



**QUALITY MANAGEMENT SYSTEM
QUALITY MANUAL
REV H
7/28/2011**

Approved By: _____
Date: _____

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4.0 *Introduction*

- a. This manual outlines the policies of USAeroteam relating to its Quality Management System (QMS) covering requirements.
- b. This manual, issued and controlled by USAeroteam will become the source for guiding, implementing, maintaining and continually improving the QMS throughout the company.

4.0.1 **Scope**

The Quality Management System described in this manual applies to all departments and to all team members within USAeroteam.

4.0.2 **Purpose**

- a. The primary purpose of this Quality Manual is to describe and document the Quality Program for managing the processes necessary to achieve planned results and continual improvements, including outsourced processes.
- b. This manual is the central source of general policies, procedures, and responsibilities that in turn authorize and govern creation of subsidiary quality related documentation and activities.
- c. This manual provides comprehensive evidence to all customers, suppliers, and team members that USAeroteam is committed to establishing and maintaining acceptable levels of measurable Quality in its products and services.
- d. The requirements and procedures addressed in the Quality manual are intended to meet the requirements of ISO-9000, AS-9100, and Customer QA specifications.

4.0.3 **Authority**

This manual is issued under the authority of the Quality Manager of USAeroteam.

4.0.4 **Issue of the Manual**

- a. The Master copy of the manual will reside in the “Q” drive on the company’s main server. USAeroteam's Quality Manager is responsible for issuing amendments to the manual and the maintenance of the master copy of the manual. A copy of the quality manual with its latest revision level and related documentation will be available for access by

all team members, customers and regulatory authorities. Revisions made to the Quality Manual are lettered A, B, C etc. consecutively.

Note: Printed copies are uncontrolled and are for reference use only.

4.0.5 Change Control of the Quality Manual

USAeroteam's Quality Manager is solely responsible for all changes and amendments to the Quality Manual.

4.0.6 Review

The Quality Manual and The Quality System will be reviewed and audited annually respectively, to affirm that the current practices conform to the policies set out in the manual.

4.0.7 Control of Documents

QMS documents consist of the Quality Manual, the Standard Operating procedures and the Quality records that are controlled, written appropriately and suitably placed so that they are legible, readily identifiable and retrievable (These typically will reside on the "Q" drive on the main server). Documents will be reviewed and approved for their adequacy and updated and re-approved as necessary. Documents of external origin, which comprise part of our quality system, are also to be identified and controlled. Obsolete documents will be so identified. The Quality Manager and/or Quality Engineer will be responsible for any changes in internal documents and will coordinate with customers and regulatory authorities according to the contract or regulatory requirements.

4.0.8 Control of records

Records will be established and maintained to provide evidence of conformity to requirements and effective operation of quality management system. They will be legible, identifiable and retrievable and retained indefinitely or as directed by the customer. Lengths of storage are established in the forms master database (AA_Master Forms List).

4.1 General Requirements

USAeroteam's (hereinafter, "USAT") has established, documented, implemented and maintains a quality management system and continually improves its effectiveness in accordance with the requirements of the AS9100 International Standard. This system also addresses customer and applicable statutory and regulatory quality management system requirements.

The USAT team is structured to assure that the quality requirements of the Customer are met and adequate personnel have been allocated with the proper authority to complete the duties assigned.

USAT's Senior Management along with the designated Management Representative have

- a) determined within this manual the processes needed for the quality management system and their application throughout the company (processes include processes for management activities, provision of resources, product realization, measurement, analysis and improvement).
- b) determined the sequence and interaction of these processes.
- c) determined the criteria and methods needed to ensure that both the operation and control of these processes are effective,
- d) ensured the availability of resources and information necessary to support the operation and monitoring of these processes,
- e) monitored, measured where applicable, and analyzed these processes, and
- f) implemented actions necessary to achieve planned results and continual improvement of these processes including delegating the authority to personnel who manage, perform, and verify work affecting quality to identify non-conformances in product, processes, and/or the Quality system.

These processes are managed by USAT in accordance with the requirements of the AS9100 International Standard.

Where outside sources and services that affect product conformity to requirements are needed, control is maintained over such processes as defined in the Purchase Orders and/or Routers. The type and extent of control to be applied to these outsourced processes has been defined within Section 7.4, Purchasing.

Ensuring control over outsourced (third-party contractors) processes does not absolve USAT of the responsibility of conformity to all customers, statutory and regulatory requirements. The type and extent of control to be applied to the outsourced process can be influenced by factors such as

- a) the potential impact of the outsourced process on USAT's capability to provide product that conforms to requirements,
- b) the degree to which the control for the process is shared
- c) the capability of achieving the necessary control through the application of 7.4 (Purchasing).

These factors are addressed during the “Kick Off”/Quality Planning meetings (see 7.1, Planning of Product Realization.)

4.2 Documentation Requirements

4.2.1 General

The quality management system documentation includes:

- a) a documented statement of the quality policy as stated below and quality objectives as designated by Senior Management,

Company Quality Policy

**“WE STRIVE TO EXCEED CUSTOMER EXPECTATIONS THROUGH
CONTINUOUS IMPROVEMENT”**

- b) this quality manual with objectives for the quality system
- c) documented procedures and records required by the AS9100 International Standard, and
- d) documents, including records, determined to be necessary to ensure the effective planning, operation and control of its processes.

USAT will continue to ensure that personnel have access to, and are aware of, relevant quality management system documentation and changes.

4.2.2 Quality Manual

This manual is established, maintained and includes

- a) the scope of the quality management system. USAT is responsible for all requirements pertaining to the AS9100 International Standard including design where directed by the customer. USAT is not responsible for on-site servicing of any components or hardware once shipped to the customer.
- b) reference to the documented procedures established for the quality management system, and
- c) descriptions of the interactions between the processes of the quality management system

4.2.3 Control of documents

Documents required by the quality management system such as forms, instructions and procedures are controlled. Records are a special type of document and are controlled according to the requirements given in 4.2.4.

Standard Operating Procedure (4.2.3 Document Control) defines the methods used

- a) to approve documents for adequacy prior to issue
- b) to review and update as necessary and re-approve documents as necessary based on the needs of the company
- c) to ensure that changes and the current revision status of documents are identified
- d) to ensure that relevant versions of applicable documents are available at points of use.
- e) to ensure that documents remain legible and readily identifiable,
- f) to ensure that documents of external origin determined to be necessary for the planning and operation of the quality management system are identified and their distribution controlled, and
- g) to prevent the unintended use of obsolete documents, and to apply suitable identification to them if they are retained for any purpose.
(Master documents are stored in the “Q” drive on the main server and all printed documents are for reference only).

4.2.4 Control of Records

Records established to provide evidence of conformity to requirements and of the effective operation of the quality management system are controlled.

SOP 4.2.4, Control of Records, includes the definition of the controls needed for the identification of records. Most records retained as evidence of conformity to requirements are to be boxed and stored in the Record Retention area labeled as to its contents. These records are stored and protected until disposal in this area. Other records may be stored electronically where feasible.

The documented procedure defines the method for controlling records that are created by and/or retained by suppliers.

Records are legible, readily identifiable and retrievable.

5. MANAGEMENT RESPONSIBILITY

5.1 Management Commitment

Senior management will provide evidence of its commitment to the development and implementation of the quality management system and continually improve its effectiveness by

- a) communicating to the USAT team the importance of meeting customer as well as statutory and regulatory requirements through Walk-about and other company meetings,
- b) establishing and communicating the quality policy by posting in prominent areas of the plant
- c) ensuring that quality objectives are established
- d) conducting management reviews, and
- e) ensuring the availability of resources.

5.2 Customer Focus

Top management ensures that customer requirements are determined and are met with the aim of enhancing customer satisfaction (see 7.2.1 (Determination of Requirements related to the Product) and 8.2.1 (Customer Satisfaction)).

Top management ensures that manufactured product conforms to the specifications and that USAT's delivery performance is measured and that appropriate action is taken if planned results are not, or will not be, achieved. These issues and resulting actions are discussed during the morning meetings and/or Walk-About meetings.

During each Management Review, top management reviews the quality policy to ensure that it

- a) is appropriate to the purpose of the USAT Team and company objectives,
- b) includes a commitment to comply with requirements and continually improve the effectiveness of the quality management system,
- c) provides a framework for establishing and reviewing quality objectives,

- d) is communicated and understood within the company, and
- e) is reviewed for continuing suitability at each Management Review.

5.4 Planning

5.4.1 Quality Objectives

Top management ensures that quality objectives such as conforming product, minimum waste in scrap, and on-time delivery (see 7.1 a (Quality objectives and requirements for the product)), are established at relevant functions and levels throughout the company with the main tool being the Quality Planning/Kick-Off meetings and the Job Routers. The quality objectives established during the planning meetings and communicated within the routers are measurable and consistent with the quality policy.

5.4.2 Quality Management System Planning

By hiring top-notch and experienced personnel, top management ensures that

- a) the planning of the quality management system is carried out in order to meet the requirements given in 4.1 (General Requirements), as well as the quality objectives, and
- b) the integrity of the quality management system is maintained when changes to the quality management system are planned and implemented.

This is accomplished through the processes of 7.1 (Product Realization) and communicated through Routings and daily meetings and/or Walk-Abouts.

5.5 Responsibility, Authority and Communication

5.5.1 Responsibility and Authority

Top management ensures that responsibilities and authorities are defined and communicated within the organization and further specified where necessary in this manual or in the Standard Operating Procedures SOPs. Responsibilities and authorities may further be defined in Work Instructions.

5.5.2 Management Representative

Top management has appointed the Quality Manager as the Management Representative with the responsibility and authority that includes, in addition to other duties,

- a) ensuring that processes needed for the quality management system are established, implemented and maintained,
- b) reporting to top management on the performance of the quality management system and any need for improvement,

c) ensuring the promotion of awareness of customer requirements throughout the company, and

d) the organizational freedom and unrestricted access to top management to resolve quality management issues.

NOTE: The responsibility of a management representative includes liaison with external parties on matters relating to the quality management system.

5.5.3 Internal Communication

Top management ensures that appropriate communication processes are established within the company and the communication takes place regarding the effectiveness of the quality management system. The daily meetings, Walk-About meetings as well as other periodic meetings are used for this communication.

5.6 Management Review

5.6.1 General

Top management shall review the organization's quality management system at a minimum of yearly to ensure its continuing suitability, adequacy and effectiveness. This review shall be scheduled and conducted by the Quality Manager and include assessing opportunities for improvement and the need for changes to the quality management system, including the quality policy and quality objectives.

Records from Management Reviews are maintained and controlled. Any issues pertaining to the team are communicated through the aforementioned meetings.

5.6.2 Review input

The input to Management Review meetings includes information on

- a) results of audits,
- b) customer feedback
- c) process performance and product conformity (see Forms 5.2.1-102, 7.4.1-101)
- d) status of preventative and corrective actions,
- e) follow-up actions from previous management reviews,
- f) changes that could affect the quality management system, and
- g) recommendations for improvement

5.6.3 Review output

The output from the Management Review meeting includes any decisions and actions related to

- a) improvement of the effectiveness of the quality management system and its processes,
- b) improvement of product related to customer requirements, and
- c) resource needs.

6. RESOURCE MANAGEMENT

6.1 Provision of Resources

USAT has determined and provides the resources needed

- a) to implement and maintain the quality management system and continually improve its effectiveness, and
- b) to enhance customer satisfaction by meeting customer requirements.

The resources needed consists of mainly the following:

- *Experienced personnel
- *Training where necessary
- *An appointed Management Representative
- *Effective Quality Policy
- *Observation of trends in customer quality and on-time delivery
- *Management Review meeting including audit findings

6.2 Human Resources

6.2.1 General

Personnel performing work affecting conformity to product requirements have to be competent on the basis of appropriate education, training, skills and experience. New hires are chosen carefully based on their background and education and are given instruction and/or training necessary to succeed.

USAT realizes that conformity to product requirements can be affected directly or indirectly by personnel performing any task within the quality management system.

6.2.2 Competence, Training and Awareness

USAT has

- a) determined the necessary competence for personnel performing work affecting conformity to product requirements below using
- b) where applicable, testing, training, or other actions to achieve the necessary competence,

c) evaluated the effectiveness of the actions taken

d) ensured that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives, and

e) maintained appropriate records of education, training, skills and experience (see 4.2.4).

These determinations are made on a case by case basis on the experience of the top management hiring professionals.

Where applicable, new employees perform a gage review and are trained in general areas of activities related to quality responsibilities.

6.3 Infrastructure

USAT has determined as below, provided and maintained the infrastructure needed to achieve conformity to product requirements. Infrastructure includes, as applicable,

a) buildings, workspace and associated utilities,

b) process equipment (both hardware and software), and

c) supporting services (such as transport, communication or information systems).

Infrastructure available:

*93000 sq feet of production and office areas, with adequate parking

*Equipment as defined within Preventative Maintenance activities

*Corporate truck/van

*Software, hardware and informational systems

*Inspection hardware (gages, fixtures, CMM, etc.)

*Production Equipment as listed within the Preventative Maintenance system

6.4 Work Environment

USAT maintains a suitable work environment to achieve conformity to product requirements. Ear protection is available where necessary and air conditioning, heating and other environmental controls as well.

7. PRODUCT REALIZATION

7.1 Planning of Product Realization

USAT plans and develops the processes needed for product realization. Planning of product realization is consistent with the requirements of the other processes of the quality management system.

Once final prints have been received from the customer and distributed to the appropriate departments (Quality, Engineering, Scheduling, etc), USAT schedules a Quality Planning (Kick-off) meeting to develop a Quality Plan using the Quality Plan Checklist (Form 7.1-105) specifying the processes of the quality management system (including the product realization processes) and the resources to be applied to a specific product, project or contract. Where applicable, USAT also applies the requirements given in 7.3 (Design and Development) to the development for product realization processes. Follow-up meetings are scheduled as needed to discuss areas of concern and monitor the product realization process. The Quality Department is Responsible for maintaining all Quality Planning meeting notes and records.

In planning product realization, USAT's Engineering Manager and Quality Manager together have the primary responsibility to determine the following, as appropriate:

- a) quality objectives and requirements for the product; including consideration of aspects such as
 - product and personal safety,
 - reliability, availability and maintainability (USAT designs),
 - producibility and inspectability (USAT designs),
 - suitability of parts and materials used in the product (USAT designs)
- b) the need to establish processes and documents, and to provide resources specific to the product
- c) required verification, validation, monitoring, measurement, inspection and test activities specific to the product and the criteria for product acceptance;
- d) records needed to provide evidence that the realization processes and resulting product meet requirements (see 4.2.4):
- e) configuration management appropriate to the product

7.1.1. Project Management

As appropriate to USAT and the product, USAT plans and manages product realization in a structured and controlled manner using the Quality Planning (Kick-off) meeting to meet requirements at acceptable risk, within resources and schedule constraints (See 7.1).

7.1.2 Risk Management

USAT has established, implemented and maintains a process for managing risk to the achievement of applicable requirements, that includes as appropriate to USAT and the product

- a) assignment of responsibilities for risk management,

- b) definition of risk criteria (e.g., likelihood, consequences, risk acceptance).
- c) identification, assessment and communication of risks throughout product realization,
- d) implementation and management of actions to mitigate risks that exceed the defined risk acceptance criteria, and
- e) acceptance of risks remaining after implementation of mitigating actions

Risks are assessed during the Quality Planning meeting(s) and continuously reviewed during the planning and production activities (see 7.1). Potential issues are discussed during the morning meetings or Walk-About meetings and responsibilities are assigned by the Plant Manager as appropriate. The Quality Department is Responsible for maintaining all Quality Planning meeting notes and records. (Located in “Q” drive under NPIM_Quality Planning Checklists).

7.1.3 Configuration Management

As needed, USAT has established, implemented and maintains a configuration management process that includes, as appropriate to the product designed

- a) configuration management planning,
- b) configuration identification,
- c) change control, and
- d) configuration status accounting

Configuration activities, planning and audits, where applicable, are included in the Quality Planning (see 7.1) activities.

7.1.4 Control of Work Transfers

In the rare case where work transfer may be necessary, the Quality Manager and/or his assigns are responsible for overseeing work transfers (e.g., from one organization facility to another, from USAT to a supplier, from one supplier to another supplier), whether temporary or permanent. Where the transfer requires the input of additional departments, a Quality Planning (see 7.1) meeting is scheduled and the transfer process is conducted as a new product/process with the inclusion of risks and configuration management where necessary. Effects to contract, schedule and costs are also taken into consideration.

7.2 Customer-Related Processes

7.2.1 Determination of Requirements Related to the Product

The Sales, Manufacturing and Engineering departments are responsible for determining the products to be quoted or rejected. For jobs that are won, preliminary prints are sent to the

Engineering department by Sales. The Quality Planning phase (See Section 7.1) begins. USAT determines the

- a) requirements specified by the customer, including the requirements for delivery and post-delivery activities
- b) requirements not stated by the customer but necessary for specified or intended use, where known,
- c) statutory and regulatory requirements applicable to the product, and
- d) any special or additional requirements considered necessary by USAT

Where necessary, any post-delivery activities are included in the discussion, for example, actions under warranty provisions, contractual obligations such as maintenance services, and supplementary services such as recycling or final disposal.

7.2.2 Review of Requirements Related to the Product

This review is conducted prior to USAT's commitment to supply a product to the customer (e.g. submission of tenders, acceptance of contracts or orders, acceptance of changes to contracts or orders) and ensures that

- a) product requirements are defined,
- b) contract or order requirements differing from those previously expressed are resolved,
- c) USAT has the ability to meet the defined requirements,
- d) special requirements of the product are determined, and
- e) risks (e.g., new technology, short delivery time frame) have been identified (see 7.1.2).

Records of the results of the review and actions arising from the review are maintained.

Where the customer provides no documented statement of requirement, the customer requirements are confirmed by USAT before acceptance.

Where product requirements are changed, the change documents are forwarded to the Engineering Manager and the Quality Manager to determine how the changes may affect USAT's processes. Where additional departments are required to assure conformance to the changes, a copy of the change document is forwarded to the relevant departments and a Quality Planning meeting is convened to ensure that relevant documents are amended and that relevant personnel are made aware of the changed requirements.

7.2.3 Customer Communication

USAT has implemented effective arrangements for communicating with customers in relation to

- a) product information,
- b) enquiries, contracts or order handling, including amendments, and
- c) customer feedback, including customer complaints

These arrangements include phone conversations, e-mails, communication through Customer software as well as on-site and/or visits to the customer.

7.3 Design and Development

7.3.1 Design and Development Planning

USAT plans and controls the design and development of product.

During the design and development planning, USAT determines

- a) the design and development stages,
- b) the review, verification and validation activities that are appropriate to each design and development stage, and
- c) the responsibilities and authorities for design and development

Where appropriate, USAT divides the design and development effort into distinct activities, for each activity, define the tasks, necessary resources, responsibilities, design content, input and output data and planning constraints using Form 7.3-106, Design Planning Checklist.

The different design and development tasks to be carried out are based on the safety and functional objectives of the product in accordance with customer, statutory and regulatory requirements.

Design and development planning considers the ability to produce, inspect, test and maintain the product.

USAT manages the interfaces between different groups involved in design and development to ensure effective communication and clear assignment of responsibility.

Planning output is updated, as appropriate, as design and development progresses through Quality Planning meetings for status updates.

Design and development review, verification and validation have distinct purposes. They can be conducted and recorded separately or in any combination as suitable for the product and organization.

7.3.2 Design and Development Inputs

Inputs relating to product requirements are determined and records are maintained (see 4.2.4). These inputs include

- a) functional and performance requirements
- b) applicable statutory and regulatory requirements
- c) where applicable, information derived from previous similar designs, and
- d) other requirements essential for design and development.

The inputs are reviewed for adequacy. Requirements are complete, unambiguous and not in conflict with each other.

7.3.3 Design and Development Outputs

The outputs of design and development are in a form suitable for verification against the design and development input and are approved prior to release.

Design and development outputs

- a) meet the input requirements for design and development.
- b) provide appropriate information for purchasing, production and service provision
- c) contain or reference product acceptance criteria
- d) specify the characteristics of the product that are essential for its safe and proper use, and
- e) specify, as applicable any critical items, including any key characteristics, and specific actions to be taken for these items.

USAT has defined the data required to allow the product to be identified, manufactured, inspected, used and maintained; including for example

- the drawings, part lists and specifications necessary to define the configuration and the design features of the product, and
- the material, process, manufacturing and assembly data needed to ensure conformity of the product

Information for production and service provision include details for the preservation of product.

7.3.4 Design and Development Review

At suitable stages, systemic reviews of design and development are performed in accordance with planned arrangements (see 7.3.1)

- a) to evaluate the ability of the results of design and development to meet requirements,
- b) to identify any problems and propose necessary actions, and
- c) to authorize progression to the next stage.

Participants in such reviews include representatives of functions concerned with the design and development stage(s) being reviewed. Records of the results of the reviews and any necessary actions are maintained electronically on main server (see 4.2.4).

7.3.5 Design and Development Verification

Verification is performed in accordance with planned arrangements (see 7.3.1) to ensure that the design and development outputs have met the design and development input requirements. Records of the results of the verification and any necessary actions are maintained. (see 4.2.4)

7.3.6 Design and Development Validation

Design and development validation is performed in accordance with planned arrangements (see 7.3.1) to ensure that the design and development outputs have met the design and development input requirements. Records of the results of the validation and any necessary actions are maintained (see 4.2.4).

7.3.6.1 Design and Development and Validation Testing

Where tests are necessary for verification and validation, these tests are planned, controlled, reviewed and documented to ensure and prove the following:

- a) test plans or specifications identify the product being tested and the resources being used, define test objectives and conditions, parameters to be recorded and relevant acceptance criteria,
- b) test procedures describe the method of operation, the performance of the test and the recording of the results,
- c) the correct configuration of the product is submitted for the test,
- d) the requirements of the test plan and the test procedures are observed, and
- e) the acceptance criteria are met.

7.3.6.2 Design and Development Verification and Validation Documentation

At the completion of design and/or development, USAT ensures that reports, calculations, test results, etc., demonstrate that the product definition meets the specification requirements for all identified operational conditions.

7.3.7 Control of Design and Development Changes

Design and development changes are identified and records are maintained. The changes are reviewed, verified and validated, as appropriate, and approved before implementation. The review of design and development changes includes evaluation of the effect of the changes on constituent parts and product already delivered. Records of the results of the review of changes and any necessary actions are maintained (see 4.2.4).

Design and development changes are controlled in accordance with the configuration management process (see 7.1.3).

7.4 Purchasing

7.4.1 Purchasing Process

USAT ensures that purchased product conforms to specified purchase requirements. The type and extent of control applied to the supplier and the purchased product is dependent upon the effect of the purchased product on subsequent product realization or the final product and the supplier quality history.

USAT is responsible for the conformity of all products purchased from suppliers, including product from sources defined by the customer.

USAT evaluates and selects suppliers based on their ability to supply product in accordance with USAT's and the customer's requirements. USAT chooses a supplier on the basis of ability to conform to product requirements, accreditations and certifications, delivery schedule, past performance, price, location and any additional factors that come into account.

Where a supplier does not hold an AS9100 series or ISO certification, Purchasing sends the potential supplier a Supplier Quality Survey (Form 7.4.1-135) or a visit to the premises is performed in order to qualify the supplier as approved. Where the supplier is newly established or has a newly established Quality system, references may be requested by Purchasing or Quality Manager.

USAT's purchasing department

- a) maintains an Approved Supplier List that includes the supplier approval status having 3 criteria (Active, Inactive and Probationary). The Purchasing Lead and/or Quality Manager may raise or drop the rating of a supplier at his/her discretion due to quality, delivery or other issues.
- b) maintains Suppliers at a probationary status will be issued a notice of their status and justification for the status. They will be monitored closer for the next 6 months and be given direction as to how to improve their status. If over the next 6 months there is not marked improvement or issues worsen, they will be listed as Inactive (and placed Inactive in MRP system) no further P.O.'s will be placed with them until such time as they can perform at an acceptable level.
- c) ensures where required that both USAT and all suppliers use customer-approved special process sources

d) determines and manages the risk when selecting and using suppliers during the Quality Planning process (see 7.1.2).

Note: An exception can exist where USAT might have to use a specific Supplier regardless of their status and that would be when we are dictated by our customer to use this specific Supplier for a particular process. If this case presents itself, then USAT will list the specific restrictions and customer requirements and place only those P.O.'s required to produce that customers product.

7.4.2 Purchasing Information

Purchasing information describes the product to be purchased, including, where appropriate

- a) requirements for approval of product, procedures, processes and equipment,
- b) requirements for qualification of personnel
- c) quality management system requirements,
- d) the identification and revision status of specifications, drawings, process requirements, inspection/verification instructions and other relevant technical data,
- e) requirements for design, test, inspection, verification (including production process verification), use of statistical techniques for product acceptance, and related instructions for acceptance by USAT, and as applicable critical items including key characteristics,
- f) requirements for test specimens (e.g., production method, number, storage conditions) for design approval, inspection/verification, investigation or auditing
- g) requirements regarding the need for the supplier to
 - notify USAT of nonconforming product
 - obtain organization approval for nonconforming product disposition,
 - notify USAT of changes in product and/or process, changes of suppliers, changes of manufacturing facility location and, where required, obtain organization approval and
 - flow down to the supply chain the applicable requirements including customer requirements,
- h) record retention requirements, and
- i) right of access by USAT, their customer and regulatory authorities to the applicable areas of all facilities, at any level of the supply chain, involved in the order and to all applicable records.

The Engineering and Quality Managers ensure the adequacy of specified purchase requirements prior to their communication to a supplier by verifying the Routing and MRP

System information against the print and specification requirements prior to releasing the material to the Buyer to order.

7.4.3 Verification of Purchased Product

USAT has established and implemented the inspection or other activities necessary for ensuring that purchased product meets specified purchased requirements.

Verification activities include, as specified in the Purchase Order or USAT Router,

-obtaining objective evidence of the conformity of the product from the supplier (e.g., accompanying documentation, certificate of conformity, test records, statistical records, process control records),

-inspection and audit at the supplier's premises,

-review of the required documentation

-inspection of products upon receipt, and

-delegation of verification to the supplier or supplier certification.

Where purchased product is released for production use pending completion of all required verification activities, it has to be identified with an "Approved for Use, Quality Inspection and Approval Pending" sign (Form 7.4.3-100) and a note recorded on the appropriate router page to allow recall and replacement if it is subsequently found that product does not meet requirements.

Where USAT delegates verification activities to the supplier, the requirements for delegation are defined within the Purchase Order and a register of delegations maintained where necessary.

Where USAT or its customer intends to perform verification or its customer intends to perform verification at the supplier's premises, USAT will state the intended verification arrangements and method of product release in the purchasing information to the supplier.

7.5 *Production and Service Provision*

7.5.1 Control of Production and Service Provision

USAT plans and carries out production and where needed, service provision under controlled conditions for product returned to USAT by the Customer. USAT uses the purchase order, routers and/or work instructions to control the production or service conditions including, as applicable.

a) the availability of information that describes the characteristics of the product, including drawings, parts lists, materials and process specifications.

- b) the availability of work instructions as indicated in the router and inspection documents and/or activities.
- c) the use of suitable equipment – usually contained in the routers including product specific tools (e.g., jigs, fixtures, molds) and software programs.
- d) the availability and use of monitoring and measuring equipment,
- e) the implementation of monitoring and measurement,
- f) the implementation of product release, delivery and post-delivery activities,
- g) accountability for all product during production (e.g., parts quantities, split orders, nonconforming product),
- h) evidence that all production and inspection/verification operations have been completed as planned, or as otherwise documented and authorized
- i) provision for the prevention, detection and removal of foreign objects,
- j) monitoring and control of utilities and supplies (e.g., water, compressed air, electricity, chemical products) to the extent they affect conformity to product requirements, and
- k) criteria for workmanship, specified in the clearest practical way (e.g., written standards, representative samples, illustrations).

Within the Quality Planning stages (see 7.1), the following are included, as appropriate

- establishing, implementing and maintaining appropriate processes to manage critical items, including process controls where key characteristics have been identified (Quality Engineering)

- designing, manufacturing and using tooling to measure variable data (Manufacturing Engineering),

- identifying in-process inspection/verification points when adequate verifications of conformance cannot be performed at later states of realization, and -special processes (Manufacturing and Quality Engineering) (see also 7.5.2).

7.5.1.1 Production Process Verification

USAT uses a representative item from the first production run of a new part or assembly to verify that the production processes, production documentation and tooling are capable of producing parts and assemblies that meet requirements. This process is repeated when changes occur that invalidate the original results (e.g., engineering changes, manufacturing process changes, tooling changes.) USAT refers to this activity as a first-piece inspection.

7.5.1.2 Control of Production Process Changes

The Quality Manager, Production Engineer and the Engineering Manager are approved to make temporary and/or permanent changes to the production/router processes usually by

initialing and dating the change. Any permanent changes or changes requiring additional routing must be communicated to the Engineering Manager for entry into MRP system. The customer is notified where appropriate when production changes may affect the quality of the product.

USAT controls and documents changes affecting processes, production equipment, tools or software programs within the router creation software (MRP system) or within the notes at the beginning of the software program.

The results of these changes to production processes are assessed during subsequent runs to confirm that the desired effect has been achieved without adverse effects to product conformity. Additional notes or instructions may be added to the router instructions where concerns of adverse effects due to changes may arise.

7.5.1.3 Control of Production Equipment, Tools and Software Programs

Production Equipment, tools and software programs used to automate and control/monitor product realization processes, is maintained and validated prior to (wherever possible) or during release for production.

Storage requirements, including periodic preservation/condition checks, is defined for production equipment or tooling where any tooling is kept in storage.

7.5.1.4 Post-Delivery Support

Post-delivery support provides, as applicable, for the

- a) feedback from in-service data where provided by the customer, and
- b) actions to be taken, including investigation and reporting, when problems are detected after delivery (for nonconformance issues, see Section 8.2.3),

7.5.2 Validation of Processes for Production and Service Provision

Where required by the customer, USAT validates any processes for production where the resulting output cannot be verified by subsequent monitoring or measurement and, as a consequence, deficiencies become apparent only after the product is in use or the service has been delivered. These processes are often referred to as special processes and may be required as a part of the contract with the customer.

Validation demonstrates the ability of the processes to achieve planned results.

USAT has established arrangements for these processes including, as applicable,

- a) defined criteria for review and approval of the processes,
- b) approval of equipment and qualification of personnel,
- c) use of specific methods and procedures,
- d) requirements for records (see 4.2.4), and

e) revalidation activities

7.5.3 Identification and Traceability

USAT identifies product throughout production by including the router or other appropriate identification. USAT maintains the identification of the configuration of the product using the router in order to identify any differences between the actual configuration and the agreed configuration.

USAT identifies the product status with respect to monitoring and measurement requirements throughout product realization. Suspect product is segregated and identified with status (Documented on DR's).

When acceptance authority media are used (e.g., stamps, electronic signatures, passwords), USAT has established appropriate controls for the media. Stamps and passwords are assigned and maintained by the Quality Department and/or the MIS/IT.

Where traceability is a requirement, USAT issues unique identification numbers (serial, lot number or other) of the product and maintain records as directed by the customer (see 4.2.4). Traceability requirements include as appropriate,

- identification to be maintained throughout the product life

- the ability to trace all products manufactured from the same batch of raw material, or from the same manufacturing batch, to the destination (e.g., delivery, scrap),

- for an assembly, the ability to trace its components to the assembly and then to the next higher assembly, and

- for a product, a sequential record of its production (manufacture, assembly, inspection/verification) to be retrievable.

For some USAT products, configuration management is a means by which identification and traceability are maintained (see 7.1.3).

7.5.4 Customer Property

USAT exercises care with customer property while it is under USAT's control or being used by USAT. USAT identifies, verifies, protects and safeguards customer property provided for use or incorporation into the product. If any customer property is lost, damaged or otherwise found to be unsuitable for use, USAT will report this to the customer and maintain records (see 4.2.4)

NOTE: Customer property can include intellectual property and personal data.

7.5.5 Preservation of Product

USAT preserves the product during internal processing and delivery to the intended destination in order to maintain conformity to requirements. As applicable, preservation includes identification, handling, packaging, storage and protection. Preservation also applies to the constituent parts of a product. Where special instructions for packaging are required, they are made available to the shipping/receiving department for reference to minimize damage and handling issues.

Preservation of product includes, where applicable in accordance with product specifications and applicable statutory and regulatory requirements, provisions for

- a) cleaning
- b) prevention, detection and removal of foreign objects,
- c) special handling for sensitive products,
- d) marking and labeling including safety warnings,
- e) shelf life control and stock rotation (See WI 113), and
- f) special handling for hazardous materials.

7.6 Control of Monitoring and Measuring Equipment

USAT determines the monitoring and measurement to be undertaken and the monitoring and measuring equipment needed to provide evidence of conformity of product to determined requirements during the Quality Planning stages (see 7.1).

USAT maintains a calibration recall system (GageTrak) for monitoring and measuring equipment. The processes employed for their calibration/verification including details of equipment type, unique identification, location, frequency of checks, check method and acceptance criteria are defined within the Calibration Work Instructions.

Monitoring and measuring equipment includes, but is not limited to: test hardware, test software, and plotters used to produce inspection data. It also includes personally owned and customer supplied equipment used to provide evidence of product conformity.

USAT establishes processes to ensure that monitoring and measurement are carried out in a manner that is consistent with the monitoring and measurement requirements.

USAT ensures that environmental conditions are suitable for the calibration, inspection, measurement and testing being carried out.

Where necessary to ensure valid results, measuring equipment is

- a) calibrated or verified, or both, at specified intervals, or prior to use, against measurement standards traceable to international or national measurement standards; where no such standards exist, the basis used for calibration or verification has be recorded (see 4.2.4);

- b) be adjusted or re-adjusted as necessary;
- c) have identification in order to determine its calibration status;
- d) be safeguarded from adjustments that would invalidate the measurement result;
- e) be protected from damage and deterioration during handling, maintenance and storage.

USAT uses the GageTrak system for the recall of monitoring and measuring equipment requiring calibration or verification.

In addition, USAT assesses and records the validity of the previous measuring results when the equipment is found not to conform to requirements. USAT takes appropriate action on the equipment and any product affected.

When used in the monitoring and measurement of specified requirements, the ability of computer software to satisfy the intended application is confirmed. This is undertaken prior to initial use and reconfirmed as necessary as deemed by Quality.

Confirmation of the ability of computer software to satisfy the intended application typically includes its verification and configuration management to maintain its suitability for use.

8. MEASUREMENT, ANALYSIS AND IMPROVEMENT

8.1 General

USAT plans and implements the monitoring, measurement, analysis and improvement processes needed

- a) to demonstrate conformity to product requirements,
- b) to ensure conformity of the quality management system, and
- c) to continually improve the effectiveness of the quality management system.

This includes determination of applicable methods, including statistical techniques, and the extent of their use. Quality and delivery to USAT's customers are measured as well as internal scrap processes. Internal Audits are also conducted to monitor and improve the conformity of the quality management system (See Internal Audits, 8.2.2). Where product quality to the customer is compromised, a Discrepancy Report (Form Q6111-11) or customer-driven corrective actions may be completed to determine causes and preventative measures (Delivery issues may also be included).

8.2 Monitoring and Measurement

8.2.1 Customer Satisfaction

As one of the measurements of the performance of the quality management system, USAT monitors information relating to customer statistics as to whether USAT has met customer requirements. The methods for obtaining and using this information has been determined. Certain customers report to USAT a performance rating or score periodically. This information is communicated throughout the organization to reinforce current practices and/or drive improvements. USAT uses an internal monitoring rating to rate product quality and delivery to our major customers. This information is also communicated and used to drive improvements when applicable.

Where USAT is deficient in area of customer satisfaction, a corrective action plan may be implemented through communication throughout the team or formally written and submitted to the customer. Continual tracking of customer satisfaction allows for the assessment of effectiveness of the plans implemented.

8.2.2 Internal Audits

USAT conducts periodic internal audits throughout the year to determine whether the quality management system

- a) conforms to the planned arrangements (see 7.1), to the requirements of this AS9100 International Standard and to the quality management system requirements established by USAT, and
- b) is effectively implemented and maintained.

An audit program is planned, taking into consideration the status and importance of the processes and areas to be audited, as well as the results of previous audits. The audit criteria scope, frequency and methods are defined. The selection of auditors and conduct of audits ensures objectivity and impartiality of the audit process. Auditors do not audit their own work.

A documented procedure (SOP 8.2.2, Internal Audits) is established to define the responsibilities and requirements for planning and conducting audits, establishing records and reporting results.

Records of the audits and their results are maintained in the Quality drive on main server (see 4.2.4).

The management responsible for the area being audited ensures that any necessary corrections and corrective actions are taken without undue delay to eliminate detected nonconformities and their causes. Follow-up activities include the verification of the actions taken and the reporting of verification results (see 8.5.2).

8.2.3 Monitoring and Measurement of Processes

USAT applies suitable methods for monitoring and, where applicable, measurement of the quality management system processes. These methods demonstrate the ability of the processes to achieve planned results. When planned results are not achieved, corrective action is taken, as appropriate.

When determining suitable methods during the Quality Planning stages (See 7.1), USAT considers the type and extent of monitoring or measurement appropriate to each of its processes in relation to their impact on the conformity to product requirements and on the effectiveness of the quality management system.

In the event of a process nonconformity, USAT

- a) takes appropriate action to correct the nonconforming process by initiating an Internal Corrective Action Report (CAR) or a Discrepancy Report , (minor nonconformances may just be discussed during the morning meetings and Walk-about),
- b) evaluates whether the process nonconformity has resulted in product nonconformity.
- c) determines if the process nonconformity is limited to a specific case of whether it could have affected other processes or products, and
- d) identifies and controls any nonconforming product (see 8.3).

8.2.4 Monitoring and Measurement of Product

USAT monitors and measures the characteristics of the product to verify that product requirements are continually met. This is carried out at appropriate stages of the product realization process in accordance with the planned arrangements using at a minimum 1st and last piece inspections (see 7.1). Evidence of conformity with the acceptance criteria is maintained within the router and/or inspection sheets.

Measurement requirements for product acceptance are documented and include

- a) criteria for acceptance and/or rejection,
- b) where in the sequence measurement and testing operations are to be performed
- c) required records of the measurement results (at a minimum, indication of acceptance or rejection), and
- d) any specific measurement instruments required and any specific instructions associated with their use.

When critical items, including key product and process characteristics, have been identified during the production planning stages (7.1), USAT ensures they are controlled and monitored within the routings and noted within the router as a key dimension.

When USAT uses sampling inspection as a means of product acceptance, the sampling plan has be justified on the basis of recognized statistical principles and appropriate for use (i.e., matching the sampling plan to the criticality of the product and to the process capability).

Where product is released for production use or to the customer pending completion of all required verification activities, it will be identified with an “Approved for Use, Quality Inspection and Approval Pending” sign (Form 7.4.3-100) and recorded to allow recall and replacement if it is subsequently found that the product does not meet requirements or customer-directed methods will be utilized.

Records indicate the person(s) authorizing release of product for delivery to the customer (see 4.2.4).

Where required to demonstrate product qualification, USAT ensures that records provide evidence that the product meets the defined requirements.

The release of product and delivery of service to the customer does not proceed until the planned arrangements (see 7.1) have been satisfactorily completed, unless otherwise approved by the Plant Manager and, where applicable, by the customer.

USAT ensures that all documents required to accompany the product are present at shipment.

8.3 Control of Nonconforming Product

USAT ensures that product which does not conform to product requirements is identified and controlled to prevent its unintended use or delivery. A documented procedure (SOP 8.3) has been established to define the controls and related responsibilities and authorities for dealing with nonconforming product.

NOTE: The term “nonconforming product” includes nonconforming product returned by a customer.

SOP 8.3, Non-conforming Product, defines the responsibility and authority for the review and disposition of nonconforming product, and the process for approving personnel making these decisions.

Where applicable, USAT deals with nonconforming product by one or more of the following ways:

- a) by taking action to eliminate the detected nonconformity;
- b) by authorizing its use, release or acceptance under concession by a relevant authority and, where applicable, by the customer;
- c) by taking action to preclude its original intended use or application;
- d) by taking action appropriate to the effects, or potential effects, of the nonconformity when nonconforming product is detected after delivery or use has started;

-USAT’s nonconforming product control process provides for timely reporting of delivered nonconforming product;

NOTE: Parties requiring notification of nonconforming product can include suppliers, internal organizations, customers, distributors and regulatory authorities.

e) by taking actions necessary to contain the effect of the nonconformity on other processes or products.

Dispositions of use-as-is or repair is followed after approval by the Material Review Board (See SOP 8.3). This Board has the delegated authority from the design organization or obtains the authority when necessary.

USAT does not use dispositions of use-as-is or repair, unless specifically authorized by the customer or design-responsible authority, if the nonconformity results in a departure from the contract requirements.

Product dispositioned for scrap is conspicuously and permanently marked, or positively controlled, until physically rendered unusable.

When nonconforming product is corrected it is re-verified to demonstrate conformity to the requirements.

Regrade material will not be used. Any material requiring regrade status will only be used for the purposes other than shippable finished products to the customer (i.e. fixtures).

Records of the nature of nonconformities and any subsequent actions taken, including concessions obtained, are maintained on the Discrepancy Reports (DR) (see 4.2.4, Form Q6111-11). Where nonconforming product is delivered to the customer, a DR form is initiated (Delivery issues may also be included) to track the nonconformance and actions.

8.4 Analysis of Data

USAT determines, collects and analyzes customer ratings of USAT, scrap dollars, job costs, delivery, and other pertinent information to demonstrate the suitability and effectiveness of the quality management system and to evaluate where continual improvement of the effectiveness of the quality management system can be made. This includes data generated as a result of monitoring and measurement and from other relevant sources.

The analysis of data is directed to provide information relating to

- a) customer satisfaction (see 8.2.1),
- b) conformity to product requirements (see 8.2.4),
- c) characteristics and trends of processes and products, including opportunities for preventive action (see 8.2.3 and 8.2.4), and
- d) suppliers (see 7.4).

8.5 Improvement

8.5.1 Continual Improvement

USAT continually improves 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.

USAT monitors the implementation of improvement activities and evaluates the effectiveness of the results.

NOTE: Continual improvement opportunities result from lessons learned, problem resolutions and the benchmarking of best practices.

8.5.2 Corrective Action

USAT takes action to eliminate the causes of nonconformities in order to prevent recurrence. Corrective actions are appropriate to the effects of the nonconformities encountered.

Procedure 8.5.2, Corrective Action is established to define requirements for

- a) reviewing nonconformities (including customer complaints),
- b) determining the causes of nonconformities
- c) evaluating the need for action to ensure that nonconformities do not recur,
- d) determining and implementing action needed
- e) records of the results of action taken (see 4.2.4),
- f) reviewing the effectiveness of the corrective action taken,
- g) flowing down corrective action requirements to a supplier when it is determined that the supplier is responsible for the nonconformity,
- h) specific actions where timely and/or effective corrective actions are not achieved, and
- i) determining if additional nonconforming product exists based on the causes of the nonconformities and taking further action when required.

8.5.3 Preventive action

USAT determines action to eliminate the causes of potential nonconformities in order to prevent their occurrence. Preventive actions are appropriate to the effects of the potential problems.

Procedure 8.5.3, Preventive Action, is established to define requirements for

- a) determining potential nonconformities and their causes,
- b) evaluating the need for action to prevent occurrence of nonconformities,
- c) determining and implementing the action needed

d) records of the results of action taken (see 4.2.4), and

e) reviewing the effectiveness of the preventive action taken,

NOTE: Examples of preventive action opportunities include risk management, error proofing, failure mode and effect analysis (FMEA), and information on product problems reported by external sources