describe in the notes space below.
   - No  Yes

4. Could the pilot/crewmember(s) recover from usage errors without undue distraction or discussions? If usage errors were frequent or a distraction, describe in notes below.
   - No  Yes

5. Was the workload required for completing a task with the EFB equal to or less than the workload for completing the task with the conventional method? If no, specify phase of flight and task for any marginal or unacceptable increases in workload in notes space below.
   - No  Yes
Describe any problems noted as “No” above:


III. General.
6. Was each pilot/crewmember able to use the cursor, track ball, touch screen, etc., for menu and functionality without frequent errors?  

☐ No ☐ Yes

7. Was the device appropriate and operational when exposed to environmental factors (e.g., turbulence, cold weather, vibration)?  

☐ No ☐ Yes

8. Was the device free of significant limitations in regard to display (e.g., off-axis view angles or various different lighting conditions)?  
The device had easy and adequate dimming functions in low-light (nighttime) conditions?  
The device was adequately backlit and/or was viewable by flight deck lighting in low-light (nighttime) conditions?  
The device was clearly visible in bright sunlight conditions?  

☐ No ☐ Yes

9. Was the device display clear (adequate resolution)? Confirm the display was never misinterpreted because of viewing limitations. If so, record issues in notes space below.  

☐ No ☐ Yes

10. Did the pilot/crewmember(s) ensure proper stowage and security (i.e., between flights, etc.) of the EFB per standard operating procedures (SOP)? Temperature limitations acknowledged?  

☐ No ☐ Yes

11. Does the display continue to be usable after prolonged use in the flight deck environment (if applicable)?  

☐ No ☐ Yes

12. Normal functions (e.g., shutdown, startup) are adequate and do not require undue pilot/crewmember attention or concern?  

☐ No ☐ Yes

13. Were procedures adequate for identifying currency of EFB data?  

☐ No ☐ Yes

14. Could the pilot/crewmember(s) easily find and use required items and functions?  

☐ No ☐ Yes

15. Were the abbreviations and/or icons easy to understand?  

☐ No ☐ Yes

16. If multiple software applications are supported, could the pilot/crewmember(s) easily switch between critical software applications?  

☐ No ☐ Yes

17. If critical (e.g., abnormal or emergency checklists) software applications are authorized in the EFB configuration basis, is their use at least equal to or better than previously approved methods?  

☐ No ☐ Yes  

☐ N/A

18. The time to complete normal tasks was appropriate?  

☐ No ☐ Yes

19. The audio features did not cause pilot/crewmember distraction and/or were adjustable and appropriate for the flight deck or cabin environment?  

☐ No ☐ Yes  

☐ N/A
Describe any problems noted as “No” above:

<table>
<thead>
<tr>
<th>IV. Electronic Charts, Documents, and Checklists.</th>
</tr>
</thead>
<tbody>
<tr>
<td>20. Were all necessary documents (including charts, checklists, and manuals) found, identified, and easily viewed by the pilot/crewmember(s) without undue distraction?</td>
</tr>
<tr>
<td>21. Was information contained in electronic charts, documents, and checklists complete, equal in quality to previously provided products, and easily accessible and understandable?</td>
</tr>
<tr>
<td>22. Was pilot/crewmember knowledge of chart/document/checklist selection and viewing adequate?</td>
</tr>
<tr>
<td>23. Could the pilot/crewmember(s) easily rearrange content on the screen to meet needs (e.g., by zooming, panning, or otherwise customizing the view)?</td>
</tr>
<tr>
<td>24. If printers are used, are printouts acceptable?</td>
</tr>
<tr>
<td>25. Did the pilot/crewmember(s) exhibit adequate knowledge of EFB functions to efficiently brief and fly required procedures?</td>
</tr>
<tr>
<td>26. Did the pilot/crewmember(s) exhibit adequate knowledge of the software applications revision process procedure/method ensuring appropriate database accuracy and currency?</td>
</tr>
<tr>
<td>27. Did the pilot/crewmember(s) exhibit adequate knowledge of contingency procedures?</td>
</tr>
<tr>
<td>In the event of a failure of a single device?</td>
</tr>
<tr>
<td>In the event both devices fail?</td>
</tr>
<tr>
<td>28. Were pilots/crewmember(s) able to monitor necessary electronic chart displays during critical phases of flight?</td>
</tr>
<tr>
<td>29. Did the EFB allow quick entry of updates for last-minute changes (e.g., flight plan/runway changes)?</td>
</tr>
<tr>
<td>30. For electronic checklists (ECL), was it easy to track completed items?</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Describe any problems noted as “No” above:

<table>
<thead>
<tr>
<th>V. Flight Performance Data/Calculations.</th>
</tr>
</thead>
<tbody>
<tr>
<td>31. Could the pilot/crewmember(s) interpret and use flight performance data/calculations efficiently and accurately?</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
32. Did the device allow quick entry of updates for last-minute changes (e.g., flight plan/runway changes)?

No  Yes  N/A

33. Are crewmembers aware of any software application limitations and do they understand only approved calculation methods may be used as a primary means of computation?

No  Yes  N/A

Describe any problems noted as “No” above:

VI. General Conclusions.

34. Were any unique safety issues or events caused or exacerbated by using the EFB during this evaluation?

No  Yes

35. Can the flight be conducted as safely with an EFB as with the methods/products it is intended to replace?

No  Yes

36. Does the EFB add an unacceptable level of complexity for any critical activity or phase of flight?

No  Yes

Assigned Aircraft:  ___________ Date:  ___________ Print Observer Name:  ___________

Observer Signature:  ________________________________ Certificate Number:  __________

RESERVED. Paragraphs 4-1650 through 4-1665.
Section 2 Oral and Flight Test Events in Airplanes for ATP Applicants Engaged in Operations Under Part 121, 135, or 91 Subpart K

5-826 APPLICABILITY. Volume 5, Chapter 3, Sections 2 through 7 provide inspectors and designated examiners with detailed guidance for the conduct of airline transport pilot (ATP) flight tests conducted in the qualification curriculum segments of Title 14 of the Code of Federal Regulations (14 CFR) parts 121 and 135 training programs. This guidance has been specifically developed to account for the conditions encountered in such programs, particularly for the wide variation in aircraft, flight simulation training devices (FSTD), and educational delivery systems currently used by parts 121 and 135 operators. Inspectors and designated examiners shall observe this guidance while conducting these flight tests instead of the guidance that applies to the testing of applicants trained and tested outside of parts 121 and 135 training programs, where different conditions prevail. This section contains general direction and guidance for the conduct of all airplane flight tests, regardless of whether a test is conducted in an FSTD or in an airplane.

Volume 5, Chapter 3, Section 3 contains specific guidance for the conduct of flight tests in an airplane FSTD. Volume 5, Chapter 3, Section 4 contains specific guidance for the conduct of flight tests in an actual airplane. Volume 5, Chapter 3, Sections 5 and 6 contain specific guidance for the conduct of flight tests in a helicopter. Volume 5, Chapter 3, Section 7 contains guidance for the documentation of practical tests.

5-827 ORAL TEST EVENTS. Inspectors and examiners should use the ATP/Type Rating Oral Test—Airplane Job Aid when conducting oral tests for ATP certificates with airplane category ratings or for airplane type ratings being added to ATP certificates (see Figure 5-112, ATP/Type Rating Oral Test Job Aid—Airplane). The topics to be examined are printed on the job aid in an abbreviated form. Most of the topics are self-explanatory; however, a discussion of selected topics for pilot applicants of airplanes requiring a Flight Engineer (FE) follows:

A. FE Station. On airplanes requiring an FE, a pilot applicant must demonstrate knowledge of controls and indicators at the FE’s station. The applicant’s level of knowledge must be sufficient for safe operation of the airplane if the FE is incapacitated or absent from the flight deck.

B. Takeoff Data. Although the duty of computing takeoff and landing data is usually accomplished by the FE, pilot applicants must be able to complete typical takeoff and landing data computations. These computations must include application of proper corrections (such as a contaminated runway, inoperative antiskid, and minimum equipment list (MEL) or Configuration Deviation List (CDL) penalties).

C. Performance Computations. An applicant must demonstrate the ability to extract aircraft performance data (such as maximum allowable altitude, cruise power settings, and driftdown performance from the aircraft performance charts).
D. Weight and Balance (W&B). An applicant must demonstrate the ability to compute or validate W&B using the operator’s procedures.

5-828 WAIVER AUTHORITY. Title 14 CFR part 61, § 61.157(j) authorizes inspectors and examiners to waive certain events on the flight test. Events that may be waived totally or partially are indicated on the job aids. The following guidance applies to the use of waiver authority:

A. Use of Waiver. The use of waiver authority is not automatic. Inspectors and examiners are cautioned to exercise judgment in the use of this authority. When an applicant demonstrates a high level of performance, inspectors and examiners should make liberal use of the waiver authority. When an applicant’s performance approaches minimum acceptable standards, however, none of the events of the flight test should be waived.

B. Waiver Provisions. Inspectors and examiners are cautioned that some waiver provisions apply to portions of a series of events rather than to the whole event (e.g., stall prevention). Other events have specific conditions that must be fully met before waiver authority may be exercised (e.g., the second Nonprecision Approach (NPA)). A discussion of the conditions and limitations of waiver authority is included with the discussion of the specific events in the following paragraphs.

5-829 PREPARATION AND SURFACE OPERATIONS EVENTS. Applicants shall be observed performing interior, exterior, and emergency equipment inspections and performing engine start, taxi, and powerplant checks in accordance with the operator’s aircraft operating manual.

A. Exterior Inspection. The exterior inspection is not an extension of the oral phase in which systems knowledge is examined, but rather a demonstration of an applicant’s ability to perform appropriate safety checks. Inspectors and examiners shall limit questions to only those necessary for determining if an applicant can recognize when a component is in an unsafe condition. The exterior inspection may be conducted before or after the flight test at the inspector’s or examiner’s discretion. Many operators have exemptions permitting the exterior preflight test event to be conducted using pictorial means. The exterior inspection may be waived when an FE is a required crewmember. When the exterior inspection is waived, pilot applicants shall be required to complete those cockpit, interior, and emergency equipment inspections defined as the pilot in command’s (PIC) responsibility. Inspectors and examiners shall determine whether an applicant inspects these items in accordance with the procedures in the operator’s aircraft operating manual.

B. Cabin Inspection. An applicant shall be evaluated on the ability to perform a cabin inspection when this inspection is specified as a PIC responsibility by the operator’s aircraft operating manual. Inspectors and examiners should occasionally sample an applicant’s knowledge of the location and use of emergency equipment in the cabin, and the operation of cabin doors, even when the cabin inspection is not designated as a flightcrew member responsibility.
C. Cockpit Preflight Inspection. An applicant shall be required to complete the cockpit preflight checks using the procedures specified in the operator’s aircraft operating manual and using the appropriate checklists. The proper challenges and responses to the checklist must be used. When the flight test is conducted in an FSTD, it is appropriate for the inspectors or examiners to present minor malfunctions to determine if the applicant is accurately performing the specified checks.

D. Engine Start Procedures. An applicant shall be required to perform an engine start using the correct procedures. When the flight test is conducted in an FSTD, it is appropriate for inspectors and examiners to present an abnormal condition such as a hot-start or malfunctioning air or start valve. The abnormal condition should be carried through to the expected conclusion in line operations for the purpose of evaluating crew coordination and the applicant’s proficiency.

E. Taxiing or Sailing. Inspectors and examiners shall evaluate the applicant’s ability to safely maneuver the airplane on the surface and to manage outside vigilance while accomplishing cockpit procedures. The applicant must ensure that the taxi path is clear of obstructions, comply with local taxi rules and air traffic control (ATC) instructions, properly use checklists, and maintain control of the crew and airplane.

F. Powerplant Checks. Powerplant checks must be accomplished in accordance with the appropriate checklist and procedures before takeoff. In an FSTD, inspectors and examiners should present appropriate instrument or system malfunctions to determine if the applicant is accurately performing these checks.

5-830 TAKEOFF EVENTS. An applicant shall be required to accomplish each of the following takeoff events. These events may be combined when convenient and practical.

A. Normal Takeoff. A normal takeoff is defined as a takeoff beginning from a standing or rolling start (not from a touch-and-go) with all engines operating normally during the takeoff and initial climb phase.

B. Instrument Takeoff. An instrument takeoff is defined as one in which instrument conditions are encountered or simulated at or before reaching an altitude of 100 feet above airport elevation. In an FSTD, the visibility value should be set to the minimum authorized by the operator’s operations specifications (OpSpecs). An applicant shall be evaluated on the ability to control the airplane, including making the transition to instruments as visual cues deteriorate. An applicant must also be evaluated on the planning of the transition to an instrument navigation environment. This event may be conveniently combined with an area departure.

C. Engine Failure on Takeoff (For Multiengine Airplanes). An applicant must demonstrate the ability to maintain control of the airplane and to continue a takeoff with the failure of the most critical powerplant. When the flight test is conducted in an airplane, the failure shall be simulated. The takeoff configuration, airspeeds, and operational procedures must be in accordance with the operator’s aircraft operating manual. When the flight test is conducted in two segments (full flight simulator (FFS) and airplane), this event shall be conducted in the
FFS segment of the flight test. This event should not be repeated in the airplane portion of the flight test unless an unusual situation occurs.

1) When the flight test is being conducted in an airplane belonging to the transport and commuter category family, the engine failure shall be introduced at a speed after takeoff decision speed (V1) and before takeoff safety speed (V2), and appropriate to the airplane and the prevailing conditions. When either V1 and V2, or V1 and rotation speed (VR), are identical, the failure shall be introduced as soon as possible after V1 is passed.

2) When the flight test is conducted in an airplane not in the transport and commuter category family, the engine failure shall be introduced at a speed and altitude that is appropriate for the airplane.

NOTE: Some nontransport multiengine airplanes cannot climb or maintain altitude with an engine out. When conducting a flight test in such an airplane, inspectors and examiners should use their authority to modify this event. For example, an engine failure recognition problem and engine shutdown may be performed at a safe altitude.

D. Rejected Takeoff. A rejected takeoff is a potentially hazardous situation that flightcrews must be trained to handle correctly. As a testing event it must be presented in a realistic and meaningful manner. The event is a test of an applicant’s ability to correctly respond to a critical situation and to correctly manage the actions necessary for safeguarding the airplane and passengers once the airplane is brought to a stop.

1) When a flight test is conducted in an FFS, performance parameters should be adjusted to make the takeoff critical. For example, the temperature and airplane weight can be adjusted so that takeoff performance is runway-limited. Another technique is to lower the visibility and make the runway wet, presenting the applicant with a tracking problem. Inspectors and examiners should take care in selecting the malfunction used to induce the reject response. The malfunction should be one that clearly and unequivocally requires rejection of the takeoff. The malfunction should be introduced at a speed that is as close to V1 as possible, yet still allowing the applicant enough time to perceive and respond to the problem before reaching V1. It is appropriate for inspectors and examiners to occasionally introduce a problem in a way that leads to an evacuation of the airplane. This event shall not be waived in an FFS.

2) When a flight test is conducted in an airplane belonging to the transport and commuter category family, a rejected takeoff at approximately V1 can be unsafe and can cause damage to the airplane. Inspectors and examiners are expected to use caution when inducing a rejected takeoff in an airplane for flight test purposes. For this event to be meaningful, it should be introduced at a speed close to V1. Therefore, inspectors and examiners are authorized to waive this event and should do so when the airplane weight, ambient temperature, and tire limits preclude the event from being conducted in a realistic manner. In other families of airplanes, the rejected takeoff shall be performed at a speed of less than 50 percent of minimum controllable airspeed with the critical engine inoperative (V_{MC}).
3) An applicant must be able to recognize the need to initiate a rejected takeoff, perform the correct procedures in a timely manner, and to bring the airplane to a stop on the runway. Once the airplane or FFS is brought to a stop, appropriate procedures must be initiated. Consideration must be given to the possibility of overheated brakes and fire.

E. Crosswind Takeoffs. A crosswind takeoff from a standing or rolling start (not a touch-and-go) must be evaluated to the extent practical on all flight tests. When appropriate, a crosswind takeoff may be evaluated simultaneously with other types of takeoffs.

1) When the flight test is conducted in an airplane, inspectors and examiners will usually have very little control over existing meteorological, airport, and traffic conditions. Inspectors and examiners are expected to make a reasonable attempt to evaluate a takeoff on a runway not favorably aligned with the prevailing wind. It will frequently be necessary, however, to evaluate this event with the crosswind component that exists on the active runway.

2) FFSs are capable of realistically duplicating crosswinds. Crosswind takeoffs shall be evaluated on all flight tests conducted in an FFS. The crosswind component entered in the instructor operating station (IOS) shall be between 10 and 15 knots. Occasionally, however, the crosswind components should be in excess of 15 knots, but must not exceed the crosswind component allowed by the operator’s aircraft operating manual, or the maximum demonstrated value given in the approved Airplane Flight Manual (AFM). The purpose of testing at such higher crosswind components is to determine whether applicants are being trained throughout the range of the flight envelope. When level A FFSs are used, principal operations inspectors (POI) must determine the maximum values at which the crosswind simulation is realistic.

5-831 CLIMB, EN ROUTE, AND DESCENT EVENTS.

A. Area Departures and Arrivals. The area departure and arrival events should include intercepting radials, tracking, and climbs or descents with restrictions. Whenever practical, a standard instrument departure or standard arrival should be used. Many of the standard procedures, however, are not suitable for the purpose of testing an applicant’s abilities. For example, common radar departures are essentially initial-climb instructions for a radar handoff, and provide little opportunity for testing an applicant’s ability to set up and use the navigation equipment normally used on an area departure. If a suitable published procedure is not available and circumstances allow, the inspector or examiner should give a clearance that presents the desired tests. Inspectors and examiners should allow applicants to use all installed equipment. The autopilot may or may not be used at the inspector’s or examiner’s discretion. The applicant’s use of navigation equipment, and other crewmembers, and the applicant’s ability to adhere to ATC clearances and restrictions shall be evaluated. Inspectors and examiners may waive one, but not both, of these events. Under normal circumstances, one of the two events should be waived.

B. Holding. Inspectors and examiners should give holding clearances with adequate time available for the applicant to identify the holding fix, select the appropriate speed, and plan the entry. Applicants should be allowed to use all aids normally available in the cockpit (such as wind drift readouts). At least the initial entry and one complete turn in the holding pattern should be completed before another clearance is issued. The applicant’s performance shall be evaluated on the basis of compliance with the holding procedures outlined in the operator’s aircraft.
operating manual, compliance with instructions issued by ATC, and the published holding pattern criteria. Holding airspeed must be as specified by the operator’s aircraft operating manual; however, it must not be allowed to exceed the regulatory limit. If the operator’s manual requires a speed higher than that allowed by regulation, the applicant must resolve the conflict by requesting an amended ATC clearance or by selecting an airplane configuration in which it is safe to comply with the regulatory speed. Inspectors and examiners should waive holding when an applicant’s performance on other events has indicated a high degree of proficiency.

C. Steep Turns. This event consists of a level turn in each direction with a bank of 45 degrees, continuing for at least 180 degrees, but not more than 360 degrees. Inspectors and examiners shall direct special attention to an applicant’s smoothness, coordination, and orientation. Steep turns may be waived, and should be if an applicant’s performance on other events has indicated a high degree of proficiency.

D. Stall Prevention (Approaches to Stalls). Inspectors and examiners must evaluate the applicant’s ability to recognize and recover from an impending stall in three separate airplane configurations: clean configuration, takeoff configuration (except where the airplane uses only a zero-flap takeoff configuration), and landing configuration. At least one impending stall recovery must be performed while in a turn with a bank angle between 15 and 30 degrees. One impending stall should be initiated by commands to the autopilot (if installed). Impending stall recovery in the clean configuration should be evaluated at a high altitude near the airplane’s maximum operating altitude. (Refer to the current edition of Advisory Circular (AC) 120-109, Stall and Stick Pusher Training.)

NOTE: This requirement applies to all airplane types, including those with flight envelope protection and fly-by-wire flight controls. Inspectors and examiners should reference the applicable Flight Standardization Board (FSB) report for recommendations to conduct this maneuver.

1) The inspector or examiner is responsible for establishing the flight conditions associated with the configuration being evaluated. While the pilot may fly the entry profile, the pilot will not be evaluated on the entry. The satisfactory completion of the event is based on the pilot’s initiating recovery at the first indication of an impending stall (e.g., buffet, stick shaker, or aural warning) and the accomplishment of the proper recovery procedure.

2) When evaluation of stall prevention is performed in an airplane, the operator’s minimum entry and recovery altitudes must be observed. In an FSTD, evaluation of stall prevention may be maneuver-based or scenario-based with an entry altitude consistent with normal operating environments. The entry parameters, including W&B, should be within airplane limitations to ensure adequate performance for recovery from first indication of an impending stall.

3) When the flight test is conducted in an FSTD, inspectors and examiners should occasionally require an applicant to recover from an impending stall at high altitude. Evaluation of stall prevention in various flight regimes should be accomplished to determine whether the operator’s training program has adequately prepared applicants for flight in those regimes.
4) Evaluation of stall prevention must not be based on altitude loss. Pilots must be evaluated on recovering at the first indication of an impending stall, even if it is based on an aural or visual indication that occurs before the stick shaker or stick pusher (if installed), and their timely and effective use of available energy (i.e., altitude and speed) during recovery. The inspector or examiner must consider the variables that are present at the time of the indication of an impending stall and their effect on the recovery. Evaluation criteria are:

- Prompt recognition of impending stall,
- Correct application of the stall recovery procedure, and
- Recovery without exceeding the airplane’s limitations.

5) Stall recovery procedures must be in accordance with the operator’s aircraft operating manual (if applicable) or AC 120-109. Inspectors and examiners may waive all but one of the impending stall recoveries. This waiver authority should be used when an applicant’s performance in other events indicates a high degree of proficiency.

E. Specific Flight Characteristics. This event consists of recovery from flight characteristics specific to the airplane type, such as a Dutch roll or a high rate of descent. These specific flight characteristics, when applicable, are specified in the FSB report for the particular airplane type. Inspectors and examiners shall evaluate an applicant on recognition and recovery from these specific flight characteristics, when applicable. The procedures used for recovery must be those specified in the operator’s aircraft operating manual. When applicable, this event may be waived. This event should be waived when the applicant’s performance in other events indicates a high degree of proficiency.

5-832 APPROACH EVENTS. The approaches described in this paragraph are required on all flight tests. They may be combined when appropriate.

A. Instrument Landing System (ILS) Approach. Inspectors and examiners shall require applicants to fly a minimum of one normal (all-engines-operative) ILS. In addition, when multiengine airplanes are used, one manually controlled ILS with a powerplant failure is also required. When the flight test is conducted as a two-segment flight test, a manually controlled, normal ILS must be flown in the airplane segment of the flight test.

1) When the operator’s aircraft operating manual prohibits raw data approaches, the flight directors (FD) must be used during the manually controlled ILS approach. In this case, a raw data approach is not required to complete the flight test.

2) If the operator’s aircraft operating manual permits raw data ILS approaches to be conducted, the operator must provide training in the use of raw data for controlling an airplane during ILS approaches. If the operator’s airplanes are equipped with a FD system, the FD must be used on at least one manually controlled ILS approach. While a raw data approach is not required to complete a flight test, inspectors and examiners should occasionally require a raw data approach to determine whether the operator’s training program is adequately preparing applicants.
3) For all raw data and FD ILS approaches flown in an FSTD, inspectors and examiners shall require applicants to use a decision height (DH) of 200 feet above the touchdown zone (TDZ). When raw data is used on ILS approaches in an airplane, inspectors and examiners shall require applicants to use a DH of 200 feet above the TDZ. When the FD is used on ILS approaches in an airplane, inspectors and examiners shall require applicants to use a DH of 100 feet above the TDZ. However, if the applicant has accomplished an ILS using a 200 foot height above touchdown (HAT) in the FSTD segment of the flight test, the published DH shall be used in the airplane portion of the test. The DH shall be determined by barometric altimeter. Inspectors and examiners shall inform applicants that this DH is for flight test purposes only and does not correlate to any minimums used in actual operations. If the flight test is being conducted in actual weather conditions, the DH shall be the published DH. The applicant must be able to track the Localizer (LOC) and glideslope (GS) smoothly and without significant excursion during the final approach segment. The LOC indication shall not exceed ¼-scale deflection at DH. When the ILS indicator is calibrated with the first dot at the ½-scale deflection point and a second dot at the full-scale point, the deflection at DH must not exceed half the distance to the first dot. The GS shall not exceed ½-scale deviation (one dot) at DH.

4) When the operator’s airplanes are equipped with autopilot couplers, at least one coupled autopilot ILS approach must be flown. If the autopilot has the capability and the operator is authorized by OpSpecs to conduct automatic landings, the coupled approach shall terminate in either an autolanding or a coupled missed approach. When an autoland is conducted, it shall not be credited as one of the three required manually controlled landings. When the flight test is conducted entirely in an airplane or entirely in an FFS, the autopilot coupled approach may be combined with the normal ILS (all-engines-operative) approach. This combination is permitted because the applicant’s ability to manually control an ILS approach is evaluated on the ILS with an engine out.

5) Qualification for Category II (CAT II) and Category III (CAT III) operations are not part of a type rating or ATP flight test. To satisfy the requirements for these types of operations, additional events that are not required for the ATP Certificate or a type rating will normally be required. The qualification checks for these types of operations, however, may be conducted in conjunction with an ATP or type rating test as a convenience to the operator and the applicant. However, if one of these additional events is unsatisfactory, the entire flight test is unsatisfactory. Therefore, the choice of whether to combine these events with the certification flight test is up to the applicant. Inspectors and examiners shall ensure that applicants understand these ground rules before conducting these additional events in conjunction with a certification test.

6) Qualification check requirements for CAT II and CAT III operations, including the required number and types of approaches, are established by the operator’s approved training program. If an applicant is simultaneously qualifying for these authorizations during the certification flight test, the approaches discussed in subparagraphs 1)–3) above may be credited toward these requirements when the approach requirements are compatible.

7) Inspectors and examiners shall use a crosswind component of 8 to 10 knots (not to exceed 10 knots) on at least one of the ILS approaches conducted in an FSTD. The use of this
crosswind is to evaluate the applicant’s ability to track the LOC and not the applicant’s ability to accomplish a crosswind landing.

8) When the flight test is conducted in an FSTD, the Runway Visual Range (RVR) should be set to the minimum value specified for the approach. If the inspector or examiner plans for the applicant to acquire the runway and to continue below DH, the ceiling should be set to a value of approximately 50 feet above HAT (the exact value depends on the characteristics of the specific FSTD). When the flight test is conducted in an airplane, the vision restriction device must remain in use until just before the airplane arrives at the DH used for the flight test.

9) Flightcrew procedures, airplane configuration, and airspeeds must be as specified in the operator’s aircraft operating manual. Turbojet airplanes must be stabilized before descending below 1,000 feet above the TDZ.

B. NPAs. Inspectors and examiners shall require applicants to demonstrate two nonprecision instrument approaches that are authorized in the operator’s OpSpecs. The second approach must be based on a different type of Navigational Aid (NAVAID) than the first approach. The second approach may be waived if an applicant demonstrates a high degree of proficiency on the first approach and the applicant’s training records or instructor certification show that the applicant has satisfactorily completed the NPA training requirements.

1) Inspectors and examiners shall allow the applicant to use any aid normally available in the cockpit, such as the FD and drift and groundspeed readouts. Many operators train their pilots to perform NPAs using the autopilot. At least one NPA must be manually flown on the flight test, except when the operator’s manual prohibits manually flown NPAs.

2) When NPAs are conducted in an FSTD, a crosswind component of 10 to 15 knots shall be used on at least one of the NPAs. The purpose of the crosswind component is to test an applicant’s ability to track the approach course, not to evaluate crosswind landings. Crosswind landings, however, may be combined with a NPA.

3) In an airplane, the vision restriction device shall remain in use until the airplane arrives at the minimum descent altitude (MDA) and a distance from the runway approximating the required visibility for the approach. In an FSTD, inspectors and examiners shall enter a ceiling of approximately 50 feet higher than the published MDA. A visibility value of approximately ¼ mile greater than the published minimums value shall be used, depending on the characteristics of the particular FSTD.

NOTE: If the approach to be conducted is a lateral navigation (LNAV)/vertical navigation (VNAV) with a published decision altitude (DA), the FSTD visibility should be set to the HAT at the DA, divided by 300 feet (a constant); then add ¼ mile. For example:
To set FSTD visibility where DA = 1000 ft and HAT at DA = 600 ft
Divide 600 ft by 300 ft = 2 (miles visibility)
Add ¼ mile visibility
Set FSTD visibility at 2¼ miles

This setting permits the flightcrew to acquire the approach lights visually before reaching the published DA, and precludes an unnecessary missed approach when the approach is otherwise satisfactory.

4) When tracking is accomplished by means of an automatic direction finder (ADF) bearing pointer, the tolerance is ±5 degrees of the final approach course. When tracking a LOC signal, the tolerance is a ¼-scale deviation (½-dot). When tracking a very high frequency omni-directional range station (VOR) signal, the tolerance is a ¼-scale deviation of the course deviation indicator (CDI). The reason for these tolerances is terrain. Also, at the visual descent point (VDP) or its equivalent, the airplane must be in a position that it can be aligned with the runway without excessive maneuvering. Turbojet airplanes must be stabilized before descending below the MDA or 500 feet, whichever is lower.

C. Circling Approach Maneuver. Operators are not required to train flightcrew members in circling approach maneuvers if the operator’s manual prohibits such maneuvers with a ceiling below 1,000 feet and a visibility of less than 3 miles. Inspectors and examiners shall waive this event if the operator does not train flightcrew members for the maneuver. If the operator provides training on the circling maneuver, it may be waived when local conditions beyond the control of the inspector or examiner, such as traffic or available approaches, prevent the maneuver from being conducted in a realistic manner.

1) For the purpose of flight testing, the visual maneuvering portion of a circling maneuver begins at the circling MDA of an NPA and requires a change in heading from the final approach course to the runway heading of at least 90 degrees. The inspector or examiner, however, is authorized to modify this event. For example, when traffic conditions preclude a circling approach, if ATC approval is attained, the visual portion of the event can be entered from a modified visual flight rules (VFR) traffic pattern at a point downwind and abeam the touchdown point.

2) The angle of bank for a circling maneuver should not exceed 30 degrees. The airplane must not descend below MDA until the runway environment is clearly visible to the applicant, and the airplane is in a position for a normal descent to the touchdown point. Turbojet airplanes must be stabilized in the landing configuration before descending below the MDA or 500 feet above touchdown zone elevation (TDZE), whichever is lower.

D. Maneuver To a Landing With 50 Percent of Powerplants Inoperative. Inspectors and examiners shall require an applicant to demonstrate an approach and landing with 50 percent of powerplants inoperative.

1) Inspectors and examiners should introduce this event in a realistic manner. Consideration should be given to the airplane weight, atmospheric conditions, and airplane position. The airplane position, when the engine failure is introduced (second engine in a
three- or four-engine airplane) should provide enough room for the applicant to maneuver the airplane. In an FFS, the weight should be adjusted to simulate realistic conditions, but still allow the applicant enough time to exercise judgment. In a three-engine airplane, this event must be performed with the center and an outboard engine failed. In a four-engine airplane, both powerplant failures must be on the same side.

2) In two-engine airplanes, the engine-out ILS may be credited simultaneously with this event. In three- and four-engine airplanes, this event should be conducted in visual conditions. A visual pattern should be used rather than a vector to the final approach, so that the applicant’s judgment with respect to maneuvering the airplane can be evaluated. When this event is conducted in an FFS, the electronic GS or Visual Approach Slope Indicator (VASI) shall not be made available for the applicant’s use. In the airplane, it may not be possible to have the VASI turned off. In daylight conditions, however, inspectors and examiners should request that the VASI be turned off. In an airplane at night, an electronic GS or VASI must be available and used.

NOTE: An approach with a simulated failure of the most critical powerplant must always be performed in the airplane segment of a two-segment flight test. That event is required in the airplane segment, even when a maneuver and landing with 50 percent of powerplants inoperative has already been previously accomplished in an FFS.

E. No-Flap or Partial-Flap Approach. Inspectors and examiners shall require an applicant to perform a no-flap approach in all airplanes except those airplanes that have alternate flap extension procedures and in which the FSB has determined that no-flap approaches are not required. If a no-flap approach is not required, the FSB may still require that a partial-flap approach be accomplished. In this case, inspectors and examiners are only required to evaluate an applicant’s demonstration of a partial-flap approach. However, inspectors and examiners may evaluate applicants conducting partial-flap or no-flap approaches any time procedures for such approaches are published in the operator’s aircraft operating manual.

1) For either a partial or no-flap approach, the limitations specified for the use of VASI and electronic GS guidance in the 50 percent engine failure maneuver (see subparagraph 5-832D2) above) apply. The approach shall be flown from a visual pattern from at least a downwind position, so that the applicant may be evaluated on planning for the approach. The approach should be presented in a realistic manner. In an FFS, inspectors and examiners shall adjust the landing weight to require an applicant to exercise judgment in matters such as approach speed and runway limitations.

2) When the flight test is conducted in a transport or commuter category airplane, a touchdown from a no-flap or partial-flap approach is not required and shall not be attempted. The approach must be flown to the point that the inspector or examiner can determine whether the landing would or would not occur in the TDZ. In an FFS, the landing must be completed to a full stop so that the applicant’s ability to control the airplane and to use correct procedures may be evaluated.
NOTE: The events required in subparagraphs 5-832D and E above should be conducted in an FFS whenever practical. These events should not be repeated in the airplane segment of the flight test unless an unusual situation occurs.

F. **Acceptable Performance for Approach Events.** The airspeed and altitude on downwind and base leg, or on an intercept to final approach, must be as specified in the operator’s flight manual. The airspeed on final approach must be adjusted for wind and gusts in accordance with the flight manual and must be positively and accurately maintained throughout the approach. The approach angle must be controlled and be appropriate to both the airplane and approach being flown. If a windshear or a ground proximity warning (GPW) should occur, an applicant must respond in a prompt and positive manner. For turbojets, the approach must be stabilized, the airplane in the landing configuration, with a sink rate of less than 1,000 feet per minute (fpm), not later than the following heights:

1) For all straight-in instrument approaches, the approach must be stabilized before descending below 1,000 feet above the airport or TDZ.

2) For visual approaches and landings, the approach shall be stabilized before descending below 500 feet above the airport elevation.

3) For the final segment of a circling approach maneuver, the approach must be stabilized 500 feet above the airport elevation or at the MDA, whichever is lower.

NOTE: Use of the stabilized concept is mandatory for all turbojet airplane operations. It is recommended for all propeller-driven airplanes when conducting operations in instrument flight rules (IFR) weather conditions.

5-833 **LANDING EVENTS.** A total of three manually controlled landings must be accomplished on all flight tests. When a two-segment FSTD and airplane flight test is conducted, a minimum of three manually controlled landings must be performed in the airplane. If the flight test is conducted in an amphibious airplane, one landing must be on water. The required events are as follows:

A. **Normal Landings.** A normal landing is defined as a manually controlled landing in the normal landing configuration (as specified in the operator’s aircraft operating manual), with normal power available, and without reference to an electronic GS. A normal landing can be accomplished from either a visual pattern or from an NPA.

B. **Crosswind Landings.** A manually controlled landing with a crosswind must be accomplished on all flight tests. The crosswind landing may be combined with any other landing event.

1) When the flight test is conducted in an airplane, inspectors and examiners usually have little control over existing meteorological, airport, and traffic conditions. As such, an inspector or examiner is expected to make a reasonable attempt to evaluate a landing on a runway not favorably aligned with the prevailing wind. It will frequently be necessary, however, to evaluate this event with the crosswind component currently existing on the active runway.
2) FFSs are capable of realistically duplicating a crosswind for landing. Crosswind landings must be evaluated on all flight tests conducted in FFSs. The crosswind component entered in the IOS shall be between 10 and 15 knots. Occasionally, however, the crosswind components should be in excess of 15 knots, but must not exceed the crosswind component allowed by the operator’s aircraft operating manual (or the maximum demonstrated value given in the AFM). The purpose of testing at such higher crosswind components is to determine whether applicants are being trained throughout the range of the flight envelope. When level A FFSs are used, POIs must determine the maximum values at which the crosswind simulation is realistic. Crosswind landings should normally be performed from a VFR traffic pattern, but may be accomplished from an NPA.

C. Landing in Sequence from an ILS Approach. On the landing from an ILS approach, the runway environment should become visible to the applicant as close as possible to the DH being used for the flight test. The applicant must complete the landing without excessive maneuvering and within the TDZ. The approach angle must not be erratic, excessively steep, or shallow in the visual segment.

D. Accuracy Landings (Single-Engine Only). The accuracy landing event consists of three approaches and spot landings from an altitude of 1,000 feet or less, with the engine throttled and an approach requiring a 180 degree change of heading. (“Throttled” means that as power is reduced, it shall not again be increased above that point until after touchdown.) Touchdown must be in a normal landing attitude and configuration, beyond but within 200 feet of a designated point. One of the three landings must be from a forward slip. Although circular approaches are acceptable, two 90-degree turns with a straight base leg are preferred. This event is not required if the applicant holds a commercial pilot certificate.

E. Rejected Landing. The rejected landing shall be initiated from a point approximately 50 feet above the runway. This event may be combined with an instrument missed approach.

F. Engine-Out Landing. One landing with the most critical powerplant inoperative must be evaluated. When a two-segment flight test is conducted, this event must be performed in the airplane. When conducted in an airplane, the engine failure shall be simulated.

G. Landing With 50 Percent of Powerplants Inoperative. A landing with 50 percent of powerplants inoperative must be evaluated. In a three-engine airplane, the event must be performed with the center and one outboard engine inoperative. In a four-engine airplane, both powerplant failures must be on the same side. When this event is conducted in an airplane, the engine failures shall be simulated.

H. No-Flap or Partial-Flap Landings. No-flap or partial-flap landings are not required to complete the flight test. When the flight test is conducted in a transport category airplane in actual flight, a touchdown from a no-flap or partial-flap approach is not required and shall not be attempted. The approach must be flown to the point that the inspector or examiner can determine whether the landing would or would not occur in the TDZ. In an FFS, the landing should be completed to a full stop so that the applicant’s abilities to control the airplane and use correct procedures under abnormal circumstances may be evaluated. For example, the airplane might
have a pitch-up tendency with spoiler extension in the no-flap or partial-flap landing configuration.

I. Acceptable Performance for Landing Events. Landings must be in the TDZ, at the correct speed for the airplane, without excessive float, and on the runway centerline (RCL). The rate of descent at touchdown must be controlled to an acceptable rate for the airplane involved. Side load on the landing gear must not be excessive, and positive directional control must be maintained through the rollout. Management of spoilers and thrust reversers must be in accordance with the operator’s aircraft operating manual.

5-834 MISSED APPROACH EVENTS. Missed approaches from two separate instrument approaches are required to complete the flight test. At least one missed approach must be flown through the entire missed approach procedure, unless traffic or ATC restrictions prevent completing the entire procedure. One missed approach is required from an ILS. When the flight test is conducted in a multiengine airplane that has a single-engine climb capability, one missed approach should be accomplished with the most critical powerplant inoperative. The engine-out and ILS missed approaches may be combined; however, to complete the flight test, at least two missed approaches are required. When the flight test is a two-segment flight test, the engine-out missed approach should be accomplished in the FSTD segment.

A. Flight Test Not in Transport or Commuter Category Airplane. When a flight test is conducted in an airplane that does not belong to the transport or commuter category family, airplane performance may be critical. Inspectors and examiners should use their authority to modify the event. For example, a missed approach may be combined with a simulated powerplant failure at a safe altitude.

B. Flight Test in a Three- or Four-Engine Airplane. A missed approach from an approach with 50 percent of powerplants inoperative is not required to complete the flight test for three- and four-engine airplanes. However, when procedures for 50 percent of powerplant-inoperative missed approaches are published in the operator’s aircraft operating manual, inspectors and examiners may evaluate the event to determine if applicants are being trained to proficiency in the event. When this event is conducted in a three-engine airplane, the center and one outboard engine must be inoperative. When this event is conducted in a four-engine airplane, two engines on the same side must be inoperative. When the missed approach event is conducted in an airplane, the engine failures shall be simulated.

C. Flight Test in an FSTD. When a flight test is conducted in an FSTD, inspectors and examiners should make use of the IOS environmental and fault panels to induce the missed approach decision. For example, many FSTDs have provisions to offset the LOC so that the airplane is not in a position to continue the approach below DH.

D. Criteria for Initiation of Missed Approach. Applicants must promptly execute the missed approach procedure if the runway environment is not acquired at DH on an ILS approach. If the runway environment is not in sight on an NPA, or if the airplane is not in a position to land at the missed approach point, the applicant must initiate a missed approach. Should conditions prevent continuation of any type of approach at any point, the applicant must initiate a missed approach. For example, a missed approach above DH might be required when an instrument
failure flag appears. A missed approach is required if the airplane is below DH or MDA and cannot be properly aligned with the runway or if the applicant loses sight of the runway environment. An applicant must adhere to the published missed approach or the instructions given by ATC and observe the procedures and limitations in the operator’s aircraft operating manual. An applicant must properly use the available aids and other crewmembers when making the transition back to the instrument navigation environment.

5-835 NORMAL AND ABNORMAL PROCEDURES. Inspectors and examiners shall require an applicant to demonstrate the proper use of as many of the airplane’s systems and devices as necessary to determine if the applicant has a practical knowledge of the use of these systems. Evaluation of normal and abnormal procedures can usually be accomplished in conjunction with other events and does not normally require a specific event to test the applicant’s use of the airplane’s systems and devices. An applicant’s performance must be evaluated on the maintenance of airplane control, the ability to recognize and analyze abnormal indications, and the ability to apply corrective procedures in a timely manner. Systems to be evaluated include, but are not limited to, the following:

- Anti-icing and deicing systems;
- Autopilot systems;
- Automatic or other approach system aids;
- Stall warning devices, stall avoidance devices, and stability augmentation devices;
- Airborne Radar (AR) devices; and
- Any other available systems, devices, or aids, such as flight management systems (FMS).

5-836 EMERGENCY PROCEDURE EVENTS. An applicant must be able to competently operate all installed emergency equipment and to correctly apply the procedures specified in the operator’s aircraft operating manual.

A. Powerplant Failures. Inspectors and examiners may introduce malfunctions requiring an engine shutdown at any time during the flight test. This provision is not intended as authority to require an unrealistic number of failures, but to permit such failures at times when they are most appropriate. Powerplant failures should be limited to those necessary for determining an applicant’s proficiency. An applicant must promptly identify the inoperative engine and initiate correct action while maneuvering the airplane safely. If the airplane is not capable of maintaining altitude with an engine inoperative, the applicant is expected to maintain the best engine-out climb speed while descending. Smooth application of flight controls and proper trim are required.

B. Other Emergency Procedures. Inspectors and examiners should sample as many of the following events as necessary for determining whether an applicant is proficient in identifying and responding to emergency situations:

- Fire in flight;
- Smoke control;
- Rapid decompression;
- Emergency descent (with and without structural damage);
• Hydraulic and electrical system failure or malfunctions (if safe and appropriate);
• Landing gear and flap systems failure or malfunctions;
• Navigation or communications equipment failure; and
• Any other emergency procedures outlined in the operator’s aircraft operating manual or training program.

5-837 STANDARDS OF ACCEPTABLE PERFORMANCE. The ATP Certificate is the highest grade of pilot certificate awarded. An applicant for this certificate must possess a degree of piloting skills beyond that required for lower grades of certificates. The applicant must be the master of the airplane, the crew, and the situation throughout the airplane’s operational envelope. Inspectors and examiners shall sample an applicant’s ability to safely and practically operate the airplane throughout the range of the approved operational envelope. For example, an ATP applicant would be expected to be able to maintain 180 knots to the marker, configure the aircraft, and establish a stabilized approach before descending below 1,000 feet above ground level (AGL) while smoothly tracking the GS and LOC.

A. Manipulative Skills. The manipulative skill standards for the ATP Certificate are the most rigorous of all pilot certificates issued. The skills requirement for the ATP Certificate and for other certificates differs not in the tolerances allowed but in the degree of mastery required. The applicant for an ATP Certificate must demonstrate the ability to operate the airplane smoothly under a complex set of circumstances. The applicant’s performance must be such that the inspector or examiner is never seriously in doubt of the successful outcome of each event of the flight test. The determination of whether an applicant’s performance is acceptable or not is derived from the experience and judgment of the inspector or examiner. It is imperative that inspectors and examiners be fair and consistent when making their determinations. For example, weather, airplane responsiveness, traffic, and other factors beyond an applicant’s control may cause the applicant to deviate briefly during the accomplishment of a maneuver. In the case of turbulence, the applicant is expected to adhere to the procedures for adjusting the target speed as specified in the operator’s aircraft operating manual. In such a situation, an applicant who makes a determined effort, is generally successful in maintaining close control, and does not deviate to the extent safety is compromised, should be considered to have met the standard.

B. Flight Management Skills. The term “pilot-in-command” implies that the pilot is the leader of a crew and bears the final responsibility for the safe conduct of the flight. This standard, more than any other, distinguishes the successful applicant for an ATP Certificate from those holding other grades of certificates. The ATP flight test must not be limited to a simple demonstration of a series of events. An ATP applicant must demonstrate a mastery of complex problems, good judgment, situational awareness, Crew Resource Management (CRM), and leadership skills.
Figure 5-112. ATP/Type Rating Oral Test Job Aid—Airplane

THE ORAL TEST

[ ] A. Knowledge of aircraft systems:
   [ ] Hydraulic
   [ ] Pneumatic
   [ ] Flight instruments
   [ ] Landing gear, wheel
   [ ] EFIS, FMS
   [ ] Fuel
   [ ] Pressurization
   [ ] Electrical
   [ ] Powerplants
   [ ] Flight controls
   [ ] Autopilot, F/D
   [ ] Navigation systems
   [ ] Propellers
   [ ] Air conditioning

[ ] B. Knowledge of, and ability to, compute performance data, takeoff, landing, and cruise performance

[ ] C. Knowledge of the flight engineer station

[ ] D. Weight and balance

[ ] E. Ability to perform or state immediate action items

[ ] F. Knowledge of, and ability to, state operating limitations

[ ] G. Knowledge of MEL

RESERVED. Paragraphs 5-838 through 5-855.
VOLUME 13 FLIGHT STANDARDS DESIGNEES

CHAPTER 2  AIRCREW DESIGNATED EXAMINER PROGRAM

Section 2  FAA’s Management of an Aircrew Designated Examiner Program

13-76 PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES. Operations: 1590, 1621, 1626, 1642, 1644, 1645.

13-77 OBJECTIVE. This section contains guidance for principal operations inspectors (POI) and aircrew program managers (APM) when managing an Aircrew Designated Examiner (ADE) program. It describes the general structure of the ADE program and the functions of the Federal Aviation Administration (FAA) participants in the program.

13-78 GENERAL. A Flight Standards District Office (FSDO)/certificate management office (CMO) holding a certificate of an air carrier participating in an ADE program may be organized in any one of a variety of ways. Regional Flight Standards division (RFSD) managers structure the management of an ADE program to accommodate local conditions. The following individuals have primary roles in an ADE program:

A. Certificate Manager. The person in a certificate-holding district office (CHDO) with primary responsibility for oversight of an operator is the certificate manager. The certificate manager is responsible for the administration of the operator’s certificate. Designation of a certificate manager varies with the structure of the respective office. The CHDO may be a CMO or it may be a FSDO which has a certificate management unit (CMU). The certificate manager may be:

- An office manager,
- A unit supervisor,
- A supervisory principal inspector (PI),
- A POI,
- A principal maintenance inspector (PMI), or
- A principal avionics inspector (PAI).

B. POI. The POI is responsible for operations within an ADE program. The POI reports to the certificate manager. The organization of operations below the level of POI is in the discretion of the POI, subject to the concurrence of the certificate manager and the RFSD manager. Other operations inspectors assigned to an ADE program support the POI, but may have unrelated activities as well. Similarly, the operator’s employees involved in the ADE program also support the POI. Such employees may include the director of operations, the chief pilot, the director of training, the respective fleet manager, and others.

C. Aircrew Program Managers (APM). An APM is an appropriately trained operations inspector, who is also specifically trained by an operator, to oversee the certification activity and to manage the surveillance of that operator’s training program in a specific airplane type. An APM reports to the POI.
D. Partial Program Manager (PPM). One or more PPMs may be assigned to complement the APM in oversight and management activities related to an ADE program. A PPM is specifically trained in the same manner as the APM, and reports to the APM.

13-79 ADE PROGRAM: FAA RESPONSIBILITIES.

A. Responsibilities of a Certificate Manager. A certificate manager is responsible for establishing policies and procedures for operations inspectors in relation to the operator. This responsibility includes coordinating administrative policies and functions, such as scheduling, and maintaining effective working relations between operations inspectors and the operator’s employees. Specific functions include the following.

1) Administrative Supervision of APMs. This includes the following:

   a) Preparation of APM Employee Performance Reports. District office managers and the RFSD manager organize the district offices so that effective supervisory and reporting relationships are established between a certificate manager and an APM.

   b) Standardization of APMs. The APM position requires a high degree of independence, specialization, expertise, and flexibility. An APM usually requires only broad guidance from the certificate manager. On occasion, a certificate manager may be required to provide detailed and specific guidance to standardize APM activities and to implement national policy.

2) Resource Management. Certificate managers are responsible for promoting the implementation of an ADE program, when appropriate, and for recommending its implementation to the RFSD. A certificate manager is responsible for identifying APM resource requirements and for coordinating with the POI, the CHDO manager, and the RFSD to meet these requirements. Resource management functions include the following:

   a) Monitoring APM Workloads and Assignments. An APM position may be initially established on the assumption that the APM workload will fully occupy the assigned inspector’s time. A certificate manager is responsible for monitoring APM workload and for recommending the deletion of the APM position if workload decreases. On the other hand, a certificate manager may recommend that an APM position be augmented by one or more PPM positions.

      1. When an APM’s duties, as defined in this order, require less than 100 percent of the APM’s available time, the certificate manager and the POI should consider the assignment of additional duties to the APM. For example, an APM might be assigned duty as a PPM on another type of aircraft, or duty as an assistant POI.

      2. When an APM’s duties, as defined by this order, exceed 100 percent of the APM’s available time, the certificate manager and the POI should consider the assignment of a PPM for the particular airplane type.

   b) Identifying and Meeting Staffing Requirements to Support an APM. The certificate manager is responsible for ensuring that APM support requirements are identified and
for coordinating with the POI, the CHDO manager, and the RFSD to meet those requirements. ADE program work and training requirements, as described in this handbook, must take priority over other inspector functions. When ADE program requirements have not been met, an APM should not be assigned other work. APMs should not normally be assigned administrative tasks or other duties such as answering complaints or conducting incident investigations and enforcement activities that are unrelated to an assigned ADE program. Such duties are more appropriately assigned to assistant POIs or other inspectors.

NOTE: This provision does not relieve an APM from normal violation and enforcement functions when the APM observes noncompliance in the course of ADE program activities. Likewise, it does not relieve an APM from normal administrative functions directly related to the ADE program.

c) Obtaining Manpower and Infrastructure to Support an APM. A certificate manager establishes channels to obtain the services of qualified inspectors to support APM programs, when necessary. Certificate managers coordinate with CHDO and local automation network managers to ensure that APMs are provided with adequate data processing support and are supplied with or can access computer-generated reports.

   d) Overseeing APM Training Requirements. The certificate manager ensures that an APM is scheduled for the training provided by the operator, as specified in the Memorandum of Understanding (MOU) establishing an ADE program, and receives that training in timely manner. Similarly, the certificate manager ensures that an APM receives any requisite training provided by the FAA. The certificate manager identifies and coordinates any requirements with district and regional office management. A certificate manager is responsible for projecting needed training, together with attendant manpower and budget requirements, at least three years ahead.

3) Coordinating with Geographic Surveillance Units. Certificate managers are responsible for establishing procedures for communicating with:

- Units having responsibility for geographic surveillance of an operator, and
- Training Center Program Managers (TCPM) when an operator contracts for training at a training center or conducts its training at a training center using its own instructors and check airmen.

B. Responsibilities of a POI. A POI is responsible for all operational matters concerning the administration of the operator’s certificate, including management of an ADE program when the operator participates in one. This responsibility includes the following:

1) Achieving Program Objectives. The POI monitors performance to ensure that the ADE program meets its objectives. Objectives are identified nationally under the National Work Program or in accordance with the Air Transportation Oversight System (ATOS) risk management process and locally by FAA managers as special or local emphasis items.

2) FAA/Operator Relations. A POI implements policies and procedures established by the certificate manager.
C. Responsibilities of an APM. An APM supports the POI in technical matters and in surveillance of ADE program activities associated with a specific airplane type. An APM’s functions include the following:

1) Airman Certification. An APM is responsible for ensuring that airman certification standards prescribed by Title 14 of the Code of Federal Regulations (14 CFR), by the practical test standards (PTS), and by this order are maintained in the ADE program, as applicable.

   a) The operator nominates one or more aircrew program designee (APD) candidates for FAA consideration. An APM recommends a candidate to the POI for selection, and is responsible for qualifying each APD in the conduct of airman certification. An APM maintains certification standards through an active program of meetings and surveillance.

   b) To ensure continued, firsthand knowledge of an operator’s program and certification activities, an APM will personally conduct a minimum of four certification activities (oral, simulator or flight evaluations) annually, provided there is sufficient certification activity. If not, an APM will conduct a minimum of four proficiency checks, preferably with no advance notice.

2) Standardization of Check Airmen. An APM ensures that high standards are maintained in the operator’s proficiency checks and line checks by developing and maintaining active surveillance of the operator’s check airmen.

   a) Observing Check Airmen, Initially and Biennially. An APM or PPM should observe each check airman performing a representative check airman function during the initial approval process. The initial check airman observation may be conducted by another qualified inspector when workload prevents an APM or PPM from performing the observation.

       NOTE: Another inspector must receive approval from the appropriate POI or APM before conducting an initial check airman observation requested by an operator.

   b) Performing Observation. An APM will ensure that each check airman is observed at least biennially (once every 2 years), in accordance with 14 CFR part 121, § 121.413 or 14 CFR part 135, § 135.339, as applicable (PTRS activity code 1641, 1642, 1643, 1644, 1645), or, for a check airman authorized as an APD, at least once per year, in accordance with procedures in Volume 13, Chapter 2, Section 3. Before a check airman candidate is approved, the APM determines the geographic unit that will have surveillance responsibility for that airman. This information is entered into the air operator’s enhanced Vital Information Database (eVID) check airman file as a geographic district office (GDO). This information is downloaded to the respective GDO. The National Work Program Guidelines (NPG) process determines surveillance requirements for non-ATOS operators. The geographic unit is notified of the check airman approval so that an annual check airman observation may be made an “R” or “P” item in the PTRS system. This requirement applies to proficiency check airman and to line check airmen.
c) Conducting Inspections Personally. An APM will personally conduct a number of inspections annually. These inspections should include the following:

- At least four inspections (preferably no notice) of the operator’s check airmen conducting proficiency checks, and
- At least four inspections of check airmen conducting line checks (preferably no notice).

3) Training Programs, Initial Review and Surveillance. An APM is responsible for reviewing a proposed training program for an assigned airplane type and, when appropriate, for recommending initial and final approval to the POI. An APM (and PPMs) will monitor an operator’s actions when a trainee does not progress as scheduled or fails a proficiency test. An APM is responsible to the POI and the certificate manager for conducting surveillance and for reevaluating the adequacy of the training program at least once each calendar year (PTRS activity code 1626). This surveillance is entered as a “P” item in PTRS for that APM’s annual work program. In this reevaluation, the APM should identify any deficiencies and recommend changes as appropriate. For part 121 air carriers, inspectors use the ATOS process for review of training programs.

4) Maintaining Airplane Qualification and Currency. An APM will maintain airplane qualification and currency, as specified in paragraph 13-82. Completion of the required training or check in the calendar-month before or after the due-month is considered to meet requirements, but does not change the due month.

5) Providing Technical Assistance. An APM develops expert knowledge of the assigned airplane type. An APM may provide technical assistance to other FAA inspectors and offices in incident, accident, and violation investigations related to that airplane type. An APM reviews the operator’s procedures, policy and airplane operating manuals, minimum equipment list (MEL), and operations specifications (OpSpecs) as an integral part of the surveillance program (PTRS activity code 1621). An APM advises the POI in approving manuals and consults with the appropriate Aircraft Evaluation Group (AEG) for assistance in doing so.

6) En Route Surveillance. An APM is responsible for ensuring a high level of aircrew performance through en route surveillance of operations in the assigned airplane type. En route surveillance includes the following activities:

a) Determining Geographic Unit Responsibility. An APM determines which geographic unit has surveillance responsibility for each aircrew domicile. From the tables presented in Volume 6, the APM determines the desired number of observations and the proportion required for each aircrew domicile. The APM ensures that this information is made available to each geographic unit supervisor through the POI by August 1 of each year so that the supervisor may construct a work plan for the next fiscal year.

b) Conducting En Route Surveillance. An APM personally conducts an en route inspection each quarter to maintain firsthand knowledge of the operator’s line operations. These observations are entered as “P” items on the APM’s work program or conducted in accordance with the ATOS risk management process for part 121 air carriers.
c) Monitoring En Route Inspections. An APM continuously monitors the effectiveness of the en route inspections performed in the assigned airplane type. For example, an APM may find that an inadequate number of en route inspections are being conducted in a particular area of operation. The APM may recommend increased en route inspections to the POI. The POI, in turn, may refer the APM’s recommendation to the appropriate geographic unit supervisor(s). An APM should analyze inspection results for trends that indicate a need for corrective action. The APM informs the POI of any trends or deficiencies identified and, if appropriate, recommends that the POI establish special-emphasis remedial action.

d) Preparing Annual En Route Inspection Trend Analysis. The POI, together with each APM, prepares an annual en route inspection trend analysis report. The POI provides a copy of the report to the operator. This report should refer to the comments and observations made by inspectors through the PTRS system. The report is not normally useful as a statistical tool alone, but it does act as an effective early warning and quality control tool for the FAA and for the operator’s managers. The report is often a departure point for deliberations by the POI and the operator on the corrective measures to be taken by the operator.

7) Training Geographic Inspectors and Others. An APM participates in a process to provide training for geographic inspectors and other inspectors, as necessary, who are responsible for oversight of an air carrier participating in an ADE program. Such other inspectors might include an operator’s POI or certificate manager. Training includes a flight training component and a ground training component comprising the operator’s manuals, checklists, and procedures. Training is conducted annually with a 60-day prior notification to the appropriate geographic unit supervisor, so that the inspector may be scheduled in timely manner to attend. This training is accomplished at the FAA’s expense, and is apart from the training provided by an operator at the operator’s expense, as provided in the applicable MOU. (See later in this section.)

a) Flight Training.

1. For a geographic inspector, flight training in an appropriate airplane is normally accomplished in accordance with existing FAA procedures, namely:

- By the certificate manager’s identifying the need in the annual call for training conducted by Flight Standards Training Division (AFS-500) in February and March, and
- By the inspector’s attending training provided under the existing FAA contract for the respective airplane type.

2. Unlike other inspectors, those under ATOS are not required by current contracts to attend flight training provided by the respective contract training provider. Ideally, flight training is conducted by the operator upon which a geographic inspector conducts surveillance. However, as a practical matter, flight training provided by the pertinent operator is not always desirable and feasible. In such cases, flight training provided by the contract training provider—another air carrier certificate holder or a part 142 (training center) certificate holder—is an acceptable alternative.
b) Ground Training. Ground training conducted by the appropriate air carrier is the ideal supplement to the flight training described above. A geographic inspector should undergo operator-specific ground training like that of one of the operator’s line pilots whenever possible. (Basic indoctrination training may be omitted.) An inspector’s attendance in ground training generally does not generate extra costs to an operator, and should be planned and tracked as surveillance. See Volume 10, Air Transportation Oversight System, for more detail.

8) Exchanging of Information. An APM is encouraged to share information and ideas with other APMs and inspectors. An APM identifies inspectors in other FAA offices who are qualified in the APM’s assigned airplane and who conduct surveillance on the APM’s operator. When appropriate, an APM communicates directly with these inspectors and their supervisors. To provide feedback to district offices with geographic surveillance responsibility for the operator, an APM sends copies of the annual en route inspection program trend analysis report to those district offices.

9) Serving on Boards (Flight Standardization Board (FSB) and Flight Operations Evaluation Board (FOEB)). When selected, an APM should commit to serve on the FSB and/or the FOEB for the appropriate aircraft. An APM is uniquely qualified and is a valuable resource for these boards.

13-80 PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites. This task requires knowledge of 14 CFR part 61, 63, 121, and/or 135 regulations as appropriate and FAA policies, and qualification as an aviation safety inspector (ASI) (Operations or Airworthiness) with designee oversight responsibilities.

B. Coordination. This task may require coordination between the managing FAA office, the RFSD, and/or the Air Transportation Division (AFS-200).

13-81 REFERENCES, FORMS, AND JOB AIDS.

A. References (current editions):

- Title 14 CFR Parts 1, 61, 63, 91, 121, 135, 142, and 183.

B. Forms. None.

C. Job Aids. Program Assessment Checklist.

13-82 APM ELIGIBILITY REQUIREMENTS.

A. Eligibility Requirements. Before being assigned as an APM in an ADE program an inspector must meet the following eligibility requirements:

- Be fully qualified as an ASI, General Schedule (GS) 1825;
- Hold an airline transport pilot (ATP) certificate;
• Hold a type rating in an aircraft of the same group, for assignment to a part 121 aircraft;
• Hold a type rating in an aircraft of the same category, for assignment to a part 135 aircraft requiring a type rating;
• Hold a class rating in an aircraft of the same category, for assignment to a part 135 aircraft not requiring a type rating;
• Must pass the Flight Engineer (FE) written exam before beginning training with the operator, when the aircraft requires an FE;
• Recommended that the candidate have served a minimum of three years as an ASI performing airman certifications; and
• Must poses interpersonal skills including sound judgment, integrity, and professionalism in their oversight function. They must be able to communicate expectations, provide constructive feedback, and deal with conflict in a proactive manner.

NOTE: For a candidate for assignment to a part 121 airplane, the 3 years of experience must have been acquired in part 121 airplanes. For a candidate for assignment to a part 135 airplane, this experience must have been acquired in airplanes of the same category. The office manager, with the concurrence of the RFSD, may give credit for equivalent experience gained in industry as a check airman or as a Designated Pilot Examiner (DPE). Credit may also be given for experience in military service as an instructor or flight examiner in equivalent aircraft.

B. Evaluating APM Candidates. Additionally, CHDO managers will evaluate APM candidates to determine that they communicate appropriate expectations, provide constructive feedback, and deal with conflict in a proactive manner.

13-83 APM TRAINING BEFORE DESIGNATION. Before APM designation, an inspector must satisfactorily complete the same training and qualify to the same standards as flight crewmembers and as check airmen employed by the operator.

A. FAA Training. An APM candidate must complete applicable APM training. See Volume 13, Chapter 1, Section 1 for initial training requirements.

B. Minimum Required Training for an APM. An APM candidate must complete, to the satisfaction of the POI and the operator, at least the following curriculum segments of the operator’s approved training program:

1) Basic indoctrination training.

2) Pilot-in-command (PIC) initial equipment training, including type certification, when appropriate. If the operator does not have a PIC initial equipment training curriculum segment for the aircraft, APMs must complete the PIC transition curriculum for the aircraft. APMs will complete the FE initial equipment curriculum segment or transition curriculum, when applicable.
3) Any special training, such as Category (CAT) II, CAT III, or long-range navigation (LORAN) that is required by OpSpecs or otherwise for qualification as a PIC for the operator.

4) The operator’s check airman training for the pilot duty position and for the FE duty position, when applicable.

5) Line observation experience. Instead of receiving Operating Experience (OE), as the operator’s flight crewmembers do, the APM candidate will observe at least three online flight segments that are representative of the operator’s use of that aircraft in line operations.

NOTE: An APM candidate is eligible for the advanced simulation provisions of part 121, Appendix H, and may receive the certification flight tests in a level C or higher simulator.

C. Inspector Duties During Training. During the period in which an APM candidate is in training with an assigned operator, the candidate should not be assigned or perform unrelated inspector duties.

D. APM Qualification in a New or Additional Airplane Type. Under limited conditions, an inspector may be assigned as an APM on more than one airplane type. The following guidance applies:

1) An inspector will not be assigned as an APM for more than one operator.

2) An APM assigned to an operator’s program that involves a turbojet or other airplane requiring a type rating is normally current only in that airplane. An APM may be assigned responsibility for more than one airplane for an operator only with the specific approval of the RFSD manager.

3) An APM assigned to part 135 aircraft other than the transport and commuter category family of aircraft, may be assigned to two families of aircraft, as defined in Volume 3, Chapter 19, Section 1. In the multiengine, general-purpose airplane family other than transport and commuter category, an assigned APM may maintain qualification in two equivalent series of aircraft, such as the Cessna and Piper series.

4) Should it become necessary to qualify an APM in a new aircraft or in a second type of aircraft, the APM will complete all of the training requirements of this section for the second aircraft, except for the following:

   - Basic indoctrination training, and
   - That portion of check airman training not specific to the second airplane type.

E. Costs of Training. The operator is responsible for providing all required training and bearing its costs. The FAA will bear the cost of any lodging and per diem incurred by the APM.
13-84 MAINTAINING APM QUALIFICATION. An APM must complete the same proficiency, currency, and recurrent training requirements as the operator’s check airmen, with the exception of line checks.

NOTE: When an APM completes training in an aircraft, the APM completes the FAA PTRS Data Sheet form for these flights, showing in the comments section: “Participating in Aircrew Program Manager (or PPM) training with [air carrier name] Airlines in the [aircraft type] (specified) aircraft.”

A. Recurrent Training.

1) Recurrent training for an APM consists of the same ground and flight training curriculum segments that the operator provides for its PICs, including the proficiency check requirements for a PIC and FE, when applicable. A proficiency check of an APM is conducted by an inspector chosen by the POI or by an APD observed by another inspector. A company-qualified check airman will occupy the second-in-command (SIC) position as a safety pilot during any APM proficiency check conducted in an airplane.

2) When the operator’s training program features single visit training (under an exemption to part 121), or Advanced Qualification Program (AQP), an APM will participate in that training program in the same manner as the operator’s PICs.

NOTE: Section 121.453 specifies the currency requirements for an FE. The POI and the operator should include a provision in the MOU to allow the APM to maintain currency as an FE. One method would be to provide simulator periods every 6 months for training and for checking.

B. Check Airman Qualification.

1) Training and Standardization Meetings. An APM will attend the recurrent check airman training and standardization meetings that the operator provides for its check airmen.

2) Single Visit Training and AQP. When the operator’s training program features single visit training (under an exemption to part 121) or AQP, the APM will participate in the instructor and evaluator training required by those programs.

C. Landing Currency. The MOU between the FAA and the operator provides for the APM to maintain currency in the assigned airplane. An APM maintains landing currency (3 landings every 90 days) for each assigned airplane for which a type rating is required. Each operator offers its APM(s) the opportunity to accomplish landing currency by making available a minimum of 2 hours of simulator time each quarter. If the operator is unable to make available the required simulator time, the operator must provide an aircraft, at the operator’s expense, to accomplish the required landing currency. For airplanes not requiring a type rating, an APM maintains currency for the assigned category, class, and equivalent grouping of airplanes.
D. Maintaining Dual Qualification. An APM assigned to two airplane types must be trained and qualified in both airplane types in accordance with this order and the operator’s approved training program.

E. Failure to Maintain Qualification and Currency. An APM failing to maintain qualification in accordance with this paragraph will not perform APM functions until all qualification requirements are met.

1) Training completed in the month before or the month after the due-month is considered to have been accomplished in the due-month.

2) A POI will not designate an APD when the operator has not provided the APM with the opportunity to remain qualified and current. Likewise, the POI and CHDO managers must take positive action to ensure that FAA responsibilities are fulfilled for keeping an APM qualified and current.

13-85 TRANSITION WHEN AN APM POSITION IS VACATED.

A. Continuity of Staffing. The POI, the office manager, and the RFSD are responsible for assuring the continuity of FAA staffing of an ADE program.

1) When an APM (or PPM) makes known a plan that would cause a position vacancy, such as a planned transfer or a retirement date, the respective POI should immediately arrange for a replacement to be located, selected, and entered into training under the MOU with the affected operator.

2) When an APM (or PPM) vacates a position without time to prepare a replacement, the POI, the office manager, and the RFSD will collaborate to obtain the services of a qualified inspector(s) to act as a temporary replacement until the vacant position can be filled.

B. Position Vacancies. An outgoing APM completes the renewal requirements for those APDs whose designations will expire within 90 days of the date that the APM position will be vacated. If adequate FAA oversight of the ADE program cannot be maintained, the POI cancels one or more APD designations, and may consider canceling the ADE program. If an APM position is vacant for an extended time, the office manager, the POI, and the RFSD detail a qualified inspector to oversee the program. If the APM position remains unfilled for 6 months or more, the office manager will consider canceling the ADE program for the affected airplane fleet.

13-86 REMOTE TRAINING FACILITIES.

A. Facilities Outside the CHDO’s Region. An operator with an ADE program may have training facilities located outside the CHDO’s area of geographic responsibility. An APM working in such a program is assigned to the certificate-holding office. This APM will regularly travel to the training facility to accomplish APM functions.

1) In some cases, this arrangement may be inefficient, and it may be beneficial to locate the APM in a facility other than the certificate-holding office. The POI and certificate-
holding office manager evaluate the specific circumstances, particularly the time and means of commuting to the remote site. If the travel time between the certificate-holding office and the training facility is too great for an APM to travel and to perform APM functions in the same day, locating the APM in a district office closer to the training facility should be considered.

2) Another consideration is whether the APM can perform en route surveillance on the appropriate airplane type during travel to and from the training location.

B. Facilities in the Same Region. When the certificate-holding office and training facility are in the same region, the recommendation for an APM’s remote placement is forwarded to the RFSD. When the certificate-holding office and training facility are in different regions, the recommendation is coordinated through the affected RFSDs and forwarded to the Air Transportation Division (AFS-200) for approval. The RFSD for the office in which the remote APM is located ensures that the necessary support is provided by that office.

13-87 AN OPERATOR’S RESPONSIBILITIES. Under an ADE program the operator makes the following special commitments:

A. FAA-Operator Relations.

1) The ADE program is based on the assumption that an open relationship between the operator and the FAA will be maintained. At any time that an operator participating in an ADE program is unwilling to maintain this vital, open relationship, the POI will cancel the program.

2) An operator must be willing to give an APM complete access to facilities, working level personnel, and managers. An operator must be willing to accept input from its POI and APM concerning procedures, manuals, and training programs and to seek mutually acceptable solutions for deficiencies at the working level. The operator must be willing to cooperate fully with incident, accident, and violation investigations. In this relationship compliance generally comes naturally. However, normal FAA enforcement procedures apply in respect to violations.

B. APM Support. An operator commits to provide training and to bear costs of qualifying the APM(s), PPM(s) when required, and replacements for APM or PPM vacancies before the vacancy occurs. The operator must be willing to cooperate in scheduling so that participating FAA inspectors meet qualification and currency requirements in a timely manner.

C. Information. The operator must agree to make the following information available to the POI and APM:

- Projected and revised training schedules,
- Projected and revised APD schedules,
- Notification of any failures and withdrawals from training,
- Actions taken on students who fail or who are withdrawn from training,
- A report of additional training provided to airmen in excess of approved training hours,
- A report of failed proficiency and line checks.
13-88 CHDO MANAGER’S RESPONSIBILITIES. (See also Volume 13, Chapter 1, Section 1, paragraph 13-11.) A manager of a certificate-holding office is responsible for establishing effective administrative systems to support an ADE program. This support includes the following:

A. Certification Paperwork. An office manager establishes and maintains administrative procedures for the efficient processing of certification paperwork. As much of the processing as possible should be accomplished by trained administrative personnel, not by an inspector, APM, or POI. An APM is not relieved of the responsibility to ensure that an APD punctually and accurately completes certification paperwork. A Flight Standards Service (AFS) office is not required to maintain hard copies of certification paperwork since the PTRS serves as a record of certification activity.

B. Data Processing Support and Standards Reports. The office manager establishes and maintains administrative procedures for entering APM and APD data into the PTRS. At the close of each quarter, the POI and the office managers will have three reports prepared for use by the APM in managing his/her work program. These reports are generated through ad-hoc procedures from the PTRS data base. In the future, these reports will be available as standard reports. The three reports are as follows:

1) APD Surveillance Report. An APD surveillance report, showing the surveillance accomplished on each APD during the past four quarters, should be formatted as follows:

- Operator;
- Aircraft type and name of each APD assigned to that aircraft;
- Name of each APM;
- Type of surveillance (oral/simulator/aircraft), and date of surveillance;
- Starting date of report; and
- Ending date of report.

2) Check Airman Surveillance Report. Check airman surveillance report, showing the surveillance accomplished on check airmen during the past four quarters, should be formatted as follows:

- Operator;
- Aircraft type and number of approved check airmen by specialty (proficiency check or line check);
- Names of check airmen observed, type of surveillance (proficiency check or line check), and date of surveillance;
- Starting date of report; and
- Ending date of report.

3) Aircraft Activity Report. A quarterly activity report should be prepared for each aircraft in the operator’s ADE program. (See Figure 13-6 for format.)
Figure 13-6. ADE Program Quarterly Activity Report

Aircraft Type: _________________________________

Operator Name: _______________________________

Dates: _______________________________________  

<table>
<thead>
<tr>
<th>PILOT CERTIFICATION</th>
<th>ORAL ATP/TR 1510/1514</th>
<th>SIMULATOR ATP/TP 1511/1515</th>
<th>AIRCRAFT ATP/TP 1512/1516</th>
</tr>
</thead>
</table>

Conducted By:
- APM
- ASI
- APD

Totals:

<table>
<thead>
<tr>
<th>FE CERTIFICATION</th>
<th>ORAL ORIGINAL/ADDED 1510/1518</th>
<th>SIMULATOR ORIGINAL/ADDED 1511/1519</th>
<th>AIRCRAFT ORIGINAL/ADDED 1512/1520</th>
</tr>
</thead>
</table>

Conducted By:
- APM
- ASI
- APD

Totals:

CHECK AIRMAN SURVEILLANCE – PTRS ACTIVITY CODE 1641, 1642, 1643, 1644, 1645

No. Conducted By APM _______ No. Conducted by ASI _______ Total: _______

APD SURVEILLANCE – PTRS ACTIVITY CODE 1672

No. Conducted By APM _______ No. Conducted by ASI _______ Total: _______

DESIGNATED FLIGHT ENGINEER EXAMINER SURVEILLANCE – PTRS ACTIVITY CODE: 1668

No. Conducted By APM _______ No. Conducted by ASI _______ Total: _______
RFSD’S RESPONSIBILITIES.

A. Program Review and Approval. An RFSD manager is responsible for the review and approval of a proposed ADE program involving any operator located within the respective region. The RFSD should give written notification of any such action to AFS-200 and the AFS-500. The RFSD forwards a copy of the signed MOU to AFS-200 for review and tracking. In any case in which the MOU does not conform strictly to the guidance contained in this order, AFS-200 is party to the review and is the final signature authority. Besides the signatures of the POI, the certificate manager, and the RFSD manager, an AFS-200 signature will be shown on any approved, non-conforming MOU.

B. Resources. The RFSD manager ensures that an ADE program is allocated adequate staffing and funding to function effectively.

1) APM Training. Sufficient resources must be allocated to provide for the training of APMs, in accordance with the requirements of this order.

2) Staffing. An adequate number of APMs, PPMs, assistant POIs, ASIs, and clerical staff must be provided to accomplish the certificate management and APM functions described in this order in an effective and timely manner.

3) Planning. Personnel and budget forecasts for a three-year period will be prepared and revised annually by the certificate manager, and will be reviewed in each cycle by the RFSD manager. The RFSD manager will provide for turnover caused by promotions and retirement and for projected additional positions caused by growth in operators’ ADE program activity.

C. Components of ADE Program Assessment. An RFSD conducts periodic reviews of each ADE program authorized within its region. The purpose of these reviews is to ensure that the ADE program is effectively managed in accordance with current FAA policies and procedures and that the program meets its objectives. These reviews are conducted using a risk management approach as often as necessary, but not less often than once each 36 months. A checklist for this purpose is provided in Figure 13-7.

1) Assessment Team Members. The program assessment team should consist of five members:

- A team leader from within the region, designated by the regional division manager;
- A POI of another operator having an ADE program, preferably from outside the region;
- Two APMs from other programs, preferably from outside the region; and
- One ASI without supervisory responsibility from within the region.

2) Four Part Program Assessment Report. The program assessment report consists of at least four parts:
• An assessment of the operator’s training program to determine if pilots (and FEs, if applicable) are being adequately trained;
• An assessment of the APDs and check airmen to determine if required performance standards are being maintained;
• An assessment of the certificate holder’s operating practices to determine if there are any undetected trends which might affect safety (particular attention should be given to manuals, checklists, and operating procedures); and
• An assessment as to whether or not the operations portion of the certificate unit is performing effectively and a determination as to whether the division, certificate manager, POI, assistant POIs, and APMs have followed the guidance of this chapter.

3) Major Findings. The assessment contained in the program assessment report is divided into major and minor findings. Major findings consist of the following items:

• Operator deficiencies which could adversely affect safety and which have gone undetected, unreported, or uncorrected; and
• Management deficiencies which, in the opinion of the assessment team, have a major impact on the effectiveness of the program.

4) Minor Findings. Minor findings contained in the assessment report are those deficiencies which APMs or POIs have recognized. Those deficiencies are being corrected or are correctable. Minor findings should be brought to the attention of the appropriate individual(s) and may be resolved during the assessment period.

5) Oral Out Briefing. An oral out briefing is given to the certificate manager, the POI, and the APM(s). A written report of the assessment is prepared, containing the identification of each major finding and the recommended corrective action. A review of the extent and nature of minor findings is presented, but the identification of each minor finding and recommended action is unnecessary. A copy of the report is furnished to the certificate manager, the Regional Division Manager, and AFS-200. A separate out briefing is conducted for the operator. This out briefing should cover items of concern to the operator.

13-90 HEADQUARTERS (HQ) RESPONSIBILITIES.

A. ADE Program Oversight. The ADE program is one of the most effective designee processes in which the FAA participates. For that reason, any allegation or perception of abuse in the ADE program threatens the program. AFS-200 is the FAA’s HQ office with primary responsibility for the ADE program nationwide. That division’s chief objective is standardizing the program among the FAA regions, and, as a consequence, promoting its integrity, its effectiveness, and the program itself.

B. Responsibilities. HQ has the following responsibilities:

1) Collect, Compare, and Track MOUs. AFS-200 will compare and track MOUs submitted by all regions. By that process, inconsistencies among regions, omissions, or misunderstandings of the ADE program are usually identified and corrected at an early stage.
2) **Review and Approve Any Non-Conforming MOU.**

   a) The ADE program is founded on a quid pro quo agreement between an operator and the FAA, in which both parties benefit in operational effectiveness. (The public benefits from the safety gains coming from the diligence and expertise that both parties gain under a well-run ADE program.) MOUs are agreed to and signed by both parties. The specific terms of the MOU stipulate that an operator will provide training to inspectors who are charged with oversight responsibilities for appointed APDs.

   b) The collegial nature of an effective ADE program has caused critics to allege abuse in some cases. For that reason, any ADE program proposing an MOU that does not conform strictly to the guidance in this order (including the sample MOU in Figure 13-8) will be reviewed, approved, and signed by AFS-200 in addition to the POI, certificate manager, and RFSD manager who routinely sign, signifying approval of the program.

**Figure 13-7. Program Assessment Checklist**

**AREA I. OPERATOR’S TRAINING PROGRAM.** An assessment of the operator’s training program shall be conducted.

   A. Are the airmen trained and certified in the program qualified for and proficient in the operations conducted?
   B. Does the operator have a consistent cockpit management philosophy which is applied to all aircraft operated?
   C. Does the operator’s training program incorporate CRM training?

**AREA II. APD AND CHECK AIRMAN PERFORMANCE.** An assessment of the APD’s/DFEE’s and the check airman’s performance shall be conducted to determine if the required standards are being maintained.

   A. Is the level of competence required for the check airman and APD designation adequate?
   B. Are the APDs complying with the airman certification regulations and the guidance of this handbook?
   C. Are the check airmen complying with the regulations and guidance of this handbook?

**AREA III. OPERATING PRACTICES.** An assessment of the certificate holder’s operating practices shall be made to determine if undetected trends are present which might affect safety.

   A. Is the policy and direction provided by the operator clear and adequate?
   B. Do crews adhere to the policy and guidance provided by the operator, the regulations, and safe operating practices?
   C. Are problems or trends present that have not previously been recognized and documented?
   D. Are corrective actions being taken to solve previously identified problems?
   E. If there are previously identified problems, does the team judge the corrective actions as likely to be effective and sufficient?
AREA IV. ADE PROGRAM MANAGEMENT. An assessment of the operations portion of the certificate unit will be made to determine if the APM is performing effectively in managing the ADE program.

A. Are APMs able to concentrate on technical questions, APD training, and the surveillance of APDs and check airmen, or are they required to concentrate on certification activities and enforcement duties?

B. Have APMs gained an expert knowledge of the operator’s aircraft, manuals, procedures, management personnel, and training programs?

C. Are APMs personally conducting a minimum of four certification actions (oral tests or flight tests) each year?

D. Are APMs personally conducting the required number of inspections that follow?

   • At least four inspections of the operator’s check airmen conducting proficiency checks?
   • At least four inspections of check airmen conducting line checks?
   • Conducting surveillance of the operator’s training program related activities for their assigned aircraft, to include initial, upgrade, differences, recurring, and specialized training?
   • Conducting surveillance of the flight simulators and flight training devices used in the operator’s training program to determine if they are being properly used with respect to program requirements and if they are being maintained so that training program effectiveness is not adversely affected?
   • Are the operator’s instructors and examiners documenting malfunctions in the simulators and flight training devices, and is the equipment being repaired promptly when discrepancies are noted?

E. Are APMs establishing programs to ensure that each check airman is observed at least once a year?

   (1) Are geographic units being notified of check airman designations?
   (2) Are the results of check airman observations being monitored and analyzed for trends?

F. Are APMs reviewing training programs for their assigned aircraft and monitoring operator’s actions when students do not progress as scheduled or fail proficiency tests?

G. Are APMs monitoring and analyzing the effectiveness of the en route inspection program on both the operator and the assigned aircraft on a continuing basis?

   (1) Are APMs determining the geographic units which have surveillance responsibility for aircrew domiciles of the assigned aircraft and providing geographic unit supervisors with information to establish “P” items by August 1 of each year?
   (2) Are APMs analyzing inspection results for trends and other areas that indicate a need for corrective action?
   (3) Are en route inspection trend analysis reports prepared by the POI in conjunction with each APM?
   (4) Are copies of the report provided to and discussed with the operator?
   (5) Are APMs identifying and training geographic unit inspectors who have specific surveillance responsibilities for segments of the program the APM manages?
   (6) Are APMs exchanging information and ideas with other AMPs and inspectors?

H. Applying the guidance of Volume 5, Chapter 5, Section 2 (40 airman certification actions per year), how many APMs should be assigned to the program?

   (1) Is this number too many or too little for the conditions found? Are there other factors such as the need for expert training present?
   (2) Have future factors been identified and planned for?

I. Is the operator willing to participate in the program?

   (1) Is the operator providing the APMs with the training previously agreed to?
   (2) Is the operator extending privileges and courtesies to APMs required as a condition of the program?
   (3) Is the operator giving APMs unrestricted access to facilities, working-level personnel, and managers?
(4) Is the operator willing to accept input from the POIs and APMs concerning procedures, manuals, and training programs and to seek mutually acceptable solutions for deficiencies at the working level?

(5) Is the operator willing to cooperate fully with incident, accident, and violation investigations?

(6) Is the operator cooperating in scheduling so that APM qualification and currency requirements are accomplished in a timely manner?

(7) Is the operator providing the required information to the POI and APMs?

J. Is there a memorandum of agreement between the operator and the CHDO?

(1) In the team’s opinion, does the memorandum effectively define the responsibilities of both parties?

(2) Are these responsibilities being faithfully discharged?

(3) Has the memorandum of understanding been kept up to date?

K. Is the operations unit effectively managed?

(1) Is the certificate manager informed about issues, problems, and corrective actions within the ADE program?

(2) Are both the authority and responsibility for accomplishing the administrative functions related to management of the certificate and to the ADE program vested in one senior operations inspector, who reports to and is directly responsible to the certificate manager?

(3) In the team’s opinion, is the organizational structure effective?

(4) How is the operations unit measuring, analyzing, and ensuring that the ADE program meets its objectives?

(5) Have policies and procedures been established for operations inspectors in relation to the operator? In the opinion of the team, are these policies and procedures effective?

(6) Does the office organizational structure ensure that supervisory and reporting relationships between the POI and the APMs are effective?

(7) Have APMs’ resource requirements been analyzed annually and projected three years ahead? Has coordination been conducted with the certificate manager, office manager, and the RFSD to ensure that these requirements have been satisfied?

(8) Has a budget forecast for three years ahead been forwarded to the certificate manager and to the regional FSDO?

(9) Have APMs’ administrative support requirements been identified and coordinated with the certificate manager to obtain the necessary support?

(10) Are APMs scheduled for required training from both the operator and from the FAA? Are APMs actually receiving the required training from both the operator and from the FAA?

(11) Were channels established to obtain the services of qualified inspectors in support of APM programs when necessary?

(12) Are adequate data processing support facilities supplied?

L. Are APMs completing the same training and qualified to the same standards as flight crewmembers and check airmen employed by the operator in the assigned aircraft? Are APMs completing the following training?

(1) Basic indoctrination training?

(2) PIC initial equipment training?

(3) Special training, such as CAT II, CAT III, or LORAN, that is required for qualification as a PIC for the operator?

(4) The operator’s check airman training for the pilot duty position for the FE duty position, when applicable?
(5) Observing at least three crews on line flights before designation?

M. During the period in which APM candidates are training with assigned operator, are they relieved of normal inspector duties?

N. Is the operator satisfied with the qualifications and competency of the individuals assigned as APMs?

O. Are office managers and POIs coordinating with the RFSD to assure continuity of the ADE program when an APM is reassigned?

P. If an operator has training facilities located outside the area of geographic responsibility of the CHDO, has an analysis been made of the benefits of locating the APMs within the CHDO?

13-91 ESTABLISHING AN ADE PROGRAM. An operator or the FAA may initiate discussions about the establishment of an ADE program. A POI should discuss the contents of this chapter in detail with the assigned operator interested in an ADE program. An operator should completely understand the program’s objectives and the specific terms of the MOU establishing the program. A sample MOU is included as Figure 13-8.

A. MOU Approved by the RFSD.

1) The MOU must be signed by:

   • An appropriate official for the operator,
   • The POI,
   • The certificate manager, and
   • The RFSD manager.

2) The certificate manager forwards a copy of the MOU, any appropriate attachments, and the certificate manager’s recommendations to the RFSD manager for review.

3) If the RFSD manager determines that the ADE program should be established, the RFSD manager signs and dates the MOU in the space provided, signifying approval.

4) The RFSD manager returns the original copy of the MOU to the certificate holding office for retention in its ADE program files, and forwards a copy to AFS-200.

B. MOU Not Approved by the RFSD. If the RFSD manager determines the ADE program should not be established, the manager forwards a letter to the appropriate office manager and returns the proposed MOU. The letter must contain an explanation of the reasons for withholding approval.

C. Non-Conforming MOU, Subject to FAA HQ Approval. In any case in which the MOU does not conform strictly to the guidance contained in this order, including the sample MOU (Figure 13-8), AFS-200 is party to the review and is the final signature authority. The RFSD manager forwards the proposed MOU to AFS-200. Besides the signatures of the POI, the certificate manager, and the RFSD manager, an AFS-200 signature will be shown on any approved, non-conforming MOU.

13-92 PROGRAM REVISIONS. Revisions to an approved ADE program may be required for a variety of reasons, such as mergers and equipment changes. The POI will consider the effects
of such changes and take appropriate action. Typically, the MOU is revised. Some changes, such as mergers, may affect more than one operator. Recommendations for changes affecting more than one operator in the same region will be forwarded to the RFSD for action. Office managers are responsible for continually evaluating the effectiveness of ADE programs and for responding to feedback on a timely basis. This evaluation is integral to ongoing continuous improvement.

Figure 13-8. Sample Memorandum of Understanding

MEMORANDUM OF UNDERSTANDING
BETWEEN
[NAME OF AIR CARRIER]
AND THE
FEDERAL AVIATION ADMINISTRATION

This Memorandum of Understanding (MOU) is based upon guidance in FAA Order 8900.1, Flight Standards Information Management System (FSIMS), Volume 13, Chapter 2. The parties to this MOU are [NAME OF AIR CARRIER], and the Federal Aviation Administration (FAA) Flight Standards District Office (FSDO) (or certificate management office (CMO)).

1. The Aircrew Designated Examiner (ADE) program has been established pursuant to the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 183, which permits, among other things, the delegation of certification authority and responsibility to selected and mutually agreed-upon [NAME OF AIR CARRIER] check airmen to be known as Aircrew Program Designees (APD). These APDs may conduct airman certification tests under the supervision of FAA inspector(s), known as Aircrew Program Managers (APM). APMs report directly to [NAME OF AIR CARRIER] principal operations inspector (POI) in all matters pertaining to the ADE program.

2. POIs are responsible for management of the ADE program. The POI’s functions include establishing policies and procedures, and coordinating and standardizing the activities of FAA inspectors assigned to support [NAME OF AIR CARRIER] ADE program.

3. In order to function effectively in an ADE program, the APM and assigned inspectors require an expert knowledge of the training program and operational procedures being conducted by the operator. [NAME OF AIR CARRIER] agrees to extend to the APM and assigned inspectors all privileges that the operator grants to its own flight instructors and check airmen, except the privilege of acting as pilot in command (PIC) of an aircraft in actual flight operations and those personnel functions that are afforded employees of as a condition of employment. For example, the APM or assigned inspectors must be granted the same authority to operate the controls of flight simulators and flight training devices (FTD) as the operator grants to its own flight instructors and check airmen.

4. APDs will be nominated by [NAME OF AIR CARRIER] in accordance with the policies and procedures outlined in FAA Order 8900.1 and appropriate FAA guidance. APD nominees must complete both [NAME OF AIR CARRIER] and FAA required training prior to appointment and will conduct all authorized duties and responsibilities under the supervision of the assigned APM. It is understood that APDs with FAA certification authority will be
required to complete the training associated with the issuance of FAA certificates. Required FAA training will normally be provided by the APM in accordance with existing FAA guidelines; however, from time to time other FAA authorized instructors may be assigned to accomplish required training. This training may require the nominee to travel to FAA training facilities not associated with the APD’s principal or satellite center. The FAA agrees to provide APD training at no cost to [NAME OF AIR CARRIER] however, associated travel and logging expenses will be the responsibility of [NAME OF AIR CARRIER]. Once designated, APDs may be removed by either party, at any time, if that individual becomes unacceptable to the FAA or [NAME OF AIR CARRIER]. Notification of such removal will be made in writing to the other party on or before the effective date of such removal. The policies and procedures contained in FAA Order VS 1100.2 will be followed whenever removal action is contemplated or conducted.

5. [NAME OF AIR CARRIER] shall provide the following training at its own expense for the APM and assigned FAA inspectors participating in the ADE program. The training provided shall be the same training that [NAME OF AIR CARRIER] provides to its own flight instructors, and check airmen for initial qualification and recurrent training. Assigned inspectors shall complete the appropriate training to the mutual satisfaction of [NAME OF AIR CARRIER] and the POI. Should an assigned inspector fail to progress through training satisfactorily, [NAME OF AIR CARRIER] shall provide the same remedial training that it provides to its own crewmembers. Should the inspector continue to fail to reach or maintain a mutually satisfactory level of competency, the POI shall meet with an appropriate airline official to resolve the matter. The minimum required training shall consist of (but not necessarily be limited to):

a. Basic indoctrination training;
b. Initial and recurrent aircraft equipment training, including type rating(s) and Flight Engineer (FE) class rating, if required);
c. Training in any appropriate specialty curriculums associated with an aircraft training program (e.g., Category (CAT) II or III procedures or special instrument approach procedures);
d. Training on the proper operation of center training devices, FTDs, and simulators;
e. Flight (simulator)/ground instructor and check airman training and FE training (if required);
f. [NAME OF AIR CARRIER] training policy and procedures;
g. Any other center programs and or procedures that [NAME OF AIR CARRIER] believes appropriate to maintain the APM and assigned inspectors currency in the operators polices and procedures; and
h. Sufficient PIC training in each aircraft authorized, each calendar quarter to ensure currency in accordance with FAA Order 4040.9 (current edition).

Note: The training referenced in subparagraphs 5a through 5g may be used to the extent practical to satisfy the requirements of the PIC training required by paragraph 5h. Training considered duplicative in nature is not required.
6. The training referenced in paragraph 5 will be administered and scheduled in accordance with
the following guidelines and shall be provided by [TRAINING CENTER NAME] at its expense:

a. All subject training will be scheduled in coordination with the APM.
b. Training and checking events will be scheduled between the hours of 0600 and 2200,
   unless an exception has been coordinated with the APM.
c. The APM and assigned inspectors may be scheduled for training in regularly scheduled
   classes with [NAME OF AIR CARRIER] crewmembers.
d. A 2-hour simulator period will be made available for administering the APM’s and
   assigned inspector’s required proficiency checks unless a greater period is required due to
   aircraft complexity and standard [NAME OF AIR CARRIER] policies for evaluations
   relating to that specific aircraft(s). The FAA agrees to use reasonable efforts to provide a
   complete crew compliment for these evaluations. However, in situations where this is not
   practicable, or at [NAME OF AIR CARRIER] request, [NAME OF AIR CARRIER] will
   provide a qualified instructor to fill required crew positions as appropriate. [NAME OF
   AIR CARRIER] will also provide a qualified simulator or FTD operator if required.
e. The APD and other crewmember services referenced in this paragraph will be provided at
   no cost to the FAA.

7. In lieu of Operating Experience (OE), assigned inspectors shall be authorized to observe from
the cockpit observer’s seat, a minimum of four revenue segments. This observation process
requires that assigned inspectors remain with the flightcrew throughout the assigned trip
pattern to become familiar with a cross section of line operations.

8. The APM and assigned inspectors are eligible for the advanced simulation provisions of
14 CFR part 121 appendix H, and may receive the certification check in a level C or level D
simulator. The ADE program may exist apart from an appendix H training program. In such
cases the inspectors training may be conducted in whole or in part in an aircraft, provided at
the operator's expense.

9. The APD/DFEE candidate shall submit a complete statement of professional qualifications on
FAA Form 8710-6, Examiner Designation and Qualification Record. The APM shall review
the qualifications and shall recommend to the POI that the candidate be designated as
an APD/DFEE, when appropriate.

10. APD/DFEE designees shall be authorized to perform airman certification in only one type
of aircraft. This authority is limited to the certification of graduates of [NAME OF AIR
CARRIER] FAA-approved training program who are employed as flight crewmembers by
[NAME OF AIR CARRIER].
11. All airman certification activities conducted by the APD/DFEE shall be limited to the privileges of the APD’s/DFEE’s own airman certificate, Certificate of Authority (COA), and letter of authority (LOA), and shall be effective only in the aircraft type named in those documents. The APD may conduct pilot oral tests and flight tests for air transport pilot (ATP) certificates, and for category, class and type ratings to be added to ATP certificates. DFEEs may conduct oral tests and flight tests for FE certificates and for the addition of class ratings to FE certificates.

a. An APD/DFEE may not conduct an evaluation of any applicant, which the APD/DFEE has instructed for the certificate or rating to be issued, unless specifically authorized by the POI or the APM. Further, an APD/DFEE may not conduct FAA written tests, special medical evaluations, tests for waivers, or any test for competency under applicable provisions of Title 49 of the United States Code (49 U.S.C.), (formerly section 609(a) of the Federal Aviation Act). Any privileges and limitations shown on an examiner’s COA issued outside an ADE program, do not apply within the ADE program.

b. The APM shall train and evaluate the prospective APD/DFEE in applicable duties and responsibilities. The APD/DFEE shall be trained and evaluated in at least the following areas:

1) The knowledge, skill, and ability requirements for the initial issuance of the ATP certificate, and for type ratings added to the ATP certificate (or for the issuance of the initial FE certificate and added class ratings, as applicable);
2) The procedures, methods and techniques associated with administering the required certification tests;
3) The responsibilities, authority, and limitations of designated examiners under regulations and under FAA Orders 8900.1 and VS 1100.2;
4) The use of FAA forms and job aids associated with the particular job function;
5) The administrative procedures and supervisory relationships that exist in the ADE program;
6) The understanding that [NAME OF AIR CARRIER] policies and economics, union loyalties and seniority issues are not relevant when certifying airmen; and
7) After formal training, observation of the APM conducting a complete oral test, a complete flight test, and all the necessary briefings; also, the completion of all certification paperwork.

12. The APM shall ensure that essential FAA materials such as FAA forms are available to authorized APDs. The APM shall conduct regular meetings with the APDs for the purpose of maintaining an effective working relationship and resolving problems. The APM shall attend crewmember safety meetings held by [NAME OF AIR CARRIER].

The following signatures signify agreement to this MOU and its contents:

FOR AND ON BEHALF OF [NAME OF AIR CARRIER].

_____________________________  (mm/dd/yyyy)
(Position)  Effective Date

Check with FSIMS to verify current version before using
FOR AND ON BEHALF OF FEDERAL AVIATION ADMINISTRATION

_____________________________ (mm/dd/yyyy)  (mm/dd/yyyy)
(FAA POI or Office Mgr.) Effective Date Effective Date
(FSDO/CHDO address)

_____________________________ (mm/dd/yyyy)
(Other FAA signatures as deemed appropriate) Effective Date
(Position and office)

RESERVED. Paragraphs 13-93 through 13-105.
VOLUME 13 FLIGHT STANDARDS DESIGNEES

CHAPTER 2 AIRCREW DESIGNATED EXAMINER PROGRAM

Section 3 Aircrew Program Designees and Designated Flight Engineers in an Aircrew Designated Examiner Program

13-106 GENERAL. This section contains information and guidance to be used by certificate managers, principal operations inspectors (POI) and inspectors concerning aircrew program designees (APD) and designated flight engineer examiner (DFEE) responsibilities and the selection, training, supervision, and administrative control of APDs/DFEES in an Aircrew Designated Examiner (ADE) program.

13-107 PRIVILEGES OF ADEs/DFEES. All certification conducted by an APD/DFEE must be limited to the privileges of the APD/DFEE’s airman certificate, the APD/DFEE’s certificate of authority (COA), the APD/DFEE’s letter of authority (LOA), one certificate type (pilot or Flight Engineer (FE)), and one aircraft type.

A. Privileges. An APD is authorized to perform airman certification in one type of aircraft for an operator’s pilots who have been trained under the operator’s Federal Aviation Administration (FAA)-approved training program. A DFEE in an ADE program is authorized to perform airman certification for an operator’s FE candidates who have been trained under the operator’s FAA-approved training program.

B. Limitations.

1) Evaluation of any applicant by an APD/DFEE when the examiner has instructed that student during the latter half of the candidate’s training, or when the examiner has recommended the applicant, is not recommended and must be approved by the POI on a case-by-case basis. Instruction during the initial phase of training will not disqualify the APD/DFEE from conducting an evaluation of an applicant.

2) APDs/DFEES may not conduct FAA knowledge tests, special medical evaluations, tests for waivers, or any test for competency under Title 49 of the United States Code (49 U.S.C.), § 44709 (formerly Section 609a of the Federal Aviation Act of 1958). Applicants for such tests must be referred to the aircrew program manager (APM) or the local district office, Flight Standard District Office/Certificate Management Office (FSDO/CMO).

C. Designation as an Examiner Outside of an ADE Program. An individual’s designation as an APD/DFEE does not prevent the individual from obtaining a designation as an examiner in another program or capacity. When an APD/DFEE holds a designation, the privileges and limitations that may be exercised outside of the ADE program must be specified on the COA and letter of authority. The privileges and limitations listed on the COA issued outside an ADE program do not apply to the ADE program.
13-108 SELECTION OF AN APD/DFEE.

A. Eligibility Requirements. The following apply to the selection of APD and DFEE candidates:

1) Must be employed by the operator either full-time, part-time, or under contract to the operator.

2) Must possess the appropriate airman certificate, class rating, and type rating, if applicable.

3) Must be an FAA-approved proficiency check pilot or check FE, as applicable, for the operator for the aircraft in which the APD/DFEE candidate is to perform examiner duties. To perform examiner duties in an aircraft in flight, APD candidates must also be an FAA-approved line check pilot-all seats and proficiency check pilot-aircraft for the operator for that aircraft.

4) Should have served as a check pilot or check FE for a minimum of 1 year (APD candidates - preferably 6 months as a proficiency check pilot) before designation as an APD/DFEE. (Check pilot/check FE experience in other types of aircraft and in service with other operators may be credited. Crediting of past experience, including length of time and type of check pilot/check FE, is at the discretion of the POI and APM.)

5) Must possess an above-average level of knowledge, ability, and experience.

6) Must have a good record of compliance with Title 14 of the Code of Federal Regulations (14 CFR) (isolated and unrelated violations or incidents are not disqualifying).

B. Evaluation of Qualifications. The APD/DFEE candidate must submit a complete statement of professional qualifications on FAA Form 8710-6, Examiner Designation and Qualification Record. The APM must review the qualifications to determine whether the candidate meets the requirements and standards for an APD/DFEE designation. If the candidate is eligible, the APM may recommend to the POI that the candidate be designated as an APD/DFEE. An APD/DFEE selection must be agreed upon by the APM, the POI, and the operator.

13-109 APD TRAINING AND EVALUATION. The APM must train and evaluate the prospective APD/DFEE on APD/DFEE duties and responsibilities as follows:

A. Training. Inspectors should ensure that the APD/DFEE is trained and evaluated in at least the following areas:

- The knowledge, ability, and skill requirements for the original issuance of the airline transport pilot (ATP) certificate and added ratings, as applicable (FE certificate and added rating for DFEE candidates).
- The procedures, methods, and techniques associated with administering the required certification tests.
- The responsibilities, authority, and limitations of an examiner under 14 CFR.
• The use of FAA forms and job aids associated with the particular APD/DFEE function.
• The administrative procedures and supervisory relationships that exist in an ADE program.

NOTE: The POI and the APMs must stress to examiner candidates that in performing their duties as an APD/DFEE, they are representatives of the Administrator and responsible to the Administrator. Prospective APD/DFEE must understand that company politics, economics, union loyalties, and seniority issues are not relevant when certificating airmen.

B. Evaluation. After formal training, an APD/DFEE candidate must observe the APM or, at the POI’s discretion, another inspector or examiner, in conducting a complete oral test, flight test, the necessary briefings, and the completion of the certification paperwork. The APM must then observe and evaluate the APD/DFEE candidate in conducting at least one complete oral test and complete flight test, including the necessary briefings and certification paperwork for the certificate or added rating involved.

13-110 SUPERVISION AND ADMINISTRATIVE CONTROL OF APDs/DFEEs. The APM assigned to a particular aircraft type is responsible for the supervision of APDs and DFEEs who conduct airman certification activities for that aircraft type. Inspectors should evaluate the supervisory and administrative process, taking into account the following:

A. Working Relationships. An APM observes and counsels APDs and DFEEs. An APM should emphasize to APDs and DFEEs appropriate methods for handling applicants; for maintaining desired test standards; and for completing and processing certification and Program Tracking and Reporting Subsystem (PTRS) paperwork. An APM should endeavor to maintain a working relationship with each APD and DFEE which promotes the examiners’ confidence in the performance of their duties and in their interactions with their assigned APM. An APM must conduct regular meetings with the program’s APDs and DFEEs for the purpose of maintaining these effective working relationships. During the APD/DFEE meetings, a close and continuing dialogue for the clarification of problem areas should be developed. Special meetings should be held when there is any change to FAA airman certification requirements, policies, or procedures affecting the particular APD/DFEE or the program in general. An APM should attend crewmember safety and standardization meetings held by the operator.

B. APD/DFEE Supplies and Materials. An APM must ensure that APDs and DFEEs have continuing access to the following materials, including current amendments and additional supplies, as needed:

• Volumes 5 and 13.
• All appropriate job aids.
• FAA Form 8710-1, Airman Certificate and/or Rating Application (Pilot).
• FAA Form 8400-3, Application for an Airman Certificate and/or Rating (FE).
• FAA Form 8060-4, Temporary Airman Certificate.
• FAA Form 8060-5, Notice of Disapproval of Application.

Check with FSIMS to verify current version before using
- FAA Form 8000-36, Program Tracking and Reporting Subsystem (PTRS) Data Sheet, which may be overprinted to facilitate standardization of data entered into the system.

13-111  CERTIFICATE-HOLDING DISTRICT OFFICE (CHDO) APD/DFEE ADMINISTRATIVE FILES. The CHDO will maintain a file on each APD/DFEE. Inspectors must ensure that the CHDO file contains the following documents for each APD/DFEE:

- FAA Form 8710-6, Examiner Designation and Qualification Record for original issuance and each renewal.
- FAA Form 8430-9, Certificate of Authority for original issuance and each renewal.
- Letter of Authority for original issuance and each renewal, change of authority, and change of limitations.
- FAA Form 8000-5, Certificate of Designation.
- Documentation of the candidate's airman certificates and any history of accidents, incidents, or enforcement action contained in the Safety Performance Analysis System (SPAS).
- A summary of annual activity from the PTRS for each renewal.
- Periodic surveillance reports (in PTRS).
- Any pertinent correspondence.

13-112  PROCESSING INITIAL APD/DFEE DESIGNATIONS.

A. APM Responsibilities. When processing an initial APD/DFEE designation, the APM must ensure that all requirements for designation have been met. The APM must prepare all of the necessary additional paperwork. The APM must complete the back of FAA Form 8710-6, Examiner Designation and Qualification Record, and sign the space labeled, “Inspector’s Signature.” The APM must enter the words, “Aircrew Program Designee” or “Designated Flight Engineer Examiner” and the aircraft type in the space labeled, “Type of Designation” under the “Regional Office Action” block. The APM must record the APD/DFEE designation number under the space labeled, “Certificate of Authority Issued” in the space titled, “No.” The expiration date is the last day of the month that is one year from the date of designation. The “DO to Serve Under” space should be left blank by the APM. The APM should cross out the word “Regional” in the block titled, “Regional Office Action” and substitute the word “District” for the word “Regional.”

B. POI Approval. The POI must indicate approval by completing the first line of the block labeled, District Regional Office Action on FAA Form 8710-6, Examiner Designation and Qualification Record and then sign in the appropriate space. POIs must also sign the FAA Form 8000-5, Certificate of Designation, FAA Form 8430-9, Certificate of Authority and the letter of authority (LOA). The originals of these forms must be issued to the APD/DFEE and copies must be retained in the APD/DFEE’s file in the CHDO.
C. **APD Designation Numbers.** Examiner Designation Numbers. For APDs and DFEEs, the airman’s certificate number coupled with the applicable four-character designator for the operator, and may be used in all instances when an Examiner Designation Number may be called for. (Example: 123456789DALA for an APD/DFEE at Delta Airlines) The four-character suffix will allow for differentiation between programs when there is more than one ADE program within a CHDO.

**13-113 RENEWAL OF APD DESIGNATIONS.** APD/DFEE designations must be renewed every 12 calendar-months as follows:

A. **Renewal Date.** The renewal date is one month prior to the expiration date. An APD/DFEE may not conduct certification tests after the expiration date.

B. **Renewal Application.** Refer to Volume 13, Chapter 1, Section 2, paragraph 13-37 for renewal procedures. In order to renew a designation, an APD/DFEE must submit the following documentation to the APM:

- The expiring FAA Form 8430-9,
- A newly-completed FAA Form 8710-6, and
- Evidence of having attended, during the past 12 calendar-months, at least one APD/DFEE safety meeting or a briefing conducted by the APM, (such as a notation on the back of the FAA Form 8430-9, signed by the APM).

C. **Annual Observation.** At least once within the year preceding an APD/DFEE’s renewal, the examiner must be observed conducting a complete certification. The observation is made by the APM or by another appropriately-rated inspector designated by the APM or POI. Preferably, this observation should take place within the 120-day period before the current designation expires (PTRS code 1672). To complete the observation, the APD/DFEE must conduct at least one oral examination and one complete flight evaluation. When an examiner designation is renewed, the day and month will normally remain the same and only the year will be changed.

**NOTE:** If it is acceptable in an operator’s approved training program for the entire proficiency or flight check to be accomplished in a FFS, then the APM is not required to observe the APD/DFEE in the aircraft for a renewal.

D. **APM and POI Responsibility.** Before renewing an APD/DFEE designation, the APM and POI must determine whether the APD/DFEE’s services have been satisfactory, whether the APD/DFEE’s level of activity warrants a redesignation, and whether the APD/DFEE’s services continue to be needed. The examiner’s level of activity may be determined from the PTRS.

E. **Processing a Renewal.** The administrative steps for renewal are the same as those outlined for original designation (see paragraph 13-112).
13-114 AMENDMENT OF APD/DFEE DESIGNATIONS. An APD/DFEE may be issued only one FAA Form 8430-9. An APD/DFEE’s examining authority should normally be cancelled when the APD/DFEE enters transition training on a new aircraft type. The POI may designate a former APD/DFEE, provided the following actions have been completed:

A. The APD/DFEE must have completed the operator’s approved pilot in command (PIC) or FE ground and flight training for the new aircraft. The APM must determine whether the designee has accumulated sufficient experience on the new aircraft to accumulate an above-average level of knowledge of its systems and operations.

B. An APD must have completed the operator’s check pilot training and be approved as a proficiency check pilot for the new aircraft. A DFEE must have completed the operator’s check FE training and be approved as a check FE for the new aircraft.

C. The APM for the new aircraft must hold an interview with the APD/DFEE to establish an appropriate working relationship and review the administrative processing (paperwork/documentation) procedures for certification activities.

D. The APM for the new aircraft must observe the APD/DFEE conducting at least one complete oral examination and complete flight evaluation, as appropriate to the certificate or type rating involved, on the new aircraft type.

E. The administrative steps for the issuance of the new designation are the same as those outlined for initial designation (see paragraph 13-112).

13-115 PROCESSING APD/DFEE CERTIFICATION PAPERWORK. An APD/DFEE must forward the airman certification paperwork to the CHDO for review, processing, and transmittal to the Airmen Certification Branch, AFS-760. The paperwork must be accepted and processed only by the CHDO and not by any other district office.

A. APD/DFEE Responsibilities. An APD/DFEE must complete the airman certification paperwork in accordance with the requirements of Volume 5, Chapters 1, 3, and 4, as applicable. An APD/DFEE will complete the PTRS data sheet for each evaluation function conducted. An APD/DFEE is responsible for the accurate, complete, and timely submission of certification paperwork. Satisfactory fulfillment of this responsibility is a condition for continued designation as an APD/DFEE.

B. APM Responsibilities. An APM is responsible for training each APD/DFEE in correct documentation procedures.

13-116 REVIEW OF APD/DFEE’s DECISION. If an airman is dissatisfied with an APD/DFEE’s decision, the airman may appeal to an APM for a reevaluation. The airman must submit the appeal in writing and indicate the reasons for protesting the APD/DFEE’s decision. The APM must review the matter and decide if reevaluation is warranted. If a reevaluation is granted, a new application must be completed, and the entire evaluation must be reaccomplished by an FAA inspector.
13-117 TERMINATION OF APD/DFEE DESIGNATIONS. An APD/DFEE designation may be terminated or canceled for cause by the POI at any time. Refer to Volume 13, Chapter 1, Section 2 for applicable procedures.

RESERVED. Paragraphs 13-118 through 13-135.