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Standard Specification for Light Sport Aircraft Manufacturer's Quality Assurance System[1]

This standard is issued under the fixed designation F2972; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

ε[1] NOTE—Editorially corrected 12.2.1 and 12.2.3 in December 2014.

1. Scope

1.1 This specification establishes the minimum requirements for a quality assurance system for manufacturers of Light Sport Aircraft or Light Sport Aircraft kits, or both.

1.2 This standard applies to aircraft seeking civil aviation authority approval in the form of flight certificates, flight permits, or other like documentation.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E2659 Practice for Certificate Programs

F2839 Practice for Compliance Audits to ASTM Standards on Light Sport Aircraft

3. Terminology

3.1 *Definitions:*

3.1.1 *permanent record, n*—where specified herein, the applicable record shall be kept and shall be accessible as long as airworthiness certificates remain in effect for aircraft produced that relate to the record.

3.1.2 *quality assurance manual (QAM), n*—the documentation of the quality assurance system.

3.1.3 *quality assurance record (QAR), n*—the permanent record of quality assurance associated with each LSA produced.

3.1.4 *quality assurance system (QAS), n*—a system of processes and controls used by a manufacturer to verify and validate that the LSA meets its specified requirement.

3.1.5 *reserved holding area, n*—physical area for isolating items away from normal production processes while awaiting proper disposition.

3.2 *Abbreviations:*

3.2.1 *MRB*—Material Review Board

4. Quality Assurance System

4.1 Manufacturers shall develop and implement a Quality Assurance System (QAS) in accordance with the requirements established within this practice. The elements of the QAS established herein include the following:

4.1.1 Quality Assurance Manual (QAM).

4.1.2 Quality Assurance Record (QAR).

4.1.3 Record of Compliance.

4.1.4 Product Configuration Control, Document Control, and Change Management.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

4.1.5 Control of Critical Special Processes and Equipment.
4.1.6 Material Control.
4.1.7 Inspections.
4.1.8 Identification and Handling of Nonconforming Material.
4.1.9 Assignment of QA Duties and Supplier Control.
4.1.10 Audits.

4.2 *Quality Assurance Manual (QAM)*—Each manufacturer shall document their QAS in the form of a Quality Assurance Manual (QAM). The QAM itself and each of the QAS elements included or referenced shall be controlled as production documentation in accordance with 6.0.

4.3 *Quality Assurance Administration (QAA)*—The manufacturer's administration that is charged with the implementation of the QAS may consist of one or more: company employees, company officials, or manufacturer's agents, consultants, or assigns.
4.3.1 The individual(s) that make up the QAA shall be identified within the QAM.
4.3.2 The member(s) of the quality assurance administration authorized to attest compliance of the aircraft to the applicable ASTM standards to any commercial or governmental entity shall be identified within the QAM.

5. Quality Assurance Record (QAR)

5.1 A QAR shall be retained for each LSA produced. Each QAR shall consist of the following, which shall include the LSA serial number and date of manufacture.
5.1.1 Completed final records and checks from the manufacturing and assembly operations. This should include items such as major subassembly sign-offs, critical part sign-offs, whole-system checks, and calibrations as well as aircraft or major subassembly repairs, rework, MRB, or temporary configuration deviation approvals.
5.1.2 Test documentation from the production acceptance testing procedures. This should include items such as checklists and/or sign-off sheets showing acceptance and completion of applicable production acceptance test requirements.
5.1.3 A copy of the Manufacturers Statement of Compliance.
5.1.4 The configuration of each aircraft at its point of delivery (for continued operational safety monitoring purposes), including associated parts lists and installed equipment lists.

5.2 A permanent record shall be maintained of the date of acceptance, the origin, and the certifications of materials used in the production of airframe components defined by the manufacturer to be critical to the aircraft structural integrity (see Note 1).

NOTE 1—The intent of this requirement is to provide a means for the manufacturer to identify and reduce the number of in-service aircraft that may be affected by a raw material anomaly requiring corrective action, thereby reducing the economic impact of such corrective action. This requirement should not be construed as a requirement for serial number specific traceability nor a requirement to identify 'critical parts' when none exist.

6. Engineering, Design, and Manufacture

6.1 *Record of Compliance*—The manufacturer shall keep a permanent record of the documentation used to show compliance of each approved aircraft configuration produced to all applicable consensus standards and regulatory requirements in effect at the time of manufacture.

6.2 *Configuration Control and Change Management:*
6.2.1 Revisions to documentation affecting compliance shall be tracked and the change process for developing, reviewing, and incorporating revisions to compliance documentation shall be controlled.
6.2.2 The manufacturer must insure and verify the use of the proper revision of any compliance document.

6.3 *Production Documentation*—The manufacturer shall maintain a permanent record of all production documentation pertinent to product compliance, including revisions. Production documentation shall include, but may not be limited to, the following types of documents:
6.3.1 Parts lists.
6.3.2 Component and assembly engineering drawings (engineering definition).
6.3.3 Manufacturing processes.
6.3.4 Specifications.
6.3.5 Tooling and gage identification.
6.3.6 Aircraft Operating Instructions (AOI) or Pilot's Operating Handbook (POH).
6.3.7 Maintenance manual.
6.3.8 Quality Assurance Manual (QAM).

NOTE 2—Any document or information necessary to show compliance to any part of any consensus standard is pertinent to product compliance and is intended to be documented and controlled as compliance/production documentation in accordance with Section 6.

6.4 *Special Processes*—A system shall be implemented to control all special processes and services related to the production of airframe components considered by the manufacturer to be critical to the structural integrity of the LSA, such as welding, brazing, heat treatment, plating, structural composites, adhesive bonding, and so forth. The system shall ensure that each process