



AS 9110 B AVIATION MAINTENANCE QUALITY MANUAL

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Abstract:

This document describes the aviation maintenance quality management system.

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Section 1: Welcome to ATSG Logistic Support Service Inc

ATSG Logistic Support Service Inc. is an aviation maintenance/modification/repair/overhaul organization that provides military aviation support on various aircraft platforms and equipment. As a defense contractor ATSG must restrict access to foreign nationals due to department of defense regulations at the sites listed below. Access will only be granted to US Citizens with proper Documentation/Identification.

Note: hereafter in this document ATSG Logistic Support Service Inc. will be identified as (ATSG)

ATSG has always applied high quality standards as guidelines for its processes and operations but has revised its systems to fully comply with *AS9110*.

Website www.atsg-lssi.com

ATSG Scope is as follows:

Over all Scope: Maintenance Repair and Overhaul of Aircraft parts, equipment, fixtures, and jigs (and associated inspection activities) in addition to Training, Resource & Equipment Mgmnt for Aviation, Defense and Commercial industries. Excluding 7.3 Design and Development. (ATSG Is Not Design Responsible)

Site Scope(s):

Corporate: 10142 103 rd St. Suite 102 Jacksonville, FL 32210 USA

Scope: Mail Stop and ATSG Property storage

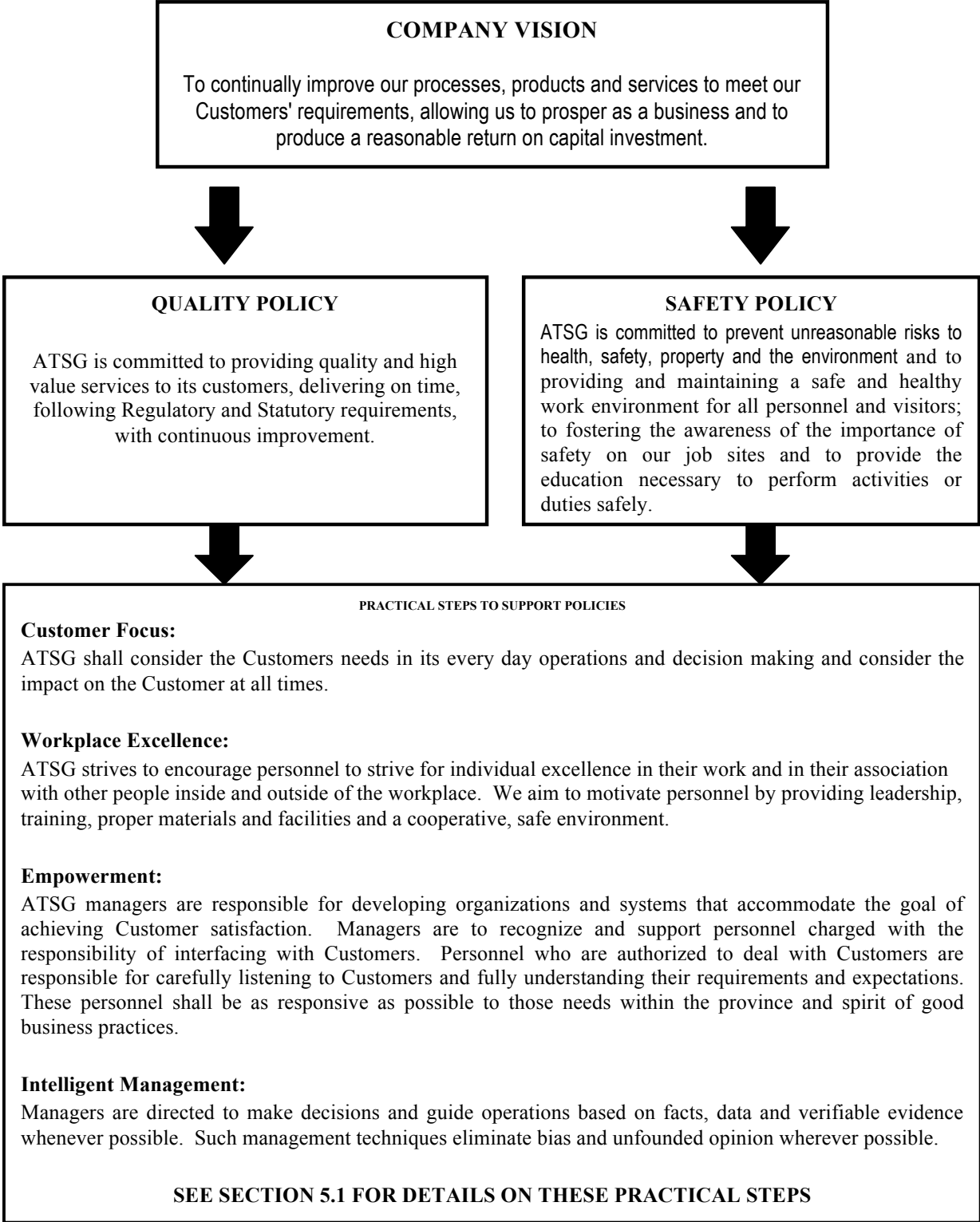
Customer's site: 6211 Aviation Ave MC S001-0215 Jacksonville, FL 32221

5 areas

- 1) Hanger 1820: Admin offices, Calibration area **Scope:** Equipment Mgmnt and Training
- 2) Hanger 825 **Scope:** Maintenance Repair and Overhaul of fixtures, and jigs and Resource services for Packing, Unpacking and demilitarization of aviation parts.
- 3) Hanger 312: **Scope:** Maintenance Repair and Overhaul of equipment, fixtures, and jigs (and associated inspection activities)
- 4) Tire and Wheel shop: **Scope:** Maintenance Repair and Overhaul of Aircraft parts.

ATSG continually revises its processes and systems to fully conform with *ISO 9001* and *AS9110*. In addition to the above quality standard and scope ATSG complies with the following; The State of Florida Labor Laws, OSHA, EHA, NAVAIR, Air Force and Boeing Requirements. This means maintaining the highest standards of quality and performance in all products and services and a dedication to maintaining the utmost levels of quality and integrity in communicating with people inside and outside of ATSG.

Section 2: Company Vision and Governing Policies



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Section 3: Scope, Exclusions and Definitions

3.1 Scope

See Section 1

ATSG’s quality management system applies to all personnel within all functional areas of ATSG’s business operation.

The particular responsibility of the managers is to inform all of the personnel about the current state of this manual and the applicable roles and processes in the documentation system at regular intervals and in a comprehensive manner and to actively involve them.

In this manual and the associated documentation system is illustrated all applicable quality management, aviation safety, occupational safety, and environmental protection requirements in a process- and role-oriented manner.

Maintenance of aviation aircraft and 7.3 Design and Development – ATSG does not perform Design and Development tasking.

associated equipment.

3.2 Exclusions

ATSG takes the following exclusion: 7.3 Design and Development. This is a justified exclusion because ATSG is not design responsible.

3.3 Definitions & Conventions

Unless otherwise noted, ATSG applies the definitions of key terms according to *SAE AS9110* Section 3 and in the *QMS-16 Definitions and Abbreviations Procedure*.

Subordinate or external documentation is referenced in ***Bold Italic*** font. Requirements specific to the *AS9110* Standard are referenced in non-bold italic font.

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Section 4: Quality Management System

4.1 General Requirements

4.1.1 Process Approach

ATSG’s quality system has been fully documented and implemented and is maintained as needed to meet the requirements of ATSG’s vision and applicable Customer and governing policies.

ATSG has adopted a process-oriented method of management. This approach emphasizes the importance of:

- a) continuous improvement of processes based on objective measurement and analysis.
- b) need to consider processes in terms of added value,
- c) obtaining results of process performance and effectiveness and
- d) understanding, meeting and integrating Customer, *statutory and regulatory* requirements,

For each process identified in use at ATSG, the sequence and interaction of processes has been determined and the process controlled by way of criteria and methods specific to that process. Objectives are set for each process and then measured and monitored with appropriate data gathered and analyzed to ensure process effectiveness. During Management Review (see 5.6), process resources are discussed and allocated by management, as applicable. Corrective and preventive action is taken to ensure the processes achieve the desired results and continually improve.

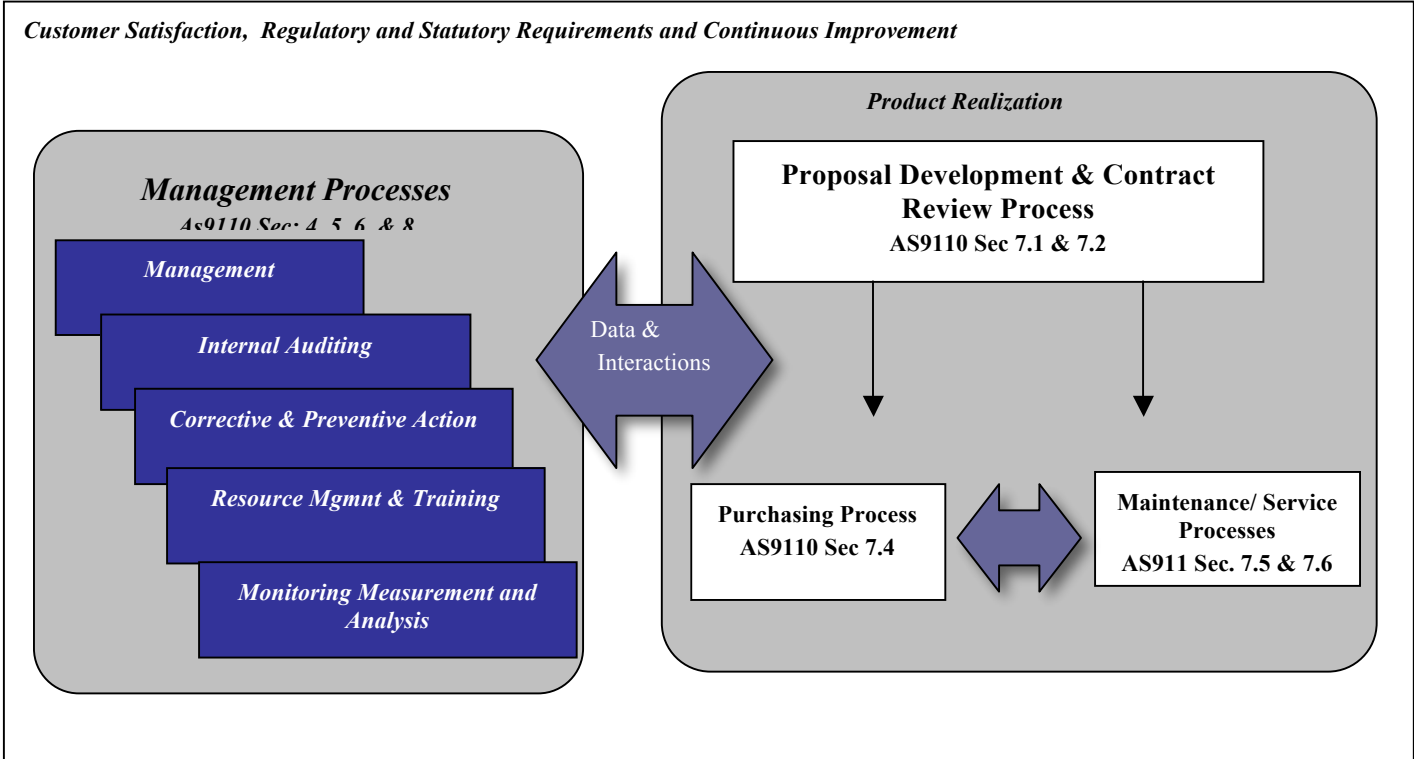
Every process has at least one QMS Procedure that defines it in greater detail and many procedures include a process map. These process maps define the details of each process through the use of individual process maps, which includes owners, inputs, outputs, check stages and objectives.

The relationship between the listed processes and their applicable **AS9110** clauses is shown in the table in Appendix A and applicable documentation is shown in Appendix B.

Outsourced processes and their controls are defined in Appendix C and controlled by the purchasing process (7.4).

ATSG has obtained and maintains documented approvals and associated ratings, certificates, statutory and regulatory compliance, licenses and permits for the quality management system.

4.1.2 Overall Process Sequence & Interaction

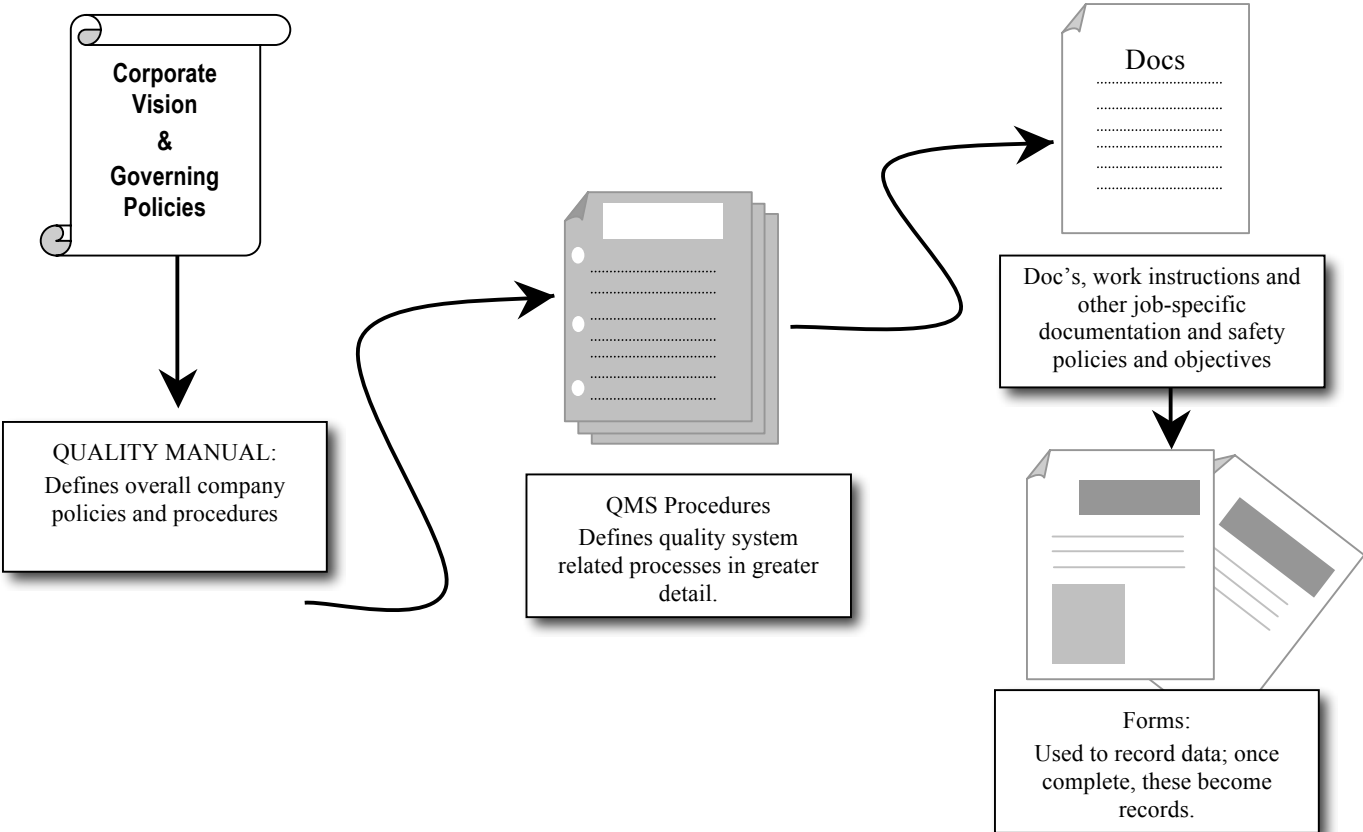


4.2 Documentation

4.2.1 Overview of Documentation

ATSG maintains all required documentation to effectively sustain its quality management system. All Managers are responsible for the implementation of procedures and records in their areas as required by the Quality Management System.

The quality system documentation is comprised of a hierarchy of documents that flow from this Quality Manual. All documents must support and enhance the primary mandates of the Corporate Vision and Governing Policies as defined in Section 2.



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The order of precedence of order-specific documentation is as follows unless otherwise directed by Customer or government requirements:

1. Typed provision set forth on the Contract/Purchase Order
2. Preprinted portion of the Contract/Purchase Order including the General Provisions, Statement of Work, specification/drawings attached or incorporated by reference.
3. ATSG's specifications
4. Government specifications
5. Vendor/Seller specifications

4.2.2 Quality Manual and Procedures

The primary purpose of the Quality Manual and QMS Procedures is to describe and document the Quality Management System in place at ATSG and to define all the processes in use within ATSG. It is issued under the authority of the President or Designee.

Copies of the manual are controlled by means as described below. Uncontrolled copies may be distributed to Customers as requested and shall be marked "Uncontrolled".

This Quality Manual has been developed by top management to define the quality system processes and policies in use at ATSG. It is meant to be used by Company personnel's as the primary source of official Company quality policies as well as Customers and third parties that wish to verify ATSG's quality management system.

Additional procedures and work instructions have been developed to further clarify specific instruction for the execution of these procedures. Where subordinate documents are referenced, they are shown in ***bold italics***.

Distributed copies will be uncontrolled and not subject to revision notification unless otherwise agreed.

A description of the process and procedures, as applicable, used for:

- a. Establishing and maintaining proficiency of personnel;
- b. Establishing and maintaining rosters for certifying staff/personnel;
- c. Establishing and maintaining the training program;
- d. Establishing and maintaining current approved or accepted technical data;
- e. The acceptance of incoming articles;
- f. Inspecting all articles that have been involved in an accident for hiddin damage before maintenance is performed;
- g. Conducting the maintenance process in compliance with customer, statuary and regulatory requirements.
- h. Performing final inspection and 'return to service' of maintained articles;
- i. Governing work performed at another location.

4.2.3 Control of Documents

Documents are controlled so that current approved technical data is established, approved, reviewed and maintained prior to release. Only the latest versions are available to users; previous versions and legacy

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documents are segregated and retained in document control libraries for historical purposes. The controls for documents are defined in *QMS-01 Document Control Procedure*.

4.2.4 Control of Records

Records are controlled to provide evidence of conformity to requirements. Records that are subject to control are maintained according to *QMS-03 Records Control Procedure*.

Section 5: Management Responsibility

5.1 Management Commitment

ATSG’s Management is committed to the ongoing maintenance and improvement of the quality management system. To ensure this, management focuses on deploying practical steps that concretely support the Quality and Environmental Policies.

- **CUSTOMER FOCUS:** We communicate the importance of meeting Customer, regulatory and statutory requirements through personnel orientation (see 6.2.2) and by providing personnel proper documentation of requirements and workmanship criteria (see 7.5.1.1). The Proposal Development and Contract Review process ensures that Customer requirements are captured and reviewed before acceptance. (see 7.2)
- **EMPOWERMENT:** All personnel are empowered to submit requests for corrective or preventive action to affect change and improve ATSG and its processes and their own experience at ATSG. All personnel are granted the authority to submit requests for corrective or preventive action (see 8.5). All personnel are empowered to stop maintenance activities when nonconformities are encountered (see 8.3).
- **INTELLIGENT MANAGEMENT:** We aim to ensure that management makes decisions based on facts, data and evidence. To do this, management has established quality and safety objectives for all processes. (see 5.4.1). The internal audit process relies on the recording of verifiable data as a means of driving corrective and preventive actions as well as improvement efforts. (see 8.2.2). By conducting periodic management reviews of the quality system, management ensures the overall effectiveness of the quality system. (see 5.6).
- **WORKPLACE EXCELLENCE:** We ensure the work environment, facilities and atmosphere are best in class through management understanding and reviews resource requirements (see 5.6) and through ongoing communication with personnel regarding the workplace (see 5.5.3).

5.2 Customer Focus

See 5.1 above.

5.3 Quality Policy

The Quality Policy has been developed and approved by ATSG’s President. This policy is taught to all new personnel and audited regularly to ensure its distribution and the ongoing overall awareness of it by personnels. During Management Review, the Quality Policy is reviewed for continuing suitability.

The Quality Policy is defined in Section 2.0.

The Quality Policy is contained inside the Quality Manual that is controlled according to QMS-01 Document Control. The Quality Policy may also be issued as a stand-alone document, separately controlled.

5.4 Planning

5.4.1 Quality Objectives

Quality objectives are communicated throughout the organization and are reviewed at each management review meeting. The records of management reviews include the current goals set for each objective and current standing. Additional Customer-specific goals may also be set; these will be published either in appropriate work instructions, proposal documents or in the records of management review.

Quality Objectives include but may not be limited to:

Product/service conformity: 100%

Product/service on time delivery: 95% or per customer requirements

5.4.2 Quality Management System Planning

This quality system has been planned in advance and its documented policies and procedures reviewed prior to implementation. Subsequent major changes that may affect the performance, quality or reliability of the product are identified, reviewed and approved and the QMS documentation updated.

The QMS documentation acts as the overall quality plan for ATSG. As required, specific quality processes may be developed for individual products or technologies, which shall include the information given above. In such cases, the President or Designee (with support from the Quality Group) shall have overall responsibility for the development of quality plans.

Quality system planning and control is treated as a process (called the Management process) and is fully defined in ***QMS-04 Management Process***.

5.4.3 Safety Objectives

During Management Review (see 5.6), safety objectives are discussed and allocated by management, as applicable. Corrective and preventive action is taken to ensure the processes achieve the desired results and continually improve.

Safety Objectives include but may not be limited to:

Objective	Goal
No accidents to personnel	Zero Incidents
No Product (Customer Property) Damage	Zero Incidents

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Tool Control (no Lost Tools/Tooling	Zero Tools Lost
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5.5 Responsibility, Authority and Communication

5.5.1 Responsibility and Authority

The organizational chart illustrates the basic chain of command and authority level of ATSG personnel. In all cases, the appropriate person has been granted both the responsibility and authority for their position’s duties.

All personnel are empowered to request corrective or preventive action to prevent the occurrence of nonconformities relating to product, process or the Quality Management System. The Quality Director oversees this effort and makes sure that such issues are identified and recorded, that solutions are transmitted to and resolved by the proper functions, and that the solutions are verified for effectiveness.

5.5.1.1 Accountable Executive Manager (Basic Job Description)

Top management has appointed a manager with corporate authority to ensure that all ordered maintenance can be financed with the necessary resources and all ordered maintenance is completed according to all requirements of the organization, Customer and Statutory/regulatory Authority.

5.5.1.2 Maintenance Manager(s) (Basic Job Description)

Top management has appointed a manager that is responsible for assuring that all maintenance required has been completed according to all requirements of ATSG, Customer Statutory/regulatory Authority.

President / Maintenance Mgr is responsible for:

Overall operations of ATSG Providing adequate housing and facilities for the scope of services in accordance with applicable Customer/ Regulatory/ Statutory requirements. Providing a senior management staff which meets all Customer/ Regulatory/ Statutory requirements. Providing qualified personnel to plan, supervise, perform, and approve for return to service work. Providing adequate training, equipment, materials, and competent personnel pertinent to the operation of the scope of services in accordance with applicable Customer/ Regulatory/ Statutory requirements.

Has authority over the policies and procedures that govern contract maintenance. The duties and responsibilities of the President / Maintenance Mgr may be delegated to any qualified assistant; however, such delegation does not relieve the PRESIDENT / MAINTENANCE MGR of the overall responsibility. In the absence of the PRESIDENT / MAINTENANCE MGR, the Accountable Manager acts on his or her behalf. Being authorized to act on behalf of ATSG.

5.5.2 Management Representative (Basic Job Description)

The Quality Director of ATSG has been assigned the role of Quality System Management Representative. The Quality Director is responsible for ensuring the proper implementation of the Quality Management System as well as for overseeing the maintenance of the system, reporting on its effectiveness during management review and representing the Quality Management System to Customers, registrars and other concerned parties.

The Quality Director is responsible for facilitation of these policies and procedures and has the responsibility and authority to resolve matters relative to quality in products, processes and services from internal and external

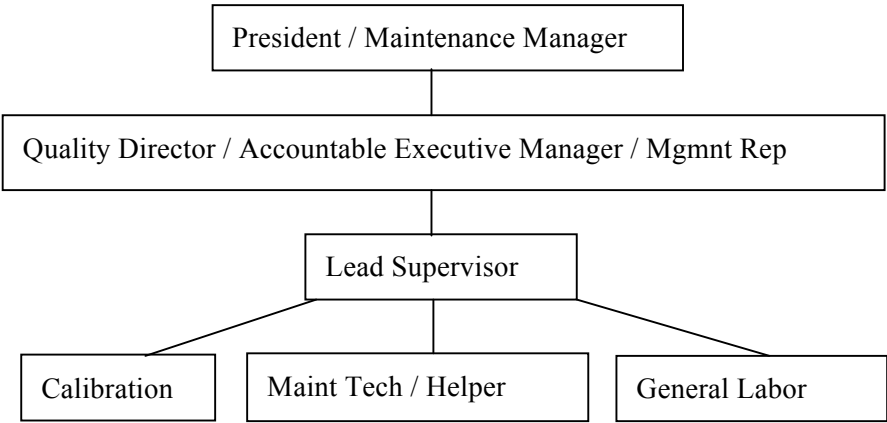
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sources. Quality may suspend internal and external processes and services that do not meet requirements until appropriate corrective and preventive action is implemented on an expedited, high priority basis. In addition, Quality may withhold internal and external shipments of products that do not meet requirements until appropriate corrective and preventive action is implemented on an expedited, high priority basis. The Quality Director has unrestricted access to top management and reports directly to the President or Designee. Quality supervisors, inspectors and auditors report directly to the Quality Director.

In addition, the Quality Director ensures the promotion and awareness of Customer requirements throughout the organization.

Quality Director / Accountable Executive Manager / Mgmnt Rep is responsible for:

Overall operations of ATSG. Being authorized to act on behalf of ATSG. Providing customer interface at the senior management level. Identifying areas of concern for ATSG and initiating corrective action plans. Participating in contract reviews of all ATSG contracts. Providing direction for additional growth and expansion. Reviewing policies and procedures for compliance with corporate policy. Maintaining communications with the PRESIDENT / MAINTENANCE MGR providing information relating to the status of all ATSG operations. The duties and responsibilities of the Accountable Manager may be delegated to any qualified assistant; however, such delegation does not relieve the Accountable Manager of the overall responsibility. Specifically, he or she is responsible for: Acting as the Accountable Manager. Responsible for ensuring the facilities and equipment are adequate to perform all work under the scope of services in accordance with applicable Customer/ Regulatory/ Statutory requirements. Ensuring ATSG does not operate without or in violation of its scope of services in accordance with applicable Customer/ Regulatory/ Statutory requirements. Ensuring ATSG changes are done in a controlled manner. Ensuring safe work environment. Being familiar with the methods, techniques, practices, aids, equipment, and tools used to perform maintenance, preventive maintenance, or alterations.



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5.5.3 Internal Communication

To ensure proper communication between and throughout all levels of personnel within ATSG, internal communication is conducted and monitored within the Management process, which is documented in *QMS-04 Management Process*.

Management periodically communicates with personnel to discuss Company policies and the status of the quality system, safety policy and objectives and other information.

Personnel are encouraged to use the Corrective Action Request (CAR) system to submit suggestions for improvements. This system requires management to take action on quality related issues within ATSG.

5.6 Management Review

5.6.1 General

Management Review meetings are conducted according to *QMS-04 Management Process*. This procedure defines the frequency and the required attendees.

5.6.2 Review Input

Inputs for management review are defined in the *QMS-04 Management Process Procedure*.

5.6.3 Review Output

Management review meeting minutes will be posted to the network or intranet to communicate the performance of the quality system to personnel.

5.7 Safety Policy

ATSG has established and regularly communicates an appropriate safety policy and safety objectives and is committed to continuously improve the safety program. Management review meetings are conducted according to QMS-04 Management Process to review safety objectives and continuing suitability.

Section 6: Resource Management

6.1 Provision of Resources

During management review, ATSG's management determines and provides the resources needed to implement and maintain the quality management system and continually improve its effectiveness. ATSG continually determines the availability of tools, technical data and qualified personnel to ensure the safe completion of the maintenance, repair and overhaul activities.

The processes of Management and Proposal Development and Contract Review have been developed to enhance Customer satisfaction by meeting Customer requirements and exceeding Customer expectations.

All personnel may also submit requests for corrective or preventive action regarding other resource needs or issues.

Resource management is discussed in *QMS-04 Management Process*.

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6.2 Human Resources

6.2.1 General

ATSG's personnel are selected, trained and evaluated to ensure that those personnel performing work affecting process or product requirements are competent on the basis of appropriate education, training, skills and experience. As required, personnel shall undergo training to develop or improve these abilities. *Non-certified personnel are assessed on their ability to complete maintenance, repair and overhaul operations prior to performing work.*

6.2.2 Competence, Training and Awareness

All Company personnel are hired on the basis of their ability to perform acceptable work. Subsequent training is performed to ensure each personnel is knowledgeable in their job function and their role within ATSG.

ATSG has implemented a training program that:

- Defines the job tasks in use that impact the quality of products or services
- Determines the necessary *proficiency* for personnel in each functional area,
- Documents the qualification of each personnel for each job task
- *Ensures that continuation training is provided that addresses changes in relevant regulatory requirements, Company procedures, quality management documentation and changes and maintenance standards of the articles being maintained.*
- Ensures that personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives
- *Ensures that personnel performing maintenance, repair and overhaul, release of aircraft and articles are qualified and certified according to Authority and Customer requirements - names are maintained on a roster.*
- *Establishes an initial and continuation training program to ensure that personnel performing specific tasks remain current in terms of procedures, human factors, technical knowledge, applicable Authority requirements and are using current approved technical data and changes in relevant Authority requirements, Company procedures and applicable maintenance standards.*
- Periodically reviews and re-certifies personnel for operations where recertification is required or beneficial.
- Revoke an personnel qualification/certification based on performance and the discretion of an immediate supervisor.
- Provides annual health and safety training to personnel.
- Provides initial training for new personnel and ongoing training for existing personnel

Management conducts periodic reviews of personnel performance.

Appropriate records of education, training, skills and experience will be maintained. The internal auditing process shall evaluate the effectiveness of training and its affect on product and service quality; in addition, the review of training effectiveness shall be a permanent feature of Management Review.

The training program is defined in ***QMS-06 Training Competence and Awareness.***

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6.3 Infrastructure

ATSG has determined and provided the basic infrastructure needed to achieve conformity to product requirements. Infrastructure requirements are regularly reviewed during Management Review and include a review of:

- buildings, housekeeping and workspace
- communication services, such as network connectivity, internet, intranet, etc.
- facilities acceptable to Authorities and Customers when maintenance, repair and overhaul operations are performed away from the fixed location
- process equipment and software
- utilities, including ventilation, electricity, water

ATSG utilizes maintenance practices and skilled maintenance personnel to ensure the ongoing maintenance of process equipment.

The Facilities Manager shall ensure the ongoing maintenance of the facilities. IT resources are overseen by the IT staff, answering to the Quality Director.

For more on management’s controls over infrastructure see *QMS-04 Management Process*.

6.4 Work Environment

ATSG has determined and provides the basic work environment requirements needed to achieve conformity to product requirements. The work environment is periodically reviewed during internal audits and work environment-related resource requirements are regularly reviewed during Management Review.

For more on management’s controls over the work environment see *QMS-04 Management Process*.

Section 7: Product & Service Realization

7.1 Planning of Product Realization

In planning the processes for product realization, management has ensured that the processes are consistent with the requirements of the other processes within the quality system.

For each process, quality and safety objectives have been established. At times additional objectives and measurements may be set for a given product; in such cases these shall be defined in work instructions or other controlled documents. Likewise, these instructions shall define any processes, documents or resource requirements specific to the product. Inspection, testing and other monitoring steps will also be defined in work instructions or other controlled documents.

The creation, review and approval of the work order during Proposal Development and Contract Review ensures that planning of each order is fully conducted and recorded.

7.1.1 Project Management

Project management is conducted according to *QMS-07 Proposal Development and Contract Review Procedure*.

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7.1.2 Risk Management

Risk management is conducted according to *QMS-18 Risk Mitigation and Planning Procedure*.

7.1.3 Configuration Management

Configuration Management of jigs and fixtures are assigned and controlled by the customer. ATSG has established, implemented and maintains a configuration management system that includes, as appropriate to the product and customer requirements.

- a. Configuration Management Planning.
- b. Configuration Identification
- c. Change Control
- d. Configuration Status Accounting
- e. Configuration Audit (Completed during internal audits)

7.1.4 Control of Work Transfers

When ATSG provides supplies for outside processing, such as acceptance testing, the work is performed under the following controls per section 7.4

- The outsourced service provider must be an approved, evaluated Supplier according to the requirements of section 7.4
- The Supplier is required to notify ATSG of any process changes, any nonconformity or other issues.
- The Supplier will be subject to the Supplier Corrective Action System, as defined in section 8.5.2.
- Work must be conducted on the supplies according to any specifications listed on the purchase order.

7.2 Customer-Related Processes

7.2.1 Determination of Requirements

ATSG captures all requirements of the Customer as well as any *special requirements*, applicable statutory or regulatory *and Authority* requirements as part of the Proposal Development & Contract Review process.

This process is defined in *QMS-07 Proposal Development & Contract Review*.

7.2.2 Review of Requirements

Once requirements are captured, risks and special requirements are reviewed to ensure that ATSG has the capability to meet requirements. ATSG ensures that maintenance contracts include the scope of work and defines the data and delivery requirements as well as requirements regarding subcontracting of work. This occurs before order acceptance during the Proposal Development & Contract Review process as defined in **QMS-07 Proposal Development & Contract Review**. The contract amendment process includes provisions for disposition of out-of-scope defects that are discovered during maintenance, repair or overhaul operations.

7.2.3 Customer Communication

ATSG treats Customer communication as an important method of gauging its success and ability to meet Customer requirements. The following communication methods are used within the Management process:

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- Customer feedback, including Customer complaints, must be recorded in the corrective action and improvement systems. See 8.5.
- Inquiries regarding contracts, deliverables, including amendments to active contracts, shall be routed to the Contracts Group. Changes to active contracts must be processed according to section 7.2.1 and 7.2.2.
- Questions regarding product information are routed to the appropriate Manager.
- Trip reports that are the result of visits to Customers are maintained and distributed as necessary.

7.3 Design and Development

Excluded – ATSG takes the following exclusion: 7.3 Design and Development. This is a justified exclusion because ATSG is not design responsible.

7.4 Purchasing

Purchasing is treated as a process within ATSG’s quality system and is fully defined in ***QMS-08 Purchasing***.

The purchasing process ensures that ATSG only purchases critical materials and services from Suppliers and subcontractors that have undergone *risk* evaluation and approval. Formal purchase orders are used to transmit ATSG’s requirements to Suppliers and these are reviewed and approved prior to release. *ATSG’s purchasing process satisfies regulatory Authority requirements regarding use of non-certificated Suppliers.*

Incoming materials are inspected by Quality to ensure they meet requirements before use and as a means of monitoring ongoing Supplier quality. All suppliers are continually monitored for quality and OTD.

7.5 Production and Service Provision

7.5.1 Control of Production and Service Provision

ATSG plans and carries out processes for product realization according to section 7.1 of this manual. In general, this includes assurances that:

- *A list of approved maintenance / repair process capabilities and/or current ratings is maintained.*
- *Maintenance operations do not adversely affect areas outside the scope of the planned maintenance.*
- Monitoring and measurement equipment is controlled by way of routine maintenance and proper training use for operators and by designating unapproved equipment with proper signage to prevent use lockout/tagout as per the COMNAVAIRFORCEINST 4790.
- Maintenance documents identify all necessary work steps.
- Processes are controlled by monitoring of process parameters where applicable and by approving processes by way of supporting documentation approval. These procedures reflect the requirements of any applicable reference standards, regulatory codes, quality plans and other documented procedures.
- Production methods are controlled by way of training and documented work instructions as applicable.
- *There is compliance with reference standards / codes, quality plans, manufacturer’s recommendations and/or documented work instructions.*
- There is effective implementation of monitoring and measurement procedures per the technical design holder, manufacturer and/or customer regulations.

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- There is effective implementation of release, delivery and post-delivery activities.
- Workmanship is controlled by way of documented maintenance manual instructions where the lack of such procedures would affect product quality.

In-process inspection is conducted according to work instruction or other controlled document to verify product quality on an ongoing basis. The Quality inspector or qualified personnel will complete the required inspection form and by signing off is attesting that they have verified the requirements as documented in the drawing, work instruction or other reference. See also Final Inspection.

These activities are fully defined in *QMS-10 Maintenance*.

7.5.1.1 Maintenance Documentation

Maintenance operations are performed according to documentation developed by the technical design holder, manufacturer and/or customer regulations. The work instruction, drawings and other documents define the maintenance and inspection steps necessary for the order.

In addition, ATSG may utilize drawings, bills of material, work instructions and other documents to define the necessary requirements. All such documents are reviewed before release to maintenance.

These activities are fully defined in the *QMS-10 Maintenance*.

7.5.1.2 Control of Production Process Changes

Only the technical design holder, manufacturer and/or customer may approve changes to maintenance processes. ATSG will identify and obtain Customer and/or regulatory authority approval for changes when required.

The results of changes to maintenance processes are assessed through various inspections to confirm that the desired effect has been achieved without adverse effects to product quality.

These activities are fully defined in the *QMS-10 Maintenance*.

7.5.1.3 Control of Maintenance Equipment & Tools

Production equipment, tools and programs are *defined by technical data or equivalent and are* validated prior to use and maintained and inspected periodically according to the maintenance system.

The internal audit process ensures that storage conditions for maintenance equipment or tooling in storage is adequate.

See section 8.2.2.

7.5.1.4 Post-Delivery Support

ATSG provides as applicable:

- Actions to be taken where problems are identified after delivery, including investigation, reporting activities and actions on service information consistent with contractual and/or regulatory requirements
- Approval, control and use of repair instructions according to *QMS-14 Control of Nonconforming Product Procedure*

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- Collecting and analyzing in-service data using per Customer contacts, Engineering and Contracts support
- Control of technical documentation according to ***QMS-01 Document Control Procedure and QMS-02 Configuration Management Procedure***
- Technical documentation requiring update and controls for offsite work is defined by ***QMS-02 Configuration Management Procedure***.

7.5.1.5 Control of Service Operations

ATSG services supplies returned to it for warranty work or repair - field servicing is(is not) performed. For such product work, all normal processes and procedures apply as if the supply were a new manufacture.

7.5.2 Validation of Processes for Production and Service Provision

ATSG performs or out sources some work operations where the resulting quality of the work cannot be ascertained without destructive physical analysis. These operations are sometimes referred to as “special processes.” ATSG utilizes the technical design holder, manufacturer and/or customer regulations regulatory and statutory requirements the following controls to ensure such operations result in quality outputs:

- **Process Name.** Briefly describe acceptance method

7.5.3 Identification and Traceability

All products are identified throughout product life cycle as defined in ***QMS-10 Maintenance Procedure***. Other identification and traceability requirements are defined in further subordinate documents and/or job-specific documentation.

Signatures and 4 digit number of inspectors may also be used to identify acceptance of material or product. The Quality Director maintains a log of inspector signatures/initials.

7.5.4 Customer Property

Where Customer property is provided to ATSG for processing or use, it is suitably marked with an asset# indicated on the property and related paperwork.

If the property is designated by the Customer for a specific use or order, the information is clearly indicated. All normal handling and protection measures are employed for Customer property as if it were owned by ATSG. Damaged or missing Customer property is reported to the Customer for disposition and is processed through the Material Review Board system.

Government and Customer property is controlled according to ***QMS-10 Maintenance Process***, specified contractual requirements and applicable property and/or facility agreements. NON-RFI/CP property is controlled according to specified contractual requirements and applicable property and/or facility agreements.

7.5.5 Preservation of Product

The Quality Director specifies, where required and according to contractual directives, instructions for the proper handling, preservation, storage, packaging and shipping of supplies to protect quality and prevent damage, loss, deterioration, degradation or substitution of products and *segregation of items for maintenance*

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that are not intended for maintenance to prevent their unintended use. The instructions are detailed in the applicable job documentation and general rules are defined in *QMS-10 Maintenance Process*.

7.6 Control of Monitoring and Measuring Equipment

All measuring and test equipment instruments and devices used to determine an item's conformance to specified requirements are provided and maintained and are calibrated and/or verified at regularly scheduled intervals that are determined on the basis of time.

The controls for such equipment and calibration activities are defined in *QMS-15 Calibration*.

Section 8: Measurement, Analysis, & Improvement

8.1 General

Measuring, analyzing and improvement is conducted through implemented processes that ensure ATSG can demonstrate conformity to product requirements, conformity of the quality management system and continual improvement the effectiveness of the quality management system.

Where statistical techniques are used, these are defined in associated work instructions; in all cases, statistical techniques used for product acceptance preclude the release of nonconforming material.

Maintenance and Quality collect data for determining the acceptability of this quality program, which may include but is not limited to:

- 1st Article inspection reports
- 1st Piece inspection reports
- Acceptance test reports
- Analytical summaries
- Audit reports (systems, procedures, Suppliers, processes, etc.)
- Corrective action reports
- Correlation of inspection results with maintenance methods and processes
- Final inspection and test reports
- Graphic materials
- In-process inspection and test reports
- Organization and key personnel changes
- Product and material reports
- Raw inspection and test data
- Receiving inspection reports
- Source inspection reports
- Statistical process control reports
- Supplier performance, such as acceptance and rejection rates

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8.2 Monitoring and Measurement

8.2.1 Customer Satisfaction

To monitor and measure Customer satisfaction, ATSG collects feedback from Customers using one or more of the following methods:

- *Corrective action requests*
- Customer complaints are processed through the corrective action system
- Customer-provided performance data is gathered and analyzed
- *On-time delivery*
- *Product conformity*
- Purchasing and payment history
- Trip report information

8.2.2 Internal Audit

Internal quality audits are conducted to ensure ongoing compliance with requirements of ATSG's policies and procedures. This is accomplished by auditing against all identified processes and requirements at least once annually. Audit requirements include those of *ISO 9001*, *AS9110* and ATSG's Quality Manual, as well as *Customer contract requirements and requirements of Customers or regulatory authorities, as applicable.*

The internal audit process is fully defined in *QMS-12 Internal Auditing*.


8.2.3 Monitoring and Measurement of Processes

Process performance is measured through quality objectives and related data. The method for measuring process performance is defined in 5.4.1. These methods demonstrate the ability of each process to achieve the planned objective. *ATSG provides objective evidence that all maintenance operations have been completed as planned.*

8.2.4 Monitoring and Measurement of Product

To ensure the conformance of product to requirements, monitoring and measurement is conducted throughout the product's lifecycle. These checks occur within each process and while other processes are used specifically to monitor or measure product conformance.

The Quality Group is responsible for examining engineering and maintenance documentation for the purpose of identifying the criteria (inspection requirements) for approval and rejection of each work operation, its associated equipment and personnel and the deliverable supplies produced by the process. Parts, components and subassemblies are inspected by the Quality Group throughout their stages of maintenance and *specific inspection and testing operations that must be verified and/or witnessed are identified.* These inspections take place as called for on inspection instructions, travelers, Maintenance or Quality Procedures, other quality program requirements or when there is an occurrence of some nature that indicates that a special inspection is appropriate as determined by the Quality Group. Whenever a material condition exists that differs from "normal", the inspector alerts quality supervision for further investigation. The "alert" should be in the form of a *Nonconformance Report* or other appropriate documentation suitable for the circumstance. *Defects are*

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identified and processed according to Customer and regulatory Authority requirements that are discovered during maintenance that are outside the scope of the maintenance contract.

Inspection methods may include but are not limited to: preliminary inspections where appropriate, inspection for damage of all articles involved in an accident, inspections by maintenance personnel with monitoring and/or witnessing by the Quality Group, automated inspection gauges, moving line or lot sampling, set-up or first-piece approval, product inspection station(s), inspection or test department(s) and/or roving inspectors. Inspections are made using applicable inspection instructions, drawings, specifications and other appropriate reference materials. The inspection includes verification of compliance to: workmanship standards, physical and functional characteristics, complete and correct documentation and the effectiveness of special processes. When physical inspection of processed supplies is impossible or disadvantageous, indirect control of product quality is accomplished by monitoring processing methods, equipment and personnel. Physical inspection and process monitoring is performed when control of product quality is inadequate without both methods.

Inspection by statistical sampling is applied, as appropriate and when specified, in Receiving, In-Process and Final Inspection. Sampling plans are used when tests are destructive or when the records, inherent characteristics of the product or the non-critical application of the product indicate that less than 100% inspection or testing can be employed without jeopardizing quality. The Quality Group takes a lead role in developing and examining alternative sampling plans, testing them, specifying their application and analyzing the results of their use. Only sampling plans approved by the Quality Group and specified for designated applications are employed. Authorized sampling plans are based on $C = 0$ and are documented in work instructions or other controlled documents. The specified sampling plan for a designated application is provided in the Inspection Instruction. When applying a sampling plan, inspectors and operators randomly select samples from a specified lot without commingling of like items from different lots. Sampling to permit defects is not permitted. Statistical process control policies and procedures are subject to Customer review and approval prior to implementation.

In the event supplies are needed prior to receipt of Certified Test Data, Certificate of Compliance or Analysis, approved Request for Deviation or Waiver or other limited risk condition, at least two applicable MRB members may release the articles on a **Calculated Risk Release Form**. The Calculated Risk Release form is produced by the Requestor and signed by members of the MRB to release material for maintenance pending closure of the calculated risk condition. A copy of the Calculated Risk Release Form is forwarded to the Quality Director for suspense in the appropriate product record. An open CRR prevents delivery of supplies unless waived by the Customer.

ATSG has implemented a procedure for preparation and completion of regulatory Authority documentation upon completion of work that includes conformity determinations, airworthiness approvals, release certificate, approval for return-to-service after maintenance and export documentation.

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8.2.4.1 Inspection Documentation

The engineering drawing or other technical documentation provides the requirements for all supplies. In all cases, this must include criteria for acceptance/rejection; where this is not clear the Quality Director oversees clarification of these criteria with the Customer.

Required inspection and test steps are defined in various documents depending on the nature of the product or order. These include the job traveler, work instructions or procedures and/or engineering specifications or other controlled documents, etc.

Various inspection records are used to record the results of inspections and tests along with any nonconforming measurements. Records are in a form that is suitable to the method of operation. The required record to use is identified in the appropriate work instruction, traveler or other controlled document. Records of product acceptance are traceable to the authorizing Personnel.

8.2.4.2 New Maintenance Process

New maintenance processes are documented, qualified and approved by the Customer and/or regulatory Authority.

8.2.4.3 Incoming (R&I) Inspection:

The receiving procedure process is fully defined in *QMS-09 Receiving Procedure*.

8.2.4.4 In-Process Inspection:

In-process inspections are conducted during maintenance to ensure ongoing quality of work *and include required Customer or Authority inspections*. These may be done randomly at the discretion of the operator or management or via planned QC inspections according to a defined acceptance sampling plan; in the latter case, the sampling plan shall be statistically sound and approved by either the Customer or ATSG Quality Group.

Records of in-process inspections are kept on the traveler and/or maintenance logs located in the applicable production area.

8.2.4.5 Final Inspection:

Once all maintenance operations are completed, articles shall be submitted to Quality for a final inspection and return to service. This may be performed according to an accepted sampling plan. The sampling plan shall be statistically sound and approved by either the Customer or ATSG Quality Group.

Records of final inspections are kept on the traveler, inspection report(s) or other statutory and regulatory documentation. The specific document used is dependent on the order or type of product.

8.3 Control of Nonconforming Product

All supplies found to be nonconforming against specified requirements are identified, documented, segregated (if possible), evaluated and dispositioned to prevent unintended use or delivery. This applies to incoming product (vendor-supplied), in-process product and final product. *“Use-as-is” and “repair” dispositions are not authorized for Company designed products that depart from and are controlled by a Customer specification.*

See *QMS-14 Control of Nonconforming Product*.

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8.4 Analysis of Data

ATSG determines, collects and analyzes appropriate data to demonstrate the suitability and effectiveness of the quality management system. The data is used to evaluate where continual improvement of the effectiveness of the quality management system can be made.

In addition to the quality objective data of Customer satisfaction, product conformity to requirements and process trend analysis, the status and acceptability of vendors and subcontractors will be regularly reviewed during Management Review.

For more on analysis of data see *QMS-04 Management Process*.

8.5 Improvement

8.5.1 Continual Improvement

It is the goal of all Company personnel to continually improve the effectiveness of the quality management system through the use of the quality policy, quality objectives, audit results, analysis of data, corrective and preventive actions and management review.

8.5.2 Corrective Action

ATSG has implemented and maintains a robust system for identifying and reporting nonconformities requiring corrective action. These nonconformities can be related to product, processes or other criteria. Such reports result in a root cause analysis by an assigned individual or team and implementation of an action plan to correct the root causes and prevent recurrence as well as follow-up activities to ensure actions taken are satisfactory.

This process is defined in *QMS-13 Corrective & Preventive Action*.

8.5.3 Preventive Action

In addition to the preventive measures taken for corrective action requests (used to prevent recurrence of an existing problem) the Corrective and Preventive Action process is used to identify potential problems to prevent them from becoming actual problems.

This process is defined in *QMS-13 Corrective & Preventive Action*.

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Appendix A: Company Processes and Applicable AS9110

Process	Applicable Clauses
Control of Nonconforming Product	8.3 Control of Nonconforming Product
Corrective & Preventive Action	8.5.2 Corrective Action 8.5.3 Preventive Action
Design & Development	7.3 Design & Development 7.5.2 Validation of Processes
Internal Auditing	8.2.2 Internal Audits
Maintenance and Completion of Regulatory Authority Documentation	7.1 Planning of Product Realization 7.5.1.1 Maintenance Documentation 7.5.1.2 Control of Maintenance Process Changes 7.5.1.3 Control of Maintenance Equipment 7.5.1.4 Control of Work Transferred 7.5.1.5 Control of Service Operations 7.5.3 Identification & Traceability 7.5.4 Customer Property 7.5.5 Preservation 8.2.4 Monitoring & Measurement of Product 8.2.4.1 Inspection Documentation 8.2.4.2 New Maintenance Process 8.3 Control of Nonconforming Product
Management	4.1 QMS General Requirements 4.2.1 Documentation Requirements, General 4.2.2 Quality Manual 4.2.3 Control of Documents 4.2.4 Control of Records 5.1 Management Commitment 5.2 Customer Focus 5.3 Quality Policy 5.4.1 Quality Objectives 5.4.2 Quality Management System Planning 5.5.1 Responsibility and Authority 5.5.2 Management Representative 5.5.3 Internal Communication 5.6.1 Management Review 5.6.2 Management Review Input 5.6.3 Management Review Output 6.1 Provision of Resources 6.2.1 Human Resources, General 6.2.2 Competence, Awareness and Training 6.3 Infrastructure 6.4 Work Environment

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Process	Applicable Clauses
	7.1.3 Configuration Management 7.2.3 Customer Communication 7.5.1 Control of Production & Service Provision 7.6 Control of Monitoring & Measurement Devices 8.1 Measurement, Analysis & Improvement: General 8.2.1 Customer Satisfaction 8.2.3 Monitoring & Measurement of Processes 8.4 Analysis of Data 8.5.1 Continual Improvement
Proposal Development and Contract Review	7.2.1 Determination of Requirements 7.2.2 Review of Requirements
Purchasing	7.4.1 Purchasing Process 7.4.2 Purchasing Information
Receiving	7.4.3 Verification of Purchased Product 7.5.3 Identification & Traceability 7.5.4 Customer Property 7.5.5 Preservation 8.2.4 Monitoring & Measurement of Product 8.3 Control of Nonconforming Product
Shipping	7.5.3 Identification & Traceability 7.5.5 Preservation 8.3 Control of Nonconforming Product

Appendix B: Company Processes and Applicable Documents

Process	Applicable Company Procedures	Applicable Company Records
Corrective & Preventive Action	ATSG QMS-13 Corrective & Preventive Action	Corrective action records (8.5.2.e) Preventive action records (8.5.3.d)
Design & Development	ATSG QMS-17 Design & Development	Realization processes and resulting product meet requirements (7.1.d) Design inputs records (7.3.2) Design review records (7.3.4) Design verification records (7.3.5) Design validation records (7.3.6) Design change records (7.3.7)
Internal Auditing	ATSG QMS-12 Internal Auditing	Internal audits (8.2.2)
Maintenance and Completion of Regulatory Authority Documentation	ATSG QMS-10 Maintenance ATSG QMS-14 Control of Nonconforming Product	Traceability records (if required) (7.5.3) Records of loss, damage or nonconforming product (7.5.4) Completion of regulatory Authority documentation (8.2.4)

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Process	Applicable Company Procedures	Applicable Company Records
		Records of release authority of inspected product (8.2.4) New maintenance process (8.2.4.2) Control of nonconforming product (8.3)
Management	ATSG QMS-00 Quality Manual ATSG QMS-01 Document Control ATSG QMS-02 Configuration Management ATSG QMS-03 Record Control ATSG QMS-04 Management Process ATSG QMS-05 Responsibilities & Authorities ATSG QMS-06 Training ATSG QMS-15 Calibration ATSG QMS-16 Definitions and Abbreviation	Management review minutes (5.6.1) Training records (6.2.2) Calibration records (7.6)
Proposal Development & Contract Review	ATSG QMS-07 Proposal Development & Contract Review	Contract review records (7.2.2)
Purchasing	ATSG QMS-08 Purchasing	Supplier evaluation records (7.4.1)
Receiving	ATSG QMS-09 Receiving ATSG QMS-14 Control of Nonconforming Product	Records of loss, damage or nonconforming product (7.5.4) Control of nonconforming product (8.3)
Shipping	ATSG QMS-11 Shipping ATSG QMS-14 Control of Nonconforming Product	Records of loss, damage or nonconforming product (7.5.4) Control of nonconforming product (8.3)

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Appendix C: Outsourced Processes

The following outsourced activities include but may not be limited to:

- Acceptance Testing: Only approved labs are used according to ***QMS-08 Purchasing***. All lab results must be accompanied by a certificate or test result that is reviewed by QC. Where applicable, tests must be conducted according to specifications referenced on ATSG Purchase Order.
- Calibration: Only approved calibration labs are used according to ***QMS-08 Purchasing***. Certificates must provide evidence of standards traceability to NIST and must meet all the requirements of section 7.6 of this *Quality Manual*. Compliance to ***ANSI Z540*** is desired but not mandatory; furthermore, the service provider is subject to all other normal vendor evaluation and monitoring.
- Internal Auditing: Contract internal auditors shall have evidence of having attended, at a minimum, the 36 hour RAB/ANAB ***ISO 9001*** Lead Assessor or equivalent course; furthermore, the service provider is subject to all other normal vendor evaluation and monitoring and shall follow internal Company auditing procedures as required.
- NDI/NDT
- Training
- REACH Analysis

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Appendix D:

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Appendix E:

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