Accra-Fab

Quality Manual

Our Mission

We partner with our customers to provide precision manufacturing and supply chain management solutions with award-winning quality, delivery, and value

QUALITY MANUAL REVISION HISTORY

Revision B – Dated 5/8/12

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President

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4.0 QUALITY SYSTEM

4.1 General

This quality manual describes the quality system that Accra-Fab has established, documented and maintained. Administrative and fabrication processes are identified in the quality plan. Accra-Fab's QMS shall also address customer and applicable statutory and regulatory requirements.

Quality plans are an integral part of the following activities:

a. Determining the processes needed in the management system, and their application.
b. Determining the sequence and interaction of the processes with one another.
c. Determining the criteria and methods for needed to ensure that the operation and control of these processes are effective.
d. Ensuring the availability of resources and information needed to support the operation and monitoring of the processes (see section 6).
e. Measuring, monitoring, and analyzing the processes (see section 8)
f. The information from corrective actions and internal problem reports provide data to be proactive in continual improvement through redlining of drawings and customer approved design changes.
   Control of outsourced processes is achieved per established procedures. Ensuring control over outsourced processes does not absolve the organization of the responsibility of conformity to all customer, statutory, and regulatory requirements.

4.2 Documentation

4.2.1 General

The quality management system documentation includes

a. Quality Policy as seen in section 5.3 and quality objectives in section 5.4
b. A quality manual (reference section 4.2.2)
c. Documented procedures include as a minimum the following;
   - Control of documents
   - Control of records
   - Internal audits
   - Control of nonconforming material
   - Corrective actions
   - Preventative actions
d. Other documents needed by Accra-Fab to ensure effective planning, operation, and control of processes are referred to in the operating procedures.
   - Accra-Fab shall ensure that personnel have access to, and are aware of, relevant quality management system documentation and changes.
e. Records for the management system will include the following;
   - Management responsibility
   - Resource management
   - Product realization
   - Measurement, analysis and improvement

4.2.2 Quality Manual

This Quality Manual describes Accra-Fab's quality management system for assuring the quality of its products manufactured at its plant in Spokane, Washington. This manual describes "what we do" to document and maintain the quality system.

Accra-Fab's quality system is designed to meet the requirements of the AS9100:2009 and ISO 9001:2008 Quality System Standards.

The quality system described herein is supported by documented operating procedures that describe how we operate our administrative and manufacturing functions. Process personnel whose work affects product quality use these procedures. The operating procedures are supported by reference documents.

A summary of all changes as well as the revision being replaced is filed in Quality Assurance and is available for review.

Scope:
Accra-Fab is a progressive precision manufacturer of sheet metal and machined products for a variety of customers including those in the aerospace industry, instrumentation, telecommunication, electronics and kiosk markets.
Exclusions to AS9100:2009 and/or ISO 9001:2008:
Clause 7.3 Design and development; as a contract manufacturer, Accra-Fab does not design product.
Clause 7.5.1.4 Post-Delivery Support; Accra-Fab does not perform off-site work or approve, control, or use repair schemes.

Accra-Fab has a modern, 155,000 square foot plant in Liberty Lake, Washington supporting customers worldwide. Accra-Fab blends the latest in tooling, software, and manufacturing technology with its employees to achieve world class quality for its products. Primary operations include metal stamping, punching, forming, machining, finishing, hardware installation, and completed assemblies. Processing includes the sale, development, purchasing, manufacture including chemical processing, powder coating, painting, silk screening, inspection and test, and a variety of delivery options.

Accra-Fab relies on its employees and customer feedback to improve its systems and products. A documented quality system assures consistent performance and continual improvement.

Documented procedures that are required for AS9100:2009 and/or ISO 9001:2008 are referenced in 4.2.1c and the quality plan (see Figure 3).
A description of the interaction of the processes can be seen in the Quality Plan (Figure 3).

4.2.3 Control of documents

A document control system has been established to insure that appropriate documents are available when and where needed. Documents supplied by the customer, internally generated documents, and other documents associated with the quality system are controlled. Document control ensures the following:

a. Documents are reviewed and approved for adequacy by authorized personnel prior to use.
b. Changes to documents are reviewed, updated, and approved by the same functions that performed the original review and approval, unless specifically designated otherwise.
c. Where practical, the nature of the change is identified in the document or appropriate attachments.
d. Procedures with reference to documents are maintained on the server and are accessible at computer stations located throughout the plant.
e. Documents and data required for manufacturing activities or historical records are identified and available at point of use electronically, ensuring legibility and identity.
f. Documents of external origin are controlled by the Quality Assurance, Planning, and Sales departments.
g. The Planning department controls issuances of documents of external origin, along with shop travelers. Quality Assurance controls issuance of customer general specifications.
h. Obsolete documents are destroyed, deleted, or identified as no longer valid.

For further information, refer to Procedure 2-006, “Document Control”, and Figure 2, “Quality Management System Documents”.

4.2.4 Control of records

Records are legible, retrievable, and stored to preclude deterioration, loss or damage. Individual customers may request additional records, which are maintained by customer order. Subcontractor or

supplier records are maintained to the degree necessary to maintain control. Control of records created and/or retained by suppliers is defined in procedure 2-006. Records are provided to the customer, if required. Controls needed for the identification, storage, protection, retrieval, retention time, and disposition are defined in the standard operating procedure 2-006.

Records that provide evidence of conformity to requirements and the effective operation of the quality system are controlled by the departments that created them.

For further information, refer to Procedure 2-006, "Document Control", and Figure 2, "Quality Management System Documents".

5.0 MANAGEMENT RESPONSIBILITY

5.1 Management Commitment

a. Top management is actively involved in the development and implementation of the quality management system. Top management is committed to continual improvement of the QMS and communicates the importance of meeting customer, statutory, and regulatory requirements to the rest of the organization.
b. The responsibility, authority, and relationships between personnel who manage, perform, and verify work which affects quality are defined in the organization charts, responsibility matrix, job descriptions, and operating procedures. All personnel have sufficient freedom and authority to accomplish the work for which they are responsible. Particular attention is given to:
   - Identifying and documenting real/potential quality problems,
   - Initiating actions to preclude quality deficiencies,
   - Providing solutions to repetitive problems, and
   - Verifying corrective/preventive actions as effective.

   Table 1 indicates the responsibilities of Accra-Fab's management in meeting the requirements of our quality system.
c. Accra-Fab has a quality policy consistent with the requirements of AS9100:2009 and/or ISO 9001:2008 which can be found in section 5.3.
d. The quality objectives reflect our commitment to customer service and can be found in section 5.4.1.
e. Management reviews are conducted in accordance with section 5.6
f. Resource management is discussed in section 6.0

5.2 Customer focus

Our focus is to interest the customer with our products and services by providing up front engineering technology and immediate attention to customer needs to enhance customer satisfaction. Top management meets regularly to review metrics regarding product conformity and on-time delivery performance. Top management ensures appropriate action is taken if planned results are not, or will not be, achieved.
For further information, see section 7.0 Product Realization and section 8.0 Measurement, Analysis and Improvement.

5.3 Quality policy

We are committed to providing our customers with products and services that meet or exceed their requirements by utilizing quality plans and measurable objectives to ensure continual improvement of our quality system.

5.4 Planning

5.4.1 Quality objectives

Accra-Fab has established the following quality objective categories. These objectives are both measurable and consistent with the Quality Policy.

- Customer Satisfaction
- Customer Returns

- Internal Problem Reports
- On Time Delivery

5.4.2 Quality Management System Planning

a. Planning of the quality management system is carried out through management reviews as well as requirements outlined in section 4.1.
b. The integrity of the quality management system is maintained when changes are planned and implemented.

5.5 Responsibility, Authority and Communication

5.5.1 Responsibility and Authority

Responsibilities and authorities are defined within this manual in the organizational chart (Figure 1), the quality plan (Figure 3), and the responsibility matrix (Table 1).

5.5.2 Management Representative

Top management has appointed the Quality Assurance Manager as a management representative to insure that requirements of the quality system are established, implemented and maintained. The Quality Assurance Manager reports to top management on the performance of the quality system, any need for improvement, and also ensures the promotion and awareness of customer requirements throughout the organization. The Quality Assurance Manager has organizational freedom and unrestricted access to top management to resolve quality management issues.

5.5.3 Internal communication

Communication processes are established in order to convey the effectiveness of the quality management system. The information outlines company goals, quality objectives and relevant general information. This information is transmitted to appropriate personnel through team meetings, training classes, publications, and postings.

5.6 Management review

5.6.1 General

Management Reviews are chaired by the Quality Assurance Manager and held at least annually to insure the continued suitability, adequacy and effectiveness of the management system. More frequent reviews may be completed dependent upon the status of the quality system. Quality system improvements are discussed during the review as well as any need for changes to the quality policy and objectives.

5.6.2 Review Input

Inputs are described as results from:

- external and internal audit findings,
- customer feedback,
- process performance indicators,
- product conformity indicators,
- status of corrective and preventive actions,
- follow-up actions from previous management reviews,
- changes that could affect the quality management system, and
- recommendations for improvement

5.6.3 Review output

Outputs are described as:

- Improvements of the effectiveness of the quality management system and it's processes,
- improvement of product related to customer requirements, and
- resource needs

The reviews compare the results of the documented quality systems with corporate goals and with the AS9100:2009 and/or ISO 9001:2008 Standard.

Records of management reviews are maintained by the Quality Assurance Manager.

For further information, refer to Procedure 2-023, "Management Review".

6.0 Resource Management

6.1 Provision of resources

Accra-Fab has determined its required resources based on the need to implement, maintain and continually improve the quality system and on individual customer needs by:

a. Integrating our own in house standards with all of our customers' needs and expectations.
b. Enhancing customer satisfaction through requirement fulfillment, communication, and leading the way in product improvements.

6.2 Human resources

6.2.1 General

Every person at Accra-Fab that performs work affecting conformity to product requirements is deemed competent based on process skills to include previous experience and education, Accra-Fab classroom training, and on-the-job training.

6.2.2 Competence, Awareness, and Training

a. Competence to perform work affecting conformity to product requirements is determined through supervisor analysis and careful evaluation of the employee's skills.
b. Training is an integral part of each process with requirements of necessary skills outlined in Process Training Forms and the "Abra" database.
c. The effectiveness of the training is measured against criteria that are consistent with the longevity and experience of personnel. Typically, the training consists of 30, 60, 120 and/or 180 day increments of evaluation providing feedback of areas requiring improvement and/or reoccurring training. In some cases a skill demands more experience and time and is reflected in the process training forms.
d. The process training forms are reviewed with each employee to ensure understanding of the requirements, the career objectives of the program, and how they contribute to achieving the quality objectives.
e. Appropriate records of individual training requirements and accomplishments are maintained by human resources and process managers.

For further information, refer to Procedure 2-030, "Employee Training".

6.3 Infrastructure

Accra-Fab's modern 155,000 square foot facility features extensive equipment and capabilities to perform numerous types of sheet metal fabrication and machining options. Equipment includes the capability to shear, stamp, machine, punch, laser cut, chromate, form, mill, weld & finish, insert hardware, wet paint, powder-coat, silkscreen, pad print and assemble product.

Process equipment consists of computer hardware stations throughout the facility hosting system software for processing, customer specifications, software for logging in and out of shop travelers, and NC punch programming.

Support services include information systems, delivery of product via Accra-Fab trucks and email and web based communications.

All equipment is maintained to provide conformity to product and service requirements.

6.4 Work Environment

Late model equipment and technology provides Accra-Fab the ability to meet or exceed product and service requirements.

The modern facility projects a professional, clean, safe, and comfortable working environment for employees.

7.0 Product Realization

7.1 Planning of Product Realization

In planning for product realization, Accra-Fab reviews customer requirements and develops the processes needed for product realization. The sales department with input as necessary from Manufacturing, Engineering, and Quality Assurance reviews the requirements to insure that current manufacturing processes and services are capable of meeting them.

The following is determined during the planning process as appropriate:

a. Customer's requirements and quality objectives for the product
    - Safety (personal and product), reliability, availability, maintainability, producibility, and suitability of parts and material used in the product should be considered. Other considerations include recycling or final disposal at the end of product service life.
b. Documentation, processes, equipment, and personnel to comply with the customer's requirements.
c. Verification, validation, monitoring, measurement, inspection and test activities specific to the customer's requirements and for product acceptance
d. Records needed to provide evidence that the processes and product meet the customer's requirements (see 4.2.4)
e. Configuration management as appropriate to the product
f. Resources needed to support the use and maintenance of the product.

7.1.1 Project Management

As appropriate to the organization and the product, Accra-Fab plans and manages product realization in a structured and controlled manner to meet requirements at acceptable risk, within resource and schedule constraints.

7.1.2 Risk Management

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

a. Assignment of responsibilities for risk management
b. Definition of risk criteria (likelihood, consequences, risk acceptance)
c. Identification, assessment and communication of risks though out product realization
d. Identification, implementation, and management of actions to mitigate risks that exceed the defined risk acceptance criteria
e. Acceptance of risks remaining after implementing mitigation actions

For further information, refer to Procedure 2-036, "Risk Management".

7.1.3 Configuration Management

Accra-Fab has established, implemented and maintains a configuration management process that includes, as appropriate to the product:

a. Configuration management planning
b. Configuration identification
c. Change control
d. Configuration status accounting
e. Configuration audits

7.1.4 Control of Work Transfers

Accra-Fab has established, implemented, and maintains a process to plan and control the temporary or permanent transfer of work and to verify the conformity of the work to requirements.

For further information, refer to Procedure 2-001, "Planning for Product Realization".

7.2 Customer-related Processes

7.2.1 Determination of Requirements Related to the Product

The following is determined at the time of initial quote to the customer:

a. Customer product requirements including delivery and post-delivery activities
b. Requirements not stated by the customer but necessary for the product's intended application (if known)
c. Customer stated statutory and regulatory requirements that are specific to the product
d. Additional requirements considered necessary for the manufacture of the product and/or service provision. These may include special requirements.

7.2.2 Review of Requirements Related to the Product

The sales department with input as necessary from engineering, manufacturing, and Quality Assurance reviews sales orders to insure that our manufacturing processes are capable of meeting customer requirements.

The following information is considered during the review process:

a. Product and/or service requirements are clearly defined. Copies of customer supplied or approved drawings/specifications are legible and in accordance with current manufacturing practices.
b. Differences between quotations, revisions, and current orders are resolved before acceptance of the order. All differences are resolved before issuance of prints.
c. The sales and engineering team determine that all resources and capacity are available to meet the customer's specifications.
d. Any special requirements are determined
e. Risks have been identified (see 7.1.2)

Records of reviews are documented and maintained in accordance with Procedure 2-001, "Planning for Product Realization" and 2-006, "Document Control".

Where there is no customer-documented statement of requirements (such as verbal requirement changes), the sales department confirms the customer requirements prior to acceptance.

Changes to requirements agreed to by the customer are noted on the master copy of the requirements document (drawings/specifications and/or shop order). Sales personnel sign and date all changes. The customer contact is noted on the documents where applicable (see 2-006, "Document Control"). Where applicable, changes made are communicated to appropriate personnel.

7.2.3 Customer Communication

Accra-Fab has established effective communication (via email, fax, and telephone) with customers in regards to the following:

a. Product information
b. Enquiries, contracts or order handling, including amendments
c. Customer feedback, including customer complaints

For further information, refer to Procedure 2-001, "Planning for Product Realization".

7.3 Design and Development

While Accra-Fab does not design product, we have positioned ourselves to assist customers with their engineering needs by providing support in many product development and planning areas. Experienced engineers

offer value-added assistance using CAD systems such as Pro-E, Solid Designer, Solid Works, AutoCad, Autodesk Inventor, CADkey, and ME 10. File transfer formats include 3D format: PRT, PKG, IGS, STP, IPT, SAT and SDP. 2D format: DXF, DRW, MI, DWG, PRT, IDW, PDF, PLT, HPG, and PS. Manufacturing provides prototyping and other services related to product development and realization.

7.4 Purchasing

7.4.1 Purchasing Process

Purchasing reviews the ERP System and any necessary customer drawings, specifications, or standards to determine the parts, materials, and services to be purchased. Purchasing reviews are conducted per Procedure 2-003, "Purchasing Function" as part of verifying and entering the order information into the computer and printing a copy of the purchase order. The type and extent of control over suppliers is defined, as well as purchasing documents clearly describing the product ordered. Accra-Fab is responsible for the product conformity of all products purchased from suppliers, including product from sources defined by customers.

Suppliers that are on the approved supplier list have proven over time that the material they supply is acceptable and meets specifications required by the purchase order. Initial supplier evaluations are performed at the supplier's site at the discretion of Accra-Fab's Quality Assurance Manager. Information from third party certification bodies or government approval may also be used to select suppliers. Re-evaluation of suppliers is accomplished dependent upon past performance. Suppliers that cannot meet Accra-Fab's established requirements are removed from the approved supplier list. Records of supplier evaluations are maintained by the Quality Assurance department. For further information regarding qualification of suppliers, see Procedure 2-020, "Approved Supplier List".

In addition, Accra-Fab:

a. Maintains a list of suppliers that includes approval status and the scope of processes approved.
b. Periodically reviews supplier performance, and uses objective evidence from these reviews to determine levels of control to be implemented.
c. Has defined the necessary actions to take when dealing with suppliers that do not meet requirements.
d. Has defined the process, responsibilities and authority for the approval status, change in approval status, and conditions for controlled use of suppliers dependent on their approval status.
e. Ensures that when required by the customer, Accra-Fab and all suppliers will use customer approved special process sources.
f. Determines and manages the risk when selecting and using suppliers (see 7.1.2)

For further information, refer to Procedure 2-003, "Purchasing Function", and Procedure 2-020, "Approved Supplier List".

7.4.2 Purchasing Information

A purchasing system has been established to insure that purchasing information describes the product and where appropriate the following:

a. Requirements for approval of product, procedures, processes and equipment are entered onto the purchase order. Copies of documents relevant to the purchased product such as prints and specifications are sent to the supplier via fax or mail.
b. Requirements for supplier qualified personnel, where appropriate, are determined during the planning for product realization stage and communicated to the supplier on the purchase order.
c. Quality Management System requirements are communicated to suppliers at the time of initial evaluation in the form of a questionnaire. Suppliers who do not meet Accra-Fab's System requirements are not chosen to be listed on the approved supplier list.
d. The identification and revision status of specifications, drawings, process requirements, inspection and verification instructions, and other relevant technical data.
e. Requirements for test, inspection, verification (including production processes), use of statistical techniques for product acceptance, and related instructions for acceptance by Accra-Fab, and as applicable critical items including key characteristics.

f. Requirements for test specimens (production method, quantity, storage and shipping conditions) for inspection and verification, investigation, or auditing.
g. Records retention requirements.
h. Right of access by Accra-Fab, its customers, and/or 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.
i. Verification of purchased product by Accra-Fab or the customer at the supplier site is communicated on the Purchase order.
j. Requirements regarding the need for the supplier to:
    1. Notify Accra-Fab of any nonconforming product
    2. Obtain Accra-Fab approval for nonconforming product disposition
    3. Notify Accra-Fab of changes in product and/or process, changes of suppliers, changes of manufacturing facility location, and where required, obtain Accra-Fab approval
    4. Flow down to the supply chain the applicable requirements, including customer requirements

Purchasing personnel ensures the adequacy of the above requirements prior to sending the purchase order to the supplier.

For further information, refer to Procedure 2-003, "Purchasing Function".

7.4.3 Verification of Purchased Product

Inspection of incoming materials, subcontracted services, in-process operations, and final product are conducted as required to ensure that the product meets customer requirements.

a. The following verification activities may be used:
    1. Obtain objective evidence of product conformity from the supplier. This may be done through review of accompanying documentation, certificates of conformity, test and statistical records, or process control records.
    2. Inspection and audits at the supplier's facility
    3. Incoming inspection
       The inspection process is designed to:
        - Ensure that incoming product is suitable for use through inspection, certification, or supplier qualification.
        - Minimize inspection time when possible, by relying on the established quality systems of approved subcontractors and suppliers.
        - Control untested materials until they are approved for use.
        - Ensure that all planned inspections and tests are completed before shipment of product.
b. The amount of inspection conducted at Accra-Fab or by its suppliers is dependent on the maturity of quality systems employed, the records that demonstrate conformance, or customer requirements.
c. To permit recall of product or material retrieval, product is identified and records kept when materials or product are released for production purposes before materials/product are known to be acceptable.
d. Product found to be nonconforming during any inspection process are handled as nonconforming material per documented procedure 2-014.
e. Partial or complete lots of purchased product are examined in accordance with documented procedures or customer requirements. Acceptance is indicated by entry of the product into the RAW warehouse. Acceptance of Product received from outside processes is shown by Quality Assurance personnel signing on the shop order or entering the accepted quantity into the Vantage database. Non-conforming product is held until disposition is made.
f. If Accra-Fab delegates verification activities to the supplier, the requirements for delegation will be defined and a record of delegations maintained.
g. If Accra-Fab performs verification activities at the supplier's facility, Accra-Fab will define the verification arrangements and method of product release on the purchase order.
h. In-process inspection records are maintained in electronic or paper form as part of the shop order control system. The inspection authority responsible for releasing product is identified in the packaging/shipping procedure.

i. Records indicate the number of acceptable parts manufactured and/or shipped in accordance with defined acceptance criteria. Inspection and test records including logs are maintained as specified in the process procedures or customer agreements.
j. Customer verification of products or services purchased by Accra-Fab does not absolve Accra-Fab of the responsibility to provide acceptable product. Further customer verification of purchased products at a supplier or subcontractor will not preclude subsequent rejection by the customer.

For further information, refer to Procedure 2-012, "Final Inspection", and Procedure 2-018, "Receiving and Inspection of Purchased Parts"

7.5 Production and Service Provision

7.5.1 Control of Production and Service Provision

a. Shop travelers are provided for each job, giving sequence of operation and number of parts required. The shop traveler also provides requirements for first article inspections and special notes where necessary. Part prints accompany the shop traveler along with applicable flat patterns, forming drawings, and silkscreen criteria.
b. Operator instructions include operation procedures available to each employee via the computer network, and process control plans, as well as the shop travelers and prints mentioned in 7.5.1.a. Product specific Standard Work Instructions are created and available whenever needed.
c. Suitable equipment is used throughout the facility in each department for the production and validation of products.
d. Monitoring and measuring equipment such as check gauges, fixtures, and metrology devices are available where they are necessary.
e. Process control plans, inspection plans, and procedures provide the basis for the use and frequency of measuring monitoring and measuring processes and product.
f. Vantage software system by Epicor provides the vehicle for order release, scheduled delivery, and post-delivery activities. Post-delivery activities include direct customer support from our Customer Service Representatives and Return Material Authorizations (RMA).
g. All product is accounted for during production. Part quantities are tracked on the job travelers and in the Vantage software system. Split orders and nonconforming product are appropriately labeled when they are separated from the rest of the order.
h. The job traveler and Vantage software system provide evidence that all production and inspection/verification activities are completed as planned prior to shipment/storage of product.
i. Accra-Fab provides for prevention, detection, and removal of foreign objects (F.O.)
j. Utilities and supplies such as water, compressed air, electricity, chemical products, etc. are monitored and controlled to the necessary extent to ensure product conformity.
k. Workmanship criteria are specified on customer prints and are referenced in customer specific and Accra-Fab standards.
l. As necessary, Accra-Fab considers the following:
    1. Establishment, implementation, and maintenance of appropriate processes to manage critical items and key characteristics
    2. Design, manufacture, and use of tooling to measure variable data
    3. Identification of in-process inspection points if conformance cannot be accomplished after subsequent processes
    4. Special processes (see 7.5.2)

For further information, refer to Procedure 2-035, "FOD Control".

7.5.1.1 Production Process Verification (First Article Inspections)

First Article inspections are accomplished to verify production processes, production documentation, and equipment/tooling are capable of producing parts and assemblies that meet customer requirements. Any changes to the manufacturing processes or tooling changes will be cause for re-verification of product conformity.

For further information, refer to Procedure 2-025, "First Article Process".

7.5.1.2 Control of Production Process Changes

a. Accra-Fab identifies personnel authorized to approve changes to production processes.
b. Accra-Fab controls and documents changes affecting processes, production equipment, tools, and software programs.
c. Any changes to production processes are assessed to verify that the desired effect has been achieved without affecting product conformity.

7.5.1.3 Control of Production Equipment, Tools, and Software Programs

a. Production equipment, tools, and software programs used to control or monitor product realization processes are validated prior to release for production, and are subsequently maintained.
b. Periodic preservation and condition checks are defined for production equipment or tooling in storage.

7.5.1.4 Post-Delivery Support

Accra-Fab claims exclusion under this clause as we do not provide post-delivery support to product. Any product deemed non-conforming by the customer is either returned for repair at Accra-Fab's facility or replaced.

7.5.2 Validation of Processes for Production and Service Provision

Special processes where the resulting output cannot be verified by subsequent monitoring and measurement are monitored at appropriate frequency levels to ensure conformance to requirements. Special arrangements for validation of these processes are made including:

a. Defined criteria for process testing are available at points of use, as well as instructions for approval.
b. Approval of equipment and personnel has met necessary requirements. Proper certification where necessary is on file or posted as required.
   1. Weld certifications requirements vary among industries, customers, and product applications. Accra-Fab will meet customer prescribed weld certification requirements prior to product realization.
c. Specific instructions and methods for testing and approval are documented in procedure form referenced to known standards.
d. Requirements for records are called out in the procedures.
e. Re-validation occurs as necessary at specified intervals per the process procedures.

7.5.3 Identification and Traceability

A product and material traceability and identification process has been documented and implemented to insure that:

- Purchased materials and products are accompanied at all stages of assembly by a shop order or part ID tag for product identification,
- The product's inspection status is recorded on the shop traveler and in the Vantage system (where applicable) throughout product realization stages to maintain the agreed upon configuration
- That traceability of materials and product are recorded in the Vantage system at appropriate product realization stages. Unique job numbers and date codes are used where traceability is required per the customer's specifications. Purchase Order numbers and lot numbers (as applicable) are used for purchased part traceability.
- Traceability requirements may include

- identification to be maintained for the service life of the product
- the ability to trace all products manufactured from the same batch of raw material, or from the same manufacturing batch, to the destination (or scrap)
- for assemblies, the ability to trace it's components to the parent assembly and next higher assemblies
- for products, sequential records of production to be retrievable

- When used, acceptance authority media is controlled appropriately

For further information, reference Procedure 2-008, "Product Identification".

7.5.4 Customer Property

Customer property to be used in the product is received as customer supplied material under the same procedures as raw or purchased material as may be the case. All customer-supplied material is received on a purchase order. It is inspected by Quality Assurance, placed into inventory and issued to the job as required. Customer supplied product is controlled and preserved. Sales reports lost, damaged, or discrepant material to the customer with records maintained by Quality Assurance for a period of at least 7 years. Intellectual property and personal data such as drawings, customer specifications, and customer contact information are controlled and preserved by the Sales department and Quality Assurance.
For further information, Reference Procedure 2-007, "Customer Supplied Material"

7.5.5 Preservation of Product

The handling, storage, packaging, preservation, and delivery system is designed so that:

- Handling and storage methods maintains conformance to requirements while in production, after final acceptance, and until acceptance by our customer.
- Packaging methods meet our customer's requirements when specified.
- Receipt into and removal from inventory is described.
- The condition of product in stock is assessed at appropriate intervals.
- Parts and materials are controlled and stored so as to prevent inadvertent use, loss, damage, or deterioration.

Products are identified with a shop order during manufacturing and with a carton label when ready for shipment. Appropriate means are used to preserve product integrity during processing. Product in inventory is packaged and segregated by customer, part number, revision, and shop order number. When contractually specified, protection of product is provided from time of receipt of materials, through processing, and until Accra-Fab's responsibility ceases.
Accra –Fab also provides for, where applicable with legal and product specifications, provisions for:

- Cleaning
- Prevention, detection, and removal of foreign objects (F.O.) prior to shipment
- Special handling for sensitive products
- Marking and labeling, including safety warnings
- Stock rotation and shelf life control
- Special handling for hazardous materials

For further information, reference Procedures 2-008, "Product Identification", 2-017, "Packaging/Shipping of Product", and 2-033, "Shelf Life Items".

7.6 Control of Monitoring and Measuring Equipment

In order to provide evidence of conformity to requirements, we have determined where and when monitoring and measurement must take place and the equipment needed for this verification throughout all product realization processes.

A register of all monitoring and measuring equipment is maintained. This register defines the process used for calibration/verification, including equipment type/identifier, location, frequency of checks, check method, and acceptance criteria.

Inspection, measuring, and test equipment used to assure that product meet requirements are calibrated and/or verified against certified equipment having a known relationship to nationally recognized standards. Calibrated tools and equipment are rechecked on a periodic basis with calibration/verification status indicated on each affected piece of equipment.

Calibration, inspection, measurement and testing are all performed under suitable environmental conditions. The calibration/verification process is documented with suitable records maintained. A process is in place for the recall of equipment requiring calibration and verification. Actions taken when results are unsatisfactory are documented. Product verified with incapable tools or equipment is re-evaluated on a case by case basis. Environmental, handling, and storage conditions are suitable for maintaining fitness for use. Calibration adjustments are safeguarded and monitoring and measuring equipment is protected from damage during handling, maintenance, and storage.

Test hardware, test software, or such comparative references are checked periodically to assure they are capable of verifying acceptable product. The devices are rechecked at prescribed levels, with the extent and frequency of checks of the above hardware/software established and records are maintained.
When requested by the customer for verification, technical data relating to measurement equipment is made available.

For further information, reference Procedure 2-013, "Calibration Procedure".

8.0 Measurement, Analysis and Improvement

8.1 General

a. Acceptance of product during processing is documented in process procedures with identification by the operator's/inspector's initials after each operation on the shop order. Only product that has been signed off for all operations is released for shipment demonstrating conformance to requirements. Product non-conforming data is recorded in the Internal Problem Report (IPR) database and/or inspection logs. Analysis of this data is accomplished at specified intervals. Statistical techniques may be used to support process control, inspection, and design verification as appropriate to the product.
b. Internal audits are conducted ensuring conformance to the management quality system and analysis is done during management reviews.
c. The effectiveness of the quality management system is under constant scrutiny and analysis to ensure continual improvement.

8.2 Monitoring and Measurement

8.2.1 Customer Satisfaction

Accra-Fab relies on documented evidence in the form of customer performance reports, analysis of product returns, delivery performance, and customer feedback or corrective action requests to ascertain the customer's perception of meeting their requirements. Customer satisfaction plans are developed and implemented when deficiencies are identified, and subsequently assessed for effectiveness.
Methods for obtaining this information are in the form of customer supplier reports, RMAs and customer communication to Accra-Fab's Sales personnel. All information is forwarded to Quality Assurance for recording and analysis. Results of the analyses are reported to top management.

For further information, refer to Procedure 2-027, "Customer Satisfaction".

8.2.2 Internal Audit

Audits of the quality system are periodically performed to determine if the quality system as implemented complies with the ISO 9001:2008 and/or AS9100:2009 standards and the quality system as planned. Audits are also employed to verify effectiveness of the quality system.
Components of the audit system are:

- An audit schedule based on the status and importance of the audited activities and the results of previous audits. The audit schedule defines the audit criteria, scope, frequency, and method.
- Competence of auditors and independence of auditors from the function being audited.
- Prompt reporting and review of audit results by management or area(s) audited.
- Audit records and results are maintained by Quality Assurance.
- Prompt Corrective Actions when deficiencies are found.
- Follow-up actions to determine if corrections and corrective actions have been effective and the results thereof are reported.

For further information, reference Procedure 2-019, "Internal Quality Audits".

8.2.3 Monitoring and Measurement of Processes

Processes are monitored in accordance with departmental procedures. Methods include testing of chemical processes; Testing of product results such as paint thicknesses and coating results; Monitoring of design results such as CAD layouts to customer specifications.

Sales Order review and Design Control are monitored on a daily basis with cross reference participation. Purchasing and Process Planning are monitored on a daily basis for accuracy and capability.

Process Control, 1st Article, and Final Acceptance are monitored in accordance with requirements. Handling, Storage, Preservation, and Delivery are monitored on a daily basis to schedule and performance.

Quality system effectiveness and System Support is monitored as required and by Management Review. Records of conformity and the acceptance criteria are maintained. When planned results are not achieved, Corrective Actions are taken where appropriate.

When process nonconformity occurs, Accra-Fab takes appropriate action to correct the nonconforming process. The process shall be evaluated to determine if it could have resulted in product nonconformity. Investigation will determine if process nonconformity is limited to a single incident of if it could have affected other processes or products. Any nonconforming product shall be identified and controlled in accordance with procedure 2-014, Nonconforming Product.

8.2.4 Monitoring and Measurement of Product

Accra-Fab monitors and measures the characteristics of product at appropriate product realization stages to verify that customer requirements have been met in accordance with section 7.1, Planning of Product Realization.

Measurement requirements for product acceptance are documented and include:

a. Criteria for acceptance and/or rejection
b. When during production the measurement/testing are to be performed
c. Required records of the measurement results (minimum, pass/fail)
d. Any specific measurement instruments required/any specific instructions associated with their use

When critical items are identified by customers or Accra-Fab, Accra-Fab will ensure these items are controlled and monitored as applicable.

Accra-Fab uses established sampling plans for product acceptance, based on recognized statistical principles. These sampling plans are adjusted as necessary in regards to process capability and critical/key product requirements. Any product released for production prior to release of all required monitoring and measurement activities is identified and recorded to allow for immediate recall if it is subsequently found that it does not meet requirements.

Evidence of conformity to product requirements, acceptance criteria, and the person(s) name that authorized the release of the product to the next process including delivery is maintained in the Vantage

database. All customer required documents are provided with the shipment and are present at product delivery (certificates of conformance, materials certifications, RoHS letters, etc.).

Product is not released to the customer until all product requirements have been met unless otherwise approved by a relevant authority or by the customer whichever applies.

For further information, refer to Procedure 2-025, "First Article Process".

8.3 Control of Nonconforming Product

Identification and control of nonconforming product is critical to customer satisfaction. Accra-Fab takes all necessary precaution to identify and control any product that does not meet requirements to prevent its unintended use or delivery.

Non-conforming product control includes the following elements:

- Procedures describing the process including responsibility for review, approval, and disposition of nonconforming product. Personnel approved to make these decisions are approved by top management.
- Identification of discrepant material or product.
- Records of occurrence and disposition (actions taken).
- Evaluation of the reported condition.
- Containing the effect of the nonconformity on other processes or products
- Disposition of material/product. Dispositions of use as is or repair are only approved by an authorized representative of the customer responsible for design of the product. If the disposition results in a change from the specified design requirements, it must be specifically authorized by the customer.
- Product dispositioned as scrap is conspicuously and permanently marked, or positively controlled, until it can be physically rendered unusable.
- Notification to those concerned.
- Rework/repair/re-inspection of nonconforming product in accordance with documented procedures.
- Record of concessions granted by a relevant authority or the customer, when applicable.
- Segregation when necessary.
- Action is taken without delay when delivered product or product already in use is suspected of having nonconformity.
- Records of the nature of nonconformities and corrective/preventive measures taken, including customer concessions, are maintained.

Non-conforming material or product is segregated and identified with a problem report (either supplier, internal, or customer related) or a HOLD tag until action is taken for disposition.

For further information, reference Standard Operating Procedure 2-014, "Nonconforming Material".

8.4 Analysis of Data

Accra-Fab utilizes the appropriate resources to analyze data to determine the effectiveness of its processes, customer product, the quality management system, and to evaluate where continual improvements can be made to the system. Data includes information relating to:

a. Customer satisfaction. (See 8.2.1)
b. Conformity to product requirements. (See 8.2.4)
c. Where appropriate, characteristics and trends of processes and product, including opportunities for preventative action (see 8.2.3 and 8.2.4)
d. Information collected from or at suppliers (see 7.4)
e. Internal Audit results

For further information, refer to Procedure 2-021, "Statistical Techniques".

8.5 Improvement

8.5.1 Continual Improvement

Accra-Fab utilizes information from its resources to continually improve the effectiveness of its quality management system. Resources include but are not limited to our quality policy, quality objectives, audit results, analysis of data, corrective and preventive actions and management review. Accra-Fab monitors the implementation of improvement activities for effectiveness.

8.5.2 Corrective Action

Our corrective action system has been designed and documented to drive our continuous process improvement efforts. The goal of the system is to prevent potential problems from recurrence and to minimize or eliminate detected chronic or systemic problems. Corrective actions taken are appropriate to the effects of the identified nonconformities.

The corrective action system ensures that:

a. Non-conformities in product, process, and services, (including customer complaints) or the quality system are reviewed.
b. Root cause investigations are performed (Although 100% determination of root cause is not possible in every case, Accra-Fab has trained its employees to recognize areas of potential causes and in addressing each one until the problem has been reduced to acceptable levels or ultimately eliminated).
c. If it is determined that the supplier is responsible for the nonconformity, a Supplier Problem Report (SPR) is written and the supplier is responsible for corrective actions.
d. The evaluation for the need for any corrective action is completed.
e. Corrective actions are determined and implemented.
f. Records of corrective actions results are maintained.
g. That the corrective action is reviewed for effectiveness.
h. Provisions for specific actions if corrective actions are not effective or completed in a timely manner
i. Determining if additional nonconforming product exists based on the causes of the nonconformities and additional actions to take if required.

For further information, reference Procedure 2-016, “Corrective/ & Preventive Actions”.

8.5.3 Preventative Action

Accra-Fab encourages all of its customers and internal personnel to utilize planning for product realization and risk management, both in the design and prototype stages, to determine potential failure mode and effects of product and processes. Identifying the potential root causes will prevent the occurrence of nonconforming material in most cases.

a. Accra-Fab’s planning for product realization processes play a vital role in determining potential nonconformities. It is the responsibility of Engineering and the Customer Service Representatives to recognize areas which may require consultation with other process personnel to determine possible problems and associated root causes.
b. The need for action to prevent the occurrences of nonconformities is evaluated with alternative solutions. An offer is made to the customer on the findings to actively pursue other remedies.
c. Determining and implementing the action required for preventing nonconformances has been emphasized throughout the organization.
d. Sales and Quality Assurance maintain records of preventative actions.
e. Preventative actions are reviewed with the appropriate process personnel to determine the effectiveness of any actions taken.

For further information, reference Procedure 2-016, “Corrective/Preventive Action”.

Figure 1 – Accra-Fab Organizational Chart

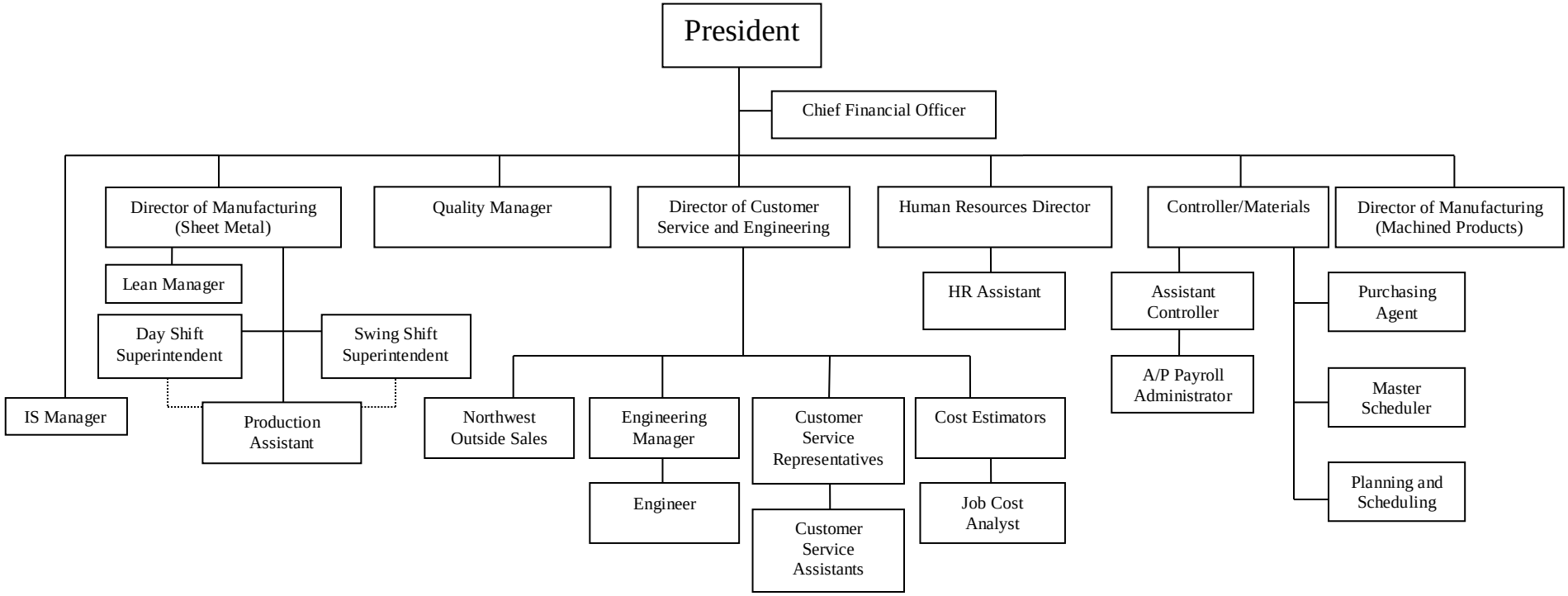


Figure 2 – Quality Management System Documents

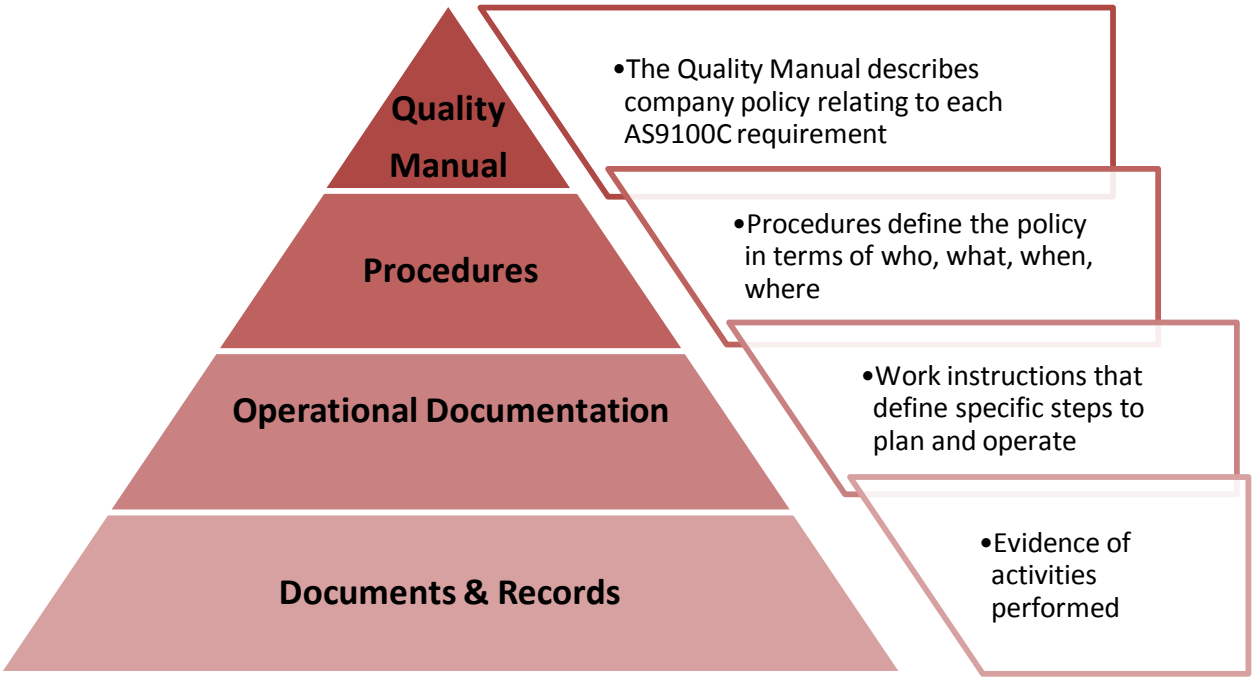
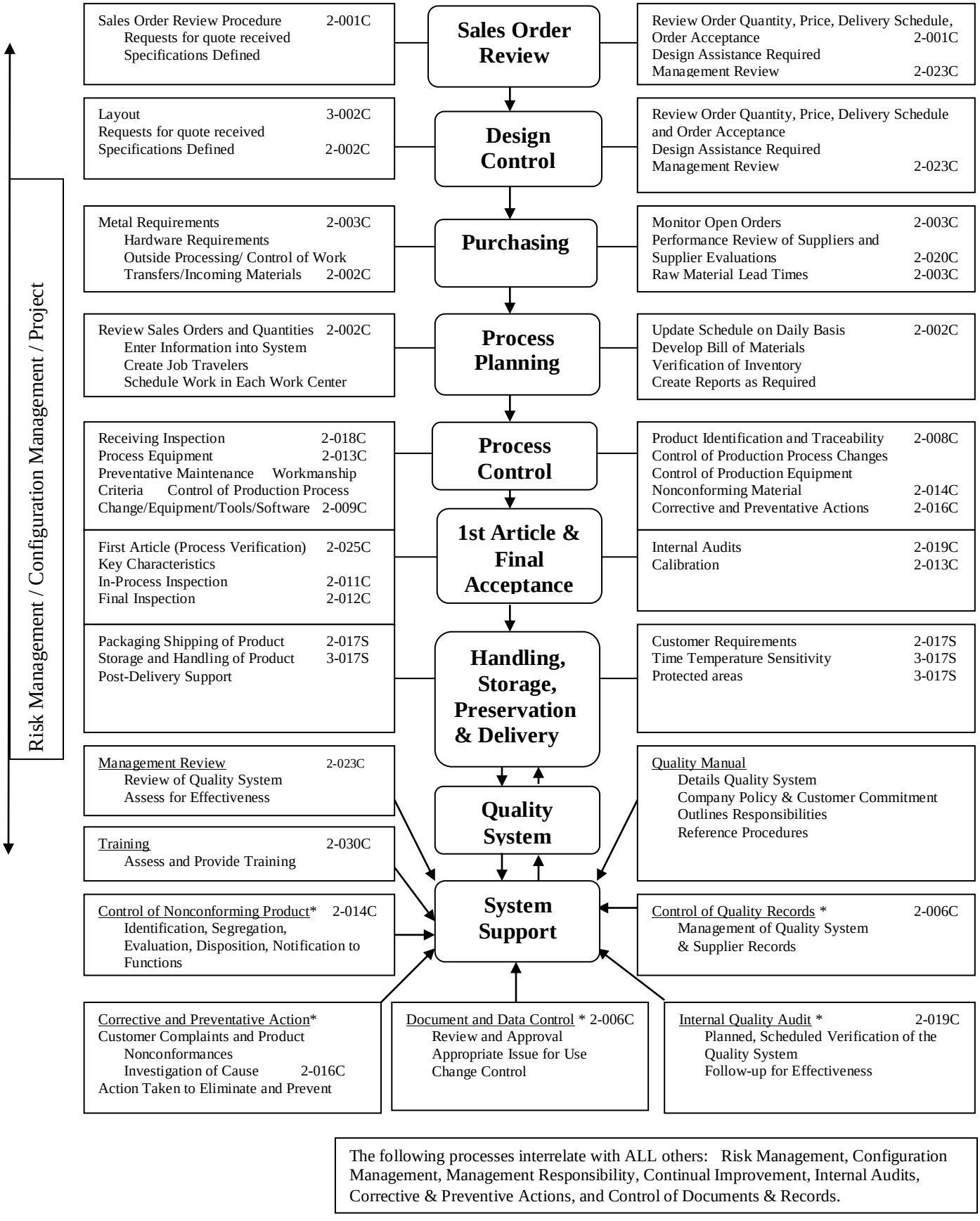


Table 1 - Responsibility Matrix

Requirement	President	CFO	QA Manager	Director of Manufacturing	Director of Sales & Engineering	Materials Manager	Human Resources Manager
Overall Quality System (4.0)	S	S	P	S	S	S	S
Management Responsibility (5.0)	S	S	P	S	S	S	S
Resource Management (6.0)			S	S	S	S	P
Product Realization (7.0)			S	P	S	S	S
Measurement, Analysis and Improvement (8.0)	S	S	P	S	S	S	S

P = *has primary responsibility*
S = *has some responsibility*

Figure 3 - Accra-Fab Quality Plan



The following processes interrelate with ALL others: Risk Management, Configuration Management, Management Responsibility, Continual Improvement, Internal Audits, Corrective & Preventive Actions, and Control of Documents & Records.