

VOLUME 6 SURVEILLANCE**CHAPTER 9 PART 145 INSPECTIONS****Section 9 Safety Assurance System: Inspect a Part 145 Repair Station's Tools and Equipment**

6-1795 REPORTING SYSTEM(S). SAFETY ASSURANCE SYSTEM (SAS). This section is related to SAS Element 4.7.3 (RS 6), Tools and Equipment.

6-1796 OBJECTIVE. This section guides the aviation safety inspector (ASI) when inspecting a repair station's tools and equipment and system procedures to confirm compliance with the Repair Station Manual (RSM) or Quality Control Manual (QCM) and Title 14 of the Code of Federal Regulations (14 CFR) part 145, § 145.109.

6-1797 GENERAL. The repair station must provide, control, and maintain the tools and equipment necessary to perform the maintenance, preventive maintenance, or alteration under its certificate and operations specifications (OpSpecs).

NOTE: In the remainder of this section, the ASI should refer to precision tools and test equipment which repair station personnel use to make airworthiness determinations as measuring tools and equipment (MTE).

6-1798 COORDINATION REQUIREMENTS. If the repair station has an assigned principal maintenance inspector (PMI) and a principal avionics inspector (PAI), both inspectors should coordinate this inspection.

6-1799 REFERENCES, FORMS, AND JOB AIDS.**A. References (current editions):**

- Title 14 CFR Parts 43 and 145.
- Volume 2, Chapter 11, Section 1, Introduction.
- Volume 2, Chapter 11, Section 2, Procedures for Certificating Part 145 Repair Stations/Satellites Located Within the United States and Its Territories.
- Volume 2, Chapter 11, Section 4, Evaluate a Part 145 Repair Station Manual and Quality Control Manual or Revision.
- Volume 2, Chapter 11, Section 5, Evaluate Part 145 Repair Station Facilities and Equipment.
- Volume 3, Chapter 15, Evaluate Avionics Test Equipment.
- Volume 6, Chapter 11, Section 17, Safety Assurance System: Inspect Avionics Test Equipment.
- Advisory Circular (AC) 43-15, Recommended Guidelines for Instrument Shops.
- AC 43-207, Correlation, Operation, Design, and Modification of Turbofan/Jet Engine Test Cells.
- AC 145-9, Guide for Developing and Evaluating Repair Station and Quality Control Manuals.

B. Forms. None.

C. Job Aids. None.

6-1800 PROCEDURES.

A. Review Applicable Information. Prior to inspecting, the ASI, or the principal inspector (PI), should carefully review:

- 1) Parts 43 and 145.
- 2) The RSM or QCM.
- 3) Applicable OpSpecs.
- 4) The Safety Performance Analysis System (SPAS). For additional information on SPAS data, see Volume 6, Chapter 9, Section 1, paragraph 6-1630.
- 5) The certificate-holding district office (CHDO) file.

B. Review Calibration/Record. Review the part of the RSM or QCM describing the system and the procedures used for calibrating MTE.

- 1) The ASI should verify:
 - a) The repair station is calibrating MTE per intervals, procedures, and the system described in the RSM or QCM.
 - b) All MTE are calibrated and traceable to a standard acceptable to the Federal Aviation Administration (FAA), to include those recommended by the manufacturer, and the National Institute of Standards and Technology (NIST) or other national authority.

NOTE: The part 145 rule states that tooling used to make airworthiness determinations must be calibrated to a standard acceptable to the FAA. Those standards may be derived from the NIST, to a standard provided by the equipment manufacturer, or other recognized standards. The International Bureau of Weights and Measures (BIPM) is a recognized authority that maintains a global list of National Metrology Institutes (NMI). The BIPM Web site lists the NMI signatory countries that participate in the International Committee for Weights and Measures (CIPM). The CIPM Mutual Recognition Arrangement (MRA) signatories are acceptable to the FAA and can be found at <http://www.bipm.org>. There are many accreditation bodies that provide third-party laboratory accreditation. The International Laboratory Accreditation Cooperation (ILAC) establishes a global network for accreditation of laboratory and testing facilities. Signatories to the ILAC MRA are in full conformance with the standards of International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC) 17011. ILAC MRA signatories are acceptable to the FAA and can be found at <http://www.ilac.org>. Accredited laboratories have

already established traceability through the assessment and accreditation process under ISO/IEC 17025. No further documentation is required once traceability is confirmed to a recognized accredited laboratory. Additionally, for foreign equipment, the standard of the country of manufacture may be used if acceptable to the Administrator.

2) The PI should consider:

- a) Whether the repair station determines calibration status of new MTE before using the MTE.
- b) How and when the repair station recalls MTE for calibration.
- c) If the calibration and tracking system includes employee-owned MTE.
- d) How the repair station establishes calibration intervals.
- e) Whether the repair station maintains a list of all calibrated equipment by name, model or part number, serial number, date of calibration, and next calibration due date.
- f) If the repair station keeps calibration records for at least 2 years.
- g) If the repair station identifies MTE to prevent using noncalibrated equipment in the maintenance process. The identification usually includes the serial number or other identification, date of last calibration, date calibration is due, and the name or initials of the person who performed the calibration.
- h) Whether MTE that are not used to make airworthiness determinations are identified.
- i) How the repair station performs in-house calibration of its MTE.

NOTE: The repair station must not use the tool or test equipment used as a standard for performing calibrations to perform maintenance, both (1) after that tool or test equipment is calibrated, and (2) before using the tool or test equipment as an in-house calibration standard.

C. Verify Use of Manufacturer's Requirements or Equivalency. Review the part of the RSM or QCM describing the system and procedures that confirm the equipment and tools that maintain articles are recommended by the article's manufacturer or an equivalent acceptable to the FAA.

1) Verify that the repair station's RSM or QCM provides procedures for ensuring the equipment and tools used in the performance of maintenance are those recommended by the article's manufacturer or an equivalent acceptable to the FAA.

NOTE: The basis of equivalency is the requirement that the article meet the manufacturer's standards and specifications in all respects regarding tolerances, repeatability, and accuracy.

NOTE: This section does not include industry standard tools and equipment, such as wrenches or sockets, that are manufactured to a recognized industry standard.

NOTE: Designated Engineering Representatives (DER) may not approve or determine equivalency of tooling and test equipment. Neither the FAA nor a DER may approve equipment or test apparatus. The FAA and DERs may only make a finding that the functional equivalency for special equipment or test apparatus is acceptable. It is important to emphasize that the repair station, not the FAA, bears the burden of demonstrating equivalency.

2) If the repair station uses a manufacturer's test and measuring equipment as an equivalent for equipment recommended by an article's manufacturer, verify that the equipment meets the calibration standards recommended by the article's manufacturer. This type of calibration must be traceable to a standard acceptable to the FAA.

D. Inspect Control, Maintenance, and Storage. Review the RSM parts or QCM describing the system and procedures for MTE control, maintenance, use, and storage that maintains articles.

1) Verify:

a) That the repair station is following its system and procedures in the RSM or QCM for MTE control, maintenance, use, and storage that maintains articles.

b) The repair station has the MTE to perform maintenance, preventive maintenance, or alterations under its repair station certificate.

c) MTE are located on the premises and under the repair station's control when the repair station is performing work.

2) Also consider:

a) Does the repair station have the maintenance and service manuals for all MTE the repair station uses to perform the maintenance, preventive maintenance, or alterations under its repair station certificate?

b) Does the repair station fulfill the MTE manufacturer's requirements for control, maintenance, use, and storage?

3) If the repair station does not own the equipment or does not keep the equipment at the facility, determine:

- a) How the repair station obtains the equipment, such as a lease agreement or rental.
- b) How the repair station ensures the equipment is on the premises and under the repair station's control when repair station personnel are performing work.
- c) That the repair station identifies the department responsible for calibrating leased MTE.

E. Inspect Test Cells. Review the RSM or QCM section describing systems and procedures for test cell correlation, operation, design, and modification. Verify that:

- 1) The repair station is following the systems and procedures in the RSM or QCM for MTE control, maintenance, use, and storage to maintain articles.
- 2) The test cell conforms to the description in the RSM or QCM, to include:
 - An accurate description of systems and procedures to ensure test cell correlation, operation, design, and modification; and
 - A description of test cell design, operation, configuration, and construction and test hardware operation and performance.
- 3) The correlated test cell ensures articles meet minimum test requirements.
- 4) The repair station calibrates test cell instrumentation to a standard acceptable to the FAA.
- 5) When the repair station repairs, or makes structural modifications to, an existing test cell, and the repairs or modifications significantly affect performance, that the repair station performs a test cell correlation or re-correlation.

F. Analyze Findings on the Spot. After the inspection, record all deficiencies and determine appropriate corrective actions.

G. Conduct Debriefing on the Spot. Brief the certificate holder on the inspection results. Discuss any deficiencies and possible corrective actions. The ASI can find detailed instructions for conducting this briefing in Volume 6, Chapter 9, Section 5.

6-1801 TASK OUTCOMES.

A. Complete the Task. Follow SAS guidance for Modules 4 and 5.

B. Document the Task. Follow SAS guidance for module 4. Place all supporting paperwork in the certificate holder's office file.

6-1802 FUTURE ACTIVITIES. Follow SAS guidance.

RESERVED. Paragraphs 6-1803 through 6-1816.