AEROSPACE STANDARD

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Technically equivalent writings exist in all IAQG sectors.

Superseding AS9101F

(R) Requirements for Conducting Audits of Aviation, Space, and Defense Quality Management Systems

RATIONALE

This standard has been revised to align with the latest revision of the International Aerospace Quality Group (IAQG) 9104-1 standard, incorporating inputs received from interested parties, standard clarifications, and Other Party Management Team (OPMT) resolutions.

FOREWORD

Industry established the IAQG, with representatives from Aviation, Space, and Defense (ASD) companies in the Americas, Asia/Pacific, and Europe, to implement initiatives that make significant improvements in quality and reductions in cost throughout the value stream.

This document has been prepared by the IAQG and standardizes the requirements for conducting audits of ASD Quality Management Systems (QMS). It can be used at all levels of the supply chain by organizations around the world.

This document supplements the existing International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC) 17021-1 conformity assessment standard and provides requirements for an audit and reporting process, based on the:

a. Process and continual improvement approach defined in 9100-series standards;

b. Specific ASD additions in 9100-series standards;

c. Use of common audit tools; and

d. Uniform, transparent, and standardized reporting of audit results.

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In this standard, the following terms are used:

- “Shall” indicates a requirement;
- “Should” indicates a recommendation;
- “May” indicates a permission;
- “Can” indicates a possibility or capability; and
- “Days” are calendar days.

Words “example” or “e.g.” indicate suggestions given for guidance, and information marked “NOTE” is for guidance in understanding or clarifying the associated requirement.

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0.1 General

Auditing is a basic tool to assess effective implementation of and conformity to QMS requirements. In addition to assessing conformity, this standard focuses on the evaluation of effectiveness (refer to ISO 9000 clause 3.7.11) of the QMS and its associated processes.

An organization is not only required to be in conformity with QMS requirements, but to be effective in meeting customer expectations and delivering products and services that meet those expectations.

0.2 Auditing Approach

This standard supports the engagement and evaluation of an organization's QMS process approach, as required by the 9100-series standards. When evaluating an organization's QMS, there are basic questions that should be asked of every process, for example:

a. Is the process appropriately determined?

b. Are responsibilities assigned?

c. Are the processes adequately implemented and maintained?

d. Is the process effective in achieving the desired results?

The collective answers to these and other associated questions will contribute to the evaluation results.

In addition, product and service quality (as delivered), customer satisfaction, and QMS effectiveness can be considered as interrelated. This relationship should be reflected in the audit process and associated results.

0.3 Audit Documented Information

This standard defines the documented information to be generated, during the audit process. The documented information is critical in providing the organization and its customers with objective evidence on the conformity and effectiveness of the QMS (including process effectiveness), and reporting the audit results in a standard format/structure.

AUDIT REQUIREMENTS

1. SCOPE

1.1 General

This standard defines requirements for the preparation and execution of the audit process. In addition, it defines the content and composition for the audit reporting of conformity and process effectiveness to the 9100-series standards, the organization's QMS documentation, and customer and statutory/regulatory requirements.

The requirements in this standard are additions or represent changes to the requirements and guidelines in the standards for conformity assessment, auditing, and certification as published by ISO/IEC (i.e., ISO/IEC 17000, ISO/IEC 17021-1). When there is conflict with these standards, the requirements of the 9101 standard shall take precedence.

NOTE 1: In this standard, the term “9100-series standards” comprises of the 9100, 9110, and 9120 standards; developed by the IAQG and published by various national standards bodies.

NOTE 2: In addition to this standard, the IAQG publishes deployment support material on the IAQG website (see http://www.iaqg.org) that can be used by audit teams, when executing the audit process.

1.2 Application

This standard shall be used for audits of 9100-series standards by Certification Bodies (CBs) for certification of organizations, under the auspices of the ASD industry certification scheme [also known as the Industry Controlled Other Party (ICOP) scheme]. The ICOP scheme requirements are defined in the 9104-series standards (i.e., 9104-1, 9104-2, 9104-3).

NOTE: Relevant parts of this standard can also be used by an organization in support of internal audits (1st party) and external audits at suppliers (2nd party).

2. REFERENCES

The following referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or resolutions) applies. When a conflict in requirements between this document and the referenced standards exist, the requirements of this document shall take precedence.

9100* Quality Management Systems – Requirements for Aviation, Space, and Defense Organizations

9110* Quality Management Systems – Requirements for Aviation Maintenance Organizations

9120* Quality Management Systems – Requirements for Aviation, Space, and Defense Distributors

9104-1* Requirements for Certification of Aviation, Space, and Defense Quality Management Systems

9104-2* Requirements for the Oversight of Aerospace Quality Management System Registration/Certification Programs

9104-3* Requirements for Aviation, Space, and Defense Auditor Training, Development, Competence, and Authentication

IAQG Procedure 105.6IAQG Forms Management

*As developed under the auspice of the IAQG and published by various standards bodies [e.g., AeroSpace and Defense Industries Association of Europe – Standardization (ASD-STAN), SAE International, European Committee for Standardization (CEN), Japanese Standards Association (JSA)/Society of Japanese Aerospace Companies (SJAC), Brazilian Association for Technical Norms (ABNT)].

ISO 9000:2015 Quality management systems – Fundamentals and vocabulary

ISO/IEC 17000:2020 Conformity assessment – Vocabulary and general principles

ISO/IEC 17021-1:2015 Conformity assessment – Requirements for bodies providing audit and certification of management systems – Part 1: Requirements

3. TERMS AND DEFINITIONS

Definitions for general terms can be found in ISO 9000, ISO/IEC 17000, 9100-series, 9104-series, and the IAQG International Dictionary (located on the IAQG website). An acronym log for this document is presented in Appendix A. For the purpose of this standard, the following definitions apply:

3.1 Containment

Action to control and mitigate the impact of a nonconformity to protect the customer, organization, or product (i.e., stop the problem from getting worse); includes immediate action, immediate communication, and verification to ensure that the nonconforming situation does not further degrade.

3.2 Key Performance Indicator (KPI)

Measures associated with goals or targets showing how well an organization is achieving its objectives or critical success factors. KPIs are used to objectively define a quantifiable and measurable indication of performance.

3.3 Major Nonconformity

The requirements of ISO/IEC 17021-1 clause 3.12 shall apply.

In addition, a major nonconformity can be one or more of the following situations:

- A nonconformity where the effect is judged to be detrimental to the integrity or safe use of the product or service;
- The absence of or total breakdown of a system to meet a 9100-series standard requirement, a customer QMS requirement, or documented information defined by the organization;
- Any nonconformity that can result in the probable delivery of nonconforming product or service; and
- A condition that can result in the failure or reduce the usability of the product or service for its intended purpose.

3.4 Minor Nonconformity

The requirements of ISO/IEC 17021-1 clause 3.13 shall apply.

In addition, a minor nonconformity can be a single system failure or lapse in conformity to meet a 9100-series standard requirement, customer QMS requirement, or documented information defined by the organization.

3.5 Nonconformity Report (NCR)

A document that provides details of the nonconformity, organization's planned actions, and auditor verification/closure (see Form 4).

3.6 Planned Activities

The criteria and methods by which the organization plans to achieve the intended results of, and conformity to, a given process to meet requirements.

3.7 Planned Results

The intended performance of a process as determined and measured by the organization. Performance measures include product/service conformity and On-time Delivery (OTD), and may include other measures related to the process defined by the organization.

3.8 Process Effectiveness Assessment Report (PEAR)

A document that provides details of a given process, process results, process realization, and the level of process effectiveness (see Form 3).

3.9 Repeat Nonconformity

A trend of identical nonconformities reported against the same requirement, indicating that previous corrective action attempt(s) failed to prevent recurrence of the nonconforming situation.

4. AUDITING AND REPORTING

4.1 General

4.1.1 The audit and reporting process established to assess conformity, including the determination of QMS effectiveness to the 9100-series standards, shall meet the requirements of ISO/IEC 17021-1, as stated in each relevant clause of this standard.

4.1.2 For Integrated Management System (IMS) audits, the requirements of 9104-1 clause 8.5.2 apply.

4.1.3 The audit program and associated activities (see 4.2) shall be followed when auditing and certifying organizations to 9100-series standards in the ASD industry.

4.1.4 The audit process requirements consist of three main parts:

a. The phases of the audit process (see 4.2.1);

b. The common audit activities (see Section 5) used to support each audit phase; and

c. The specific requirements for each audit phase (see Section 6).

4.2 Audit Program

4.2.1 The audit program consists of the following phases:

a. Pre-audit activities (see 6.2);

b. Stage 1 audit (see 6.3);

c. Stage 2 audit (see 6.4);

d. Surveillance audit (see 6.5); and

e. Recertification audit (see 6.6).

4.2.2 Pre-audit activities and Stage 1/Stage 2 audits are applicable for initial certification. A Stage 1 audit can also be utilized for recertification audits and during CB transfer.

NOTE 1: Although ‘Special Audit’ is not listed as a part of the audit program, it can be applicable after initial certification, when directed by special request. The requirements for special audits are defined in 6.7.

NOTE 2: The requirements for certification are defined by the 9104-1 standard.

4.3 Audit Reporting

4.3.1 Audit reporting requirements are defined in Table 1.

Table 1 - Audit reporting requirements

<table>
<tr><th>Audit Phase / Audit Report(s)</th><th>Stage 1 (see 6.3)</th><th>Stage 2 (see 6.4)</th><th>Surveillance (see 6.5)</th><th>Recertification (see 6.6)</th><th>Special (see 6.7)</th></tr>
<tr><td>Stage 1 Audit Report (see Form 1)</td><td>Required</td><td colspan="4"></td></tr>
<tr><td>QMS Process Matrix Report (see Form 2)</td><td rowspan="4"></td><td colspan="3" rowspan="2">Required; per site or combined, as appropriate (see 4.3.3)</td><td rowspan="2">See 4.3.2</td></tr>
<tr><td>Process Effectiveness Assessment Report (PEAR) (see Form 3)</td></tr>
<tr><td>Nonconformity Report (NCR) (see Form 4)</td><td colspan="4">Required (as applicable)</td></tr>
<tr><td>Audit Report (see Form 5)</td><td colspan="4">Required</td></tr>
</table>

4.3.2 A QMS Process Matrix Report (see Form 2) and PEAR (see Form 3) shall be issued dependent upon the reason for the special audit, as defined in Table 2.

4.3.3 Recording of process information may be combined into a single PEAR and QMS Process Matrix Report for multi-site organizations, provided that the process is common across the sites. Information recorded shall reflect each site included in the PEAR and QMS Process Matrix Report. The process effectiveness level shall reflect the lowest single value of the various sites assessed.

4.3.4 All audit reporting, defined within this standard, shall be managed electronically within the Online Aerospace Supplier Information System (OASIS) database, including the audit reports defined in Table 1.

NOTE: In accordance with IAQG Procedure 105.6, representations of the 9101 forms are presented in Appendix B for reference only. These forms and supporting instructions are accessible via the IAQG website.

Table 2 - Special audit reporting requirements

Reason for Special Audit	QMS Process Matrix Report (see Form 2)	Process Effectiveness Assessment Report (PEAR) (see Form 3)
Transferring certification from one CB to another	Not required	
Reducing an organization's certification scope, or number of sites and/or locations		
Verification of evidence to support application of Performance Based Surveillance/Recertification Process (PBS/RP)		
Change to an organization's certification structure	Required	Required, if special audit activity is conducted against 9100-series standard clause 8
Investigate a complaint or serious issue		
Follow up from an organization's suspension		
Expanding an organization's certification scope, or number of sites and/or locations		

5. COMMON AUDIT ACTIVITIES

5.1 General

5.1.1 Common audit activities shall be undertaken for each phase of the audit program as defined in Table 3.

5.1.2 Stage 1, Stage 2, surveillance, and recertification audit activities shall be described in the audit program established during the 'Pre-audit Activities' phase (see 6.2).

5.2 Audit Planning

5.2.1 The requirements of ISO/IEC 17021-1 clause 9.2 shall apply.

5.2.2 Audit teams shall plan audits in accordance with 9104-1 clause 8.5.5.

5.2.3 Process names shall be consistent in the audit plan, QMS Process Matrix Report (see Form 2), and PEAR (see Form 3) and shall correspond to the process names defined by the organization.

5.2.4 The audit team leader shall use the organization's customer feedback requests, including those received through the OASIS database (see 9104-1 clause 8.5.12), to assist with audit planning for surveillance and recertification audits, and special audits (when appropriate).

Table 3 - Relationship between common activities and audit phases

Audit Phase / Common Activity	Pre-audit Activities (see 6.2)	Stage 1 (see 6.3)	Stage 2 (see 6.4)	Surveillance (see 6.5)	Recertification (see 6.6)	Special (see 6.7)
Audit Planning (see 5.2)	X	X	X	X	X	X
Conducting Audits (see 5.3)		X	X	X	X	X
Audit Reporting (see 5.4)		X	X	X	X	X
Nonconformity Management (see 5.5)			X	X	X	X

5.2.5 Audit activities shall be prioritized based upon performance data for business risks that could impact the customer and on processes that are not achieving planned results.

5.2.6 Audit planning shall take into account, as appropriate to the relevant audit phase:

a. Organization Certification Analysis Process (OCAP) data (see 9104-1 clause 8.5.1);

b. Risks identified in the risk analysis process (see 9104-1 clauses 8.5.1.5 and 8.5.5.6);

c. The sequence and interactions of the organization's processes;

d. The criticality of products, services, and processes, including special processes;

e. Risks associated with QMS, product, service, and process maturity (e.g., new product or service introduction, new process equipment or facilities);

f. Product related safety issues (e.g., airworthiness issues, reporting to customer and/or authorities);

g. Results of internal audits;

h. Previous audit findings (e.g., CBs, customers, regulatory authorities);

i. Previous management review results;

j. Changes to QMS, customer, statutory, or regulatory requirements;

k. Customer satisfaction/performance data;

l. Certification structure [i.e., single site, multi-site (see 9104-1 clause 8.5.1.4.1)];

m. Level of IMS (see 9104-1 clause 8.5.2.1);

n. Use of PBS/RP (see 9104-1 clause 8.5.3);

o. Use of Information and Communication Technology (ICT) (see 9104-1 clause 8.5.4); and

p. Any current IAQG published resolutions.

5.3 Conducting Audits

5.3.1 General

5.3.1.1 The requirements of ISO/IEC 17021-1 clause 9.4 shall apply.

5.3.1.2 Audit team composition shall meet the requirements of 9104-1 clause 8.5.6.1.

5.3.1.3 The audit team shall pursue relevant audit trails to assist in the determination of QMS conformity and effectiveness.

5.3.1.4 Each audit, except for nonconformity follow-up (see 5.5) and special audits (see 6.7) shall include the following, as applicable:

a. Verification of the scope of certification;

b. Verification that changes to QMS, customer, statutory, or regulatory requirements have been implemented since the last audit;

c. Customer satisfaction information, and requested corrective actions and associated responses;

d. Verification of OCAP data submitted, prior to the audit (see 9104-1 clause 8.5.1);

e. An interview with top management;

f. The organization's processes, including their performance and effectiveness, as identified in the audit plan (see 5.2);

g. Continual improvement of the QMS; and

h. Verification of nonconformity status and effectiveness of corrective action resulting from the previous audit.

NOTE: If there is more than one surveillance audit during a year (e.g., every six months), some activities (e.g., interview with top management) may be spread over those audits.

5.3.2 Conducting the Opening Meeting

5.3.2.1 The requirements of ISO/IEC 17021-1 clause 9.4.2 shall apply.

5.3.2.2 In case of a multi-site certification structure:

a. An Authenticated Experienced Auditor (AEA) shall conduct site-specific opening meetings; or

b. An opening meeting shall be conducted with representatives from all sites, either physically or by means of remote meeting methods.

5.3.3 Site Tour

5.3.3.1 The audit team leader may choose to conduct a site tour to address any changes in scope or facilities since the last visit, or to familiarize audit team members with the organization's activities.

NOTE: The site tour for a Stage 1 audit is defined in 6.3.1.4.

5.3.4 Audit Conduct

5.3.4.1 The requirements of ISO/IEC 17021-1 clauses 9.4.1, 9.4.3, and 9.4.4 shall apply.

NOTE: Audit tools may be developed (e.g., check sheets, questionnaires, supplemental reports) to help auditors in the collection of objective evidence during the audit process.

5.3.5 Special Processes

5.3.5.1 When special processes (reference 9100/9110 clause 8.5.1.2) are included in the audit plan, the audit team shall review and evaluate process validation, as well as the monitoring, measuring, and control of these processes, including the following:

a. The retained documented information relating to each audited special process, including the established arrangements and a comparison between actual and planned results;

b. A sample of special processes, including those defined by the customer. For the selected special processes, the audit team shall audit the monitoring and measuring equipment used (e.g., calibration, accuracy) and the method for recording the results. If required, traceability between the process (e.g., batch or load charge identification) and the resulting product/service shall be verified; and

c. In the case of outsourced special processes, the audit team shall verify that the organization's external provider control process addresses these items accordingly. In addition, the audit team shall review the use of customer-designated sources, as required.

NOTE 1: Special processes are managed by using qualified personnel, as determined by the organization and/or customer requirements, and by controlling physical or chemical process characteristics [e.g., temperature, time (process duration), pressure, chemical composition of product, process treatment material (surface treatment solution)].

NOTE 2: If an audit(s) has been performed by a customer or by a specialized independent 3rd party, the audit team can take the audit by these organizations into account. This can include audit results, sampling of the findings, and verification of any reported nonconformities to determine adequate resolution (i.e., no recurrence).

5.3.6 Identifying and Recording of Audit Findings

5.3.6.1 The requirements of ISO/IEC 17021-1 clause 9.4.5 shall apply.

5.3.6.2 The audit team shall complete the QMS Process Matrix Report (see Form 2) to demonstrate which processes and 9100-series standard clauses have been audited, including a summary of objective evidence related to each 9100-series standards clauses (i.e., 4, 5, 6, 7, 9, and 10). For recording a summary of objective evidence related to the operational processes (9100-series standards clause 8), see 5.3.8.

NOTE: If objective evidence for 9100-series standards clauses 4, 5, 6, 7, 9, and 10 is recorded on a PEAR(s), there is no need to repeat these details on the QMS Process Matrix Report. Reference to the applicable PEAR(s) should be stated in the respective QMS Process Matrix Report objective evidence field.

5.3.6.3 The NCR (see Form 4) shall be used to record each nonconformity against a specific requirement. When nonconformities are identified, the audit team shall categorize the nonconformity as ‘major’ or ‘minor’ (see 3.3 and 3.4 respectively). The need for containment (see 3.1) shall be identified by the audit team.

NOTE: Soft grading of nonconformities and/or identifying them as an opportunity for improvement does not benefit the organization, its’ customers, or the CB. Furthermore, there is risk that the nonconformity would be given a lower priority for correction and/or corrective action, or that no action would be taken and the conditions will expand and/or continue to exist.

5.3.6.4 For IMS audits, where a nonconformity has been determined in a common process, a single NCR shall be issued referencing the requirements for each 9100-series standard.

5.3.6.5 Recurrence of the same or similar nonconformity found during consecutive audits at a particular site/location shall be considered as a major nonconformity against the corrective action process (see 9100-series standards clause 10.2).

5.3.7 Process Results

5.3.7.1 The audit team shall record measures, targets, and values of KPIs related to each audited operational process (see 9100-series standards clause 8) on the PEAR (see Form 3, Section 2), taking into account the confidentiality of information (see ISO/IEC 17021-1 clause 8.4 requirements).

NOTE: Upon mutual agreement between the organization and the CB, other processes can be recorded on a PEAR.

5.3.7.2 The audit team shall issue an NCR against the relevant 9100-series standard clause, when the process is not delivering the planned results and appropriate action is not being taken.

NOTE 1: The NCR may be issued against 9100-series standards clause 4.4.1.c and/or 4.4.1.g, if the nonconformity is related to the effective operation and control of the process.

NOTE 2: Nonconformities identified against 9100-series standards clauses 4.4.1.c and/or 4.4.1.g, resulting from multiple PEARs, may be combined into a single NCR.

5.3.8 Process Realization

5.3.8.1 The audit team shall record a summary of audit trails and audit evidence related to each audited operational process (see 9100-series standards clause 8) on the PEAR (see Form 3, Section 3).

NOTE: Population of the PEAR may start during the Stage 1 audit to record information reviewed.

5.3.8.2 The audit team shall issue a NCR against the relevant 9100-series standard clause, when planned activities of a process are not realized or not fully realized.

5.3.9 Process Effectiveness

5.3.9.1 The audit team shall evaluate the effectiveness of each audited operational process (see 9100-series standards clause 8) considering:

a. Process realization – the extent to which planned activities are realized (see 3.6); and

b. Process results – the extent to which planned results are achieved (see 3.7).

5.3.9.2 In order to determine the effectiveness level of the audited process, the audit team shall evaluate the audit evidence arising from the PEAR (see Form 3, Sections 2 and 3) and select the corresponding value, based upon the descriptions given in the Process Evaluation Matrix (see Table 4).

5.3.9.3 The process effectiveness level derived from the evaluation shall be recorded in the PEAR (see Form 3, Section 4) and documented on the QMS Process Matrix Report (see Form 2).

5.3.9.4 An effectiveness level of “5” shall only be determined, if the audited process is delivering the planned results and planned activities are fully realized with no nonconformities identified.

Table 4 - Process evaluation matrix

Process Realization (a)	Process Results (b)		
	Planned results not achieved and appropriate action is not taken	Planned results not achieved, but appropriate action is being taken	Planned results are achieved
Planned activities fully realized	a) The process is determined, and planned activities fully realized; however, b) The process is not delivering the planned results and appropriate action is not being taken. **2**	a) The process is determined, and planned activities fully realized; however, b) The process is not delivering the planned results, but appropriate action is being taken. **4**	a) The process is determined, and planned activities fully realized; and b) The process is delivering the planned results. **5**
Planned activities not fully realized	a) The process is determined, but planned activities not fully realized; and b) The process is not delivering the planned results and appropriate action is not being taken. **2**	a) The process is determined, but planned activities not fully realized; and b) The process is not delivering the planned results, but appropriate action is being taken. **3**	a) The process is determined, but planned activities not fully realized; however, b) The process is delivering the planned results. **4**
Planned activities not realized	a) The process is not determined, and planned activities not realized; and b) The process is not delivering the planned results and appropriate action is not being taken. **1**	a) The process is not determined, and planned activities not realized; and b) The process is not delivering the planned results, but appropriate action is being taken. **2**	a) The process is not determined, and planned activities not realized; however, b) The process is delivering the planned results. **2**

5.3.10 Preparing Audit Conclusions

5.3.10.1 The requirements of ISO/IEC 17021-1 clause 9.4.6 shall apply.

5.3.11 Conducting the Closing Meeting

5.3.11.1 The requirements of ISO/IEC 17021-1 clause 9.4.7 shall apply.

5.3.11.2 At the site closing meeting, the audit team leader shall, at a minimum, provide the organization with any applicable NCRs (see Form 4) and PEARs (see Form 3) associated with those NCRs.

5.4 Audit Report

5.4.1 The requirements of ISO/IEC 17021-1 clause 9.4.8 shall apply.

5.4.2 At the conclusion of the Stage 1 audit (see 6.3), the Stage 1 Audit Report (see Form 1) shall be compiled and issued. At the conclusion of each certification, surveillance, recertification, and special audit, the audit results shall be recorded and issued using the standard forms (see Table 1).

5.4.3 Requirements determined as not applicable within the determined scope (see 9100-series standards clause 4.3), as justified by the organization and accepted by the audit team, shall be documented in the Audit Report [see Stage 1 Audit Report (Form 1), QMS Process Matrix Report (Form 2), and Audit Report (Form 5)].

5.4.4 The content in the Audit Report (see Form 5), including findings, shall give a true and independent view of the conformity status and determination of effectiveness of the QMS in order to give confidence to customers or potential customers; enabling them to draw appropriate conclusions in their supplier selection and surveillance processes.

5.4.5 For surveillance, recertification, or special audits, the audit team leader shall advise, within the Audit Report (see Form 5), whether the recorded nonconformities should be reason for suspension or withdrawal of the certificate. Failure by the organization to demonstrate effective corrective action to deal with repeat nonconformities (see 3.9) shall warrant suspension of the certification (see 9104-1 clause 8.5.11).

5.4.6 For IMS audits (see 9104-1 clause 8.5.2.2), a single Audit Report (see Form 5) may be issued. Processes common between the standards may be reported on the same PEAR (see Form 3) and QMS Process Matrix Report (see Form 2).

5.4.7 The audit documented information shall be made available and published in the OASIS database within the specified time frames (see 9104-1 clause 8.5.7).

5.5 Nonconformity Management

5.5.1 The requirements of ISO/IEC 17021-1 clauses 9.4.9 and 9.4.10 shall apply.

5.5.2 After issuance of a nonconformity, the audit team leader shall:

a. Require the organization to determine and submit the root cause(s), correction to re-establish conformance, and corrective action plan(s) to prevent recurrence of the detected nonconformity on the NCR (see Form 4); and

b. Review and accept the organization's response on correction, root cause(s), corrective action(s), and supporting corrective action plan(s) in accordance with Table 5.

5.5.3 When the nature of the nonconformity requires containment action(s) (see 3.1), the audit team leader shall require the organization to:

a. Describe the immediate action(s) ('fix now') taken to contain the nonconforming situation/conditions and to control any identified nonconforming products; and

b. Report the specific containment action(s) and reach agreement on those actions with the audit team leader in accordance with Table 5.

NOTE: Containment action and correction can be reviewed during the audit.

Table 5 - Nonconformity report management time frames

Item	Who	What	When
1	Auditor	Issue NCR	Site closing meeting (see 5.3.11)
2	Organization	Response to containment	Within a maximum of 7 days of NCR issuance
3	Auditor and Organization	Reach agreement on containment action	Within a maximum of 21 days of NCR issuance
4	Organization	Response to root cause, correction, and corrective action plan	Within a maximum of 30 days of NCR issuance
	Auditor	Review and accept correction(s), root cause(s), corrective action, and supporting corrective action plan	
5	Organization	Re-establish conformity	Within a maximum of 90 days of NCR issuance (see 9104-1 clause 8.5.1.1)
6	Auditor	Verify implementation of correction and corrective action	In accordance with the dates accepted in the correction and supporting corrective action plans
7	Auditor	Verify effectiveness of corrective action	During the next programed audit

5.5.4 The NCR (see Form 4) shall be used to document verification of the corrective action. Evaluation and closing of the corrective action plan and associated corrective actions relating to a nonconformity shall not be performed during the audit in which the nonconformity was issued.

5.5.5 Verification activities shall be carried out, as determined by the audit team leader.

5.5.6 If the verification of the corrective action cannot be carried out based on a review of the documentation and supporting objective evidence provided by the organization, then verification shall be carried out on-site.

5.5.7 After verification, the NCR (see Form 4) shall be updated and closed in the OASIS database.

6. AUDIT PHASE SPECIFIC REQUIREMENTS

6.1 General

6.1.1 The requirements of ISO/IEC 17021-1 clause 8.4 shall apply.

6.1.2 The CB shall require the organization to provide information if any activities, programs, specifications, and/or areas are not accessible because of a restrictive or confidential nature.

NOTE: Denial of access may be due to proprietary/classified information, areas of competitive sensitivity, national security regulations, or requirements invoked by customer contracts. In these instances, the organization and CB should decide on the approach in order to determine the scope of certification.

6.1.3 Any information considered confidential by the organization's customers and/or authorities, or the organization itself shall not be reported, unless approved by the audited organization.

6.1.4 The organization shall provide the OCAP data to the CB a minimum of 90 days prior to each initial, surveillance, and recertification audit (see 9104-1 clause 9.1.10).

6.1.5 The CB and audit team leader shall create an entry and set up the audit in the OASIS database, prior to each audit.

6.2 Pre-Audit Activities (Initial Audit)

6.2.1 General

6.2.1.1 The requirements of ISO/IEC 17021-1 clauses 8.5 and 9.1.3 shall apply.

6.2.1.2 The scope of certification shall be determined (see 9104-1 clause 8.5.1.3.2).

6.2.1.3 The scope of certification shall not include processes that were not audited to sufficient depth to verify an organization's conformity, including the determination of effectiveness. Unaudited processes may be included in the scope of certification, if it can be demonstrated that they are similar to processes that were assessed and the same QMS documented information and controls are invoked. Justification for this approach shall be included in the audit report.

6.2.2 Application

6.2.2.1 The requirements of ISO/IEC 17021-1 clause 9.1.1 shall apply.

6.2.2.2 The CB shall require the organization to provide the following:

a. Number of employees associated to ASD business (i.e., full time, part time, temporary) and percentage of the total workforce; and

b. Identification of the key (e.g., top five) customers.

6.2.3 Application Review

6.2.3.1 The requirements of ISO/IEC 17021-1 clause 9.1.2 shall apply.

6.2.4 Requirements for the Certification Body

6.2.4.1 Before scheduling the Stage 1 visit, the CB shall:

a. Appoint an audit team leader that has sufficient knowledge of the activities and the intended scope of certification to determine auditor required competences and/or whether technical experts are needed;

b. Take into account any additional requirements/requests from the organization and/or the organization's customer(s), as long as they are not in conflict with the provisions of ISO/IEC 17021-1, to optimize the benefit of the certification audit program; and

c. Ensure that audit time is identified in accordance with 9104-1 clauses 8.5.1.6, 8.5.2, and 8.5.3.

6.2.5 Requirements for the Audit Team Leader

6.2.5.1 Before scheduling the Stage 1 audit, the audit team leader shall:

a. Determine if information received during the pre-audit phase is sufficient to proceed to the Stage 1 audit; and

b. Verify the audit time for the Stage 1 and Stage 2 audits.

6.3 Stage 1 Audit

6.3.1 General

6.3.1.1 The requirements of ISO/IEC 17021-1 clause 9.3.1.2 shall apply.

6.3.1.2 Before the Stage 1 audit, the audit team leader shall be confirmed and possible audit team members shall be identified. After the Stage 1 audit, the team composition for the Stage 2 audit shall be reviewed based on information received and observed during the Stage 1 audit; followed by the final appointment of the team members.

6.3.1.3 The Stage 1 audit shall:

a. Be performed by the audit team leader appointed for the initial audit with audit team assistance, if needed; and

b. Include an on-site evaluation (see 9104-1 clauses 8.5.5.1 and 8.5.5.2).

6.3.1.4 The Stage 1 audit shall include a tour of the site facilities. This will enable the audit team to gain a greater understanding of the organization's processes, equipment, areas, products, and state of readiness in preparation for the Stage 2 audit.

6.3.2 Collection of Information

6.3.2.1 During the Stage 1 audit, the audit team shall collect sufficient information that allows the CB to:

a. Confirm the audit program;

b. Review the need for additional technical experts and/or auditors to compose a competent audit team;

c. Confirm the number of employees associated to ASD industry business (i.e., full time, part time, temporary) and percentage of total work force (as declared by the organization during the application review phase);

d. Review the key (e.g., top five) customers, as declared by the organization during the application review phase;

e. Confirm any customer/regulator specific approvals and associated requirements, if applicable;

f. Confirm the number of shifts and shift patterns;

g. Determine restricted areas and proprietary information, including confidentiality requirements;

h. Determine any additional audit activities, as needed, for the fulfillment of the requirements for initial certification;

i. Confirm the OCAP data, submitted prior to the audit (see 9104-1 clause 8.5.1); and

j. Schedule the Stage 2 audit activities.

6.3.3 Review of the Organization

6.3.3.1 During the Stage 1 audit, the audit team leader shall require the organization to provide the necessary documented information for review, including the following:

a. Requirements determined as not applicable within the scope of the QMS, including justification by the organization (see 9100-series standards clause 4.3);

b. QMS documented information;

c. Evidence that the requirements of the applicable 9100-series standards are addressed by the organization's documented information established for the QMS (see 9100-series standards clause 4.4);

d. Evidence of customer performance (i.e., product/service quality, OTD, complaints), process performance, and performance of quality objectives;

NOTE: The data should be sufficient to allow the audit team leader to make a judgment on performance and trends.

e. export limitations/controls, if applicable [e.g., International Traffic in Arms Regulations (ITAR), Export Administration Regulation (EAR)];

f. evaluation of certification structure (i.e., single site, multi-site) eligibility for determination of audit time and site coverage (see 9104-1 clauses 8.5.1.4 and 8.5.1.6); and

g. level of management system integration (see 9104-1 clause 8.5.2), as applicable.

6.3.4 Stage 1 Conclusions

6.3.4.1 The audit team leader shall use the results of the organization review and additional information obtained from the site tour to:

a. Develop a plan for the Stage 2 audit, that includes any additional customer and regulatory requirements;

b. Verify the proposed scope of certification (see 9104-1 clause 8.5.1.3);

c. Verify the information used for audit time calculation (see 9104-1 clause 8.5.1.6) and recommend adjustment, as needed;

d. Update the Stage 2 audit plan based upon any confirmed audit time adjustments, as applicable;

e. Recommend adjustments to the composition of the audit team for the Stage 2 audit, including the need for any technical experts or translators, as applicable;

f. Verify the information used for determination of the certification structure; and

g. Identify any changes required to the contract and communicate those revisions to the organization and CB.

6.3.4.2 The CB shall review the status of the areas of concern to determine preparedness for the Stage 2 audit.

6.4 Stage 2 Audit

6.4.1 The requirements of ISO/IEC 17021-1 clauses 9.3.1.3, 9.3.1.4, and 9.5.3 shall apply.

6.4.2 All requirements of the applicable 9100-series standard (except requirements determined as not applicable within the determined scope) and the organization's processes that are part of the QMS shall be audited.

6.4.3 Detailed audit findings, including reference to the audited processes and documented information shall be recorded (see 5.3.6).

6.4.4 During the opening meeting, the audit team leader shall reconfirm with the organization the issues identified during the Stage 1 audit (see 6.3).

6.4.5 After the opening meeting, the audit team leader shall revise the audit plan, as needed, due to changes since the Stage 1 audit (e.g., personnel changes, department/business unit reorganization, new customer complaint) or any objections from the organization that impact the audit.

NOTE: Revision to the audit plan can have an impact on the audit time.

6.5 Surveillance Audit

6.5.1 The requirements of ISO/IEC 17021-1 clause 9.6.2 shall apply.

6.5.2 All requirements of the applicable 9100-series standard (except requirements determined as not applicable within the determined scope) and the organization's processes that are part of the QMS shall be audited across the surveillance audits, during the certification cycle.

6.5.3 The audit method(s) to be used (e.g., audits on specific problems, areas, products, or sub-processes) shall be based on the outcome of the audit team's review of the OCAP data (see 6.1.4) and information gathered during audit planning (see 5.2.6).

6.5.4 Detailed audit findings, including reference to the audited processes and documented information shall be recorded (see 5.3.6).

6.5.5 The audit team shall verify the effectiveness of corrective action(s) taken for nonconformities identified during the previous audit, if applicable.

6.6 Recertification Audit

6.6.1 The requirements of ISO/IEC 17021-1 clauses 9.5.4 and 9.6.3 shall apply.

6.6.2 The audit method(s) to be used (e.g., audits on specific problems, areas, products, or sub-processes) shall be based on the outcome of the audit team's review of the OCAP data (see 6.1.4) and information gathered during audit planning (see 5.2.6).

6.6.3 Any change of customer and/or regulatory approval status shall be reviewed by the audit team to determine the impact on the certification status.

6.6.4 All requirements of the applicable 9100-series standard (except requirements determined as not applicable within the determined scope) and the organization's processes that are part of the QMS shall be audited.

6.6.5 The organization's QMS, associated processes, and documented information shall be reviewed for changes.

6.6.6 Detailed audit findings, including reference to the audited processes and documented information shall be recorded (see 5.3.6).

6.6.7 The audit team shall verify the effectiveness of corrective actions taken for nonconformities identified during the previous audit, if applicable.

6.7 Special Audit

6.7.1 The requirements of ISO/IEC 17021-1 clause 9.6.4 and 9104-1 clause 8.5.10 shall apply.

6.7.2 Special audits shall be coordinated with the organization, prior to the visit. The organization shall be given information about the specific reason and subject of the visit.

6.7.3 Detailed audit findings, including reference to the audited processes and documented information shall be recorded (see 5.3.6).

7. NOTES

7.1 Revision Indicator

A change bar (I) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document, including technical revisions. Change bars and (R) are not used in original publications, nor in documents that contain editorial changes only.

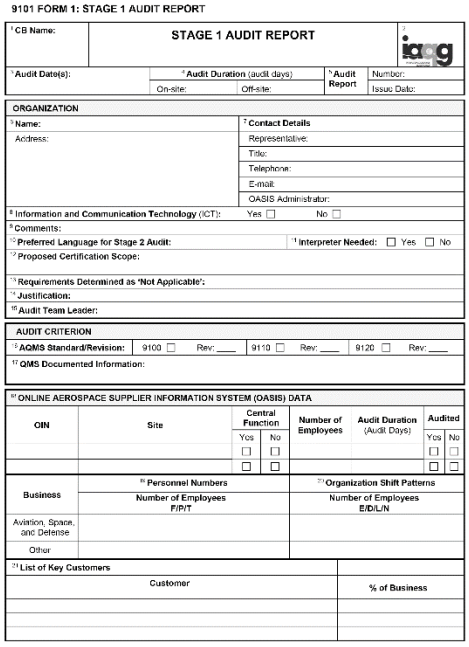
PREPARED BY SAE COMMITTEE G-14, AMERICAS AEROSPACE QUALITY STANDARDS COMMITTEE (AAQSC)

APPENDIX A - ACRONYM LOG

ABNT	Brazilian Association for Technical Norms
AEA	Authenticated Experienced Auditor
ASD	Aviation, Space, and Defense
ASD-STAN	Aerospace and Defense Industries Association of Europe - Standardization
CB	Certification Body
CEN	European Committee for Standardization
EAR	Export Administration Regulation
IAQG	International Aerospace Quality Group
ICOP	Industry Controlled Other Party
ICT	Information and Communication Technology
IEC	International Electrotechnical Commission
IMS	Integrated Management System
ISO	International Organization for Standardization
ITAR	International Traffic in Arms Regulations
JSA	Japanese Standards Association
KPI	Key Performance Indicator
NCR	Nonconformity Report
OASIS	Online Aerospace Supplier Information System
OCAP	Organization Certification Analysis Process
OPMT	Other Party Management Team
OTD	On-Time Delivery
PBS/RP	Performance Based Surveillance/Recertification Process
PEAR	Process Effectiveness Assessment Report
QMS	Quality Management System
SJAC	Society of Japanese Aerospace Companies

APPENDIX B - FORMS

9101 FORM 1: STAGE 1 AUDIT REPORT



9101 FORM 1: STAGE 1 AUDIT REPORT

[1] CB Name: | STAGE 1 AUDIT REPORT | [2]

[3] Audit Date(s): | [4] Audit Duration (audit days): On-site: Off-site: | [5] Audit Report Number: Issue Date:

ORGANIZATION

[6] Name: | [7] Contact Details

Address: | Representative: | Title: | Telephone: | E-mail: | OASIS Administrator:

[8] Information and Communication Technology (ICT): Yes ☐ No ☐

[9] Comments:

[10] Preferred Language for Stage 2 Audit: | [11] Interpreter Needed: ☐ Yes ☐ No

[12] Proposed Certification Scope:

[13] Requirements Determined as 'Not Applicable':

[14] Justification:

[15] Audit Team Leader:

AUDIT CRITERION

[16] AQMS Standard/Revision: 9100 ☐ Rev: ____ 9110 ☐ Rev: ____ 9120 ☐ Rev: ____

[17] QMS Documented Information:

[18] ONLINE AEROSPACE SUPPLIER INFORMATION SYSTEM (OASIS) DATA

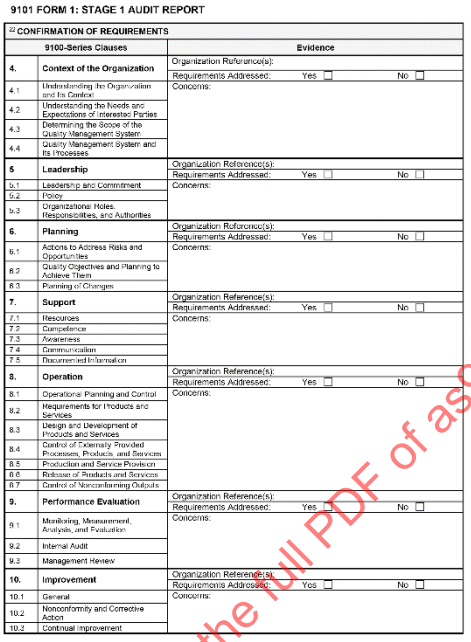
OIN	Site	Central Function Yes	Central Function No	Number of Employees	Audit Duration (Audit Days)	Audited Yes	Audited No
		☐	☐			☐	☐
		☐	☐			☐	☐

Business	[19] Personnel Numbers — Number of Employees F/P/T	[20] Organization Shift Patterns — Number of Employees E/D/L/N
Aviation, Space, and Defense		
Other		

[21] List of Key Customers

Customer	% of Business

9101 FORM 1 (14 FEB 2022)

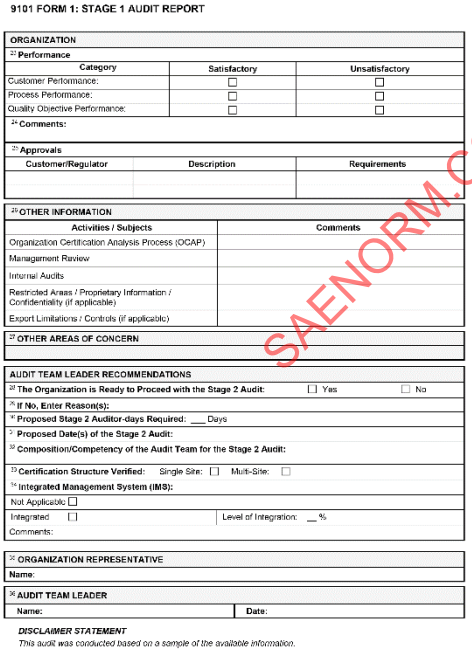


9101 FORM 1: STAGE 1 AUDIT REPORT

[22] CONFIRMATION OF REQUIREMENTS

	9100-Series Clauses	Evidence
4.	Context of the Organization	Organization Reference(s): Requirements Addressed: Yes ☐ No ☐ Concerns:
4.1	Understanding the Organization and Its Context	
4.2	Understanding the Needs and Expectations of Interested Parties	
4.3	Determining the Scope of the Quality Management System	
4.4	Quality Management System and Its Processes	
5	Leadership	Organization Reference(s): Requirements Addressed: Yes ☐ No ☐ Concerns:
5.1	Leadership and Commitment	
5.2	Policy	
5.3	Organizational Roles, Responsibilities, and Authorities	
6.	Planning	Organization Reference(s): Requirements Addressed: Yes ☐ No ☐ Concerns:
6.1	Actions to Address Risks and Opportunities	
6.2	Quality Objectives and Planning to Achieve Them	
6.3	Planning of Changes	
7.	Support	Organization Reference(s): Requirements Addressed: Yes ☐ No ☐ Concerns:
7.1	Resources	
7.2	Competence	
7.3	Awareness	
7.4	Communication	
7.5	Documented Information	
8.	Operation	Organization Reference(s): Requirements Addressed: Yes ☐ No ☐ Concerns:
8.1	Operational Planning and Control	
8.2	Requirements for Products and Services	
8.3	Design and Development of Products and Services	
8.4	Control of Externally Provided Processes, Products, and Services	
8.5	Production and Service Provision	
8.6	Release of Products and Services	
8.7	Control of Nonconforming Outputs	
9.	Performance Evaluation	Organization Reference(s): Requirements Addressed: Yes ☐ No ☐ Concerns:
9.1	Monitoring, Measurement, Analysis, and Evaluation	
9.2	Internal Audit	
9.3	Management Review	
10.	Improvement	Organization Reference(s): Requirements Addressed: Yes ☐ No ☐ Concerns:
10.1	General	
10.2	Nonconformity and Corrective Action	
10.3	Continual Improvement	

9101 FORM 1 (14 FEB 2022)



9101 FORM 1: STAGE 1 AUDIT REPORT

ORGANIZATION

[23] Performance

Category	Satisfactory	Unsatisfactory
Customer Performance:	☐	☐
Process Performance:	☐	☐
Quality Objective Performance:	☐	☐

[24] Comments:

[25] Approvals

Customer/Regulator	Description	Requirements

[26] OTHER INFORMATION

Activities / Subjects	Comments
Organization Certification Analysis Process (OCAP)	
Management Review	
Internal Audits	
Restricted Areas / Proprietary Information / Confidentiality (if applicable)	
Export Limitations / Controls (if applicable)	

[27] OTHER AREAS OF CONCERN

AUDIT TEAM LEADER RECOMMENDATIONS

[28] The Organization is Ready to Proceed with the Stage 2 Audit: ☐ Yes ☐ No

[29] If No, Enter Reason(s):

[30] Proposed Stage 2 Auditor-days Required: ___ Days

[31] Proposed Date(s) of the Stage 2 Audit:

[32] Composition/Competency of the Audit Team for the Stage 2 Audit:

[33] Certification Structure Verified: Single Site: ☐ Multi-Site: ☐

[34] Integrated Management System (IMS):

Not Applicable ☐

Integrated ☐ | Level of Integration: __ %

Comments:

[35] ORGANIZATION REPRESENTATIVE

Name:

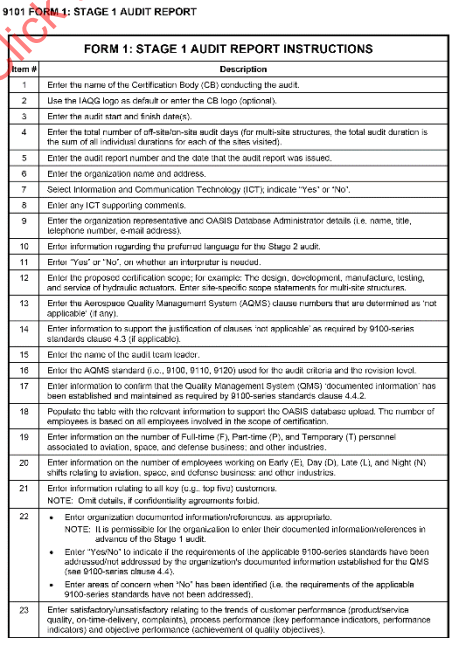
[36] AUDIT TEAM LEADER

Name: | Date:

DISCLAIMER STATEMENT

This audit was conducted based on a sample of the available information.

9101 FORM 1 (14 FEB 2022)



9101 FORM 1: STAGE 1 AUDIT REPORT

FORM 1: STAGE 1 AUDIT REPORT INSTRUCTIONS

Item #	Description
1	Enter the name of the Certification Body (CB) conducting the audit.
2	Use the IAQG logo as default or enter the CB logo (optional).
3	Enter the audit start and finish date(s).
4	Enter the total number of off-site/on-site audit days (for multi-site structures, the total audit duration is the sum of all individual durations for each of the sites visited).
5	Enter the audit report number and the date that the audit report was issued.
6	Enter the organization name and address.
7	Select Information and Communication Technology (ICT); indicate "Yes" or "No".
8	Enter any ICT supporting comments.
9	Enter the organization representative and OASIS Database Administrator details (i.e. name, title, telephone number, e-mail address).
10	Enter information regarding the preferred language for the Stage 2 audit.
11	Enter "Yes" or "No", on whether an interpreter is needed.
12	Enter the proposed certification scope; for example: The design, development, manufacture, testing, and service of hydraulic actuators. Enter site-specific scope statements for multi-site structures.
13	Enter the Aerospace Quality Management System (AQMS) clause numbers that are determined as 'not applicable' (if any).
14	Enter information to support the justification of clauses 'not applicable' as required by 9100-series standards clause 4.3 (if applicable).
15	Enter the name of the audit team leader.
16	Enter the AQMS standard (i.o., 9100, 9110, 9120) used for the audit criteria and the revision level.
17	Enter information to confirm that the Quality Management System (QMS) 'documented information' has been established and maintained as required by 9100-series standards clause 4.4.2.
18	Populate the table with the relevant information to support the OASIS database upload. The number of employees is based on all employees involved in the scope of certification.
19	Enter information on the number of Full-time (F), Part-time (P), and Temporary (T) personnel associated to aviation, space, and defense business, and other industries.
20	Enter information on the number of employees working on Early (E), Day (D), Late (L), and Night (N) shifts relating to aviation, space, and defense business and other industries.
21	Enter information relating to all key (e.g., top five) customers. NOTE: Omit details, if confidentiality agreements forbid.
22	• Enter organization documented information/references, as appropriate. NOTE: It is permissible for the organization to enter their documented information/references in advance of the Stage 1 audit. • Enter "Yes/No" to indicate if the requirements of the applicable 9100-series standards have been addressed/not addressed by the organization's documented information established for the QMS (see 9100-series clause 4.4). • Enter areas of concern when "No" has been identified (i.e. the requirements of the applicable 9100-series standards have not been addressed).
23	Enter satisfactory/unsatisfactory relating to the trends of customer performance (product/service quality, on-time-delivery, complaints), process performance (key performance indicators, performance indicators) and objective performance (achievement of quality objectives).

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9101 FORM 1: STAGE 1 AUDIT REPORT

24	Enter general comments / collective summary of the performance trends, plus any other performance information gathered, including complaints.
25	Enter information regarding any customer / regulatory approvals granted to the organization.
26	Enter other specific information obtained from the organization.
27	Enter any areas of concern that need to be resolved before the Stage 2 audit.
28	Recommend if the organization is ready to proceed with the Stage 2 audit, by entering "Yes" or "No".
29	If recommendation is "No" (see box 25), enter the reason(s).
30	Enter the number of auditor days for the Stage 2 audit.
31	Enter the proposed date(s) of the Stage 2 audit.
32	Enter the composition / competency of the audit team for the Stage 2 audit, including identification of any technical experts or translators that may be needed.
33	Verify certification structure (i.e., Single Site, Multi-Site) by selecting the appropriate box.
34	Identify if the QMS is integrated and if applicable, enter the level of QMS integration, including supporting comments (see 9104/1 clause 8.5.2).
35	Enter the name of the organization's representative.
36	Enter the name of the audit team leader and the date.

NOTE: The completeness of this form may be supplemented by the use of attachments to provide further detailed information. When attachments are provided, the respective box on the form should describe the information in summary format and then refer to the respective attachment. It is not permissible to simply say "see attached". All information is entered into the OASIS database in accordance with 9104/1.

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