AS 9100C / ISO 9001COMPLIANT

QUALITY MANUAL

Level I

REV: B – 08/05/14

RODCO PRECISION GRINDING

122 W. Redondo Beach Blvd
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RODCO PRECISION GRINDING

QUALITY POLICY AND PROCEDURE APPROVAL AND REVISION RECORD

Document #	Title
Quality Manual	**QUALITY MANUAL (AS9100C / ISO 9001:2008 COMPLIANT)**

APPROVAL

Name	Title / Department	Signature
Rodolfo Fuentes	President, General Manager, Engineering, Sales, Purchasing	
Marco Fuentes	Operations Manager, Shipping, Receiving	
Rosa Urbina	AS9100 Management Representative, Quality Assurance, Office Administration, Customer Service, Accounting	

REVISION RECORD

Revision	Date	Change Description
N/C	09/30/09	New Release conforming to AS9100B / ISO 9001:2000 standards.
A	4/5/11	Updated to AS9100B / ISO 9001:2008 Standards.
B	8/5/14	Updated to AS9100C / ISO 9001:2008 Standards.

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QUALITY POLICY

RODCO PRECISION GRINDING IS COMMITTED TO DELIVERING QUALITY PRODUCTS ON TIME AT MINIMAL OPTIMUM COST.

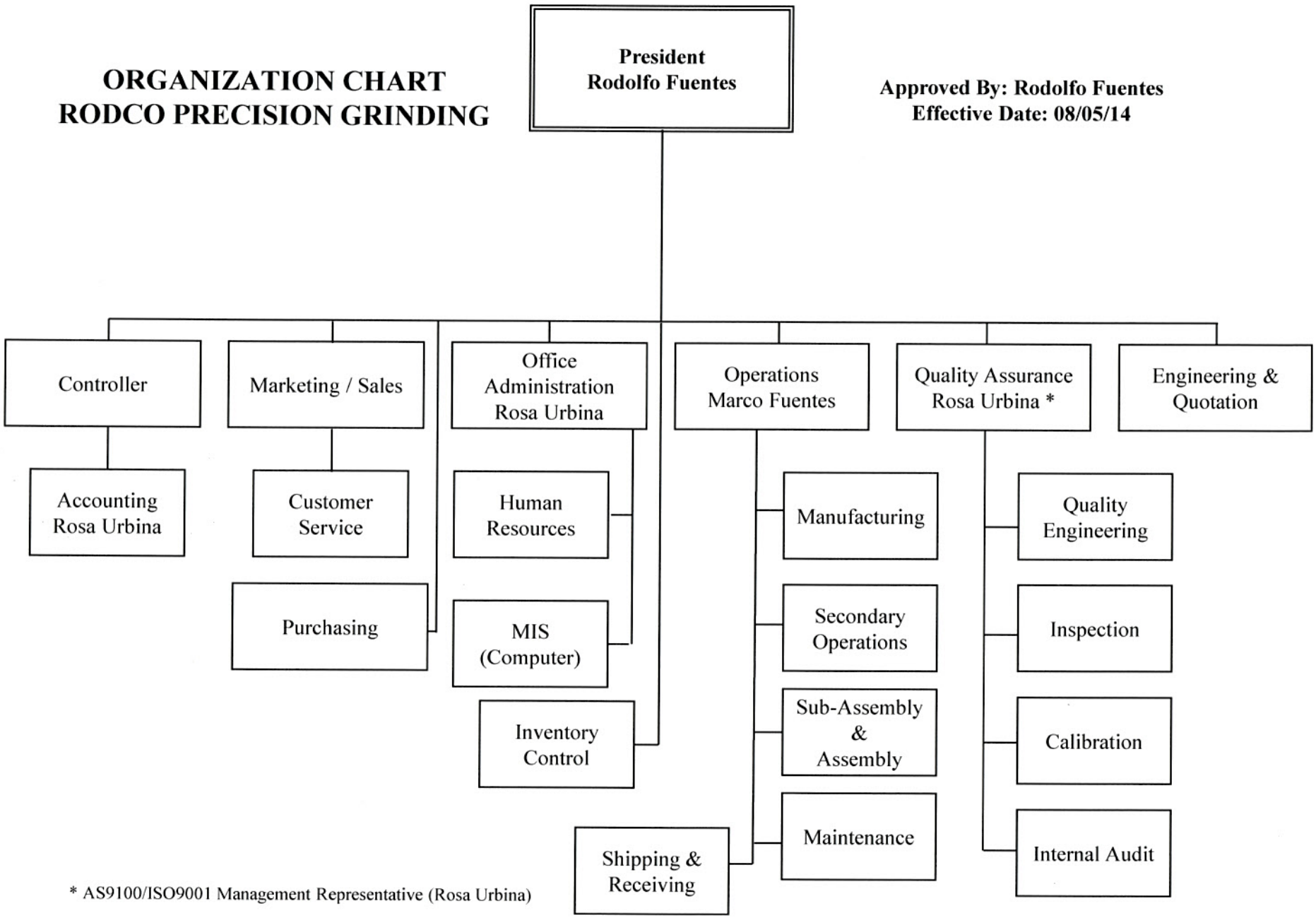
WE ARE MANUFACTURER OF PRECISION CENTERLESS GRINDING ON VIRTUALLY ANY MATERIAL INCLUDING MINIATURE PARTS DOWN TO .006" FOR AEROSPACE, DEFENSE, ELECTRONICS, INDUSTRIAL AND COMMERCIAL APPLICATIONS.

OUR PRIMARY OBJECTIVE IS PURSUING CUSTOMER SATISFACTION BY:

- CONTINUALLY IMPROVING PROCESS EFFICIENCY AND EFFECTIVENESS OF THE QUALITY MANAGEMENT SYSTEMS (QMS).
- REDUCING COST OF MANUFACTURING AND IMPROVING PRODUCTIVITY.

RODOLFO FUENTES
PRESIDENT
RODCO PRECISION GRINDING
September 30, 2009

ORGANIZATION CHART
RODCO PRECISION GRINDING



Approved By: Rodolfo Fuentes
Effective Date: 08/05/14

* AS9100/ISO9001 Management Representative (Rosa Urbina)

Rodco Precision Grinding
Quality Manual

QUALITY MANUAL (ISO 9001:2008 / AS9100C)

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QUALITY MANUAL (ISO 9001:2008 / AS9100C)

1 SCOPE

1.1 General

Introduction: **Since 1972 Rodco Precision Grinding has provided centerless grinding services with unbeatable quality and delivery at competitive price. We consistently maintain tight tolerances and provide superior finishes on parts using virtually any material, and our grinding capabilities include spherical radius, angle, grooves, bars thru feed, in-feed grinding, OD grinding between centers, surface grinding thread rolling and multiple grinding including miniature parts down to .006 inch.**

From its founding, the company has worked to build up reputation for QUALITY, RELIABILITY, and SERVICE second to none. This has been achieved through a dedicated and experienced staff committed to customer care, first class workmanship and the provision of fast and efficient service that can be relied on.

AS9100 Scope: **Manufacture of precision centerless grinding on virtually any material including small parts down to .006" for Aerospace, Defense applications.**

ISO 9001 Scope: **Manufacture of precision centerless grinding on virtually any material including small parts down to .006" for Aerospace, Defense, Electronics, Industrial and Commercial applications.**

AS9100 / ISO 9001: The purpose of the scope statement within the quality manual is to define the subject of the AS9100 / ISO 9001standard and the structure of the quality management system (QMS) within manufacturing at RODCO. Primary structure and activities of the scope is as follows:

- QMS is aimed at Process Approach within manufacturing and location of activities.
- Determine the sequence and interaction of these processes (see Appendix A1, A2 and A3 for typical processes within manufacturing.
- Determine the criteria and methods needed to ensure that both the operation and control of these processes are effective.
- Ensure the availability of resources and information necessary to support the operation and monitoring of these processes.

- Implement action necessary to achieve planned results.

It is important to note that within the manufacturing environment at RODCO the term "product" applies only to the product intended for, or required by, a customer. The quality system described within this manual establishes the total quality policy. The manual is written to address the requirements of AS9100 / ISO 9001except for the exclusions shown, with justification, in the paragraph 1.2 titled "Application." The manual also serves to direct the user from the policy statements to the procedures required to implement the policy.

AS9100 / ISO 9001 ***The supplement requirements for aerospace industry as shown in* AS9100 / ISO 9001 *standard using bold, italic text is also added in this manual and overall QMS.***

1.2 Application

All requirements of this manual are intended to be applicable to all departments and processes within RODCO, regardless of type and size unless it is explicitly stated in exclusions (see table titled "Exclusion Table" below). Where exclusions are made, management is aware about the exclusions and assured that such exclusions do not compromise management's ability, or responsibility, to provide product that meets customer and applicable regulatory requirements.

EXCLUSION TABLE

Clause or Sub-clause	Exclusion	Justification
7.3.1	Design and Development Planning	1) Products are produced from customer's design and production drawings.
7.3.2	Design and Development Inputs	2) Any drawings or sketches created by the organization are to facilitate manufacturing processes or training purpose only. These documents are also created to determine criteria and methods needed to ensure that both the operation and control of the manufacturing processes are effective.
7.3.3	Design and Development Outputs	
7.3.4	Design and Development Review	
7.3.5	Design and Development Verification	
7.3.6	Design and Development Validation	
7.3.7	Control of Design and Development Changes	

QUALITY MANUAL (ISO 9001:2008 / AS9100C)

2 NORMATIVE REFERENCE

Quality Management Systems – Fundamentals and Vocabulary
The above normative document contains provisions, which, through reference in this manual, constitute provisions of the International Standards. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, management is aware about the possible changes and editions, and committed to investigate the possibility of applying the most recent edition of the normative document indicated above.

3 TERMS AND DEFINITIONS

Supplier → Organization → Customer

Supplier:	means RODCO suppliers who supply material and services for manufacturing products.
Organization:	means RODCO management and its employees.
Customer:	means RODCO customers.
Quality Policy:	the organization's requirements on issues affecting quality.
Quality Procedure:	the directions for implementing a Quality Policy.
Work Instruction:	the generic name for detailed descriptions of work to be done in the manufacture and inspection of acceptable product. Work instructions are also used for related tasks such as calibrations and preventive maintenance.

- Customer owned property - Any type of instrumentation, accessories, manuals, or shipping containers that belong to a customer.
- Customer supplied product - Any type of service or material supplied to be utilized in the manufacture, modification or repair of customer-owned property.
- Product – The end item result of meeting all contracts terms and conditions. (e.g.: manufactured goods, merchandise, services etc.)
- Quality Records – Documentation of those activities wherein records of said activities must be maintained will be specified in the procedure or work instruction level documents, as applicable
- Key Characteristics- The features of a material, process, or part whose variation has a significant influence on product fit, performance, service life, or manufacturability.

- Risk - An undesirable situation or circumstance that has both a likelihood of occurring and a potentially negative consequence.

- Special requirements - Those requirements identified by the customer, or determined by the organization, which have high risks to being achieved thus, requiring their inclusion in the risk management process. Factors used in the determination of special requirements include product or process complexity, past experience and product or process maturity.

- Critical items - Those items (e.g., functions, parts, software, characteristics, processes) having significant effect on the product realization and use of the product; including safety, performance, form, fit, function, producibility, service life, etc.; that require specific actions to ensure they are adequately managed.

4 QUALITY MANAGEMENT SYSTEM

4.1 General requirements

4.1.1 This quality management system has been created, is being maintained, is implemented, and its effectiveness is measured to continually improve to conform to AS9100 / ISO 9001standard.

4.1.2 **Quality Management System Diagram, Cross-Functional Flow Chart, and Cross-functional matrix (Appendix A1, A2 and A3 respectively)** shows the order and interaction of company's quality management system general processes. General processes of QMS as detailed in "Quality Management System Diagram" and "Cross-Functional Matrix" (see Appendix A1,A2 and A3), at the minimum, includes:

- Receiving, and developing RFQ (Request for Quote)
- Review Contract or P.O.
- Quality planning activities (manufacturing and purchasing activities)
- Manufacturing (resource management)
- Monitor, Measure and Analysis
- Management reviews

The order and interaction of specific (department, machine, product or service) quality management system processes can be found on standard operating procedures (SOP), quality plans, drawings, route sheets, flow charts and associated documents. The criteria and methods for effective control of processes are found in lower level procedures, and

can take on various formats such as work instructions, process sheets, checklists, decision matrix, inspection and test instructions, etc.

4.1.3 Outsourced processes, having impact on the achievement of product or service requirements, are controlled in accordance with quality system procedure titled "Purchasing."

4.1.4 The information necessary for effective operation and monitoring of these processes is found within available controlled documents throughout the company. Upon the completion of measurement and monitoring of the processes and analysis of the data, appropriate action is taken to assure intentions are achieved and opportunities for improvement are acted on. Management of these processes is accomplished in accordance with the requirements of AS9100 / ISO 9001.

4.2 Documentation requirements

4.2.1 General:

RODCO has elected to include the following documents in its quality management system:

- Statements of quality policies
- Statements of quality objectives
- This quality manual
- The documents referred to in this quality manual, including documented procedures required by AS9100 / ISO 9001.
- Any documents required by the organization to ensure the effective planning, operation and control of its processes.
- The records described in quality system procedure titled "Control of Records."
- Quality system requirements imposed by the applicable regulatory authorities.

The organization's management members approving this manual on approval sheet have access to QMS documentation and are aware of relevant procedures. This includes using the relevant procedures to train the employees and implement in their respective departments to achieve effective process controls.

Access to QMS documentation: The organization also permits to customers and/or regulatory authorities' representatives to have full access to QMS documentation.

4.2.2 Quality Manual:

This quality manual contains:

- A scope statement with exclusions.
- Reference to the quality management system procedures.
- Reference to QMS diagram and cross-functional flowchart and matrix (Appendix A1, A2 and A3), which provides a description of the interaction within the quality management system.
- When referencing the documented procedures, the relationship between the requirements of the AS9100 / ISO 9001standard and the documented procedures are shown, e.g., Appendix B shows the quality system procedure reference matrix to AS9100 / ISO 9001.

4.2.3 Control of documents:

RODCO Quality Management System incorporates four levels of documentation as described below:

Level I - Quality Manual

1. This Quality manual encompasses quality policy and commitment of the Quality Management System and its approach to meeting the requirements of AS9100 / ISO 9001. The manual states the overview of the organization and its products; commitment to comply with applicable AS9100 / ISO 9001requirements, system scope, exclusions, organization and responsibilities, sequence and interaction of processes, documented procedures.

2. The objectives of this Quality manual are implemented through all lower level documentation.

3. Clauses of AS9100 / ISO 9001are stated by assigning paragraph number, e.g., paragraph 4 for clause 4 (Quality management system), paragraph 5.1 for clause 5.1 (management commitment) and so on. The purpose of alignment of paragraph to each clause is to facilitate the use of the quality manual and assure that the manual is completely conforming to the standard.

4. Quality Manual is approved and signed-off, at the minimum, by the top management as shown on approval sheet.

QUALITY MANUAL (ISO 9001:2008 / AS9100C)

Level II - Quality System Procedures (QSP), also see Appendix B

1. Documented quality system procedures define and control the responsibilities, methods, and sequence of operations necessary to meet the requirements of the Quality manual, AS9100 / ISO 9001and any other requirements specified by the customers and/or regulatory authorities.

2. Procedures refer to lower level documentation when such documentation is required to properly implement the process described by the procedure.

3. Manufacturing and inspection procedures define and control manufacturing and inspection processes, respectively. They refer to lower level work and test methods that may be required to properly implement the plans.

4. Procedures are numbered according to AS9100 / ISO 9001major clause number, e.g., clause 4 is Quality management system so Quality System Procedure (QSP) is numbered "QSP 4" with date and revision. This means, for example, if there are three system procedures to cover clause 4, then they are numbered QSP 4(a), QSP 4(b) and QSP 4(c). Each system procedure is approved and signed-off, at the minimum, by the management representative (MR) and other responsible management members as appropriate.

5. Documented quality system procedures (QSP) are shown in Appendix B, titled "Quality System Procedure Reference Matrix". There are, at the minimum, seven documented procedures that are required by the standard, in addition to other quality system procedures as deemed necessary by the senior management.

Level III - Standard Operating Procedures (SOP) & Work Instructions (WI)

1. Documented Standard Operating Procedures (SOP) and Work Instructions (WI) are subordinate to quality system procedures. The SOP and/or WI document the details of specific tasks or activities; the **"How"** of performing a specific task.

2 A Standard Operating Procedure defines the detailed steps involved in the various hands on tasks required by a quality system procedure and can take on various formats and names such as quality plans, work instructions, drawings, flowcharts, inspection instructions, calibration methods, process sheets, decision matrices, checklists, test procedures, product specifications, etc. If there are sub level

procedures, e.g., work instructions, then they may have their own numbering system, but they all fall in Level III document structure.

3. Standard Operating Procedures and Work Instructions are numbered according to AS9100 / ISO 9001clause numbers as close as possible to facilitate the conformance to standards, e.g., clause 7.4 "Purchasing," so all standard operating procedures related to this clause is numbered according clause number.

4. The SOP manual and related work instruction is approvded and signed-off by local supervision or management depending upon the scope of the procedure or work instruction. Work instruction may be assigned a unique number system depending upon its significance and use, e.g., shop traveler work instructions are approved when job is released for production. The level III documents are treated as controlled documents, and they are an integral part of the QMS documentation system.

Level IV - Quality Records

1. Quality records provide the objective evidence necessary to demonstrate achievement of required product quality and the effective operation of the quality management system.

2. Quality records are referenced in quality system procedures and standard operating procedure, work instructions and possess a variety of formats such as certificates of conformance, inspection data sheets, and training completion certificates.

3. Records are collected on blank forms, tags, labels, etc. and forms/tags are identified with form number. Master forms are kept in blank master file and table of contents shows the form number and title of the form. Master forms are also retained on computer database as appropriate.

Quality related procedures and supporting instructions (Level I, II, III and IV) type documents within the organization are controlled by assigning the levels as described above. Documents are approved by management/supervision for adequacy prior to use. This includes the review and update as necessary and re-approval of documents.

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The organization maintains a system for the control of drawings, specifications, planning, procedures, other technical documents, and changes thereto. The system provides the timely removal of incomplete, obsolete or defaced documents from production and inspection areas.

Document change coordination: In addition to internal document control, the organization also coordinates document changes with customers and/or regulatory authorities in accordance with contract or regulatory requirements.

4.2.4 Control of records:

It is RODCO's policy to define and control the responsibilities and methods for identification, collection, indexing, filing, storage, maintenance, and disposition of quality records with documented procedures. The requirements for control of records are found in "Control of Records" procedure. Successful control of quality records includes the following principles:

a) Quality records are maintained to demonstrate achievement of the required product quality and the effective operation of the quality system.

b) All quality records are legible and identifiable to the product involved.

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

d) Quality records are stored and maintained in such a way that they are readily retrievable in facilities that minimize deterioration, damage, and loss.

e) **Retention Period:** Retention period of quality records are established and recorded. The records are retained for a minimum of **seven (7)** years unless stated otherwise by customer or regulatory requirements. In some instances, the management may decide to retain records longer for reference or legal purpose. Senior management is responsible to make an appropriate decision regarding the retention period, especially, when customer's PO states the retention time longer than stated here, e.g. certifications, test reports, and inspection reports are retained indefinitely (permanent) when customer states as PO requirements or call out in their supplier requirements manual.

f) **Customers' review of records:** Objective evidence of compliance with requirements, including records of inspection, tests, nonconforming material and corrective action, engineering change incorporation, supplier survey/approvals, and other Quality Assurance activities, are maintained and available for review by customer and/or regulatory authorities upon request.

g) Legible and reproducible microfilms of records are in filed in place of original records. Records maintained as a computerized database are subject to the same requirements as stated above, and are backed up at appropriate intervals.

h) Methodology of disposal of Quality Records is established in the procedure.

5 MANAGEMENT RESPONSIBILITY

5.1 Management commitment

At RODCO, customer satisfaction is our primary objective. Only the most effective operating environment is tolerated, and only quality product is shipped. It is the policy of RODCO to implement the requirements of AS9100 / ISO 9001as the operational basis for the Quality Management System.

RODCO continuously strives to broaden the decision-making authority at all levels within the organization through increased empowerment of all employees. This means empowering individuals in a team environment to achieve personal excellence in their work, improved performance in our production processes, and increased effectiveness in the quality management system.

5.2 Customer Focus

The RODCO top management assures that all customer requirements are uncovered through the processes described in section paragraph 7.2 later in this manual. Through all of the policies, objectives and processes described in this quality manual, the top management assures the needed environment to consistently fulfill the customer requirements. By routinely assessing customer satisfaction, the management optimizes the likelihood of moving customer satisfaction closer and closer to customer delight. Customer Satisfaction Surveys and other communication and feedback (e-mail, written letters and documents, interview, dialogue with customers) are evaluated and aimed at enhancing customer satisfaction.

5.3 Quality Policy

The Quality policy statement has been formulated by the top management of RODCO after giving due considerations to the following:

- The purpose of the organization
- The need to include an explicit commitment for conformance to requirements
- The need to include an explicit commitment to continual improvement of effectiveness of the quality management system
- The required continual compatibility with quality objectives

The quality policy has been approved and signed by top management and attached in front of this manual, and posted throughout the plant for employees' awareness.

RODCO affirms its commitment to quality through Quality Policy Statement, the definition and allocation of individual management responsibilities, the nomination of a Quality Management Representative, and the regular review of the quality management system by top management. The Quality Policy is also prominently displayed at many strategic locations throughout the site.

After communication of the quality policy to the employees, employees at all levels of the organization are expected to fulfill the requirements of this policy in all of their work related efforts and decisions. Lastly, the quality policy is reviewed to determine continuing suitability and revised, as appropriate, by the top management. The Quality policy is signed off and dated by the top management (see quality policy statement attached in front of this manual showing management sign-off and date).

5.4 Planning

5.4.1 Quality objectives:

RODCO management policy is to develop a formal comprehensive quality objectives matrix showing measurable quality objectives. The matrix typically includes manufacturing aspect (processes, inspection, delivery, cost analysis) of the business. The quality objective matrix including target goals are periodically (at the minimum once a year) reviewed and updated by the senior management. The data and information is gathered from various facets of the business and tracked to drive process improvement plans. The matrix is followed and communicated throughout the organization in various formats depending upon the nature of the work done in each department, and the degree of management and supervision channels appropriate for the area.

Typical objectives include key measurable indicators, such as customer satisfaction, improvement programs, productivity, defect rate, customer returns and corrective action analysis, on-time delivery performance and so on. The matrix is reviewed during the management review meetings, and is evaluated to ensure continuing suitability and consistency with the quality policy.

5.4.2 Quality management system planning:

Management and supervision responsible for the development of quality plans are required to consider the following:

- The quality objectives as stated in 5.4.1
- The quality policy information as stated in 4.1
- Quality plans are documented on process control plan (the plan may be in various formats, e.g., shop traveler, job ticket, router report)

When significant changes occur in categories such as the manufacturing process, organization, the facilities or business strategy, the procedures and activities related to the change are maintained without compromising the integrity of the quality management system. The documents related to change are reviewed and approved by the management. For example, when the manufacturing process is significantly changed of a product, the process control plan of that product is changed and approved by the management; this ensures that the change is reflecting the planning process and intended objectives.

5.5 Responsibility, authority and communication

5.5.1 Responsibility and authority:

The Cross-functional matrix illustrates functions, their interrelations, responsibilities and authorities relevant to the quality management system. More specific quality management system responsibilities and authorities can be found on job descriptions, process control plans, work instructions etc. associated with processes utilized, products manufactured. Appropriate distribution of these documents and associated training assures clear communication of this information.

Organization Chart

- The organization chart is approved by the top management with effective date.

- The OC chart does not include any temporary employees or sub-contractors hired on a need only basis. Any changes in the organization chart must be reviewed and approved by the top management.
- The OC depicts actual functional positions to assure that the quality management system as stated in this manual is carried out by interrelations among departments.

5.5.2 Management representative:

The Management Representative (MR) at RODCO is appointed by the top management, and is clearly identified on the organizational chart showing the person's name. The MR is responsible for:

- Ensuring that the requirements of this Quality Manual are effectively implemented and maintained.
- Ensuring the effective operation of the quality management system.
- Reporting on the performance of the quality management system to the top management.
- Reporting on the need for improvement of the quality management system to the top management
- Encouraging and assisting in extending the understanding of customer requirements to the degree necessary throughout the organization.
- Resolving matters pertaining quality.

The MR has the organizational freedom and authority to resolve any matters pertaining to quality. The MR is also authorized and responsible to work as liaison with external parties on the matters relating to the quality management system.

5.5.3 Internal Communication:

The management shares data, indicating the performance of the quality management system, throughout the organization in the following ways:

- Periodically (minimum, once a year) updated postings related to quality performance indicators (charts, graphs, matrices)
- Real-time data on the computer for visibility to management
- Accessibility of corrective and preventive action status, including customer complaints
- Any significant business related news or customer correspondence
- Facility awareness meetings, presentations, newsletters, posters, etc.

5.6 Management review

5.6.1 General:

In order to assure the continuing suitability, adequacy and effectiveness, the management conducts periodic reviews of the quality management system. The reviews can address the quality management system entirely or in parts, as long as the entire quality management system is reviewed at least annually. An expected outcome of that review is the determination of the need for any changes or to reveal opportunities for improvement to the quality management system, including adjustments to the quality policy and quality objectives. Management review records are maintained in accordance with Control of Records procedure.

5.6.1 Review input:

Performance and opportunities for improvement are determined by reviewing the following:

- Internal quality management system audits and non-conformances
- 3rd party quality management system audits, customer audits, regulatory audits, etc.
- Customer feedback, customer surveys, customer complaints, etc.
- Process performance and product conformity reports
- Quality indicators such as scrap, ppm, inspection reports
- Preventive and corrective action status
- Account aging, on-time delivery report
- Carryover action items and their status
- Quality management system related changes
- Potential improvement projects

5.6.2 Review output:

Actions associated with the following are included in the output from management review:

- Improvement of effectiveness of the processes of the quality management system
- Overall improvement of the quality management system effectiveness
- Improvements upon products associated with customer requirements
- Maintenance of appropriate resources

Management review records are maintained per "Control of Records" procedure.

6 RESOURCE MANAGEMENT

6.1 Provision of resources

RODCO management determined and provided the necessary resources on time for the following purpose:

- To implement and maintain the quality management system.
- To continually improve upon the quality management system effectiveness.
- To ensure customer satisfaction through consistent conformance to customer requirements.

6.2 Human Resources

6.2.1 General

Employees of RODCO, having an assignment that can affect product quality, must be competent through education, skills, training and experience, as necessary. Requirements for education, skills, training and experience can be found in the job descriptions maintained by the Human Resource department. Competency is determined by pre-testing, where possible, and/or by the temporary assignment. Temporary assignment activities are evaluated by the supervisor or experienced trainer to determine the effectiveness. Apprenticeships are also used to develop competency.

6.2.2 Competence, awareness and training

Supervisors, engineers and other experience employees are jointly responsible for the determination of competence needed as new processes evolve and existing ones change. When training is required to aid achievement of the required competence, the following methodology for training, as appropriate, may apply:

- Classroom training (internal or external) is scheduled and coordinated by the Human Resource department.
- On-the-job training is coordinated by the department supervisor
- Apprenticeships is jointly arranged and coordinated by the Human Resource department and the supervisor of the department where the apprenticeship takes place.

When and where it is necessary, actions other than training are employed to achieve the needed competence, and appropriate measures of effectiveness are applied.

Training effectiveness is measured by employing, but is not limited to, the following techniques:

- Testing on the material presented in the classroom or during training session on-the-job.
- "Training Record and Evaluation Sheet" completed by supervisor or experienced trainer
- Certificates of completion for externally or internally provided training
- Measuring process outcomes before and after training
- Performance monitoring and reviews on new hires

An Employee appointed to achieve measurable quality objectives must endorse a written acknowledgement of understanding of his work and how it affects the attainment of the overall objectives. If the affected employee does not understand the importance of his/her work to the objectives, an explanation should be provided. Supervisors and/or human resource department is responsible to develop appropriate forms and statement for employees to review and sign. Records of acknowledgement and supporting documents and statements are to be retained in employee personnel file.

The Human Resource department is responsible for retaining records of education, training, skills and experience in employee personnel file.

6.3 Infrastructure

The RODCO management (Top Management, Quality, Operations, Engineering, Sales, Purchasing, Human Resources, etc.) determines the infrastructure needs for each new product and/or service or significant change to existing product and/or service. Consideration is given to the following:

- Building, size, location, etc.
- Workspace, size, layout, etc.
- Facilities associated with building or workspace: HVAC, water, lighting, electricity, telephone systems, data lines, compressed air lines, machine specific requirements, etc.
- Equipment – hardware: furniture, workbenches, storage racks, tools, gages, machines, test equipment, vehicles, computers, other office equipment, etc.
- Equipment – software: engineering software, process control software, test, calibration, data collection, SPC, etc.
- Services for support: preventive maintenance, calibration, engineering, transportation, emergency, etc.

Changes to the infrastructure are planned during quality planning stage. When all the needs have been identified, it is the responsibility of the top management to approve those necessary for the achievement of product and/or service requirements.

6.4 Work environment

The RODCO management (Top Management, Quality, Operations, Engineering, Sales, Purchasing, Human Resources, etc.) considers and addresses many different aspects of the work environment. It often involves physical factors, such as air quality, humidity, and temperature that may adversely affect processes or detrimental to achieving conformity to product requirements. Most significant among them and the departments assigned to manage them are listed below:

Facilities – managed by the Operations
Health and safety – managed by the Operations
Housekeeping – managed by the Operations
Work ethics – managed by Human Resources

Factors that may affect the conformity of the product include temperature, humidity, cleanliness, protection from electrostatic discharge, etc.

7 PRODUCT REALIZATION

7.1 Planning of product realization

As RODCO prepares for a new product or service, the following are determined:

- Specific quality objectives
- Specific processes required
- Specific documentation required
- Specific resources required
- Specific infrastructure required
- Verification activities and criteria required
- Validation activities and criteria required
- Monitoring activities and criteria required
- Inspection and test activities and criteria
- Records to demonstrate achievement of requirements
- Identification of resources to support operation and maintenance of the product

Presently the document called "Shop traveler" reflecting "Quality Plan" activities (where it adds value) is developed with a reference of the appropriate documentation, resources, and sequence of activities that are relevant to particular products, projects or contracts. Typically, control plans are used in lieu of quality plans, particularly in specific business sectors, such as manufacturing operations. Shop traveler, Control Plan or Quality Plan are similar in nature to describe the specific processes required and what is being done with respect to planning of product realization. The completed records and documentation also evaluate the suitability and effectiveness of that planning activity.

A validation activity goes beyond verification as validation may require prove-out testing, prototype testing, and customer purchase part approval and so on. When management elects not to have specific documents similar to or including quality plans, then a rationale statement is developed indicating the justification of the decision and, as appropriate, identifying those documents that do serve as an output of the planning of product realization process. Typical examples of "output" include control plans, quality plans, feasibility commitments, travelers, work orders, job tickets, and so on. Management determines that the records needed to provide evidence that the realization processes and resulting product meet requirements, and the output of this planning is in a form suitable for the method of operation.

7.1.1 Project Management: Management assigns responsibility for project management and ensuring that product realization is planned and managed in a controlled manner, meeting requirements at acceptable risk, within resource and schedule constraints.

7.1.2 Risk Management: Risks are managed according to the Risk Evaluation by management. The process of risk management includes;

- Assigning responsibility for risk management
- Defining risk criteria
- Identification, assessment and communication of risks
- Identification, implementation and management of actions to mitigate risks
- Acceptance of risks remaining after implementation of mitigating actions

7.1.3 Configuration Management: The organization has established, documented and maintained a configuration management process appropriate to the product. The configuration management includes:

- ❖ Document Change Incorporation

- Establish process for timely review, distribution, implementation, and maintenance of documents and changes thereto.
- Released drawings / Standards & Specifications
- Planning Documents / Changes
- Maintain Records of Change Effectivity
- Coordinate Effectivity with customer when required
- Engineering Drawing & Specifications
- Quality Manual, Procedures & Plans
- Work Instructions (Product & System)
- Test & Inspection Procedures
- Internal Audit Procedures / Reports

7.1.4 Control of Work Transfers: Temporary or permanent transfer of work is planned to control and verify the conformity of the work to requirements. Planning of work transfers, for example, from one company facility to another, from the company to a supplier, from one supplier to another, takes place according to the Planning of Realization Processes procedure and coordination with the purchasing department with purchasing procedure.

7.2 Customer-related processes

7.2.1 Determination of requirements related to the product

Quality Planning

At RODCO, major business is to manufacture products, which is a primary input for our customers in their product process mapping; this enhances further the need for Advanced Product Quality Planning (APQP). Each product line is completely routed through APQP requirements with supporting documents. RODCO is using Advanced Product Quality Planning and Control Plan (Shop Traveler) to conduct APQP activities. Depending upon the customers' requirements and types of customers, the senior management decides the scope and nature of the APQP activities on a case by case basis.

Internal multi-disciplinary teams are used to establish and implement an advanced quality planning process. These teams are convened to prepare for production of new or changed products. Feasibility reviews are conducted to confirm the manufacturing of proposed products prior to contracting to produce those products. Feasibility includes an assessment of the suitability of a particular material, or process for production.

In an effort to thoroughly identify all customer requirements, the following are considered by sales, quality and engineering as they interface with the customer:

- Product specifications provided by the customer
- Product performance requirements provided by the customer
- Customer stated availability requirements
- Customer stated delivery requirements
- Customer stated support needs
- Determination of application related requirements or process parameters including temperature, productivity, product life cycle, safety and so on.
- Determination of relevant legal requirements if any (FAA, EPA, federal, state, local government, etc.)
- Determination of relevant environmental requirements if any
- Customer required standard (e.g., Aerospace standard AS9100) or unique requirements for end use customers in targeted countries.

7.2.2 Review of requirements related to the product

RODCO management reviews all identified customer product requirements prior to the organization's commitment to supply a product to the customers (e.g. submission of tenders, acceptance of purchase orders, contracts, and acceptance of changes to contracts or orders). The review activity addresses:

- Definition of requirements.
- Situations where customer requirements have been provided verbally.
- Requirements that change after the quote process has begun.
- The determination of organization's ability to meet the requirements.
- Risks, e.g., new technology, new process, short delivery time scale evaluation

The term "ability" implies having the facilities, staff, inventory, expertise, and so on to satisfy contract or order requirements. Here the activity includes understanding the customer requirements to the extent that they are adequately defined and agreed to. Determining customer requirements and verifying the organization's capability to meet these requirements is an essential element of the quality management system. The review process addresses agreement, resolution, and ability to meet requirements of any order including verbal orders.

Records of requirements reviews and follow-on actions are maintained to demonstrate the communication of contract requirements to affected areas, such as production control, process

functions, customer service, purchasing, and so on. Where there is absence of a "documented statement of requirements," such as verbal orders and agreements, the management obtains confirmation with all affected parties prior to acceptance.

The organization ensures that the process addressing contract amendment is established, or that the existing procedure is updated to provide for the transfer of order changes to all concerned functions. To assess this clause, management identifies the occurrence of amendments in the order(s) or contract(s), and then determines whether these changes are reviewed and communicated back to the "relevant personnel" or functional groups.

7.2.3 Customer communication

There are several scenarios where communication occurs between the RODCO and its customers. The first contact often occurs through some form communication between sales (top management play an important role of carrying out sales activity) and existing and potential customers. Sales department coordinates with other functions and departments (e.g., operations or quality assurance department) as required by the customer to facilitate any issue resolution. Order acceptance activity including amendments occurs within the Sales department.

The organization ensures that the communication with customers about "product information" takes place in a systematical way. This includes product promotional and/or marketing information. The Quality department coordinates customer feedback, and responses to customer complaints through the use of Corrective and Preventive Action.

7.3 Design and development

Since RODCO is primarily a manufacturing company producing parts per customer issued drawings and specifications, the "Design and Development" (Clause # 7.3 and sub clause 7.3.1, 7.3.2, 7.3.3, 7.3.4, 7.3.5, 7.3.6, 7.3.7) is not applicable under AS9100 / ISO 9001Standard.

7.4 Purchasing

7.4.1 Purchasing process

It is policy to ensure that all purchased products conforms to specified requirements. Responsibilities and methods for the effective purchasing process are defined and controlled by documented procedures.

Supplier Selection

1. Suppliers are selected based on their ability to meet contract and quality requirements. Criteria for initial approval and performance requirements for maintaining the approved status are established.

2. Suppliers are assessed and approved **prior** to use, and subject to ongoing monitoring of performance thereafter.

3. The selection of Suppliers and the degree of control exercised are dependent upon the effect of purchased product on the subsequent product or processes, product type, supplier performance, previous relationships, and customer requirements.

4. Records of acceptable Suppliers and their quality performance are maintained. Periodically, quality performance for each supplier is measured and evaluated to determine the level of controls needed for future relationship.

5. Upon evaluation of quality performance, the senior management defines the necessary actions needed to deal with suppliers who are not meeting the customers' requirements. This includes the disapproving the supplier from the approved supplier list.

6. It is management's policy to ensure that the organization and its suppliers use customer-approved special process source, e.g., customer designated plating, heat treat or such process houses.

7. Purchasing manager and Quality Assurance manager, as a team, have the responsibility and authority to approve or disapprove the use of sources.

Approved Supplier List

1. The Purchasing manager and Quality Assurance manager are responsible for maintaining the approved supplier list. The list is kept current on a computer. Hard copy of the approved supplier list is available upon request.

2. Customer-Designated Suppliers:

   - When customers have their own approved supplier list, the suppliers on the list are evaluated, and, if deemed satisfactory, are added to the organization's approved supplier list.

- ❖ When none of the customer-designated suppliers are acceptable, the customer is contacted with a request to approve additional suppliers.
- ❖ The use of customer-designated suppliers does not relieve the organization of the responsibility for ensuring the quality of suppliers' products and services.

7.4.2 Purchasing information

1. Purchasing documents contain a clear description of the product or services ordered and include references to applicable drawings, catalogue numbers, identification codes, process requirements, inspection instructions, applicable specifications and other relevant data; and where applicable, the title, number, and issue of the quality system standard to be applied to the product or service ordered. Also specialized equipment, uniquely qualified personnel, quality management system requirements are also documented and communicated to suppliers.

2. Purchasing documents are reviewed and approved for adequacy of specified requirements prior to release to the supplier.

3. When specified in the contract, the customer is allowed to verify the acceptability of supplier-supplied product either at source or upon receipt.

4. RODCO is committed to accept the responsibility for the quality of all products purchased from suppliers, including customer-designated sources.

5. Purchasing data includes, as applicable, design, test, examination, inspection and customer acceptance requirements and any related instructions and requirements.

6. Purchasing data includes, as applicable, the requirements for test specimens (production method, number, storage conditions, etc.) for design approval, inspection, investigation or auditing.

7. Purchasing data includes, as applicable, the requirements relative to the notification of abnormalities, changes in definition and the approval of their processing, arrangement for notification and approval of supplier nonconforming material.

8. The purchasing data also includes the **"Right of Access"** clause, stating that the organization, their customers, and regulatory authorities have right of access to all facilities involved in the order and to all applicable records.

9. Purchasing data includes, as applicable, the requirements to flow down to sub tier suppliers the applicable requirements in the purchasing documents, including key characteristics where required.

7.4.3 Verification of purchased product

The processes for verification of purchased product or service are found in the specific quality plans for those products or services. The process selected and included in the quality plans depends on the criticality of the purchased product and the performance history of the supplier.

The processes for incoming material acceptance include:

- Acceptance based on certification of conformance
- Acceptance based on the review of data from a certificate of analysis
- Acceptance based on incoming inspection
- Acceptance based on inspection at the source by the organization or its customer.

Source Inspection: When RODCO stipulates in any contract that purchased product or service is subject to source inspection by RODCO or its customer, the details for such an inspection and subsequent release of accepted material is stated in the purchase agreement.

Right Of Entry: The contract with suppliers includes the right of entry clause. The right of entry clause states that the supplier is to allow the RODCO's customer, and regulatory agencies right of entry to any place necessary to determine and verify the quality of contracted work, records and material.

Flow down: RODCO ensures that the quality system requirements are properly flow down to a supplier to the extent necessary to ensure that characteristic not verifiable upon receipt are adequately controlled by the supplier.

Key Characteristics If RODCO determines that the key characteristic process is controlled by the supplier, then the key characteristic requirements are flow down to the supplier.

7.5 Production and service provision

7.5.1 Control of production and service provision

QUALITY MANUAL (ISO 9001:2008 / AS9100C)

It is RODCO policy to identify and plan the production processes which directly affect quality to ensure that these processes are carried out under controlled conditions. The planning controls include, but not limited, to:

- Developing control plans where key characteristics are identified.
- Identification of in-process verification points where adequate verification of conformance cannot be performed at a later stage of manufacturing.
- Tooling use is such that variable data can be taken, particularly for key characteristics, and
- Special processes where verification cannot be made later due to the nature of the special processes.

Controlled conditions include, as appropriate, the following activities:

a. documented work instructions (where the absence of such instructions would adversely affect quality) and standard operating practices are used to control process activities to ensure conformance with contract, product, and process requirements.

b. easy access of drawings and specifications for product

c. process and product characteristics are monitored and controlled during the production sequence to ensure that product characteristics meet required customer specifications.

d. criteria for workmanship are stipulated in written standards or, as appropriate, by means of representative samples.

e. The use and suitability of the equipment as qualified and approved prior to use for production

f. Process equipment is maintained and/or calibrated to ensure its consistent performance.

g. When and where suitability is a function of appropriate maintenance and/or calibration, Preventive Maintenance procedure and/or Equipment Calibration procedure are in effect

h. Availability of specified measuring and monitoring equipment

i. Implementation of monitoring and measurement activities, as planned, through the use of specific quality plans

j. Release of product, including nonconforming material disposition and control activities

k. Delivery of product in accordance with the procedure or quality plan

l. Trained and qualified personnel operate the production and inspection processes.

m. Records are maintained for qualified processes, equipment, and personnel.

n. Accountability of product during manufacturer.

o. Provision for the prevention, detection, and removal of foreign objects.

p. Criteria for workmanship, which is stipulated in the clearest practical manner (e.g., written standards, representative samples or illustrations).

Designation of Key Characteristics

- ❖ RODCO complies with all customer requirements for designation, documentation and control of key (special) characteristics.
- ❖ With regard to Key Characteristics, products are identified and are traceable to their process control plans, and thereby to the processes and operators that manufactured them. The process control plans identify process equipment, process operators, and provide process performance data. With regard to other characteristics, products are traceable to their production work orders.
- ❖ Key Characteristics require processes that restrict variation, which has the potential of affecting the product's safety, compliance with government, fit, form, function, appearance or quality of subsequent manufacturing operations.

7.5.1.1 Production Process Verification

The organization prepares shop traveler with drawings, parts list, inspection operations, production documents and inspection documents.

7.5.1.2 Control of Production Process Changes

Only RODCO management, as identified in organization chart, is authorized to make changes in production process. Changes are documented and verified for validity to ensure that the desired effect has been achieved without adverse effect to product quality.

7.5.1.3 Control of Production Equipment, Tools and Software Programs

Tools and numeric control machine (Computer Numerical Control - CNC) programs are validated prior to use by programmers or supervision, including verification of first article produced at the work center. Production programs and tooling in storage is also verified before use to ensure that they are free of any programming error or degradation.

7.5.1.4 Post Delivery Support

The management is committed to take actions, including investigation and reporting, when problems are detected after delivery of products to customers.

7.5.2 Validation of processes for production and service provision

Processes within RODCO, whose outcomes are not verifiable at reasonable cost, are validated to assure that requirements are met. This also applies to processes used for products that may experience premature failure. The process approval which may include:

- Defined criteria for review and approval of processes
- Validation of first piece(s)
- Measurement of product characteristics, destructive testing, qualification testing
- Measurement of process parameters
- Process capability
- equipment approval through first piece approval, calibration status or preventive maintenance status
- Operator training / operator qualification / operator certification
- Required documentation (requirements of specific records)

Records of the above activities are maintained as indicated in Control of Records. Process revalidation is achieved in accordance with each product specific plan.

Special Processes: The shop traveler or production documents identifies processes where the quality of the products cannot be verified at the following operations to ensure that significant process parameters are identified and controlled by qualified operators and subcontractors.

- The special processes are identified and qualified prior to use or implementation.

- Records are maintained for qualified processes and certifications are retained in files.
- Process specification and changes are defined, documented and controlled during production.

Process Specification requirements

- ❖ When special processes requiring customer approval required by drawing, specification, or purchase order, the RODCO obtains qualification prior to processing or subcontracting the process to a customer approved source.

7.5.3 Identification and traceability

RODCO identifies the product by suitable means throughout product manufacturing as detailed below:

1. It is RODCO's policy to appropriately identify the product from applicable drawings, specifications, or other documents, during all stages of production, delivery, and installation. Product Traceability is of prime importance at RODCO and documented procedures and methods are established to comply with these requirements.

2. For an assembly, the identity of its components and those of next higher assembly to be traced.

3. The organization's identification and traceability system provides for:

    - All the products manufactured from the same batch of raw material or from the same manufacturing batch to be traced, as well as the destination of all products of the same batch.

    - Identification of the configuration of the product in order to identify any differences between the actual configuration and the agreed configuration.

In order to prevent the misuse or misapplication and to maintain identity of purchased material, work-in-process, or completed product, RODCO utilizes Product Identification procedure.

Product Traceability is maintained when required by the customer or a governing regulatory agency or when RODCO determines that the practice would be prudent for the product being manufactured.

7.5.4 Customer property

Customer property is treated the same as purchased material. More specifically, it is:

- Identified per Product Identification procedure
- Verified per product quality plans
- Protected per procedure Material Movement and Protection
- Safeguarded and maintained using appropriate procedures such as Preventive Maintenance procedure

Any customer –supplied property that is lost, damaged, or otherwise unsuitable for use is recorded and reported to the customer in accordance with procedure "Control of Nonconforming Product" and procedure " Control of Records." Customer provided intellectual property is treated as documents of external origin and distributed on a need-to-know basis.

7.5.5 Preservation of product

It is the organization's policy to control the handling, storage, packaging, and delivery of product in such a manner that preserves all quality characteristics and prevents damage, deterioration, or loss. Adequate control includes the following fundamental elements:

a) Specific responsibilities and methods are defined and controlled by documented procedures and instructions. These procedures and/or instructions, where applicable, include:
   - Cleaning
   - Prevention, detection and removal of foreign objects
   - Marking and labeling including safety warnings
   - Shelf life control and stock rotation
   - Hazardous materials

b) Storage areas and stock rooms are physically secure to prevent damage or deterioration of product pending use or delivery to destination.

c) Transfers in and out of storage areas are reviewed, approved, and documented by authorized personnel.

d) The condition of product in stock is assessed at appropriate intervals to detect and prevent deterioration.

e) Packing, preservation, and marking processes conform to specified drawing requirements.

f) Product quality is protected after final inspection and test, and where contractually specified, through delivery to destination. This includes products as well as accompanying documents.

g) **FOD (Foreign Object Debris):** Foreign objects and debris (i.e., rocks, nails, screws, fasteners, tools, rivets, metal/food particles and wire) can find their way into the strangest places and do considerable damage to the products or components in manufacturing environment. The special processes and training is conducted to prevent the impact of FOD on the products. The organization is thoroughly aware of FOD and its associated hazards, and does every thing to prevent and control FOD.

7.6 Control of monitoring and measuring equipment

Product quality plans identify the measurements to be made and the monitoring and measurement equipment required. Inclusion of a monitoring and measurement device into a quality plan requires that there be sufficient confidence that the error of the measurement system (device, documentation and operator) will not alter the measurement to be made. RODCO accommodates this need by selecting measurement devices that can resolve one more decimal place than the number of decimal places in the total tolerance of the measurement to be made.

When these 10:1 criteria cannot be achieved or when there is reason to believe that other sources may interfere with obtaining a true reading, appropriate statistical studies are conducted to analyze the variation present in the results of measuring device. This approach assures that initially, measurement capability is consistent with the measurement requirements.

To assure that measurement capability remains consistent, RODCO requires that measuring and monitoring devices:

- Be calibrated prior to use or periodically to NIST traceable standards

- Utilize safeguards for inappropriate adjustment
- Be handled, maintained and stored properly
- Have records of Calibration

It is RODCO policy to adequately control, calibrate, and maintain inspection, measuring, and test equipment used to demonstrate the conformance of product to the specified customer requirements. Such equipment is used in a manner, which ensures that measurement capability is known and is consistent with the required measurement capability. Specific responsibilities and methods are defined and controlled to ensure the following activities:

a) Required measurements, measurement accuracy, and selected measurement equipment are identified in the appropriate quality plans.

b) All inspection, measuring, and test equipment that can affect product quality are uniquely identified, properly calibrated, and adjusted at prescribed intervals.

c) In-house calibrations are performed using certified equipment having a known valid relationship to nationally recognized standards, or using industry-recognized testing methods where no such standards exist.

d) External calibration is carried out by a suitably approved test house providing approved certificates of calibration which detail traceability to national standards.

e) Calibrations, calibration intervals, adjustments of calibration intervals, identification of calibration status, calibration methods, and acceptance criteria are defined.

f) Records of calibrations provide details of results, traceability, and check frequencies, and are maintained as evidence of effective control over each piece of inspection, measuring, and test equipment.

g) Environmental conditions are maintained to accommodate the calibrations, inspections, measurements, and tests being carried out.

h) Inspection, measuring, and test equipment is handled, preserved, and stored in a manner that ensures their accuracy and fitness for use.

i) Inspection, measuring, and test facilities are guarded against adjustments which would invalidate the calibration setting.

j) Test hardware and test software used during product inspections are checked at prescribed intervals to prove their continuing capability of verifying the acceptability of product characteristics.

k) RODCO keeps a record of inspection and test devices including the devices supplied by the customers.

l) The gage "recall" method that require calibration is defined and implemented to ensure that gage system is calibrated and current.

Measurement System Analysis: Measurement system analysis is performed on inspection, measuring and test equipment referenced in the customer's approved quality plan.

8 MEASUREMENT, ANALYSIS AND IMPROVEMENT

8.1 General

RODCO product quality plans are used for planning the necessary monitoring and measurement processes. The process for improvement is found in procedure titled "Continual Improvement." Implementation occurs according to the defined plans, the resulting data is analyzed and improvements are pursued.

According to the nature of the product and depending on the specified requirements, statistical techniques may be used to support:

- Design verification (include design of a process)
- Process control
  - Selection and inspection of key characteristics
  - Process capability requirements
  - Statistical process control
- Failure mode and effect analysis

8.2 Monitoring and measuring

8.2.1 Customer satisfaction

RODCO determines customer satisfaction through acquisition of customer and end-user information available in written and/or verbal forms, from internal and external sources.

Examples of customer-related information may include, but is not limited to:

- Feedback of all aspects of product
- Customer needs and contract information
- Market needs
- Product and delivery data
- Information relating to competition

The information derived addresses conformance of the product to specified requirements, meeting the needs and expectations of customers.

Sources of information on customer satisfaction may include, but are not limited to:

- Customer complaints
- Direct communication with customers
- Questionnaires and surveys
- Focus groups
- Reports from customer organizations
- Media reports
- Sector studies

The standard operating procedure "Customer Satisfaction" describes the methodology to determine the level of satisfaction/dissatisfaction and initiating corrective action, including follow-up to remedy the situation. In addition, the resulting information is discussed at the management review meeting.

8.2.2 Internal audit

RODCO conducts periodic internal audits to verify that the quality management system:

1) Conforms to the internal approved procedures, quality plans and the requirements of AS9100 / ISO 9001.
2) Is effectively implemented and maintained

Audit Schedule: The Audit Schedule shows the frequency of the audits and general guideline related to the audit program. Any changes are reflected when the audit plan are prepared and auditors are assigned. The auditors are seeking conformance with the requirements of AS9100 / ISO 9001, the requirements called out in QMS procedures and related documents.

The criteria for auditor independence and clarification of auditor responsibilities are stated in the quality system procedure "Internal Audit." The results are recorded per "Control of Records" procedure to enable management and others take timely corrective action including proper verification of effectiveness.

8.2.3 Monitoring and measurement of processes

RODCO has identified measurement methodologies to evaluate process performance. Quality management system processes are monitored and measured when required in accordance with specific product plans. When a nonconformance is determined from such measurements, a nonconformance report is issued in accordance with the procedure "Control of Nonconforming Product.

Measurement methodologies may include, but not limited to:

- Accuracy
- Timeliness
- Dependability
- Reaction time of processes and people to special internal and external requests
- Cycle time or quantity per hour
- Effectiveness and efficiency of people
- Utilization of technologies
- Cost reduction

Department supervisors are responsible for ensuring that the processes performed meet our internal and/or external requirements. Department managers/supervisors are responsible for ensuring that RODCO has the **capability and capacity** to execute the requirements of the contract **prior** to acceptance.

When departures from planned results occur, management initiates process specific reaction plan, as appropriate, to ensure conformity of the product to specifications and requirements.

8.2.4 Monitoring and measurement of product

QUALITY MANUAL (ISO 9001:2008 / AS9100C)

RODCO has established and specified the measurement requirements, including acceptance criteria, for their products. Such measurements is planned and performed to verify conformance to specified requirements.

When choosing a methodology, each department considers, but is not limited to, the following aspects:

a) The conformance to specified requirements of its products, and those items provided by its customers

b) The location of each measurement point in its process sequence

c) Characteristics to be measured at each point, the documentation and acceptance criteria to be used

d) Equipment and tools required

e) Customer-established points or witness or verification of selected characteristics of the product

f) Inspections or tests that are required to be witnessed or performed by statutory and regulatory authorities

g) Where, when, and how the department intends, or is required by the customer or statutory and regulatory authorities to engage qualified second parties to perform:
   - In-process inspection and testing
   - Product verification
   - Product validation

h) Qualification of:

   - Material
   - Product
   - Process
   - People
   - The quality management system

i) Final inspection to confirm all specified inspections and testing are completed and accepted

j) Outputs of the measurement process

k) When key characteristics are identified, then they are monitored and controlled.

Such measurements are performed prior to delivery to verify that the product is in conformance with specified requirements. Conformance is documented on any of the following as required:

- Inspection and test reports
- Material release notices
- Conformance certificates as required
- Electronic data

The department head is re responsible for ensuring that documents or drawings are inspected prior to issue. The quality assurance is responsible for verifying that the procedure details are adhered to and maintained at all levels of activities. One of the methods of verifying the procedure is to conduct internal audit.

Inspection activities include, but are not limited to:

- Receiving inspection and testing
- First article inspection (including layout inspection) and testing
- In-process inspection and testing
- Final inspection and testing

When RODCO may use sampling inspection as a means of product acceptance, the sampling plan is based on statistical validity. The sampling plan uses Accept Number zero (C = 0) as acceptance criteria for each item subject to sampling inspection. All lots rejected using C = 0 sampling plan are subject to 100% inspection of rejected characteristics. If the quality of a particular item warrants 100% inspection, then the quality assurance manager has the authority to institute such a change.

Products which are found as nonconforming during the sampling inspection are not accepted until corrected, re-inspected and verified as conforming to specified requirements.

8.3 Control of Nonconforming Product

8.3.1 It is RODCO's policy to prevent the inadvertent use of product that does not conform to specified requirements. Responsibilities, authorities, and methods for controlling, reviewing, and dispositioning nonconforming product are defined by documented procedures. Effective control of nonconforming product includes the following activities:

- Nonconforming product is properly identified, documented, evaluated, and segregated from conforming product wherever practical.
- Nonconforming product is reviewed by a Material Review Board and dispositioned in one of the following four categories:
  - Rework to meet specified requirements
  - Return To Supplier
  - Scrap
- Reworked product is re-inspected in accordance with documented procedures.
- Nonconforming product is documented and referred to the functions concerned for appropriate corrective and preventive actions.

8.3.2 It is RODCO's policy to evaluate process nonconformity that may result in product nonconformity to ensure that the process is authentic.

8.3.3 The term "nonconforming product" includes nonconforming product returned from a customer. The dispositions of "use-as-is" or "repair" are not used at RODCO. The only exception to this policy is when such disposition is authorized by the customer in writing or specified in the contract. When such policy is employed then the organization ensures that the nonconformity does not result in a departure from customer-specified requirements.

8.3.4 Regrading Material: RODCO's policy is not to regrade unless specifically authorized with instruction and approved in writing by the customer.

8.3.5 Scrap Material: Scrap material is positively identified and permanently marked until physically turns into as unusable.

8.3.6 Notification: RODCO's policy is to expedite all required communication channels with customers, subcontractors when nonconforming products shipped to customer. The notification includes a clear description of the nonconformance including part number, customer, date and scope of the problem. RODCO will fully cooperate with the customer to purge the stock and remedy the situation.

8.3.7 Each employee has the responsibility to report any suspected nonconformance at any stage of the process to his supervisor. The Quality Assurance is responsible for verifying that nonconformance is dealt with using "Control of Nonconforming Product" procedure. The Material Review Board (MRB) is responsible to assess the extent and significance of the nonconformance. The responsibility for authorizing the disposition and all subsequent communications with the customer regarding the nonconformities is dependent on the type of nonconformance, as detailed below:

1. The Production Manager is responsible for the disposition on nonconformance relating to production.
2. The Purchasing Agent is responsible for the disposition on nonconformance relating to purchasing.
3. The Quality Assurance Manager is responsible for the disposition of nonconformities relating to the QMS, and those that are general in nature.

8.3.8 The Quality Assurance Manager is responsible to coordinate all activities with related parties (supplier, customer, production, etc.) to ensure that nonconformities are properly disposition and corrective actions including follow-up are conducted and documented.

8.3.9 Re-inspection is required on all reworked or repaired products. Rework products must conform to original requirements. Repaired products must meet intended function and other requirements in accordance with customer's requirements.

8.3.10 Discovery of nonconforming products after delivery is immediately followed by the actions necessary to minimize its impact and preserve customer satisfaction to the highest level possible under the circumstances. Records of nonconforming material are maintained as indicated in "Control of Records" procedure.

8.4 Analysis of data

RODCO determines, collects, and analyzes appropriate data to demonstrate the suitability and effectiveness of the quality management system, and to evaluate continual improvement activities to determine their merits. This includes data generated by monitoring and measuring of processes and products, and other relevant sources such as internal audits, control of nonconforming products, corrective and preventive action, etc.

RODCO analyzes such data to provide information on:

a) Customer perceptions / customer satisfaction
b) Conformity to product and customer requirements
c) Characteristics of processes, products, and their trends
d) Suppliers performance

RODCO does employ statistical techniques, such as Pareto Chart, Sampling Tables, Process Capability studies, Fishbone Diagram, Trend Analysis, etc., as appropriate, to assess the scope of the problem or to identify opportunities of improvement. Quality management system related data is recorded as indicated in "Control of Records" procedure.

8.5 Improvement

8.5.1 Continual improvement

RODCO facilitates the continual improvement of the quality management system through the use of the quality policy, quality objectives, audit results, analysis of data, corrective and preventive action, and management review.

RODCO plans for continual improvement of the quality management system through two stages:

a) The documentation and implementation of the quality plans and quality objectives
b) Proactive measures such as Internal Audits, Data Analysis, Control of Nonconforming Product, and Corrective Actions

Such actions are analyzed in the management review to determine the efficiency and effectiveness of the processes. Where deviation occurs from the specified norm, the causes of such deviations are identified and any resultant changes to product, processes, or the quality management system are made.

8.5.2 Corrective action

In order to avoid the recurrence of problems, appropriate corrective actions are initiated and implemented. RODCO Corrective Action procedure provides a systematic approach to corrective action problems that includes:

- Reviewing nonconformities including customer complaints
- The determination of causes of nonconformities
- Assessing the need for actions to avoid recurrence
- The determination of corrective actions needed
- The implementation of determined corrective actions

- Making records of the outcomes from actions taken (See Control of Records)
- Verifying the effectiveness of corrective actions taken

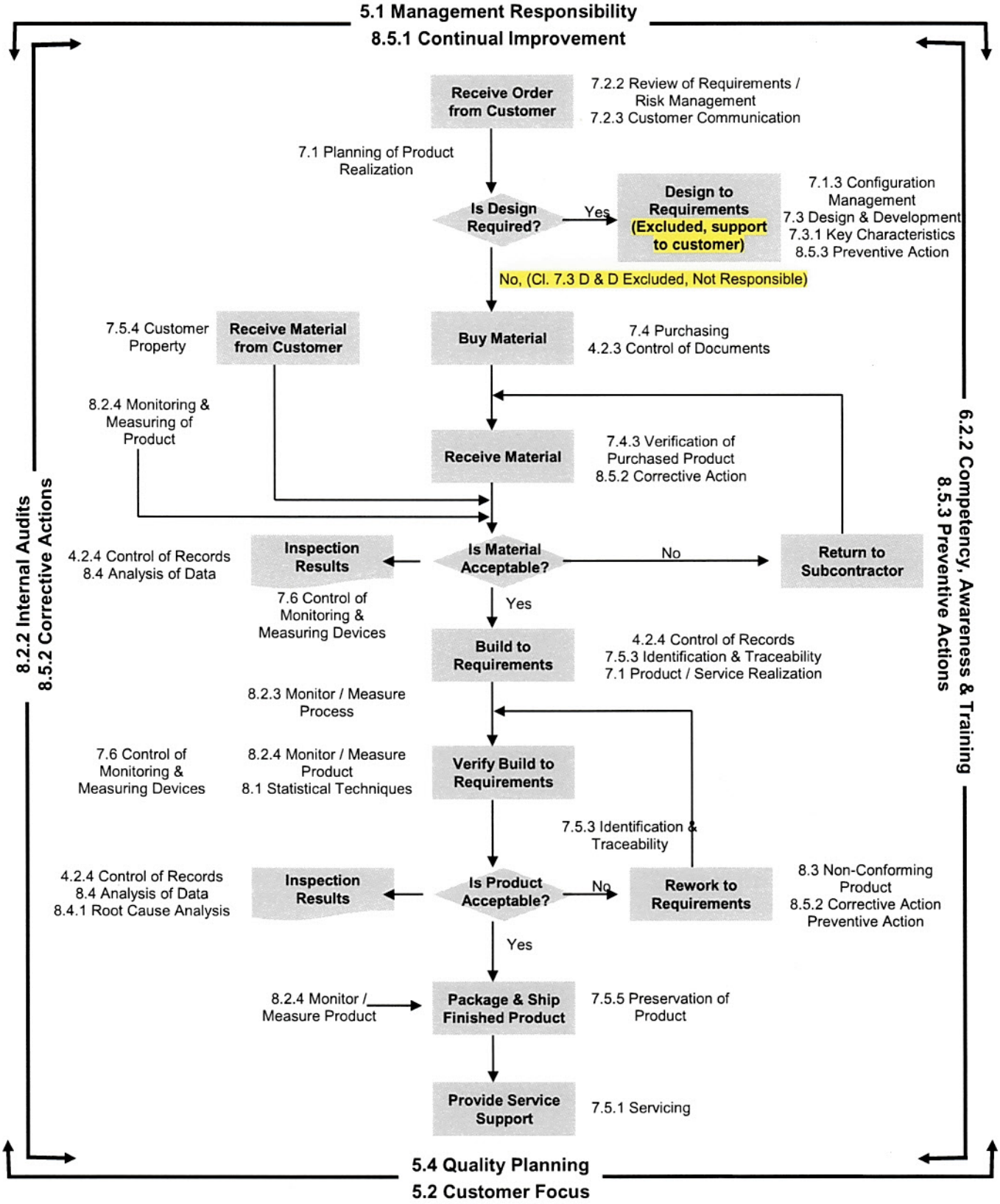
8.5.3 Preventive action

In order to avoid the occurrence of potential problems, appropriate preventive actions are initiated and implemented. RODCO Corrective and Preventive Action procedure provides a systematic approach to preventive action problems that includes:

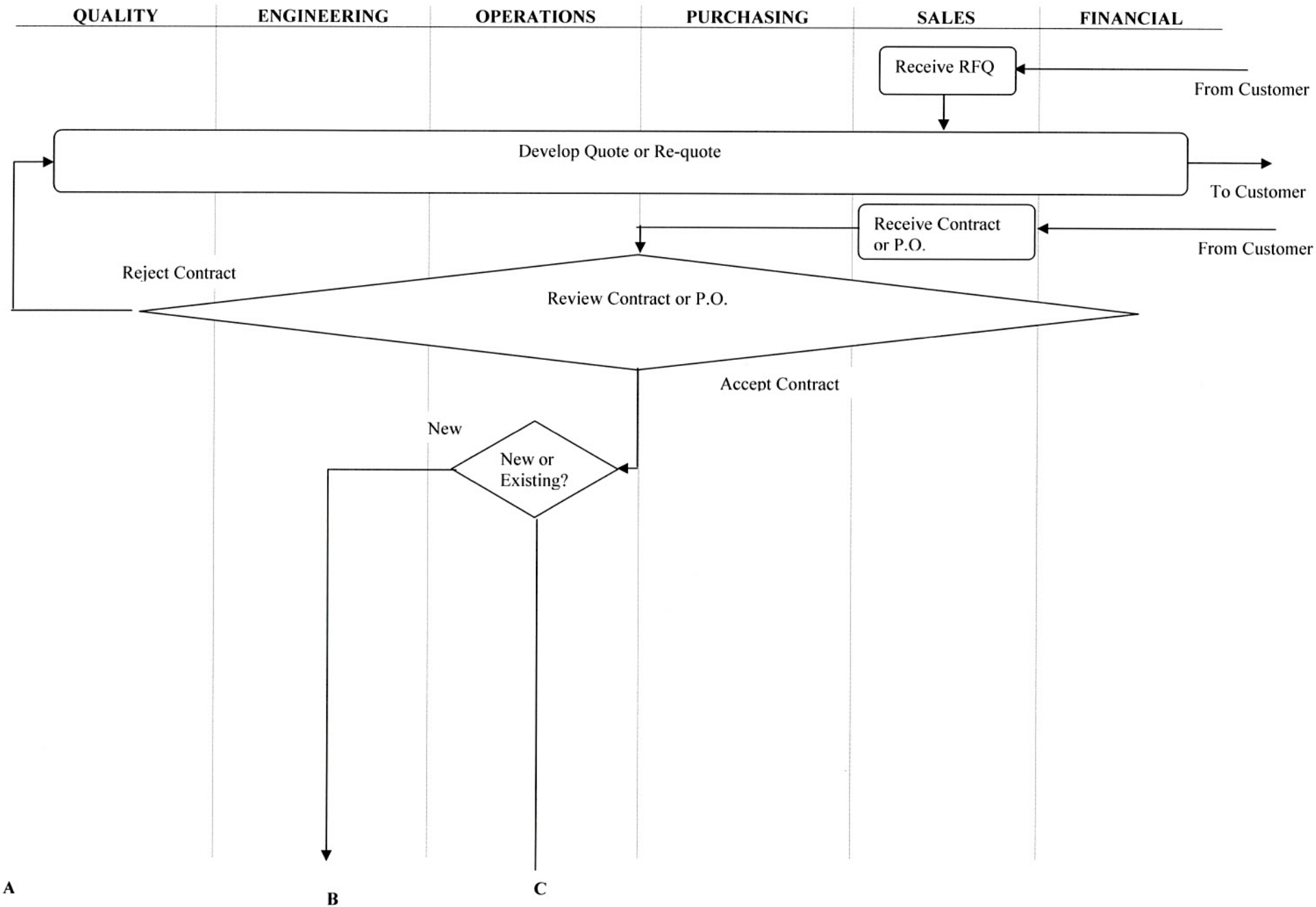
- The determination of potential nonconformities
- The determination of causes of potential nonconformities
- The determination of preventive actions needed
- The implementation of determined preventive actions
- Making records of the outcomes from actions taken (See Control of Records)
- Reviewing preventive actions taken

APPENDIX A1

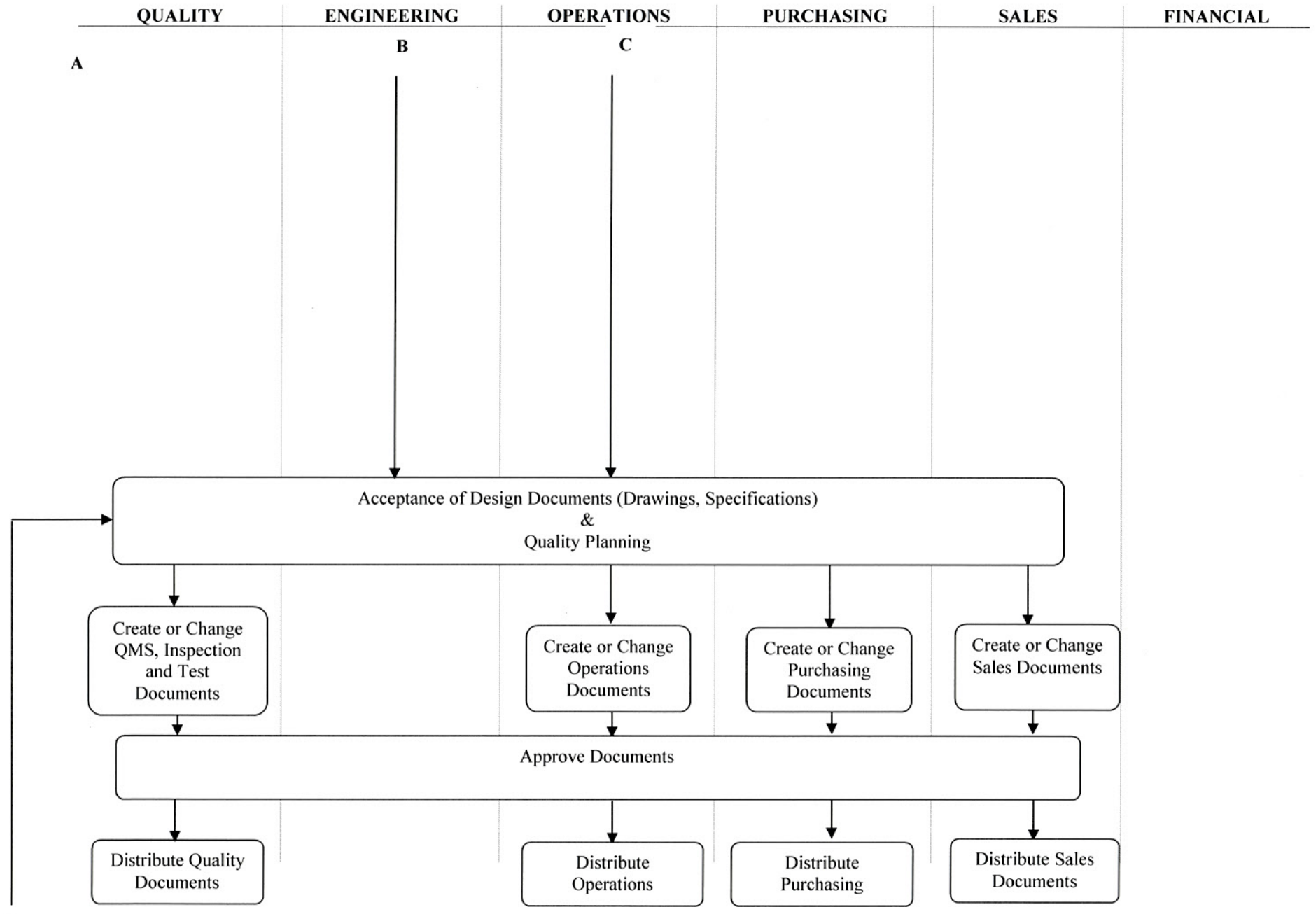
AS9100 Quality Management System Diagram



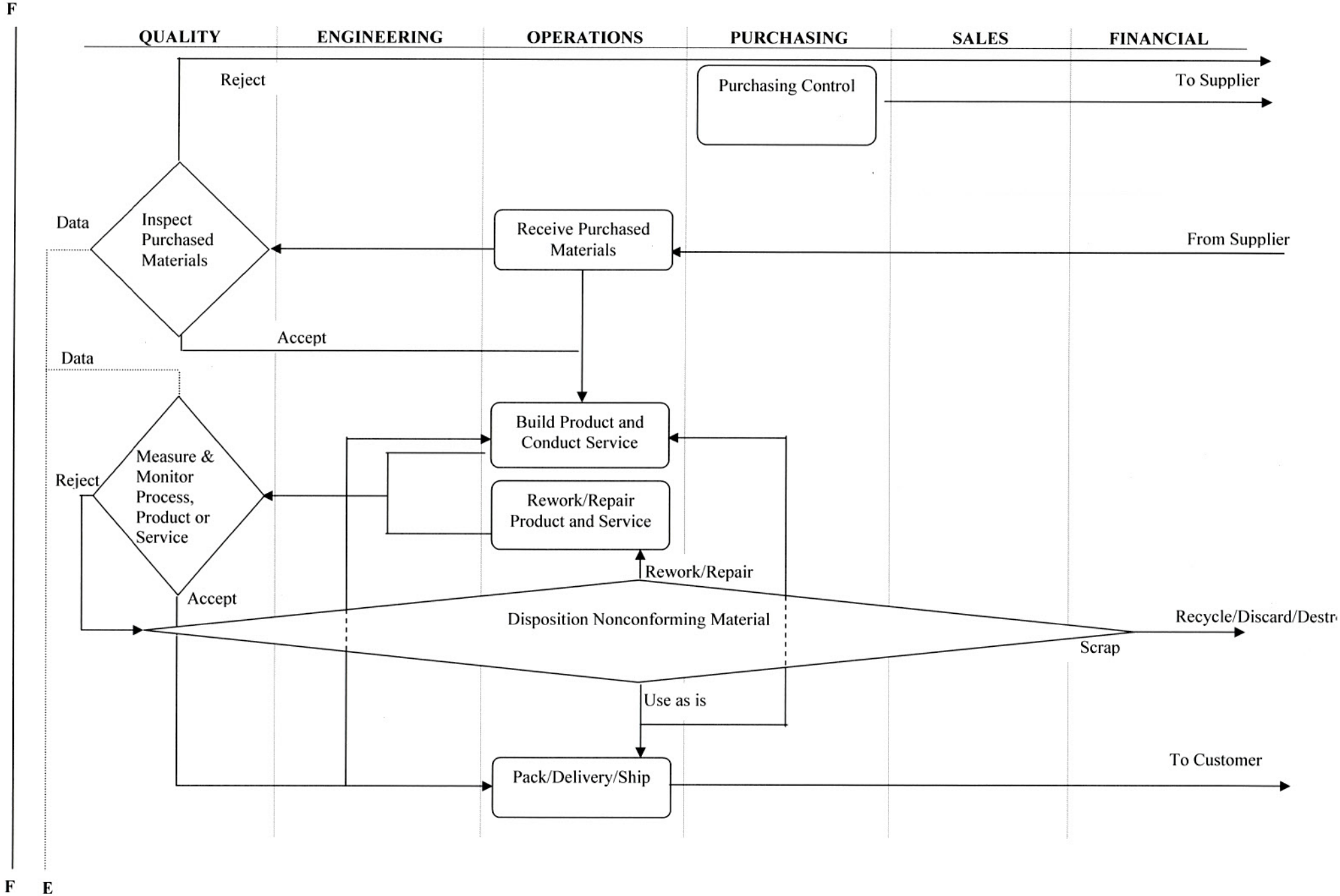
Appendix A2: CROSS-FUNCTIONAL FLOW CHART



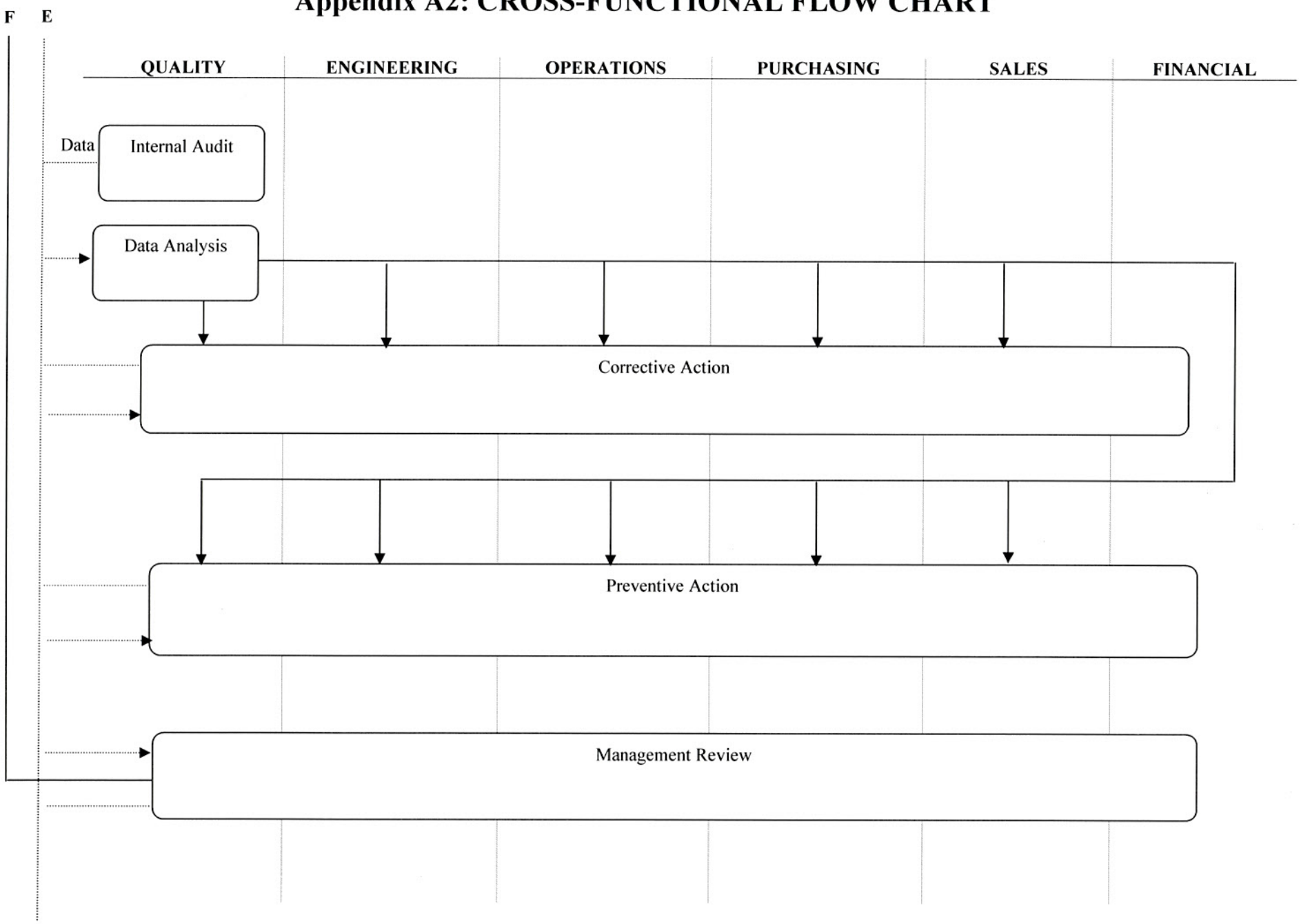
Appendix A2: CROSS-FUNCTIONAL FLOW CHART



Appendix A2: CROSS-FUNCTIONAL FLOW CHART



Appendix A2: CROSS-FUNCTIONAL FLOW CHART



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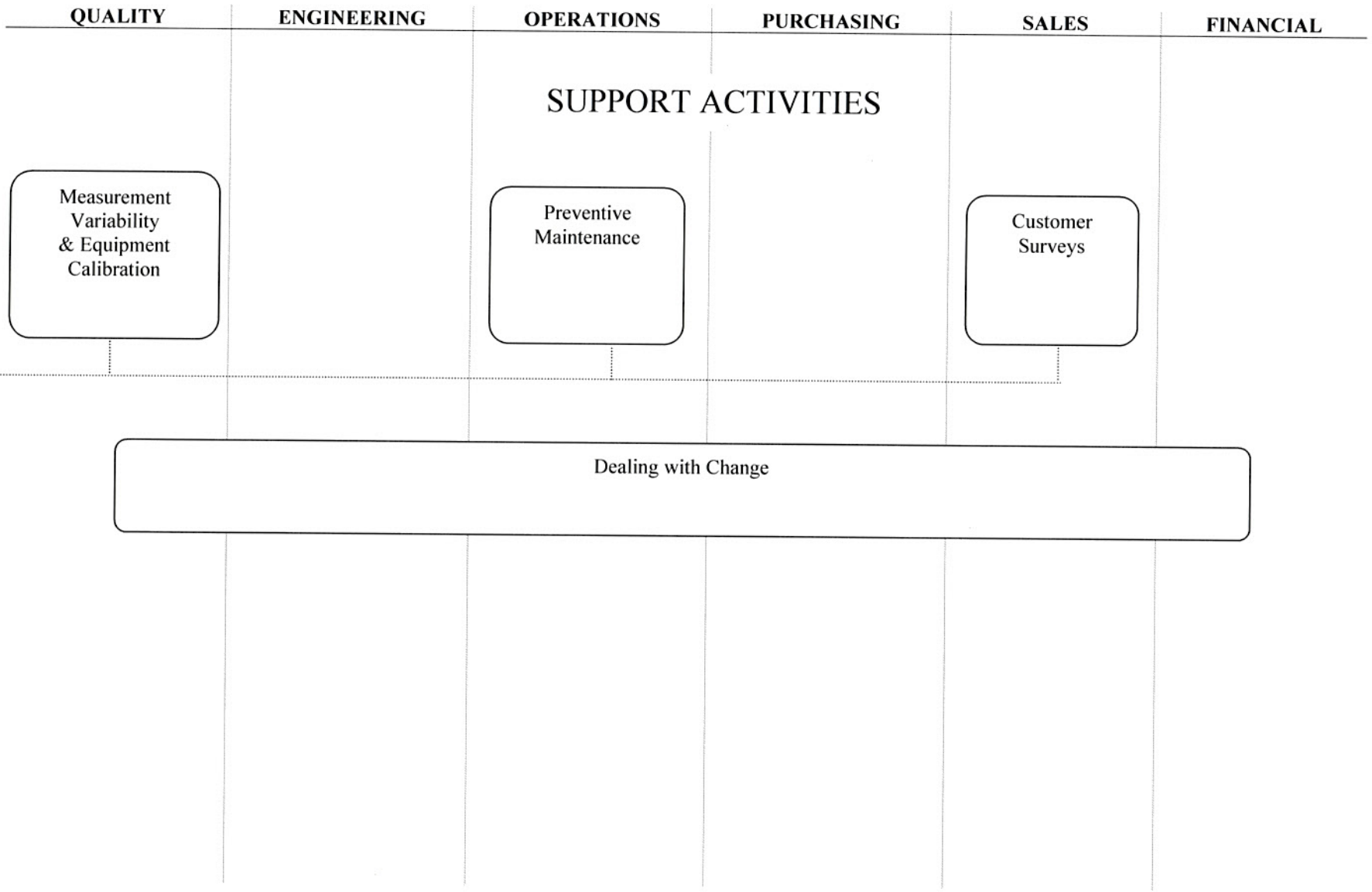
Appendix A2: CROSS-FUNCTIONAL FLOW CHART



APPENDIX A3
CROSS-FUNCTIONAL MATRIX

ITEM	PROCESSES / ACTIVITIES	QUALITY	ENGINEERING	OPERATIONS	PURCHASING	SALES	FINANCE	COMMENTS
1	Receive RFQ					◆		Receive from Customer
2	Develop Quote or Requote	◈	◆	◈	◈	◈	◈	Interact with other departments, Sales to send completed RFQ to Customer
3	Receive Contract or P.O.					◆		From Customer
4	Review Contract or P.O.	◈	◈	◈	◈	◆	◈	Interact with other departments as necessary to conduct review. Conduct Risk analysis, Conduct "Control of Work Transfer" analysis. If contract is rejected then communicate to customer applying Item 2 "Re-Quote" activities. If accepted then proceed with planning and manufacturing.
5	Conduct Quality planning	◆	◈	◈	◈	◈	◈	Conduct Quality planning per procedure. Quality to coordinate and follow-up planning activities. Conduct Risk analysis, Conduct "Control of Work Transfer" analysis.
6a	Create or Change QMS, Inspection and Test Documnets	◆						e.g., acceptance criteria may need to be changed
6b	Create or Change Manufacturing Engineering related documents		◆					e.g., machine fixture related documents or fixture mounting technique need to be changed, etc.
6c	Create or Change Operations Documents			◆				e.g., special insert is required or how often the insert need to be changed or part de-burring training method, etc.
6d	Create or Change Purchasing Documents				◆			e.g., supplier may need to be communicated on special packaging requirements or part marking requirements, etc.

APPENDIX A3
CROSS-FUNCTIONAL MATRIX

ITEM	PROCESSES / ACTIVITIES	QUALITY	ENGINEERING	OPERATIONS	PURCHASING	SALES	FINANCE	COMMENTS
6e	Create or Change Sales Documents					◆		e.g., customer funded tool status need to be communicated to customer or any special part release requirements, etc.
6f	Create or Change Finance related Documents						◆	e.g., Payment terms related documents or instructions or document of new purchase of equipment, etc.
7	Review and Approve documents as necessary.	◆	◆	◆	◆	◆	◆	This applies to all departments as necessary to manufacture the subject part. The order and inteaction of specific QMS processes can be found on route sheets or other supporting documents. The criteria and methods for effective control of processes to evaluate effectiveness are also included.
8	Distribute documents to users or make accessible at the work center as necessary.	◆	◆	◆	◆	◆	◆	Same as above
9	Purchase Control				◆			Purchase control requirements and specifications are provided to Supplier. Conduct Risk analysis, Conduct "Control of Work Transfer" analysis.
10	Receive Purchased Material			◆				From Supplier
10a	Inspect Purchased Material	◆						1) Accepted material to proceed to Operations to build products 2) Inspection data collected for Analysis, C/A system and Management Review as appropriate.
11	Build Product			◆				Operation to build product and inspect per appropriate route sheets or work instructions.
11a	Measure & Monitor Process, Product	◆		◆				If product is accepted then goes to Packing and Shipping. If product is rejected then goes for Rework, Scrap or Material Review as appropriate

APPENDIX A3
CROSS-FUNCTIONAL MATRIX

ITEM	PROCESSES / ACTIVITIES	QUALITY	ENGINEERING	OPERATIONS	PURCHASING	SALES	FINANCE	COMMENTS
11b	Rework product and Inspect	◆		◆				Rewoked product is re-inspected and accepted as appropriate.
11c	Disposition Nonconforming Material	◆	◆	◆	◆	◈	◈	Rework, Scrap or follow Material Review Board Instcructions.
12	Packing, Shipping and Delivering			◆				
13	Internl Audit	◆						Audit data to Data Analysis, C/A system and Management Review
14	Data Analysis	◆						Conduct or coordinate QMS data analysis system for control and improvement. Also measure effectiveness of the QMS. Includes Process and Product and related activities. Customer and supplier feedback is included.
15	Corrective Action	◆	◆	◆	◆	◈	◈	
16	Preventive Action	◆	◆	◆	◆	◆	◆	
17	Management Review	◆	◆	◆	◆	◆	◆	
18a	Measurement Variability	◆		◈				Quality to study process variation and apply appropriate statistical methods to reduce variation.
18b	Equipment Calibration	◆		◈				

APPENDIX A3
CROSS-FUNCTIONAL MATRIX

ITEM	PROCESSES / ACTIVITIES	QUALITY	ENGINEERING	OPERATIONS	PURCHASING	SALES	FINANCE	COMMENTS
18c	Preventive Maintenance			◆				
18d	Supplier Surveys	◆			◆			
18e	Customer Surveys	◆				◆		
19	Dealing with change	◆	◆	◆	◆	◆	◆	

◆ Active participation

◈ Partial participation

Appendix B Quality System Procedure Reference Matrix ISO 9001 / AS9100		
ISO 9001 / AS9100 Clause No.	**Title**	**Quality System Procedure (Level II)**
4	Quality Management System	4
4.2.3	Control of Documents	4.2.3
4.2.4	Control of Records	4.2.4
5	Management Responsibility	5
6	Resource Management	6
7.1	Planning of Product Realization	7.1
7.2	Customer-related Processes	7.2
7.4	Purchasing	7.4
7.5	Production Provision and Validation of Processes	7.5
7.5.3	Identification and Traceability	7.5.3
7.5.4	Customer Property	7.5.4
7.5.5	Preservation of Product	7.5.5
7.6	Control of Monitoring and Measuring Devices	7.6
8.2.2	Internal Audit	8.2.2
8.2.3	Monitoring and Measurement of Processes	8.2.3
8.2.4	Monitoring and Measurement of Product	8.2.4
8.3	Control of Nonconforming Product	8.3
8.4	Analysis of Data	8.4
8.5.1	Continual Improvement	8.5.1
8.5.2	Corrective Action	8.5.2
8.5.3	Preventive Action	8.5.3