SAE Aerospace
An SAE International Group

# AEROSPACE INFORMATION REPORT

SAE AIR5493 REV. A

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Superseding AIR5493

(R) Requirements for Development, Implementation and Control of Aerospace Auditor Training

## INTRODUCTION

The programs for accrediting courses for Quality Management Systems (QMS) Lead Auditors are developed and administered by national accreditation bodies such as the RAB. This document is designed to supplement those basic training requirements and set additional basic and advanced training provisions necessary for the aerospace industry.

Contained herein are special criteria that have been created for the training of auditors that perform audits to meet the requirements set forth by SAE AIR5359 and for auditors who perform audits to support certification and recognition of quality management systems developed in response to Aerospace Quality Management System (AQMS) models.

The criteria introduced in this document are not intended to replace the certified auditor training recognized by the RAB, IRCA and other national accreditation bodies. Rather it is intended to supplement that training for those professionals wishing recognition as “Aerospace Auditors” either basic or Experienced per the requirements outlined in AIR5359 (see Section 7 of AIR5359).

Persons intending to enter these type of training programs should first review the requirements set forth by SAE AIR5359 to determine if they have the necessary prerequisites satisfied, if it is their intention to become either an Aerospace Auditor or an Aerospace Experienced Auditor.





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## 1. SCOPE:

This document shall be applied by course approval bodies, accreditation bodies, CRBs and other providers of training for the instruction of auditors or other professionals for specialization for the aerospace industry per the requirements of SAE AIR5359. Additionally, this document applies to all organizations qualifying Aerospace Auditors in support of Aerospace Quality Systems standards.

### 1.1 Purpose:

The purpose of this document is to outline the process for establishing, controlling and standardizing qualified Aerospace Auditor training programs to satisfy the requirements established by AIR5359 in support of the recognition of Aerospace Quality Management System standards.

## 2. REFERENCES:

### 2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

| | |
|---|---|
| AS9003 | Aerospace Standard – Inspection and Test Quality System |
| AS9006 | Aerospace Standard – Deliverable Aerospace Software Supplement for AS9100 |
| AS9100 | Quality Systems – Aerospace – Model for Quality Assurance in Design, Development, Production, Installation and Servicing |
| AS9110 | Aerospace Standard – Quality Management Systems – Aerospace – Requirements for Maintenance Organizations |
| AS9120 | Aerospace Standard – Quality Management Systems – Aerospace – Requirements for Stockist Distributors |
| AIR5359 | Requirements for Certification/Registration of Aerospace Quality Systems |

### 2.2 ANSI Publications:

Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

| | |
|---|---|
| ISO 9000 | Quality management systems – Fundamentals and vocabulary |
| ISO 9001 | Quality management systems requirements |
| ISO 19011 | Guidelines on quality and/or environmental management systems auditing |

### 2.3 Federal Aviation Administration (FAA) Regulations:

Available from FAA, 800 Independence Avenue, SW, Washington, DC 20591.

Title 14 CFR Part 21 Certification Procedures for Products and Parts

## 3. DEFINITIONS:

3.1 AAQG:

Americas Aerospace Quality Group – An SAE Aerospace Council committee (G-14) comprised of individuals from aerospace Original Equipment Manufacturers (OEMs). This group is chartered to develop common requirements for use by the aerospace industry for quality improvement.

3.2 ACCREDITATION BODY (AB):

A body recognized by an IAQG sector that has the responsibility for the sector qualification of CRBs to issue certifications/registrations to aerospace quality management system standards. ABs also provide training course accreditation as provided for in this AIR.

3.3 AEROSPACE:

For the purposes of this document 'Aerospace" is defined as the business of design, manufacture, overhaul, distribution and support of aerospace vehicles and engines, accessories and component parts, all ancillary and allied businesses, including aerospace vehicle operations.

3.4 AEROSPACE EXPERIENCE AUDITOR:

An "Aerospace Experience Auditor" shall refer to an auditor that has met the requirements set forth in SAE AIR5359, section 7.2. Auditors conducting audits for OEMs in support of recognized shared audits at suppliers may be referred to as "Aerospace Experience Auditors" provided they meet the OEM's requirements which are to be the same or similar to AIR5359 section 7.2.

3.5 AEROSPACE QUALITY MANAGEMENT SYSTEM STANDARDS (AQMS):

Standards develop for and by the aerospace industry to define minimum quality management system requirements for the aerospace industry supply chain. These standards are typically ISO 9001 based documents. For example: AS9003, AS9006, AS9100, AS9110, AS9120 and other similar standards.

3.6 AEROSPACE PRODUCT:

"Aerospace Product" shall mean an aircraft, rotocraft, guided weapon, spacecraft, other product designed travel through the air, inside or outside the ground effect, or to travel outside the influence of the earth's atmosphere or major components of these products such as engines or major sub-systems.

3.7 AUDITOR:

An "Auditor" shall refer to an auditor that has met the requirements set forth in paragraph 7.1 of SAE AIR5359. Auditors conducting audits for OEMs in support of recognized shared audits at suppliers may be referred to as "Aerospace Auditors" provided they meet the OEM's requirements that are to be equivalent to paragraph 7.1.

3.8 CERTIFICATION/REGISTRATION BODY (CRB):

An organization that assesses and registers/certifies the quality system of customer organizations with respect to published quality system standards and any supplementary documentation required under the system.

3.9 COMPETENCY COURSE:

A course designed for auditors who have not acquired the required 4 of the previous 10 years in acceptable aerospace industry experience. The contents of this training are described in AIR5359, 7.2.3.1.

3.10 COURSE APPROVAL BODY:

Organization responsible for the approval of training courses, including: national course accreditation body, AAQG, OEM.

3.11 INTERNATIONAL AEROSPACE QUALITY GROUP:

An international assembly of major aerospace companies comprised of 3 sectors representing companies in the Americas, Europe and Asia-Pacific to harmonize quality requirements and processes on a global scale.

3.12 REGISTRAR MANAGEMENT COMMITTEE (RMC):

The Registrar Management Committee (RMC) as used by this document is defined as three members of the AAQG and one Member of ANSI-RAB NAP and two members of the Independent Association of Accredited Registrars (IAAR) on a limited basis. Further definitions are provided in AIR5359.

3.13 STANDARD COURSE:

A course designed to meet the full requirements of this document. The standard course shall include a minimum of 40 hours of contact time.

3.14 TAILORED COURSE:

A course designed for auditors who have successfully completed an RAB accredited or OEM approved ISO 9000-based auditor course. The tailored course shall include a minimum of 14 hours contact time.

**4. GENERAL CRITERIA**:

In order to establish an acceptable training program for consideration under this program the following minimum set of criteria shall be satisfied:

4.1 Prerequisite:

4.1.1 Prior to any training as an Auditor for aerospace the individual shall have already received training in one of the ways described in 4.2, dependent on; 1) why the individual is attending this training and, 2) how the training upon completion is to be applied.

4.1.2 If the attendee intends to perform aerospace audits for the purpose of certification/registration under the guidance set forth by AIR5359, the attendee shall have successfully completed an AB accredited QMS lead auditor course.

4.1.3 If the attendee's intention is to perform internal or (2nd party or shared) unaccredited audits, the attendee shall have received internally- or externally-developed training in auditing per the guidelines established in ISO 19011.

4.1.4 If the attendee's intent is only to acquire information on Aerospace standards, auditing, and/or AIR5359, and no auditor certification is planned, the final examination may be waived.

4.2 Course Offerings:

These courses may be given under three different sets of circumstances:

4.2.1 Commercially Offered Courses:

Public Venues – an offering of accredited courses open to the public where the individual attendee pays a fee. These courses are openly advertised and shall be run on a non-discriminatory basis.

Private Venues – accredited courses provided by a course provider to an individual or organization's own employees. The course is not open to the general public, nor is it advertised for consideration. The private organization and the course provider enter into a contract covering cost, frequency, location, dates, etc., but the course shall otherwise meet all of the requirements of a commercially offered course. These courses may contain company proprietary information, case studies, etc., which shall be appropriately protected.

4.2.2 In-House Offered Accredited Courses: Accredited course developed and provided internally to a company's own employees. These courses are accredited courses run specifically by, and for, the employees of a specified organization. This organization controls the attendance. Specific arrangements may be made by the company to include other attendees (e.g., purchasers, subcontractors, etc.). It is not advertised or publicly offered. Aerospace OEMs may wish to have their In-House Courses accredited, however they are not required to do so if used solely for the purpose of qualifying their auditors.

4.2.3 In-House Offered Non-Accredited Courses: Unaccredited courses developed and provided internally. The course is not approved by any outside organization. Results and status of this training are for internal use only. These courses are run specifically by, or for, the employees of the OEM. The OEM controls attendance. Specific arrangements are made by the OEM to include other attendees (e.g., purchasers, subcontractors, etc.). It is not advertised publicly.

4.3 Course Approval:

4.3.1 Approval and maintenance of approval of an auditor training course depends on objective evidence of the following aspects of the course:

a. Content that covers, by explanation and examples, all topics required for the approved or applicant course (see paragraph 4.4.1 for content requirements).

b. Detailed attendee individual learning objectives that specify the attendee performance required and the conditions under which attendee performance will be measured.

c. The methods that will be used to measure attendee evaluation/examination, instructor performance and overall course performance.

d. Administration of the course offerings, results, and continual improvement methodologies used at the organization's offices, including creation and maintenance of a training program that can be audited to these criteria.

e. The criteria for selecting course instructors and the process for evaluation of their delivery of the course to attendees, both initially and on an ongoing basis, and a list of all instructors' names.

4.4 Training Programs:

4.4.1 CRBs and OEMs shall have an auditor training program, and records thereof, for AQMS requirements. Content of the training program as defined by the AAQG in SAE AIR5359, clause 6.3 b is:

a. Applicable AS standard(s) for AQMS's

b. Applicable AS checklist(s) and scoring method

c. AIR5359

d. Civil Aviation Authority requirements (CAA) (such as FAA Title 14 CFR Part 21 or equivalent per the national CAA) and applicable advisory material

e. Relevant Department of Defense requirements and National Space Agency (NSA) procurement requirements.

4.4.2 CRBs shall document their auditor training program, and it shall be reviewed and approved by the accreditation body during the accreditation process.

4.4.3 OEMs shall document their training programs, and they shall be reviewed during their AQMS certification/registration process.

4.4.4 Commercial course providers that are not OEMs or CRBs, shall document their auditor training program and submit it to the accreditation body (AB) for approval.

4.4.5 Documentation of the training program shall include the items listed in 4.3.1 and the following:

a. Actual copies of materials used in training on the following subjects: Applicable AQMS, AIR5359 and CAA Rules and Requirements.

b. Resumes of personnel that are leading or conducting the training. Each instructor should have teaching/training experience, ISO 9000 RAB or internationally recognized Lead Auditor approval and 4 years minimum aerospace experience in the last 10 years, as per AIR5359.

**5. COURSE CONTENT**:

5.1 This course shall provide training in the principles and practices of auditing of aerospace quality management systems as related to the most current revision of the applicable AQMS, and ISO 19011. Training shall be provided in the methods for assuring the conformance of the organization's aerospace quality management system to the requirements of the AQMS. This training shall also include methods for assuring the organization's conformance to the provisions of documentation (Quality Manual, System Procedures, Work Instructions, etc.).

5.2 The course format, attendee requirements and how the attendee will be evaluated shall be included in the course materials.

5.3 An attendee who successfully completes the course shall be able to:

**a. Explain the intent and requirement of each clause of the applicable AQMS.**

**b. Identify the audit evidence needed to demonstrate conformity to the requirements of the applicable AQMS.**

c. Describe the requirements of the current revision of ISO 19011 as applicable to the audit process.

d. Describe the function of first, second and third party audits, the similarities and differences, and the varying roles and responsibilities of the auditor, the auditee and the client of the audit in each of these activities.

e. Explain the importance of audits related to the QMS.

f. Perform all aspects of an audit of a process in accordance with ISO 19011, including audit planning, document review, use of checklists, opening and closing meetings, sampling, note taking, objective evidence, audit team meetings, classification of nonconformities, communication and documentation of nonconformities and observations, audit reporting, and record keeping.

**g. Describe the aerospace auditors' personal qualifications and conduct, including personal attributes, audit management capabilities, interviewing techniques.**

h. Explain the importance of scope in relation to: the accreditation scope of CRBs; the structure and content of the auditee's AQMS including the concept of application of requirements (exclusions), an audit plan, and the selection of audit team members.

i. Describe the roles and responsibilities of the auditor and the auditee at all stages of the corrective action process.

j. Understand the potential benefits of including follow-up in an internal audit program.

5.3 (Continued):

k. Describe and undertake the roles and responsibilities of an auditor and of an audit team leader during the audit process.

**l. Explain the terminology of ISO 9000:2000, as employed by the ISO 9000 series standards, and applicable AQMS.**

**m. Describe the SAE AIR5359 Requirements for Registration of Quality Systems to the AQMS.**

n. Describe how to establish an audit path or trail and when to deviate.

o. Determine an audit schedule based upon past audit experience and degree of importance based upon the type of business.

**p. Describe the documentation required by the AQMS and the interrelationships between the quality manual, procedures, quality planning, policy and objectives.**

**q. Demonstrate the proper use of the applicable checklists and scoring methods.**

5.4 A tailored course shall include the items identified in **bold** from the above list.

**6. COURSE STRUCTURE AND FACILITIES**:

6.1 Duration and Organization:

6.1.1 The total course time devoted to direct instruction and to assigned team and individual activities shall be at least 40 hours plus an additional two hours for examination.

6.1.2 For a tailored course, the time shall be at least 14 hours plus at least one hour additional time for completion of an examination that covers the differences between the ISO 9000 series standards and the applicable AQMS. The course accreditation body may approve variations for certain AQMS.

6.1.3 If the course is given through interpreters, this time shall be increased as required to meet the learning objectives.

6.1.4 Time devoted to meals, breaks, or other free time is not included in the calculation of the course duration.

6.1.5 Each attendee shall actively participate in workshop, case studies, auditor role playing, and/or actual auditing of the organization as part of the structured class activities. At least 50% of the total course time shall be used for such activities.

6.1.6 Any case studies shall be designed to cover the important aspects of the standard and shall be aerospace industry related.

6.1.7 The course shall be structured and conducted so that each attendee is subjected to realistic audit practices and conditions. This may include actual practice audits. When attendees participate in actual audit situations, transit time to and from the audit site and delay time is not counted as part of the course time.

6.1.8 Training aids, such as commercial training videos, videos produced during the course to record and review performance of attendees, CDs or interactive training tools that are directly relevant may be used to supplement the training by the instructors.

6.1.9 Instructors shall demonstrate effective management of the course, including attention to time schedule, course content, requirements of the standard, instructor conduct, and other course requirements.

6.2 Class Size, Attendance:

6.2.1 The number of attendees in a class shall be no greater than 20, nor fewer than four. Under rare and exceptional circumstances, a course offering for fewer than four attendees or greater than 20 attendees may be considered for approval in accordance with Section 8.

6.2.2 Attendees shall be required to be in attendance for the full duration of the course. Failure to do so shall be reflected in the attendee's continual and final evaluations

6.3 Number of Instructors:

6.3.1 Each course offering shall be presented by at least one instructor, who shall be actively involved in the instruction and evaluation for the full length of the course. Additional resource people or trainee instructors may be used for specific subjects or activities; however, the one instructor remains responsible for the entire course offering.

6.3.2 When activities (e.g., written quizzes or preparation of checklists) involve neither instruction nor evaluation, and do not require the availability of the instructors for explanation, clarification or counsel, at least one instructor shall be present. The instructor shall be present during the entire exam to assure good examination practice.