VOLUME 6 SURVEILLANCE

CHAPTER 11 OTHER SURVEILLANCE

Section 20 Safety Assurance System: Evaluate Special Equipment or Test Apparatus

6-2641 GENERAL.

A. Purpose. This section provides guidance for evaluating special equipment and test apparatus used by a certificate holder in maintaining aircraft and their associated components.

B. Scope. The certificate holder, not the Federal Aviation Administration (FAA), is responsible for determining the equivalency of special equipment and/or test apparatus. The principal inspector (PI) may make only an acceptance of functional equivalency for special equipment or test apparatus. Special equipment or test apparatus must meet the Original Equipment Manufacturer's (OEM) standards and specifications for tolerances and accuracy in order to satisfy equivalency requirements. This task may require the PI to coordinate with other specialties, regions, or district offices.

6-2642 TASK PREREQUISITES AND SIGNIFICANT INTERFACES.

A. Reporting System(s).

1) Program Tracking and Reporting Subsystem (PTRS). For Title 14 of the Code of Federal Regulations (14 CFR) part 125, use PTRS activity codes: 3626, 3658, 5626, and 5658.

2) Safety Assurance System (SAS) Automation. For 14 CFR parts 121, 135, and 145, use SAS automation. This section is related to SAS Elements 4.7.1, (AW) Control of Calibrated Tools and Test Equipment and 4.7.3, (RS 6) Control of Calibrated Tools and Test Equipment.

B. Significant Interfaces.

1) Organizations or Individuals.

a) Operator.

b) Flight Standards District Office (FSDO).

c) Aircraft Evaluation Group (AEG).

d) PI.

2) Automation Tools. [Reserved].

C. References (current editions).

NOTE: To ensure you are using the most current information, check the Flight Standards Information Management System (FSIMS).

1) Legal References.

a) Title 49 of the United States Code (49 U.S.C.) § 40113, Administrative.

b) 49 U.S.C. § 44701, General Requirements.

c) 49 U.S.C. § 44709, Amendments, Modifications, Suspensions, and Revocations of Certificates.

d) 49 U.S.C. § 44713, Inspection and Maintenance.

e) 49 U.S.C. § 46101, Complaints and Investigations.

f) 49 U.S.C. § 46301, Civil Penalties.

2) Regulatory Guidance.

a) 14 CFR Part 43, Maintenance, Preventive Maintenance, Rebuilding, and Alteration.

b) 14 CFR Part 121, Operating Requirements: Domestic, Flag, and Supplemental Operations.

c) 14 CFR Part 125, Certification and Operations: Airplanes Having a Seating Capacity of 20 or More Passengers or a Maximum Payload Capacity of 6,000 Pounds or More; and Rules Governing Persons on Board Such Aircraft.

d) 14 CFR Part 135, Operating Requirements: Commuter and on Demand Operations and Rules Governing Persons on Board Such Aircraft.

e) 14 CFR Part 145, Repair Stations.

3) Procedural Guidance.

a) FAA Order 1380.51, Program Tracking and Reporting Subsystem.

b) FAA Order 2150.3, Compliance and Enforcement Program.

c) FAA Order 8900.1, Flight Standards Information Management System (FSIMS).

4) Additional Guidance (current editions).

a) Advisory Circular (AC) 120-16, Air Carrier Maintenance Programs.

b) MSG 2 and 3, Maintenance Steering Group Documents.

D. Forms. FAA Form 8000-36, PTRS Data Sheet.

E. Job Aids. [Reserved].

6-2643 BACKGROUND. A certificate holder must determine whether the equivalency of special equipment and/or test apparatus used to maintain aircraft and their associated components is acceptable.

A. Equivalency. Throughout this section, the term "equivalency" means equivalent to that recommended by the OEM for performing specific tests or for making the measurements required to determine airworthiness. To determine equivalency, a certificate holder reviews the required test operations or specifications and compares it with the technical data of the special equipment or test apparatus. (This includes data for the special equipment or test apparatus recommended by the manufacturer and data for the special equipment or test apparatus proposed by the certificate holder). Even if the special equipment or test apparatus recommended by the manufacturer looks different, is made of different materials, and is a different color, etc., it can be used for the specific test application if it is functionally equivalent.

B. Special Equipment/Test Apparatus. Special equipment or test apparatus used to perform a specific task should be at least as accurate as that recommended by the manufacturer.

C. Equipment Evaluation. The Civil Aeronautics Manual (CAM) 52, Repair Station Certificate, which preceded part 145, first discussed equivalent equipment. CAM 52, Section 52.30-1 stated, "The applicant will have the responsibility of choosing suitable tools and equipment (which may be either equipment or tools recommended by a manufacturer in the overhaul or repair of his product or the equivalent of such equipment or tools). The inspecting CAA [Civil Aviation Authority] agent will determine if these tools, equipment, and materials are satisfactory within the intent of this regulation." This implied that the CAA inspector determines the equivalency. However, this statement simply established that the CAA inspector determined if the equipment was satisfactory. The same is true today. Part 43, § 43.13(a) states, "If special equipment or test apparatus is recommended by the manufacturer involved, he must use that equipment or apparatus or its equivalent acceptable to the Administrator."

D. Technical Data File. The certificate holder must evaluate a technical data file to make a finding of equivalency. Demonstrating the functionality of the special equipment or test apparatus may also be required. A technical data file includes, but is not limited to, data, drawings, specifications, instructions, photographs, templates, certificates, and reports. When calibration standards are necessary for calibration equipment, the technical data file should also include data sheets attesting equipment accuracy. This file should also describe any special manufacturing processes used in the controlling processes, including gauges and recording equipment. If calibration equipment is involved, documented procedures will be used to evaluate its adequacy. The calibration equipment must be traceable to a standard of the National Institute of Standards and Technology (NIST) or to a standard provided by the equipment manufacturer. With foreign equipment, a standard of the country of manufacture may be used if the FAA agrees it is acceptable.

E. Test Apparatus. Most of the test apparatus used for making airworthiness decisions are generic and designed to make measurements that are not unique to a specific manufacturer's product or process. Equipment that is not "special" only needs to be designed and calibrated to

make measurements within the specific manufacturer's tolerances to be considered equivalent for those tests or measurements.

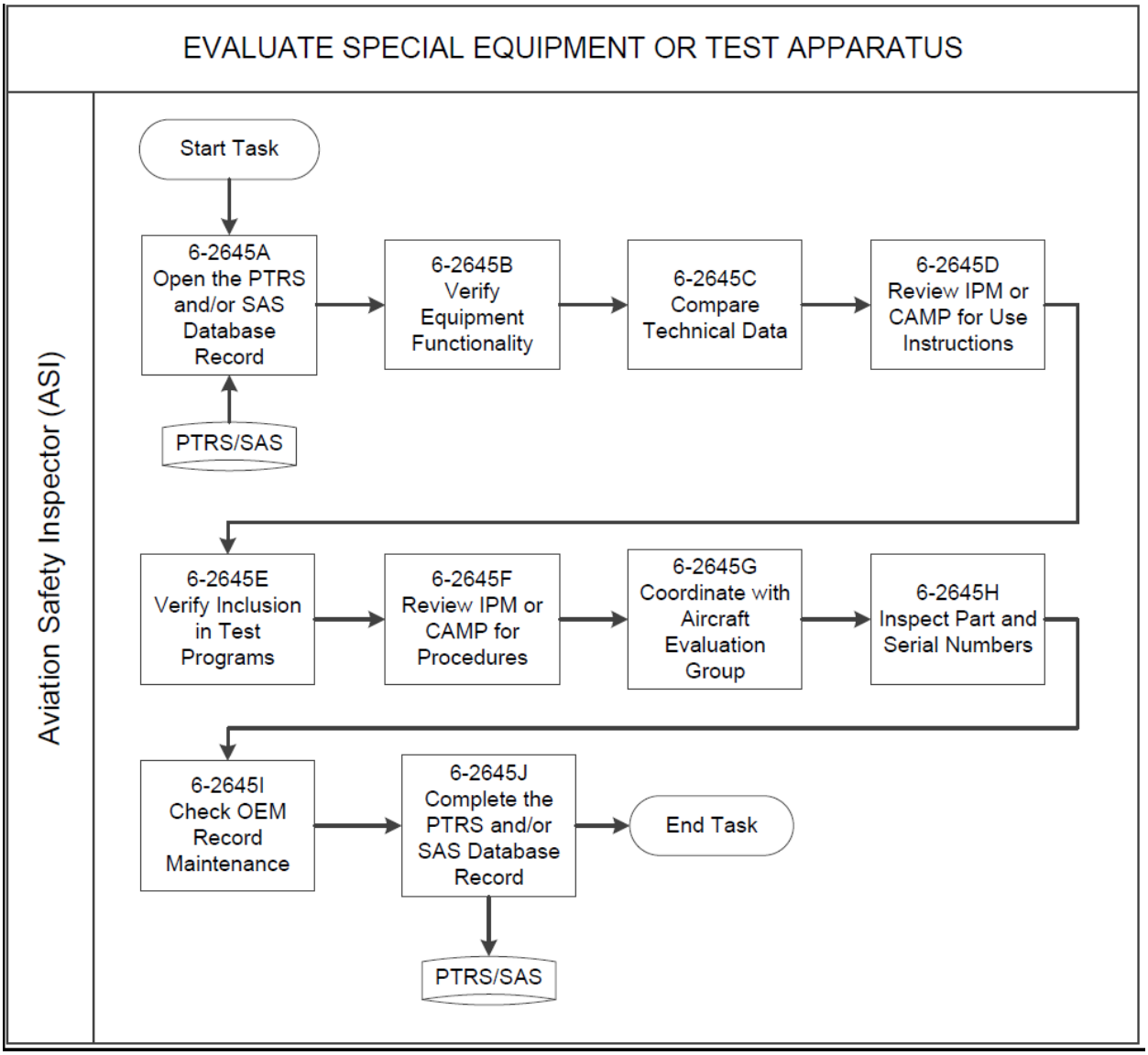
NOTE: The FAA allows the industry to fabricate their own equipment and/or apparatus (test fixtures, jigs, tooling, etc.) with limited FAA assessment. Many certificate holders, especially those with engineering departments, are very knowledgeable about fabricating special equipment or test apparatus. In some cases, the fabricated special equipment or test apparatus exceeds the component manufacturer's requirements for accuracy, reliability, etc.

1) Occasionally, a tool manufactured by an air carrier does not produce the same results as the tool from the OEM. Industry-wide validations have also shown that some tools are not equivalent in function to the OEM's specifications.

2) Some tools are manufactured by a method known as reverse engineering. When reverse engineering does not use data, drawings, testing, or reports, the generated tool or fixture may not be functionally equivalent to an OEM's requirements.

3) With recent technological advances, highly specialized test equipment or test apparatus is frequently required to support the continued airworthiness of aircraft systems and components to the manufacturer's specifications and tolerances.

6-2644 SPECIAL EQUIPMENT OR TEST APPARATUS EVALUATION PROCESS FLOW.



6-2645 PROCEDURES. Because the certificate holder is responsible for determining the equivalency of special equipment and/or test apparatus, as the PI you may only accept the functional equivalency for special equipment or test apparatus.

A. Open the PTRS and/or SAS Automation. (See flowchart process step 6-2645A.)

NOTE: Refer to FAA Order 1380.51.

B. Verify Equipment Functionality. (See flowchart process step 6-2645B.) Make sure that the limitations, parameters, and reliability of the equipment allow it to function equivalently to the OEM's recommended equipment for the specific test application. You may need to review data from the OEM or another source of data used to manufacture the equipment.

C. Compare Technical Data. **(See flowchart process step 6-2645C.)** Compare the technical data used to that of the manufacturer (if obtainable) and that data used by the certificate holder. Manufacturers are often reluctant to release technical information about tools and test equipment. If the OEM technical data is not available, the certificate holder must evaluate the equipment to determine functional equivalency. If needed, observe test demonstrations of the equipment.

D. Review Inspection Procedures Manual (IPM) or Continuous Airworthiness Maintenance Program (CAMP) for Use Instructions. (See flowchart process step 6-2645D.) Ensure that specific instructions about the proper use of any special equipment or test apparatus are provided, and adequately referenced, in the repair station's IPM or the air carrier's CAMP.

E. Verify Inclusion in Test Programs. **(See flowchart process step 6-2645E.)** Make sure that the certificate holder's test inspection and calibration programs include any special equipment or test apparatus that requires inspection and/or calibration. The programs should also address the regular inspection and calibration of special equipment or test apparatus used for making final airworthiness determinations.

F. Review Repair Station Manual (RSM)/Quality Control Manual (QCM) or CAMP for Procedures. (See flowchart process step 6-2645F.) Where applicable, the FAA recommends that the PI review the repair station's RSM/QCM or the air carrier's CAMP to ensure that there are adequate procedures in place for manufacturing and/or determining equivalency of any special equipment or test apparatus in use. Review operations specifications (OpSpecs) and determine the applicable maintenance program requirements. Then review the operator's manual system and make sure it includes all required CAMP elements.

> NOTE: An Aircraft Engineering Division (AIR 100) memorandum, dated December 21, 1999, states, "Designated Engineering Representatives (DER) may not approve or determine equivalency of tooling and test equipment." Furthermore, neither the FAA nor a DER may approve equipment and/or a test apparatus. The FAA and DER may only accept functional equivalency for special equipment or a test apparatus. It is important to emphasize that the certificate holder is responsible for demonstrating equivalency, not the FAA.
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> NOTE: Refer to AC 120-16.

G. Coordinate with Aircraft Evaluation Group. (See flowchart process step 6-2645G.) If unable to make a determination of equivalency from the technical data or through testing, the PI will contact the AEG and request assistance from the appropriate Aircraft/Rotorcraft/Engine Certification Office.

H. Inspect Part and Serial Numbers. (See flowchart process step 6-2645H.) According to standard industry practice, any special equipment or test apparatus that is used to make a critical airworthiness decision, or that requires calibration or inspection, must have a unique part number and serial number in the certificate holder's inventory system.

I. Check OEM Record Maintenance. (See flowchart process step 6-2645I.) Ensure that the OEM maintains the records for special equipment or test apparatus in a manner acceptable to the FAA for as long as the records are used to determine airworthiness.

J. Complete the PTRS and/or SAS Process. (See flowchart process step 6-2645J.)

NOTE: Refer to FAA Order 1380.51.

6-2646 TASK OUTCOMES.

A. Follow SAS Guidance. For parts 121, 135, 145, follow SAS guidance for Modules 4 and 5.

B. For part 125:

1) Task Documentation. File all supporting paperwork in the operator's/applicant's office file.

2) Analyze Results of Inspection. Discuss any deficiencies with FAA supervisory personnel to verify the findings. Coordinate inspection results with the principals and send the operator the inspection findings and corrective actions in writing, as required.

6-2647 FUTURE ACTIVITIES. For parts 121, 135, and 145, follow SAS guidance. For part 125, conduct normal surveillance of the repair station's RSM/QCM to ensure that procedures are adequate. Follow up on corrective actions taken by the operator, as applicable.

6-2648 JOB AIDS. [Reserved].

6-2649 FORMS. [Reserved].

RESERVED. Paragraphs 6-2650 through 6-2665.