

Quality Assurance Manual

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1.0 SCOPE

1.1 General

This manual describes the Quality Management System for the Round Rock, Texas site of TECO-Westinghouse Motor Company. This system has been established by the Company to implement the spirit and intent of the Quality Policy.

This manual covers the following business activities:

- design, manufacture, service and repair of induction, direct current, synchronous motors, generators, medium voltage drives, parts, accessories and manufacture wind turbines.
- purchase, stocking, modification, and distribution of motors, starters and drives products

This manual is structured to comply with the requirements of ISO 9001-2008, and when contractually required, 10CFR50-Appendix B, 10CFR21, EPRI NP-XXXX, NRC-Generic Letter XX-XX, MIL-Q-9858A, MIL-I-45208A and C-TPAT.

1.2 Application

The manual establishes the policies and commitments of TECO-Westinghouse Motor Company to meeting our customers' requirements and serves as the guiding document to employees whose actions affect product quality. This manual may be used to inform our customers and third party auditors as to the content of our Quality Management System, but remains the property of TECO-Westinghouse Motor Company and is not to be used for other purposes without prior written approval of the Quality Manager.

This Quality Manual complies with ISO 9001-2008 without exclusions.

2.0 NORMATIVE REFERENCE

The normative reference for this manual is:

ISO 9001-2005, Quality Management Systems - Fundamentals and vocabulary.

3.0 TERMS AND DEFINITIONS

For the purposes of this manual, the terms and definitions given in ISO 9000 apply.

Throughout the text of this manual, wherever the term "product" occurs, it can also mean "service." Additionally, Quality System and Quality Management System can be used interchangeably.

The following are some of the terms which apply to this manual:

process

set of interrelated or interacting activities which transforms inputs into outputs

customer satisfaction

customer's perception of the degree to which the customer's requirements have been fulfilled

continual improvement

recurring activity to increase the ability to fulfil requirements

infrastructure

(organization) system of facilities, equipment and services needed for the operation of an organization

work environment

set of conditions under which work is performed

traceability

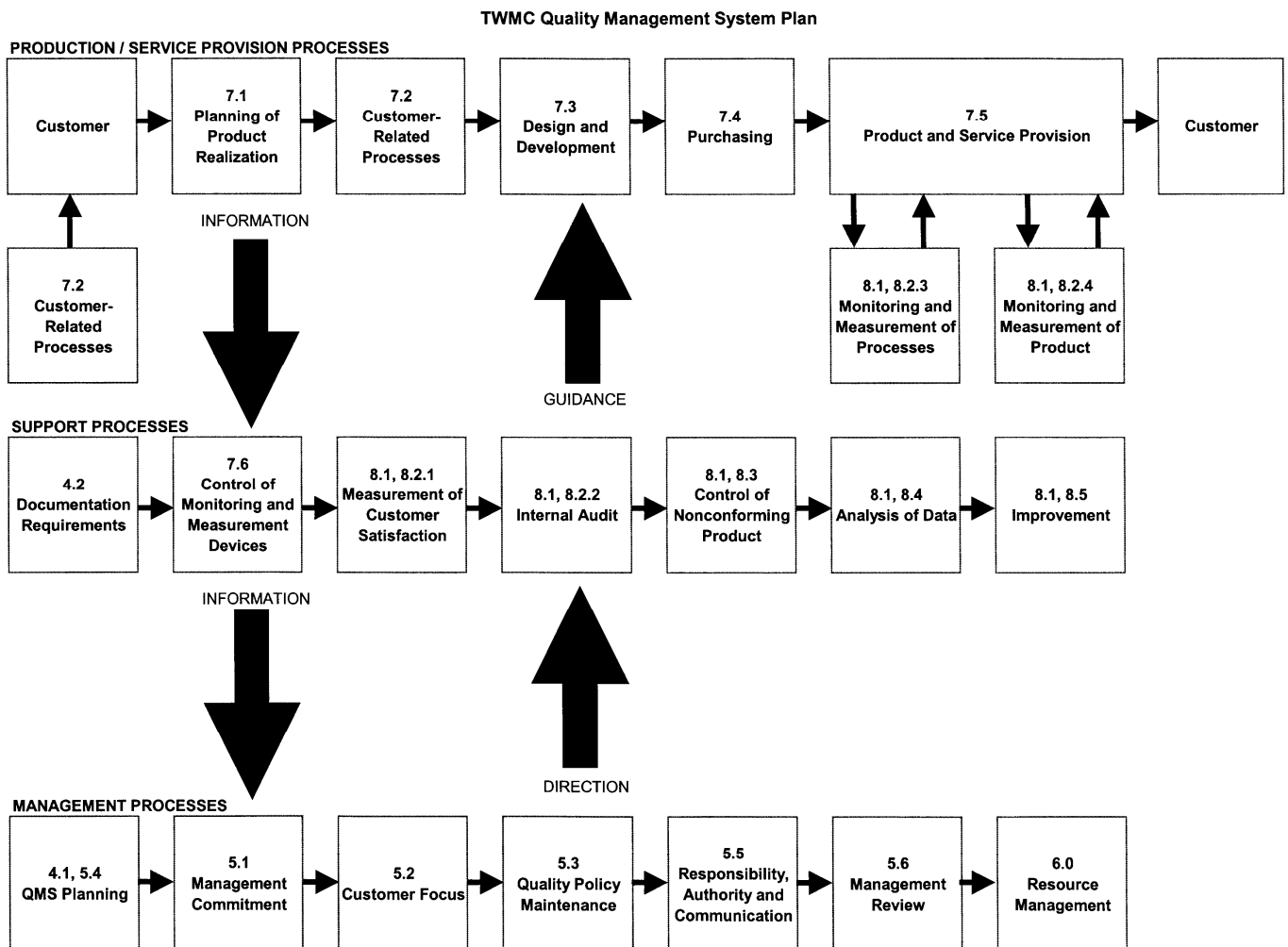
ability to trace the history, application or location of that which is under consideration.

Note: Drawing, part, material specification, job and item numbers can be one and the same for identification and traceability purposes. The term used depends on where the item is in the process.

4.0 QUALITY MANAGEMENT SYSTEM

4.1 General Requirements

This section outlines the way in which TECO-Westinghouse Motor Company's Quality Management System is established, documented, implemented and maintained, and how the company will continually improve its effectiveness.



Each department manager shall:

- a) determine the processes needed for the Quality Management System and their application throughout the organization,
- b) determine the sequence and interaction of these processes,
- c) determine criteria and methods needed to ensure that both the operation and control of these processes are effective
- d) ensure the availability of resources and information necessary to support the operation and monitoring of these processes,
- e) monitor, measure where applicable, and analyze these processes, and
- f) implement actions necessary to achieve planned results and continual improvement of these processes.

Any process that affects product quality that is outsourced is handled per section 7.4.

The President has overall responsibility for establishing expectations for effective implementation of the Quality Management System and obtaining the desired end result. He ensures that all procedures and instructions considered necessary to design, manufacture, re-sell or service are in place. Then, because quality is achieved and maintained by those assigned responsibility for performing the work, each department manager is responsible for ensuring that their departmental procedures are compliant with the Quality Manual and accurately detail the work processes necessary to support the Quality Management System requirements. The Quality Manager monitors the status of the Quality Management System and supporting documents through the Internal Audit program. The status of the Quality Management System is reported to the Office of the President in accordance with the Management Review process.

4.2 Documentation Requirements

4.2.1 General

This section describes the way in which all documents and data relating to the Quality Management System are controlled and recorded.

The company has a documented Quality Policy and published Quality Objectives. For details refer to sections 5.3 and 5.4.

Procedures and instructions take into account the requirements of ISO 9001-2008 and any other requirements specified by the Company's customers. They are documented on three levels.

Level 1 - Quality Assurance Manual

The Quality Assurance Manual describes the Company's approach to the requirements of ISO 9001-2008 and covers policy, organization and responsibility.

Additional information which is subject to frequent changes is contained in the Appendixes to this manual.

Level 2 - Department Work Instructions

Work Instructions are procedures, plans, instructions, drawings, or other documents relating to specific contracts, products or processes, which give methods on how a work process is to be carried out in order to meet customer requirements.

Level 3 - Forms and Records

These documents provide the means and objective evidence that requirements have been satisfied in accordance with level 1 policy and level 2 instructions.

The Quality Manager is responsible for issue and control of Level 1 documents. Level 2 and Level 3 documents are controlled by the responsible department manager. In establishing the range and detail of procedures, the department managers take into account the complexity of the work, the methods used, and the skills and training needed by the personnel carrying out the activities.

4.2.2 Quality Manual

The Quality Manager is responsible for publication and distribution of the Quality Assurance Manual and supporting appendixes. The initial issue and any revisions of the Quality Assurance Manual are reviewed by the Office of the President and approved by the President prior to publication. The controlled copy of the manual is maintained in and distributed through an online system. The system is accessed from the company Intranet.

Appendixes to the manual are maintained as separate documents, and are approved by the Quality Manager.

Uncontrolled copies of the Quality Assurance manual may be obtained electronically or printed from the company intranet document retrieval system. Printed copies are clearly identified as uncontrolled.

Uncontrolled copies of the manual are not maintained or updated by the Company, but are current at the time of issue. It is the responsibility of all holders of uncontrolled copies of the manual and/or appendixes to destroy the obsolete issues or identify their copy as reference or information only.

The manual Revision History provides a review of the manual revision levels, including a description of changes and annotation of approval for each revision level.

4.2.3 Control of Documents

Procedures, work instructions and forms shall be prepared and controlled by each department, as necessary, to accomplish its specific responsibilities. The premises on which these documents will be written, are:

- a) Delegate responsibility to the performing organization for writing all procedures subordinate to this manual.
- b) Write only that which is necessary for a well-trained, skilled employee to correctly execute processes.
- c) Expect practical, common sense execution of processes by employees.
- d) Avoid the publication of non-value added documentation whenever possible.
- e) Forms are designed and implemented to collect and record essential Quality Management System information.

Procedural documentation shall be sufficient to satisfy requirements and to provide employees necessary guidance. Each department manager is responsible for determining the extent of documentation required to satisfy the requirements of the Quality Management System.

Documents requiring control include the following:

- a) Quality Assurance Manual

- b) Procedures and work instructions, necessary to implement the Quality Management System
- c) Engineering design, material, purchasing and process specifications
- d) Drawings
- e) External and customer drawings, standards and specifications determined by TWMC to be necessary for the planning and operation of the Quality Management System
- f) Forms which represent quality record information
- g) Plans which provide for design and quality implementation

Each department maintains document control procedures, if required. Unless otherwise specified, printed documentation will be considered uncontrolled. Documents are available at the locations where they are used. Obsolete documents are removed from points of use, or if retained, are suitably identified.

When copies of drawings or specifications are provided to support work in process by Production or Quality Assurance, the using organization is responsible for assuring the appropriate revision level of the document is available and used. When the job or activity has been completed, the using department is responsible for control and/or destruction of the documents in accordance with department work instructions.

Approval and Issue Policy

Documents are originated or revised according to a standardized format. Format guidelines for Quality Management System documents are provided in Appendix 4.2.

Documents are reviewed and approved by authorized personnel prior to issue. Prescribed approval, issuance, removal, and obsolescence procedures are defined in department work instructions.

Document control procedures shall provide for a master list, or other means for identifying the current revision levels and revision dates of issued documents. The revision status of all Quality Management System documents is maintained and readily available for reference.

Document control procedures shall ensure that documents of external origin determined by TWMC to be necessary for the planning and operation of the Quality Management System are identified, and their distribution is controlled.

Change Policy

When changes or revisions to documents or data are required to correct observed errors, the individual who makes the change must have the same level of authority as the individual who entered the original information.

Documents

Changes to documents are reviewed and approved by the authorities performing the original review unless specifically designated otherwise. Revised documents incorporate a revision section. Change procedures are defined in department work instructions.

Data

Changes to data recorded on Quality Checklists, Quality Reports or other types of paper quality records may be accomplished by lining through the incorrect information, recording the correct data next to the incorrect information, writing the initials of the individual who corrected the data and dating the entry. When appropriate, an explanation should be provided for the correction.

Detailed procedures for accomplishing this quality process are defined in department work instructions. Department responsibilities are identified in Appendix 5.5.1-2.

4.2.4 Control of Records

This section describes the way in which records used in the Quality Management System are identified, stored, protected, retrieved, retained and dispositioned.

Quality records are maintained to demonstrate achievement of the required quality and the effectiveness of the Quality Management System. The detailed control requirements for quality records are documented in department work instructions.

All quality records are legible and identifiable to the product or process concerned. They may be in the form of any type of media including electronic form.

Quality records are collected and maintained by the departments which establish the record or have the greatest need to retrieve the information contained in the record. They are maintained in such a manner as to provide for ready access unless the contract stipulates that access to the records be controlled. In that event, the customer requirement supersedes Company practice.

When archived, storage facilities are selected which minimize deterioration and loss and are appropriate to retrieval level and storage cost considerations.

Quality record retention requirements are further defined in Appendix 4.2. This list identifies each record type, the department responsible for maintenance of the record(s), and the retention interval.

When specified in the contract, quality records are made available to the customer for examination.

Detailed procedures for accomplishing this quality process are defined in department work instructions. Department responsibilities are identified in Appendix 5.5.1-2.

5.0 MANAGEMENT RESPONSIBILITY

5.1 Management Commitment

The President has formulated the Quality Policy Statement. This statement defines the Company's commitment to Quality and is designed to be relevant to our Company's goals, regulatory requirements and the needs of our customers. Each executive reporting to the Office of the President has developed quality objectives in support of this policy which are designed to continually improve its effectiveness. Each executive is committed to protecting the integrity of the Quality Management System while planning and implementing changes. The TWMC Quality Policy and Objectives are published in the company on-line documentation system.

Procedures for identification, evaluation and reporting of defects and noncompliance as required by 10CFR21 are described in Appendix 5.1.

5.2 Customer Focus

The Office of the President is committed to ensuring that customer requirements are determined and are met, and that our efforts are always aimed at enhancing customer satisfaction.

5.3 Quality Policy

This section describes the means by which the Company acknowledges its responsibility for Quality Policy, the definition and allocation of individual management responsibilities, the nomination of a Management Representative, and the operation of a Quality Management System review by Company management.

Communication of the Quality Policy forms part of the new employee orientation process. Copies of the Quality Policy Statement are prominently displayed throughout the Company premises, and can also be found on the website and intranet. Departmental objectives and status are reviewed at departmental meetings and individual performance reviews as appropriate.

5.4 Planning

5.4.1 Quality Objectives

Company goals and objectives are established by executive management. Objectives must be measurable and be reviewed on a regular basis. Each department then establishes objectives within the department to support the company objectives. It is each department manager's responsibility to review the department's progress on a continuing basis.

5.4.2 Quality Management System Planning

Executive management establishes measurable quality objectives at relevant functions and levels within the company. Additionally, it identifies plan processes and resources that are required for the Quality Management System and for achieving quality objectives.

5.5 Responsibility, Authority and Communication

5.5.1 Responsibility and Authority

Appendix 5.5.1-1 features an organization chart which demonstrates lines of organizational authority.

Appendix 5.5.1-2 features a responsibility matrix which matches departments to primary Quality Management System responsibilities.

5.5.2 Management Representative

The President nominates a Management Representative because quality achievement must be verified by those not directly responsible for performing the work. The Quality Manager has been nominated by the President as the Management Representative for the Quality Management System and as such has the ultimate responsibility and authority to assure that the system is planned, established, implemented, and is maintained in accordance with requirements. The Management Representative responsible for establishing and executing the Quality Management System under this manual may delegate any or all of the work to others, but shall retain responsibility therefor.

The Quality Manager reports the performance of the Quality Management System to executive management and seeks to continuously improve the system's effectiveness and efficiency. The staff responsible for verifying quality achievement works directly for the Quality Manager, and has responsibility and authority that includes:

- a) ensuring that processes needed for the Quality Management System are established, implemented and maintained,
- b) reporting to top management on the performance of the Quality Management System and any need for improvement, and
- c) ensuring the promotion of awareness of customer requirements throughout the organization.

The Quality Manager acts as the liaison to Quality Management System registration bodies.

5.5.3 Internal Communication

The company conducts management and workplace meetings, where quality objectives are reviewed.

Executive and department managers ensure that quality policies, objectives, procedures, instructions, records, data and other information regarding the Quality Management System are effectively communicated throughout the organization.

5.6 Management Review

5.6.1 General

Executive management is required to periodically review the Quality Management System to identify the need for changes to the Quality Management System, Quality Policy and quality objectives, and to identify opportunities for improvement. The purpose of the review is to ensure continuing suitability and effectiveness of the Quality Management System.

The Quality Management System will be reviewed annually. A copy of the presentation, meeting minutes, and any other notes, findings, resolution plans, etc., will be filed in Quality Assurance.

5.6.2 Review Input

The agenda for the management review is established by the Quality Manager and shall include information on:

- a) results of audits
- b) customer feedback
- c) process performance and product conformity
- d) status of preventive and corrective actions
- e) follow-up actions from previous management review
- f) changes that could affect the Quality Management System, and
- g) recommendations for improvement.

5.6.3 Review Output

The output should include any decision and actions related to:

- a) improvement to the effectiveness of the Quality Management System audits process
- b) improvement of product related to customer requirements, and
- c) resource needs

Minutes of the review meetings are recorded, distributed and maintained by the Quality Manager. The Quality Manager is responsible for follow-up on the action items defined in the meeting.

6.0 Resource Management

6.1 Provision of Resources

Executive management shall ensure that adequate and appropriate resources are identified and provided so that specified requirements can be met and maintained. These resources are charged with authority and responsibility including but are not limited to:

- a) Implementing and maintaining the Quality Management System
- b) Continually improving its effectiveness
- c) Enhancing customer satisfaction by meeting customer requirements

In the event of an absence of any employee with designated responsibility and authority, that responsibility and authority is delegated upwards per the organization chart.

6.2 Human Resources

6.2.1 General

Executive management shall ensure that personnel performing work affecting conformity to product requirements shall be competent on the basis of appropriate education, training, skills, and experience. Conformity to product requirements can be affected directly or indirectly by personnel performing any task within the Quality Management System.

6.2.2 Competence, Training and Awareness

The Company regards the use of appropriately trained staff to be essential in maintaining the conformity of its products and services requirements. This section outlines the training responsibilities of each department.

6.2.2.1 Human Resources Department

Human Resources (HR) administers the establishment and maintenance of Employee Records and Job Descriptions and is responsible for the maintenance of a centralized training database for maintaining records of education, non job specific training, skills, and experience. HR is also responsible for ensuring that incumbent job descriptions are reviewed annually and new ones are available as positions are created.

6.2.2.2 Quality Assurance Department

Quality Assurance is responsible for conducting new employee quality awareness training of personnel performing activities affecting conformity to product requirements. The awareness training covers the following items:

- a) TWMC Quality Policy
- b) DocuShare On-Line Document System
- c) Overview of the processes of the Quality Management System
- d) Review of Appendix 5.5.1-1 - Organization Chart
- e) Review of Appendix 5.5.1-2 - Responsibility Matrix
- f) Overview of applicable codes and standards (Welding, NDE, NQA-1, API, IEEE)
- g) Review of Appendix 5.1 - 10CFR21 Reporting
- h) Review of the Defense Priorities & Allocations System (DPAS)

6.2.2.3 Department Managers

Department managers are responsible for conducting Quality Management System awareness training for their respective departments. The extent of this training is based on a review of the Quality Assurance Manual and the responsibilities identified in Appendix 5.5.1-2. At a minimum, the departmental quality awareness training should include:

- a) Company Mission and Profile
- b) TWMC Quality Policy
- c) Quality Objectives / Department Objectives
- d) Specific Department Quality Management System Responsibilities
- e) Department Work Instructions

Each department manager is responsible for supporting HR in the preparation and revision of Job Descriptions appropriate for the work performed in their departments.

Managers are responsible for ensuring that personnel have adequate resources to perform tasks in conformance to requirements and that employees have the combination of education, experience, and/or training required to perform tasks. Job descriptions specify the education and/or experience required to perform the job. Managers identify departmental tasks which require training and/or qualification of personnel and the minimum requirement for such personnel. Additionally, if all training for employees is maintained in HR's centralized training database, department records are optional unless otherwise specified.

No activity which could affect the conformity of product requirements is assigned to a temporary employee until the responsible manager has

ensured that the temporary can perform the task in accordance with requirements.

6.2.3 Training Requirements

This section outlines the way in which training requirements are identified, implemented, monitored and evaluated throughout the Company.

All Company personnel involved with activities affecting the conformity of products or services requirements receive instruction in the requirements of the Quality Management System and the management principles embodied in the Quality Policy. A general overview is given as part of new employee orientation by Quality Assurance. Detailed Quality Management System training is provided by the responsible department management as part of the defined training for the specific job classification. All training provided will be evaluated by the appropriate manager for effectiveness. The evaluation can take many forms, i.e., report, score sheet, surveys/questionnaires or records of reviews.

All job functions requiring training in order to assure conformity of the Company's products and services requirements are identified by the responsible manager. Only individuals with the required combination of education, training and/or experience are assigned to these job functions. Training needs and status are reviewed and recorded at defined intervals by the responsible managers. Records of training, education, and experience are maintained.

Human Resources is responsible for coordinating new employee orientation with the responsible department manager. Human Resources establishes the initial training database record.

Managers institute a training and/or qualification plan when:

- a) the task could affect the conformity of product requirements and the personnel selected for the task lack the combination of education and experience which could assure product conformance
- b) the task is too complex to be adequately described in instructions
- c) industry standards require continuing qualification (certification) to perform a task
- d) the task involves a special process
- e) the task involves verifying conformity of product requirements

Detailed procedures for accomplishing this quality process are defined in department work instructions. Work instructions are required only if the department maintains training records that are not kept by Human Resources. Department responsibilities are identified in Appendix 5.5.1-2.

6.3 Infrastructure

The company is committed to providing and maintaining the infrastructure needed to achieve conformity to product requirements under controlled conditions. Infrastructure includes buildings, workspaces, utilities, appropriate equipment, software, computer networks, transportation, and other supporting services.

Production equipment is subject to routine and preventive maintenance activities. Production and Maintenance share responsibility for the equipment maintenance and retention of records verifying that maintenance is performed.

Facilities is responsible for the proper maintenance of buildings, heating, ventilation, and air conditioning equipment, and regular cleaning of production areas to ensure a suitable working environment.

The Information Systems department is responsible for maintaining and controlling software and computer networks such as SyteLine, and tools and reports in Access and Excel.

All product warehouses and Shipping & Logistics department are responsible for packaging and coordinating the transportation for shipping of product.

Department work instructions identify equipment requiring qualification, provide for equipment maintenance, and assign responsibilities for performing these activities.

6.4 Work Environment

The company is committed to providing a suitable work environment in order to achieve conformity of product requirements. The term "work environment" relates to those conditions under which work is performed including physical, environmental and other factors (such as noise, temperature, humidity, lighting or weather).

7.0 Product Realization

7.1 Planning of Product Realization

Each department manager will plan and develop the processes and documents needed for Product Realization. This section outlines the plan and development of processes and documents needed for Product Realization. The flow chart in 4.1 is used as a guide.

7.1.1 Customer Related Processes

All applicable managers shall determine quality objectives and provide requirement by establishing: determination of requirements related to the product; review of requirements related to the product; and customer communication.

Department managers will determine the need to establish process, documentation and provide resources.

7.1.2 Design and Development

Department manager shall plan and control the design and development by determining the design and development stages. At each stage the manager determines responsibility and authority and ensures proper review, verification and validation. New product and changes are also identified.

7.1.3 Purchasing

Department manager shall ensure that purchase product conforms to purchase requirement. Suppliers are evaluated and selected based on their ability to supply product that meet requirements.

7.1.4 Product and Service Provision

Factory Operation shall plan and carry out production and service provision under controlled conditions.

7.1.5 Support Operation

Managers of departments performing support operations help determine required verification, validation, monitoring, inspection and test activities specific to product and the criteria for product acceptance. Also they help determine records needed to provide evidence that the realization processes and resulting product meets requirements.

Quality Assurance provides general guidelines for documentation requirements. They provide assistance as required throughout Product Realization, i.e., contract/design and purchase order review when required, quality plan, Source/First Article, receiving, in-process and final inspection, control of monitoring and measuring equipment, audits, measurement of customer satisfaction, analysis of data, and maintenance of a database to track process improvement.

Planning supports Product Realization from start to finish. With assistance from Project Management they determine the manufactured or purchased decision for product. The decision is made with input from Industrial Engineering, Manufacturing Engineering, Purchasing and Quality Assurance as appropriate.

Product that is determined to be manufactured is produced in stages which are typically performed in the same order and by the same methods. Job Orders and Job Operations specify the sequence of production activities and provide a record that all required activities were performed. Contracts with special requirements are identified during contract review.

Planning department provides the connection between design output, Purchasing and Product & Service Provision. The following processes are conducted to ensure an orderly production flow:

- a) Publishing Monthly Pre-Manufacturing Status Reports (when required)
- b) Conducting regularly scheduled meetings to review materials, capacity, scheduling and delivery issues
- c) Generate and deliver manufacturing information packets to Production areas which provide the necessary job order, drawing(s) and record(s) documents

Industrial/Manufacturing Engineering is responsible for the generation and oversight of the required documentation that will economically satisfy the manufacturing requirements to produce the component based on product design documents.

7.2 Customer-Related Processes

7.2.1 Determination of Requirements Related to the Product

TWMC shall determine

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

Post-delivery activities include, for example, actions under warranty provisions, contractual obligations such as maintenance services, and supplementary services such as recycling or final disposal.

The applicable group coordinates review as appropriate to the scope and nature of the inquiry, contract, and/or requested change. Departmental review responsibility is assigned as follows:

- a) National Sales - Contract Terms and Conditions, Scope of Work
- b) Commercial Sales - Contract Terms and Conditions, Scope of Work
- c) DC & Service - Contract Terms and Conditions, Scope of Work
- d) Projects - Contract Terms and Conditions, Scope of Work, Schedule
- e) Control Products - Contract Terms and Conditions, Scope of Work
- f) Engineering - Technical and Design Requirements
- g) Technical Support - Technical and Design Requirements
- h) Operations - Capacity, Scheduling and Manufacturability
- i) Quality Assurance - Nuclear, Government and Special Quality Requirements

If any required resources are unavailable, any requirement needs amplification, or if specifications cannot be met, appropriate action including contacting the customer, if required, is taken until the situation is resolved. Final result must be documented.

7.2.2 Review of Requirements Related to the Product

Upon receipt of a purchase order and prior to the starting of work, an acknowledgment is issued to the customer, if applicable. When no written statement of requirement is available for an order received by verbal means, a record of the requirement shall be made and the requirement shall be communicated to the appropriate organization(s) and acknowledgement provided to the customer.

Prior to agreeing to supply product to a customer, a review of all requirements are made and any differences or ambiguities are resolved. This review should include an assessment to ensure the customer requirements are within normal and reasonable manufacturing capability. This assessment should include:

- a) specifications can be met
- b) manufacturing processes are developed and are capable
- c) special requirements - quality, packaging, delivery, etc. - can be met
- d) regulatory, environmental and safety requirements are known and can be satisfied

Contractual requirements, which define the basic design or manufacturing parameters are identified and documented within the order entry processes. Incomplete, ambiguous, or conflicting issues are resolved prior to processing the design if possible. Unresolved issues and changes to design or manufacturing requirements that may compromise contract compliance are controlled and documented through the customer Change Notice system.

Records of review are maintained by the appropriate department.

After approval, a shop order number is assigned and the transaction becomes a contract. Changes to the contract, either at customer or Company request, must be confirmed in writing. When approved, the Company identifies and records the

amendment and ensures that the amendment is correctly communicated to the appropriate departments.

In some situations, such as internet sales, a formal review is impractical for each order. Instead the review can cover relevant product information such as catalogues or advertising material.

Detailed procedures for accomplishing this quality process are defined in department work instructions. Department responsibilities are identified in Appendix 5.5.1-2.

7.2.3 Customer Communication

The applicable departments are responsible for communicating with customers based on the scope and nature of the inquiry or service requested.

- a) National Sales - Inquiries, Quotes and Negotiations, Product Information, Contract Terms and Conditions, and Scope of Work
- b) Commercial Sales - Inquiries, Quotes and Negotiations, Product Information, Contract Terms and Conditions, and Scope of Work
- c) DC & Service - Inquiries, Quotes and Negotiations, Product Information, Contract Terms and Conditions, Scope of Work, Warranty Issues, Motor Repair, Servicing, Engineering Services, and Renewal Parts
- d) Projects - Contract Software, Manufacturing and Test Schedules, Contract Changes, and Scope of Work
- e) Distributor Sales - Inquiries, Quotes and Negotiations, Product Information, Contract Terms and Conditions, and Scope of Work
- f) Logistics & Customer Service - Stock Order Entry, Order/RMA Verification, Product Availability
- g) Control Products - Inquiries, Quotes and Negotiations, Product Information, Contract Terms and Conditions, and Scope of Work
- h) Technical Support - Stock Product Quotes, Technical and Product Information
- i) Quality Assurance - Customer Audits, Inspections and Customer Satisfaction feedback

Detailed procedures for accomplishing this quality process are defined in department work instructions. Department responsibilities are identified in Appendix 5.5.1-2.

7.3 Design and Development

7.3.1 Design and Development Planning

This section describes the means by which design and development activities are defined, controlled and verified to ensure that specified requirements are met.

Engineering is responsible for design and development planning. During the design and development planning, Engineering determines all design and development stages related to product. Engineering also determines the review, verification and validation that are appropriate to each design and development stage, and the responsibilities and authorities for design and development. Engineering and Information Systems share responsibility for the development of Design and Test Software. Engineering is responsible for the control of Design and Test Software.

Each design and development planning activity is described by a design plan that supports required activities and schedules, defines assigned qualified personnel, and provides for internal and external interface and coordination activities. Schedule plans are updated as the design develops. The level of the plan's complexity is dependent upon the design's complexity, the product's intended application, the degree(s) of innovation required, and the degree(s) of standardization and similarity with proven designs.

All internal and external groups related to design activities are identified and the flow of information among them controlled as defined within the department work instructions.

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

7.3.2 Design and Development Inputs

Design and development input formally documents the expected features and characteristics of the product being designed. The inputs are appropriately specified on a timely basis and correctly translated into design and development documents. Included is all information regarding the rating, loading, function and performance requirements of the apparatus ordered. Also included are any special considerations regarding machine options, service environment, test requirements, shipping and handling, etc., as well as references to applicable product design specifications and regulatory and statutory requirements. Additionally, information derived from previous similar designs, and other requirements essential for design and development are utilized.

The inputs are reviewed for adequacy. All requirements must be complete, concise and must not conflict with each other.

7.3.3 Design and Development Outputs

Design and development output addresses all design and development input and contains or references acceptance criteria. Primary design and development output shall consist of documents which define the final product configuration and characteristics. These outputs provide appropriate information for purchasing, production, service provision and specify the characteristics of the product that are essential for its safe and proper use. These documents shall include drawings, specifications, procedures, and acceptance criteria. Secondary design and development output shall consist of documents supporting the design. These documents shall include calculations, analysis, test requirements and references to other documents supporting the design.

Design and development output is reviewed and approved prior to release and will list all required drawings and specifications necessary to comply with requirements. Acceptance criteria and characteristics determined to be crucial are identified on the drawings and referenced specifications.

7.3.4 Design and Development Review

Design and development reviews vary in degree depending on the complexity of the contract and are planned, conducted and documented at appropriate design stages as specified in department work instructions. Design and development reviews are held to evaluate the ability of the results of design and development to meet

requirements, and to identify any problems and propose necessary actions. Issues such as reliability, serviceability, manufacturability, capability to inspect and test, and the availability of capable and qualified suppliers to provide specified materials and components can be addressed. Participants in such reviews shall include representatives of functions concerned with the design and development stage(s) being reviewed. Engineering maintains records of the design review activities.

7.3.5 Design and Development Verification

Design and development are performed in accordance with planned arrangements and verified by an engineer's review of calculations which are either computer or manually generated, or comparison with similar design when available.

Design and development verification (including, but not limited to, testing to specification) is performed during manufacture and final test under defined conditions to ensure that the design and development outputs have met the design and development input requirements and that the product conforms to requirements. Records of design and development verification are maintained.

7.3.6 Design and Development Validation

Design and development are performed in accordance with planned arrangements and validated by approval of the performance testing results. Specific customer requirements, and/or related industry standards are used to judge and validate the design.

Software which is used to design and develop or test product shall be validated prior to initial implementation and each time a new version is incorporated. Engineering shall establish and maintain software validation and version control procedures appropriate to the type of software application. These controls apply to purchased and TWMC developed software programs.

When required by contract, department instructions shall be established to provide detailed instructions for compliance with 10CFR50.

7.3.7 Control of Design and Development Changes

Design and development changes shall be identified and records maintained. The changes, to include field changes, modifications to operating facilities, and nonconforming item disposition use as is or repair, shall be reviewed, justified, verified and validated, as appropriate, and approved before implementation. The review of design and development changes shall include evaluation of the effect of the changes on constituent parts and product already delivered.

Detailed procedures for accomplishing this quality process are defined in department work instructions. Department responsibilities are identified in Appendix 5.5.1-2.

7.4 Purchasing

7.4.1 Purchasing Process

This section outlines the way in which suppliers of products and services affecting conformity to product requirements are approved or monitored, the way in which purchasing documents are reviewed, provides for verification of purchased product, and establishes the same controls as other purchasing processes over any outsourced process that affects product conformity.

The Purchasing, Stock Product Group, Projects, Shipping & Logistics, Engineering, DC & Service, Quality Assurance, and all product Warehouses share responsibility for the selection and assessment of suppliers. The method chosen follows written guidelines and is dependent on the type and application of the commodity or service purchased.

7.4.1.1 Purchasing Activity

Purchasing is responsible for the following actions:

- a) Identifying the need for new suppliers of products or services
- b) Requesting potential new supplier(s) be evaluated and qualified
- c) Assuring the scope of work for the selected supplier falls within the limitations and/or restrictions defined by the Approved Supplier Listing (ASL)
- d) Providing technical support and input to the evaluation process
- e) Measure and report supplier performance
- f) Identify supplier performance problems and initiate corrective or preventive actions

7.4.1.2 Quality Assurance Activity

Quality Assurance is responsible for the following actions:

- a) Establish, publish and maintain the Supplier quality requirements document
- b) Evaluate and qualify suppliers based upon their ability to meet Company quality requirements
- c) Identify and coordinate technical support activities necessary to assess supplier capabilities
- d) Perform Source, First Article and Receiving Inspection when required
- e) Measure and report supplier quality performance
- f) Maintain and publish the ASL
- g) Identify supplier quality performance problems and initiate corrective or preventive actions

Suppliers may be evaluated and selected for inclusion on the ASL based on one or more of the following considerations:

- a) Third party accreditation such as ISO, NIAC, ASME, EASA, A2LA, ACLASS, NVLAP, etc.
- b) On-site audit
- c) References from other customers or users
- d) Historical performance

- e) Survey Questionnaire which provides evidence demonstrating capability
- f) Sole source of a specific commodity or item
- g) Established nationally or internationally accepted provider of a product or service, i.e.: US Post Office, Federal Express, etc.

Suppliers of nuclear-related products are audited to the requirements of QMA 7.4.1 and 10CFR50 Appendix B. Products which must be procured from suppliers who are not qualified per 10CFR50 Appendix B are dedicated for use in accordance with the appropriate Commercial Dedication Instruction (CDI).

Suppliers of nuclear-related services, i.e., calibration, consultancy, may be evaluated and approved for inclusion on the ASL based on the same as above or:

- a) The supplier's history is evaluated to ensure that identical or similar product that has been previously supplied performs satisfactorily in actual use. Supplier's history shall reflect current capability.
- b) The supplier's current quality records are supported by documented qualitative and quantitative information which can be objectively evaluated.

Suppliers of products for Government contracts are evaluated and approved based on the requirements defined in Appendix 7.4.1. Products which must be procured from suppliers who are not qualified per Appendix 7.4.1 receive additional instruction through purchase order review.

Detailed procedures for selection, evaluation and re-evaluation are defined in department work instructions.

7.4.2 Purchasing Information

Purchasing documents are reviewed and approved prior to release to ensure that technical and quality requirements are specified. Additionally, the purchasing document, process audit, source and/or receiving inspection are used to ensure control over all processes affecting product conformity that are outsourced. Where necessary, these requirements can include drawing specifications, codes, standards, regulations, procedures or instructions, which include revision, that describe the items or services to be furnished. Amendments to the purchase order are processed per department work instructions.

Buyers receive and process purchase requests as described in department work instructions. All requests, whether manual or automated, are reviewed by the Buyer using existing procedures to identify requirements. Non-standard, complex, and first time buys of a commodity or service may require the Buyer to request input and review by Engineering, Production, Quality Assurance or other departments, as appropriate.

Purchasing information shall describe the product to be purchased, including, where appropriate:

- a) Requirements for approval of product, procedures, processes and equipment
- b) Requirements for qualification of personnel, and
- c) Quality Management System requirements.

Quality Assurance reviews and/or approves purchase orders for product applications and outsourced processes on designated commercial orders and all government and nuclear orders.

7.4.3 Verification of Purchased Product

The Company retains the rights to verify purchased product or outsourced process to order requirements. This right may be exercised at source or upon receipt by the Company, its customer, or a representative of either. By accepting the Company's contract, the supplier affirms his obligation to observe these rights.

When the Company requires the right to verify purchased product at the supplier's site, the Company purchase or change order shall specify how verification arrangements are to be made and the method of product release.

When specified in the contract, the Company's customer will be afforded the right to verify that purchased products conform to specified requirements. Such does not absolve the Company or its supplier of the responsibility to provide acceptable product/services nor preclude subsequent rejection by the customer.

All purchased products are subject to visual verification by Receiving and Stores personnel for identification, completeness, and condition. Receiving processes the necessary documents and routes product to Receiving Inspection, as required. Appendix 7.4.3-1 identifies product which requires Receiving Inspection. Product which is not submitted for Receiving Inspection is verified for identification, completeness, condition and conformance to requirements by operating personnel at the point of use.

Quality Assurance maintains a designated Receiving Inspection area to permit organized, efficient and controlled handling of materials requiring inspection. Purchased products awaiting Quality Assurance verification are identified and, when practical, segregated. Rejected products are documented, clearly identified, and when practical, placed in a segregated area. Product which is not inspected upon receipt, is subject to "Point of Use" inspection by the applicable manufacturing operator. Products not covered by Appendix 7.4.3-1 are also subject to point of use inspection.

This manual provides for the Urgent Release of material in the event an emergency production need arises. This release is documented to provide for positive recall should a problem subsequently arise. Planning is responsible for establishing the need for, requesting and tracking, the urgent release of product.

Exception - product designated for Nuclear applications, Government contracts or Customer Supplied Product shall not be Urgent Released under the provisions of this section.

Product expedited under this urgent release provision is subject to point of use inspection by the using organization or Quality Assurance.

Detailed procedures for accomplishing this quality process are defined in department work instructions. Product requiring Receiving Inspection is identified in Appendix 7.4.3-1. Supplier quality requirements are defined in Appendix 7.4.1.

7.5 Product and Service Provision

7.5.1 Control of Production and Service Provision

Drawings/specifications are provided to Production personnel so that workmanship standards are specific to the work activity in progress. Drawings/specifications provide the criteria, tolerances and dimensions appropriate to the specific task at hand.

Product is identified and scheduled based on product and delivery requirements. The requirements are then reviewed and scheduled for production during planning of Product Realization.

Work instructions and workmanship standards are provided to Production personnel in the form of work orders, process specifications and drawings. Conformity to product requirements is achieved and maintained by those who have been assigned responsibility for performing the work.

Process specifications are prepared, issued and controlled by Manufacturing Engineering. Department work instructions provide guidelines for determining when process specifications are required, stipulate content criteria, and assign issuance and maintenance responsibility for ensuring the control of process specifications.

Inspection and testing are conducted in accordance with documented procedures upon receipt of product, at significant stages of production, and prior to shipping finished products.

Inspection and Test requirement and acceptance criteria will include specified requirements contained in the approved design or pertinent technical document.

Production and Quality Assurance are responsible for inspection and test activities in accordance with department work instructions and procedures.

Monitoring and measurement equipment is provided to Production and Quality for the purpose of accepting or verifying product and processes during production and final inspection.

Personnel are responsible for reporting damaged equipment or equipment that is known to have an out-of-tolerance condition to Quality Assurance.

Test procedures shall include or reference test objectives and provisions for assuring that prerequisites for the given test have been met, that adequate instrumentation is available and used, that necessary monitoring is performed, and that suitable environmental conditions are maintained.

Test results shall be documented and evaluated by authorized personnel to assure that requirements have been met.

Test and inspection records shall, as a minimum, identify: item tested/inspected, date tested/inspected, tester or data recorder/instrument (if applicable), type of observation, inspector or person evaluating test result, results and/or acceptability and action or reference to information on action taken in connection with any deviations/nonconformance.

Each person who verifies conformance of work activities for the purpose of acceptance will be qualified to perform the assigned inspection task.

Quality Assurance is responsible for control of the stamps, tags and stickers which are used to indicate the status of product. Inspection and Test Status may be

identified by one or more of the following methods depending on the organization, type of product or step in the manufacturing process.

- a) Inspection Acceptance sticker (White Circle/Orange Square for Nuclear)
- b) Quality Approved sticker (Green Circle)
- c) Nonconforming Material sticker (Red Circle)
- d) Signature/employee #/stamp and date on Quality Checklist or Quality Record forms
- e) Stamp and date on the Receiving Slip
- f) Job Operations transactions
- g) Signed and/or computer released Test Reports or Blue tag (Blue Circle)

Unless contractually arranged by the customer, delivery is subcontracted. When contractually required, the traffic specialist arranges for delivery of product to the customer using shipping instructions found in the order database.

Carriers are selected using approved transport service suppliers as noted on the ASL.

Bills of lading and packing lists reference internal and customer identification numbers and list all items.

Hazardous and limited shelf-life items are marked prior to shipment.

All product Warehouses and Shipping & Logistics oversee product loading to assure that the carrier properly loads and protects shipments.

All customer requested post-shipment activities are governed by the policies and procedures documented in this manual and in supporting department procedures.

DC & Service is responsible for responding to customer service or warranty requests. The Field Assistance Report (FAR) and Returned Material Authorization (RMA) systems are used to administer warranty issues.

Instruction books which address storage, preservation, installation, operation, and normal maintenance of the product are provided to the customer. Engineering has the responsibility to ensure that the content of the books is current.

Quality Assurance is responsible for reviewing FAR and RMA information. When appropriate, Corrective Action docketts are issued to the responsible organization or supplier, when required.

Records are maintained to verify that the service has been completed in accordance with a documented plan and/or that the results of the service comply with the terms of the agreement with the customer.

Department work instructions provide procedures for after-sale communications, parts ordering, installation, servicing and/or repair, performance monitoring, and recommendation for corrective and/or preventive action.

Detailed procedures for accomplishing this quality process are defined in department work instructions. Department responsibilities are identified in Appendix 5.5.1-2.

7.5.2 Validation of Processes for Production and Service Provision

Processes for production and service must be validated when the resulting output cannot be verified by subsequent inspection.

All processes which are key to assuring the conformity to product requirements are controlled by written specifications. The method of control is indicated in the specification. Methods used to control processes include operator training, operator certification, process qualification, and process monitoring.

Processes which require particular skills and knowledge or for which the results cannot be fully verified by subsequent inspections or tests are identified, appropriate process control methods detailed, records maintained, and responsibilities assigned for these activities.

Production, Manufacturing Engineering, Engineering Lab and Quality Assurance are responsible for the control of Special Processes.

The following special processes are used in the manufacture or service of TWMC products:

- a) Welding
- b) Brazing
- c) Heat Treating
- d) Painting
- e) Vacuum Pressure Impregnation (VPI)
- f) Varnishing
- g) Nondestructive Testing (NDT)
- h) Soldering, Electrical
- i) Tinning

It is the responsibility of the department/individual performing the special process to adhere to the approved procedures and processes.

Conditions necessary for accomplishment of the process shall be included in the procedures or instructions. These conditions will include proper equipment, controlled parameters of the process, and calibration requirements.

The requirements of applicable codes and standards, including acceptance criteria for the process, shall be specified or referenced in the procedures or instructions.

For special processes not covered by existing codes and standards, or where conformity to product requirements specified for an item exceed those of existing codes or standards, the necessary requirement for qualification of personnel, procedures, or equipment will be specified or referenced in the procedures or instructions.

Procedures provide for process change. Conditions under which a change can be requested and customer approval is required, responsibility to coordinate the request, and authority to request and approve change are defined in department work instructions. Records are maintained.

Detailed procedures for accomplishing this quality process are defined in department work instructions.

7.5.3 Identification and Traceability

This section defines the way in which product is identified to drawing, part, material specification, job and/or shop order number from receipt through warranty and provides for the traceability of pre-defined materials.

Procedures are established and maintained which provide for materials, components, and subassemblies to be identified to drawing, part, job order or material specification numbers from receipt throughout product realization.

Projects, National Sales and DC & Service are responsible for assigning product identification numbers which may be used to establish job order, service order or shop order identification during design, manufacture, delivery, installation and warranty. Additionally, they are responsible for identifying and communicating customer material traceability requirements to all affected operations.

Engineering is responsible for assigning a unique number to all parts, subassemblies, assemblies and material specifications to ensure appropriate identification of product throughout product realization.

Production, Planning and Quality Assurance are responsible for control of product documentation and identification during the manufacturing operations.

Procedures are established and maintained which govern the Company's standard practice of requiring material certifications on commodities which could affect form, fit, or function of the final product. Appendix 7.5.3 identifies products which require material traceability.

In the event the contract indicates that a customer requirement for material certification is more stringent than the Company's standard practice, the customer's instructions will take precedence. Additionally, markings used for identification and traceability shall be transferred to each part of an identified item when subdivided and shall not be obliterated or hidden by surface treatment or coating unless other means of identification are substituted.

Purchasing is responsible for including material traceability requirements in supplier purchase orders.

All product Warehouses and Shipping & Logistics are responsible for the receipt and transmittal of traceability documentation required by purchase orders to Quality Assurance, if required.

Quality Assurance is responsible for review and retention of material traceability documentation. Quality Assurance maintains the Traceability Records.

7.5.4 Customer Property

This section outlines the way in which product provided by a customer is reviewed for acceptability and is controlled.

Projects, National Sales and DC & Service are responsible for coordination between the Company and the customer to ensure timely and efficient receipt and processing.

All product Warehouses and Shipping & Logistics are responsible for the receipt, handling, storage and control of customer supplied product. Customer supplied product is identified, verified, stored, and maintained as other purchased products

unless a contract indicates special handling is required. In that event, the customer's instructions will take precedence over standard procedures.

Quality Assurance is responsible for inspection of the customer supplied product to assure conformance to defined product and documentation requirements.

Production controls and handles customer product during the manufacturing, final assembly, test and shipment as any other purchased product.

Any customer supplied product which is lost, damaged, or is otherwise unsuitable for use is documented and reported immediately to the customer and a record maintained.

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

Detailed procedures for accomplishing this quality process are defined in department work instructions.

7.5.5 Preservation of Product

This section describes the department responsibilities for preserving product during internal processing and delivery to the intended destination in order to maintain conformity to requirements.

Customer specific requirements for handling, storage, packaging, marking, preservation and delivery are identified during the order entry and contract review process. National Sales, Projects and DC & Service are responsible for identifying and communicating special customer requirements.

Manufacturing Engineering identifies any non-standard handling requirements as part of process planning activities. Any special fixtures or procedures are included in the manufacturing specification for that operation.

Methods and means of handling product to prevent damage or deterioration are determined. Procedures provide for equipment selection and for using equipment correctly. Equipment requiring maintenance is regularly checked and records retained. When equipment operation requires operator qualification, operators are qualified to use the equipment and qualification records are maintained. Instructions for the use of equipment are available in the manufacturing areas where they are needed.

The Health, Safety and Environmental (HS&E) Office assures that overhead cranes and associated slings and chains are inspected to assure their safety and proper operating condition. The HS&E Office provides training for the operation of overhead cranes and forklift trucks and the handling of hazardous materials.

Department Supervisors and/or Team Leaders instruct operators on the proper handling of materials and product as part of job training and departmental orientation. Included are acceptable practices for the use of pallets, blocks, baskets and other handling devices when moving and storing items.

Pallets, baskets, blocks and other items used to transport or handle materials and product are monitored by Production, all product Warehouses and Shipping & Logistics operators and supervisors. Potentially defective items are replaced, repaired or cleaned, as necessary.

Material stockrooms are controlled by all product Warehouses and Shipping & Logistics. In-process and floor stock is controlled by Production. Each storage location is identified by signs, labels or space layout documents, as appropriate.

Storage procedures provide for receipt of product into and dispatch of product out of storage areas. Provision is made for special product characteristics such as age-sensitive materials. Limited shelf-life items are stored using "first-in-first-out" inventory methods. Limited shelf-life items are identified in Engineering Material Specifications (EM Specs). Affected materials come labeled with expiration dates by the manufacturer or are labeled when received in accordance with the procedures defined in Appendix 7.5.5-2. If materials are issued out of stock locations from labeled packages they are re-labeled to maintain expiration date information.

Area supervisors monitor material storage to assure that materials and product are placed only in designated areas and are clearly identified. Storage locations are selected for each item based on that item's required storage need, such as temperature, humidity or contamination.

All storage locations are evaluated periodically to assess the condition of materials and validate quantity on hand. Damaged, obsolete, expired, and unidentified material is addressed during this evaluation.

Appendix 7.5.5-1 identifies storage areas requiring periodic Inspection. This document also defines actions and responsibilities of Quality Assurance, Production, all product Warehouses and Shipping & Logistics.

Final product packing, packaging, and preservation are performed and suitable materials selected per documented process specification. In the event that contractual requirement differs from standard methods, customer requirement will take precedence.

If a shipping location specified is a different Customer location (i.e., drop ship to the Customer or a third party) TWMC shall supply proof of shipment to the Customer at the time of shipment. Proof of shipment shall include a packing list, signed bill of lading, quality documentation package (if required) and any other documents that would provide proof of shipment. This proof of shipment must be provided to the Customer within two business days of the made shipment.

7.6 Control of Monitoring and Measuring Equipment

This section describes the means by which adequate inspection, measuring and test equipment is provided to demonstrate conformance to the specified requirements and how such equipment is calibrated and maintained.

Identification of equipment requiring calibration is the responsibility of Quality Assurance, Manufacturing Engineering, Engineering and Production.

Quality Assurance coordinates and administers the calibration system. Equipment used by Quality Assurance, Production and Engineering for the purposes of accepting or qualifying products or processes is controlled and subject to the calibration system.

A list of all inspection, measuring, and test equipment is maintained and all such equipment is uniquely identified.

The Company ensures that the environmental conditions are suitable for the calibration, inspection, or measurement being conducted.

Where calibration is carried out in-house, work instructions are provided and contain details of equipment type, identification numbers, location, frequency of checks, check method, and acceptance criteria. Records detail traceability to national standards, where they exist.

Calibration to be performed outside of the Company's facilities shall be carried out by an approved calibration facility. The calibration facility shall meet the requirements of QMA 7.4.1.

Re-calibration intervals are dependent upon previous results. Any change to such is properly authorized prior to execution.

Where possible, calibration status and date of next check is shown on inspection measuring, and test equipment. All other equipment is traceable through a unique identification number to a calibration record.

Records of calibration are maintained to provide details of results, traceability, and check frequencies.

Where necessary, equipment is handled, preserved, and stored in such a manner as to prevent unauthorized adjustment and to ensure that accuracy and fitness for purpose is maintained.

Any calibration standard or piece of equipment suspected of or known to be outside the limits of accuracy is withdrawn from use immediately, identified, and segregated until the out-of tolerance condition(s) is evaluated and appropriate action(s) taken.

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

Detailed procedures for accomplishing this process are defined in department work instructions.

8.0 Measurement, Analysis and Improvement

The company shall monitor and measure conformity of the product and the Quality Management System to identify opportunities for improvement.

8.1 General

Production and Quality Assurance are responsible for Inspection and Testing activities. Inspection and testing are conducted according to documented procedures at source, upon receipt of product, at significant stages of production, and prior to shipping finished products.

All product Warehouses and Shipping & Logistics are responsible for all Receiving, Stores and Shipping activity.

Product is prevented from use, assembly, or shipment until the required inspections and/or tests are complete and results deemed satisfactory.

Section 8.3 of the manual provides for identifying and processing nonconforming product.

Records of inspections and/or tests are maintained to confirm that products comply with requirements.

8.2 Monitoring and Measurement

8.2.1 Customer Satisfaction

The company is committed to fulfilling customer requirements. Methods which may be used to measure customer satisfaction are as follows:

- a) Customer Satisfaction Surveys
- b) Customer data on conformity to product requirements of delivered product
- c) Percent of Business through long-term agreement/supply contract
- d) Lost business analysis
- e) Customer Complaints and Warranty Claims
- f) Measuring Rates of Returned Product

National Sales, Commercial Sales, Stock Product Group, Projects, DC & Service and Quality Assurance are responsible for monitoring information received from the customer on quality concerns and field problems. This information may be entered into the Customer quality concerns or the Field Assistance Record database.

Customer quality concerns are received by Quality Assurance and entered into the QA database application developed as a tool for addressing customer complaints.

Field assistance requests are received by DC & Service and entered into the Field Assistance Record database. This information is reviewed and analyzed by Quality Assurance to continually improve the Quality Management System and to resolve recurring problems. Recurring problems may be entered into the Corrective Action system and are reviewed by executive management during the management review meetings.

8.2.2 Internal Audit

This section describes how, at regular intervals, all aspects of the Quality Management System are audited to assess compliance with approved procedures, to identify any deficiencies, and to initiate corrective and preventive action where required. Audit intervals are based on the importance of the process and results of previous audits.

Internal Quality Audits are conducted to verify compliance with and to determine the effectiveness of the Quality Management System. Internal Quality Audits focus on compliance with the quality policies and procedures stated in the Quality Manual and supporting Department Work Instructions. Quality Assurance is responsible for implementing this quality process. Department procedures address the planning, execution, and reporting of internal Quality Audits and the coordination of corrective and/or preventive action for deficiencies or nonconformance.

Audits are scheduled, organized, performed, and recorded in accordance with department work instructions.

An Audit Plan identifying criteria, scope, frequency and method is established and maintained to ensure that all aspects of the Quality Management System are audited when appropriate.

Audits are performed by qualified personnel who are not directly responsible for the area being audited.

Audit findings are documented and reviewed with the responsible manager at the conclusion of the audit. The management responsible for an audited area takes action necessary to correct deficiencies identified during the audit. Corrective action is taken in a timely manner.

Deficient areas are re-audited to ensure the corrective action taken has been effective. Records of audit results and follow-up activities are maintained.

Internal audit reports are used by management when reviewing the effectiveness of the Quality Management System.

Detailed procedures for accomplishing this quality process are defined in department work instructions.

8.2.3 Monitoring and Measurement of Processes

The company shall monitor and measure Quality Management System processes to demonstrate the ability of the system to achieve planned results. This is accomplished by reviewing, monitoring and measuring quality objectives established at relevant functions and levels within the organizations, results of internal audits, analysis of data, root cause of nonconforming product, and performance of suppliers.

8.2.4 Monitoring and Measurement of Product

This section describes the manner in which product is inspected and tested to verify that product requirements have been met throughout product realization.

The Production and Quality Assurance organizations are responsible for conducting in-process inspection and testing activities.

Source, receiving and in-process inspections and tests are conducted as a standard practice. Quality checklists, quality plans, project control plans, process specifications and other types of department work instructions establish the responsibility, type and point in the manufacturing process when in-process inspections and/or tests shall be performed. The required inspections and tests are documented in accordance with department work instructions and records are forwarded to Quality Assurance.

The Production and Quality Assurance organizations are responsible for conducting final inspection and testing activities.

Engineering is responsible for establishing the test agenda for completed product in accordance with the customer's requirements.

All products are subject to final testing and inspection. No product is released for shipment until all specified activities show evidence of satisfactory completion and associated data and documentation is approved. The authorization to release final products is a Quality Assurance responsibility.

Note: the release of product and delivery of service to the customer may require customer approval.

Final tests and inspections are conducted as a standard practice. The required tests and inspections are documented and records maintained.

Detailed procedures for accomplishing this quality process are defined in department work instructions.

8.3 Control of Nonconforming Product

This section assigns responsibilities and authorities for identifying, documenting, controlling, and dispositioning nonconforming product.

All nonconforming product is identified (see 7.5.1) and segregated (where practical) to prevent inadvertent use. Nonconforming product is documented using either the Error Appraisal Notice (EAN), Supplier Deviation Request (SDR) or Returned Material Authorization (RMA) systems or Field Assistance Report (FAR).

All TWMC employees are responsible for reporting nonconforming conditions to Quality Assurance. Quality Assurance is responsible for issuing, routing, reviewing, approving, coding and closing EANs, except as otherwise defined in department work instructions. The EAN system is an on-line business application which provides input forms, coding tables, data control, administration and reporting capabilities.

Suppliers of products to TWMC are responsible for reporting nonconforming conditions identified during their manufacture of product using the SDR system. The supplier prepares and transmits the SDR to Quality Assurance in accordance with the procedures specified in Appendix 7.4.1. Quality Assurance reviews, routes, approves, codes, closes and returns the dispositioned copy of the SDR to the supplier. Upon receipt of an SDR, Quality Assurance initiates an EAN record for administration of the SDR process as applied to nonconforming materials, drawing errors or specification errors.

Product returned from the customer as nonconforming is processed on an RMA or FAR. Department work instructions provide guidance for issuing and administering the RMA and FAR processes.

All actions to be taken on nonconforming product shall be in accordance with documented instructions on the EAN, SDR, RMA or FAR document.

Procedures for identification, evaluation and reporting of defects and noncompliance as required by 10CFR21 are described in Appendix 5.1.

The following represent authorized disposition categories for nonconforming product.

Notes: a) When a concurrence is associated with a disposition type, the name of the engineer, planner or project administrator should be recorded as part of the EAN record.

b) Any authorized individual can disposition a part as scrap. Only President, Director of Operations and Chief Financial Officer are permitted to perform the scrap authorization transaction in SyteLine.

- **Use As Is** Deviation from the drawing or specification does not affect the design intent of the product. Condition is acceptable for use and does not adversely affect form, fit or function. If deemed necessary, Design Engineering reviews and determines the condition is not detrimental and the product meets the design intent with the stated nonconforming condition(s). This disposition shall include an explanation.

- **Rework** Deviation from drawing or specification may be corrected by standard manufacturing practices. Part will conform to drawing or specification requirements.

- **Repair** Deviation will require special processing to render product usable for its intended function. Part does not meet specific drawing or specification criteria. Repaired condition satisfies the original design intent.
- **Salvage** Product is not suitable for intended use. Repair is not feasible or cost effective. Material may be re-used in another application.
- **Scrap** Product is not suitable for intended use. Repair is not feasible or cost effective.
- **Return to Vendor** Purchased product does not meet Purchase Order requirements. Product is returned for action by the vendor. Specific actions may include: rework, repair or replace product.
- **Ship Short** Final product is missing a part or component at time of shipment, customer desires product as is to meet their needs. Part or component will be shipped at a later date.
- **Conditional** Product is subject to further processing which should correct the nonconforming condition and therefore the product is judged acceptable at the point of discovery.
- **Special Use Code** In addition to the product disposition codes defined above, two special codes are available for use. The special codes are REC for Record Only and CNX for Cancelled.
 - REC - all use requires QA concurrence and should be used when a record of the originally defined condition is desired. Additionally, this code can be used when a deviation or material substitution that does not effect the design intent of the product and does not fit the requirements of a material Authorization change, i.e., use on current shop order only.
 - CNX - use by QA only when it is determined that processing the EAN is not required.

The following guidelines establish department authorizations and category of product dispositions:

Engineering

- Use As Is - when forwarded from Manufacturing Engineering or QA, and all Nuclear and Government orders
- Rework
- Repair
- Salvage
- Scrap
- Return to Vendor
- Conditional

Manufacturing Engineering

- Use As Is - when nonconforming condition is determined not to affect form, fit, or the design function; Nuclear and Government orders, with Engineering concurrence
- Rework
- Repair - Nuclear and Government orders, with Engineering concurrence
- Salvage
- Scrap
- Return to Vendor
- Conditional

Production / Control Products

- Rework
- Salvage
- Scrap
- Return to Vendor

Quality Assurance

- Use As Is - when nonconforming condition is determined not to affect form, fit, or the design function; Nuclear and Government orders, with engineering concurrence
- Rework
- Repair - Nuclear and Government orders, with Engineering concurrence
- Salvage
- Scrap
- Return to Vendor
- Conditional
- Ship Short - with documented concurrence from Planning and Projects/Customer

Where required by the contract, the proposed use as is or repair of product which does not conform to specified requirements is reported for review, approval and/or concession to the customer. When accepted by the customer, a record of the nonconformity, its disposition, and the resulting product condition is retained.

Repaired and/or reworked product is re-inspected in accordance with the original criteria and/or the disposition instructions stated on the EAN or SDR.

Detailed procedures for accomplishing this quality process are defined in department work instructions. Department responsibilities are identified in Appendix 5.5.1-2.

8.4 Analysis of Data

This section describes the way in which the data is collected and analyzed to demonstrate the suitability and effectiveness of the Quality Management System.

The analysis of data is performed by Quality Assurance as specified in departmental procedures on the following:

- a) Customer Satisfaction
- b) Conformity to product requirements
- c) Characteristics and trends of processes and products including opportunities for preventive action
- d) Supplier performance

Quality Assurance is responsible for establishing statistical techniques for use in the Inspection and Testing of product. Statistical techniques can be used for Acceptance Sampling and Measurement Systems Analysis.

Acceptance sampling plans, based on documented procedure, are used to evaluate supplier performance at Receiving Inspection. TWMC uses an Average Outgoing Quality Limit (AOQL) plan for acceptance sampling inspection of supplier products.

Measurement Systems Analysis is accomplished in accordance with standard industrial practices.

Detailed procedures for accomplishing this quality process are defined in department work instructions. Department responsibilities are identified in Appendix 5.5.1-2.

8.5 Improvement

8.5.1 Continual Improvement

The company shall continually improve the effectiveness of the Quality Management System through the use of the Quality Policy, quality objectives, audit results, analysis of data, corrective and preventive actions and management review. The issues and information are presented and discussed at management review.

8.5.2 Corrective Action

This section defines responsibilities and describes the way in which system deficiencies or product nonconformance are investigated and corrective or preventive action implemented.

Executive management assures that a responsive Corrective and Preventive Action program has been established and that each department manager is accountable for the timely analysis and implementation of effective corrective action.

Quality Assurance is responsible for establishing and administering the Corrective and Preventive Action program. Any TWMC employee can request a corrective or preventive action be issued for deficiencies or product nonconformance trends. Quality Assurance investigates the identified condition and, when appropriate, issues a Corrective Action Docket (CAD). Corrective action is not necessarily required for every occurrence of a nonconformance, but periodic analysis of patterns of nonconformance is considered to uncover opportunities for process improvement.

All departments are expected to respond to Requests for Corrective Action in a timely manner. Quality Assurance monitors the status of all open and past due CAD's and provides reporting and follow-up activity. The due date for initial response to a corrective action request shall be set by QA and approved by the Quality Manager. The adequacy of the proposed action(s) is evaluated by Quality Assurance. Implementation and effectiveness of approved actions are verified through the internal audit process, or by other appropriate means.

Corrective action dockets may be issued for, but not limited to, the following conditions:

- a) Deficiencies identified during Internal, Customer, Third Party or Supplier Audits
- b) A single significant product nonconformance, or nonconformance trends
- c) Problems reported by Field Assistance Reports or report trends
- d) An observed unsafe act or unsafe condition
- e) Safety Inspection deficiencies identified by Internal, OSHA or Insurance audits
- f) Deficiencies or product nonconformance identified during EMS Audit

8.5.3 Preventive Action

Preventive action opportunities are identified and taken as needed. They may be identified as a part of new product or process development and definition, corrective action investigations, management review of the effectiveness of the Quality Management System, or during other activities. The corrective action docket system is used to administer preventive action requests including monitoring status of open and past due dockets. Response times for preventive actions shall be in accordance with the criteria for Corrective Actions.

MANUAL REVISION HISTORY

Revision 0, dated 7/18/02

Approved by: M. Kuo

The original of this manual. This manual supersedes a previous manual (Rev. 4, 6/5/2000). This manual was formatted to conform with the requirements of ISO 9001:2000. Because the changes were extensive, this manual returned to Rev. 0, original.

Revision 1, dated 7/31/02

Approved by: M. Kuo

Manual updated to meet requirements of NQA-1-1994.

Revision 2, dated 10/31/02

Approved by: M. Kuo

Manual updated to satisfy SQE-2002-35 and CA0883.

Revision 3, dated 4/4/03

Approved by: M. Kuo

Manual updated to satisfy requirements of internal audit QS0880.

Revision 4, dated 7/2/04

Approved by: M. Kuo

Manual updated to satisfy requirements of CA0982.

Revision 5, dated 7/6/07

Approved by: H.C. Meng

Manual updated to include Wind Energy Division.

Revision 6, dated 5/27/09

Approved by: Vincent Tang

Manual updated to include ISO 9001:2008 and MV Drives product line.

Revision 7, dated 9/29/10

Revised by: Donald Jones, Sr. Quality Engineer

Reviewed by: Anthony Sykes, Quality Assurance Manager

Approved by: Vincent Tang, President

Manual updated to correct nonconformances identified on the EBARA External Audit Report EAR-10-05 dated Aug. 24 to 27, 2010: CAR-10-0066/CA1177, CAR-10-0068/CA1179, CAR-10-0071/CA1181.

2/20/15 Reviewed and approved by Pat Rogers.