The STG Global Supply Chain Quality Management System

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The purpose of GEZ-4982A is to provide an overview of the GEE Quality Management System . It describes the main elements of the Quality Management System and provides general information on the requirements and the mechanisms of the system. GEZ-4982A is structured in line with the major clauses of ISO 9001:2000.

Section	Element
1	Scope
2	Normative Reference
3	Terms and Definitions
4	Quality Management System
5	Management responsibility
6	Resource Management
7	Product Realization
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1 Scope

1.1 General

GEE Systems has determined that it has a need for a quality management system by which it will:

a) demonstrate its ability to consistently provide products and services that meet customer and product specifications and applicable regulatory requirements, and

b) aim to enhance customer satisfaction through the effective application of the GEE Systems Quality Management System (GEEQMS) and the assurance of conformity to customer and applicable regulatory requirements.

1.2 Application

The GEE Systems Quality Management System (GEEQMS) is designed to satisfy the requirements of ISO 9001:2000. As in ISO 9001:2000, the requirements of the GEEQMS are considered applicable to all organizations regardless of type, size and product or service provided.

Where any requirement of the GEEQMS cannot be applied due to the nature of the organization and its product, this can be considered for an exclusion. Where exclusions

are made, claims of conformity to GEEQMS are not acceptable unless these exclusions are limited to the requirements in Section 7 and such exclusions do not affect the organization's ability, or responsibility, to provide a product that fulfills customer and applicable regulatory requirements.

Compliance with this document is mandatory for all GEE organizations currently registered (or pursuing registration) to ISO 9001/9002 (1994) or ISO 9001:2000. Compliance to this document for organizations transitioning their registration to ISO 9001:2000 will be done in coordination with their Registrar. All other organizations are required to determine the degree of adherence to this manual.

This document is intended to replace earlier versions of GEZ 4982A for the Steam Turbine-Generator Global Supply Chain. It may also replace versions of GEZ 8304-1, the GE Gas Turbine Quality Management System, at the discretion of Gas Turbine Quality Management.

2 References

The following documents are referenced in the GEE Systems Quality Management System. GEE Systems organizations are encouraged to utilize these documents in the design and development of their Level 2 Procedures Manuals.

ISO 9000:2000 - Quality Management Systems – Fundamentals and Vocabulary

ISO 9001:2000 – Quality Management Systems - Requirements

ISO 9004:2000 - Quality Management Systems – Guidelines for Performance Improvements

3 Terms and Definitions

The terms and definitions given in ISO 9000:2000 will apply.

a) The terms in reference to the supply chain are:

supplier → **organization** → **customer**
(GE's supplier) (the GE business) (GE's customer)

b) "Product" is defined as the "result of a process".

c) "Process" is defined as a "set of interrelated or interacting activities which transforms inputs into outputs."

d) Throughout the GEE Systems Quality Management System manual, whenever the term "product" occurs, it can also mean "service".

e) ISO 9001:2000 refers to "Top management" in numerous requirements. For the purpose of the GEE Systems Quality Management System, "Top" or "Executive" management will be considered to be the highest level of management and the staff at the Department or site location.

4 Quality Management System

4.1 General

GEE Systems organizations shall establish, document and implement a quality management system and continually improve its effectiveness in accordance with the requirements of this manual.

Organizations shall:

a) identify 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 and analyze these processes, and
f) implement actions necessary to achieve planned results and continual improvement of these processes.

4.2 Outsourced Processes

When an organization chooses to outsource any process that affects product conformance with requirements, the organization will do so in accordance with defined requirements and methods of control to ensure effective compliance by the vendor/subcontractor. Such procedures may exist within the organizations local procedures or the GEE Systems Sourcing Operation quality system procedures.

4.3 Quality System Documentation

The extent of quality system documentation may vary from one GEE Systems organization to another. The range and detail of the procedures and work instructions shall be depend upon:

a) the size of the organization and its activities,
b) the complexity of processes and their interactions, and
c) the competence of personnel.

GEE Systems Quality Management System Manual (Level 1)

The GEE Quality Management System Manual is the governing document outlining top level quality system requirements to be followed in the design, manufacture, installation, supply and servicing of GEE Systems steam turbine, gas turbine and generator products. It is designed to satisfy the requirements of ISO 9001: 2000.

The GEE Quality Management System Manual is a controlled document. The on-line version in the GEPS Intranet is the official master. The use of uncontrolled information is not permitted in the contract negotiation, design, manufacture, installation, supply and servicing of GEE products or services except when used for reference.

Procedures Manuals (Level 2)

Each ISO registered department level organization / function / site covered by GEE System's Quality Management System will utilize controlled procedure manuals which address all applicable ISO elements for which they have a prime or contributing responsibility. Where practical and appropriate, Departments may chose to combine or incorporate their Quality System requirements into one manual. This is acceptable as long as the requirements, responsibilities and procedures are clearly defined.

Work Instructions (Level 3)

This level of documentation provides greater detail as to the actual mechanics and implementation of the Quality System requirements within Departments or functions. Due to the broad nature and scope of GEE Systems organizations, this tier will vary in scope, structure and content across the business and, in most cases, is found in Manufacturing, Engineering and Servicing. This tier can include, but not be limited to, documentation referred to in the diagram below.

Level 4 Documentation

Level 4 consists of other documentation and includes, but is not limited to, forms, tags, external documents, etc. The GEE Quality System allows, and encourages, the documentation of procedures in support of ISO 9001 and the GEE Quality System requirements. Many procedures may exist at local levels which do not fall into one of the major classifications above and are the responsibility of the originating individual / function.

Documents Requiring Control

All documents and data, whether of a hard copy or electronic nature, that relate to the requirements of this Quality System including, to the extent applicable, documents of external origin such as standards or customer drawings, shall be controlled by established and documented procedures.

A controlled document is one which must be of the latest or proper revision at the point of use where the use of an incorrect revision may have a detrimental effect on quality.

The following types of documentation are normally required to be controlled. Exceptions should be noted at the local level. This list is not intended to be all inclusive.

a) Quality Systems Manuals and supporting documentation such as quality operating procedures, quality plans, manufacturing operation procedures, etc.;
b) Engineering drawings, process specifications, manufacturing instructions, etc.;
c) Quality and Manufacturing process instructions;
d) Work station instructions and methods;
e) Material Specifications;
f) Shop planning, routing, etc.;
g) Inspection and test procedures;
h) Purchasing documents;
i) Customer contracts and amendments;
j) Acceptance standards;
k) Quality data (record) sheets/forms.
l) Supporting engineering documentation such as Alteration Notices, Engineering Instructions, Field Instructions, Design Changes, etc. (note: emphasis on the control of this type of documentation must be at the point of use; requirements as to the control of copies generated will be defined at the local level).
m) NC/DNC data and programs;

4.4 Control of Quality Records

All organizations / functions governed by this Quality Management System will establish and maintain documented procedures for the identification, control and maintenance of quality records as defined in this instruction. Such records will be maintained to demonstrate conformance to specified requirements and the effective operation of the quality system and may be in the form of any media, such as hard copy or electronic.

Consideration will be given to the following elements of record retention:

- Legibility
- Retrieveability
- Retention times & disposition
- Availability to customers
- Type of storage
- Suitable environmental conditions / protection
- Responsibilities

5 Management Responsibility

Executive management at all organizations and sites shall, within their Quality Management Systems, provide evidence of its commitment to the development and implementation of the GEE Systems Quality Management System and continually improve its effectiveness by:

a) communicating to the organization the importance of meeting customer as well as statutory and regulatory requirements,
b) commitment to and deployment of the GEEQMS Quality Policy,
c) ensuring that quality objectives are established and such objectives support and satisfy those at the GEE Systems level,
d) conducting management reviews at defined intervals, and
e) ensuring the availability of resources.

5.1 Customer Focus

Through the continuing application and improvement of the GEE Systems Quality Management System, executive management at all sites and within all organizations shall ensure that customer requirements are determined and fulfilled with the aim of enhancing customer satisfaction. The success of GEE Systems depends on understanding and satisfying the current and future needs and expectations of present and potential customers (internal as well as external).

To satisfy customer needs and expectations, management should understand the needs and expectations of customers, including those of potential customers, and determine key product characteristics and other points of customer satisfaction.

Examples of customer needs and expectations, as related to the organizations products, include, but are not limited to:

- product conformity to specification
- dependability
- availability
- delivery
- post-production activities
- price and life cycle costs
- product safety
- product liability, and
- environmental impact.

5.2 Quality Policy

"We are driven by a passion for delivering on every commitment. We are dedicated to providing our customers with the highest quality offerings with unparalleled customer service and responsiveness. We are committed to working together to deal with any problem in an open and honest manner - always with unyielding integrity."

John Rice

It is the responsibility of the President and CEO, GEE Systems, and his management teams at all levels, to ensure the understanding and implementation of this policy throughout the business and to provide the necessary processes, practices, procedures and resources necessary to achieve that end.

5.3 Objectives

The objectives in support of the Quality Policy are based on the premise that, in striving for excellence in every facet of our operations, we will assure the highest level of customer satisfaction and the fulfillment of their objectives through the products and services GEESystems has provided. Integral to this are the following key elements:

a) Customers are both internal and external.
b) Quality measurements must be customer oriented.

c) Complete understanding of customer requirements and expectations is essential.
d) Quality is to be achieved by designing and building quality and reliability into our products and services, optimizing our processes and minimizing or eliminating inspections, waste and rework.
e) Business processes and procedures instrumental in the achievement of the Quality Policy are to be defined, documented and controlled as defined in this manual.
f) Continuous process improvement efforts will focus around process simplification, variation reduction and cycle time compression, utilizing when able, "Best Practices" as models and examples.
g) Timely and effective corrective and preventive action will be the key to the continuous improvement process.
h) Management involvement plays a critical role in the achievement of the quality objectives.
i) The GEE Systems Quality System will be based on the International Standard ISO 9001:2000.

Due to the size and expanse of General Electric Energy Systems, quality objectives in support of the GEE Systems Quality Management System will be considered to be established at the Department or site level of executive management. Such objectives may vary from department to department but will be consistent and in support of the quality policy and the guidance given by the President and CEO, GEE Systems.

Quality objectives will be documented, measurable and established at relevant functions and levels within the organization. The quality objectives should be communicated in such a way that people in the organization can contribute to their achievement. The responsibility for deployment of quality objectives should be defined. Objectives should be systematically reviewed and revised as necessary.

5.4 Quality Objectives Measurement

To ensure the success of the Quality Policy, appropriate and meaningful measurements will be identified, developed and reviewed at all levels and functions to ensure that appropriate corrective and preventive action needs are identified and addressed in a timely and effective manner. The type and degree of such measurements will be of a nature to evaluate the performance to the objectives implied in the quality policy and consistent with the continuous improvement philosophy of the business.

Such measurements will include, but not be limited to:

- Customer satisfaction measurements
- Audit results
- Internal and external failures
- Process and product quality trends

- Organizational performance data
- Statistical analysis techniques
- Product performance data
- Related cost data

5.5 Responsibility and Authority

The matrix below is intended to depict the major functions within Power Systems and identify the functions which typically have a primary and contributing role in the PSQMS systems and processes. Variations to this matrix may be documented, as appropriate, in lower level procedures.

GEE Responsibility Matrix

		Management	Sales / Services	Engineering	Manufacturing	Purchasing	Quality Control	Human Resources
4.0	**Quality Management System Requirements**							
4.1	General Requirements	C	C	C	C	C	P	C
4.2	Documentation of Requirements	C	C	C	C	C	P	C
5.0	**Management Responsibility**							
5.1	Management Commitment	P	C	C	C	C	C	C
5.2	Customer Focus		P				C	
5.3	Quality Policy	P	C	C	C	C	C	C
5.4	Planning		C	C	C	C	P	
5.5	Responsibility, Authority and Communication	P	C	C	C	C	C	C
5.6	Management Review	P	C	C	C	C	C	C
6.0	**Resource Management**							
6.1	Provision of Resources	P	C	C	C	C	C	C
6.2	Human Resources	C	C	C	C	C	C	P
6.3	Infrastructure	P			C		C	
7.0	**Management of Processes**							
7.1	Planning of Product Realization	C	C	C	C	C	P	
7.2	Customer Related Processes		P	C	C		C	
7.3	Design and Development			P	C	C	C	
7.4	Purchasing			C	C	P	C	
7.5	Production and Service Provision			C	P	C	C	C
7.6	Control of Monitoring and Measuring Devices			C	C		P	
7.7	Delivery and Post-Delivery Services		P	C	P		C	
8.0	**Measurement, Analysis and Improvement**							
8.1	General	P						
8.2	Monitoring and Measurement		C	C	C	C	P	
8.3	Control of Nonconforming Product		C	C	C	C	P	
8.4	Analysis of Data	C	C	C	C	C	P	C
8.5	Improvement	C	C	C	C	C	P	C

P indicates the function that provides primary leadership on the process or is the primary user of the process

C indicates a function that has a contributing role or is a user of the process

5.6 Management Representative

The GEE Systems Quality Leader is the designated Management Representative for GEE Systems. The GEE System Management Representative's scope, responsibility and authority will include:

a) the definition and maintenance of the GEE Quality Management System defined in this manual,
b) the interpretation and application of this Manual,
c) providing guidance to GEE Systems organizations relating to ISO requirements and registration,
d) preparing and conducting a management briefing of selected portions of the GEEQMS and departmental QMS status

Additional management representatives will be designated as defined by department level policies and procedures. All organizations and functions required to support the ISO 9001 certification requirements under this Quality System shall appoint a management representative who will have the authority to:

a) act on the behalf of, and interface with, all appropriate levels of management on Quality System / ISO 9001 issues;
b) ensure that the processes needed for the Quality Management System are established, implemented and maintained in accordance with this document and ISO 9001:2000;
c) report to management on the performance of the Quality Management System and any need for improvement;
d) ensure the promotion of awareness of customer requirements throughout the organization.

5.7 Internal Communication

Executive management within all organizations ensures that appropriate communication processes are established within the organization and that communication takes place regarding the effectiveness of the quality system.

The primary method of communication within GEE Systems shall be the GEE System Intranet and associated web pages. In addition, the following methods are examples of communication processes that will be utilized as appropriate:

- staff meetings
- newsletter and bulletins
- team meetings and roundtables
- display boards

- one-on-one supervisor/employee communication

The content of such communication will vary and is at the discretion of local management. Consideration should be given to content such as:

- Customer satisfaction measurements
- Audit results
- Organizational performance data
- Internal and external failures
- Process and product quality trends
- Product performance data

5.8 Management Reviews

Within General Electric Energy Systems, the Management Review process will be focused primarily at the Department or site level. The management review process and structure may vary due to many reasons such as organizational structure, complexity of the business, etc.

The terminology applied to the management review may also vary (such as Corrective Action Boards, Quality Management Reviews, etc.) but the process must address quality measurements as appropriately intended and satisfy the intent of ISO 9001:2000, Para. 5.6.2. Frequency and scheduling of such meetings will be the responsibility of the Management Representative at the local level

At a minimum of annually, the GEE Systems Management Representative schedules and leads, with the President and CEO, GEE Systems, a formal management briefing in order to provide selected information as to the continued suitability and effectiveness of the GEE Quality Management System. This meeting will also include a review of the GEE Quality Policy and its objectives for its continued applicability. The content of the meeting will be determined by the Management Representative.

6 Provision of Resources

All GEE Systems organizations and businesses are responsible to determine and provide the resources needed
a) to implement and maintain the Quality Management System and continually improve its effectiveness, and
b) to enhance customer satisfaction by meeting customer requirements.

6.1 Competence and Awareness

It is the responsibility of all GEE Systems organizations to ensure that all personnel performing work affecting product quality and/or relating to elements of the Quality Management System shall be competent on the basis of appropriate education, skills and experience.

Organizations shall:
a) determine the necessary competence for personnel performing work affecting product quality or the GEEQMS,
b) provide training or take other actions to satisfy these needs,
c) evaluate the effectiveness of actions taken,
d) ensure that personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of quality objectives, and
e) maintain appropriate records of education, training, skills and experience.

7 Product Realization

7.1 Planning of Product Realization

Quality plans are issued for a part, family of parts, components, assemblies or operations. They define the quality assurance actions at the operating level which provide a means of control and measure the characteristics of an item to Engineering and Quality Control specifications. The format of quality planning within GEE Systems may vary depending upon the requirements of the site quality system, the type and complexity of the product, processes involved, etc. Implementation of quality plans in manufacturing operations is usually accomplished through the use of quality data forms, travelers, integrated routing / quality planning, etc.

7.2 Customer Related Processes

The review and administration of contracts for units and major conversions, modifications and uprates, will be conducted to ensure that contract requirements and expectations are fully met and complied with. It is the responsibility of the GEE Systems Global Sales organizations / functions to establish procedures relative to customer-related process requirements. Such procedures will address:
a) the determination of requirements related to the product
b) the review of requirements related to the product
c) customer communication

7.3 Design and Development

GEE Systems Technology is responsible to establish and maintain procedures which address the following requirements:
1. The preparation of detailed plans specifying the responsibility for each design and development activity. The plans will describe or reference these activities and will be updated as the design evolves.
2. The planning and assignment of the design, verification and validation activities assigned to qualified staff equipped with adequate resources.
3. The organizational and technical interfaces between different groups and that necessary information is documented, transmitted, and regularly reviewed.
4. The design input requirements relating to the product are identified, documented, and their selection reviewed for adequacy. Incomplete, ambiguous or conflicting requirements are to be resolved with those responsible for defining these requirements.
5. The design output is documented and expressed in terms of requirements, calculations, and analyses. The design output must:
    a) meet the design input requirements;
    b) contain or reference acceptance criteria;
    c) conform to appropriate regulatory requirements whether or not these have been stated in the input information;
    d) identify those characteristics of the design that are important to the safe and proper functioning of the product;
    e) meet the customer requirements.
6. The design verification process which establishes that design output meets the design input, and design validation ensures that the design meets the intended use, is to be accomplished by means of design control measures such as:
    a) holding and recording design reviews;
    b) undertaking qualification tests and demonstration;
    c) carrying out alternative calculations;
    d) comparing the new design with a similar proven design, if available.
7. Procedures are established and maintained for the identification, documentation and appropriate review and approval of all changes and modifications to design.

7.4 Purchasing

The GEE Systems Global Sourcing Operation (GSO) is responsible for the procurement of sourced items used in the products manufactured by GEE Systems.

GSO has, within its organizational structure, quality functions responsible for all quality elements of the procurement process. Sourcing Quality Engineers assure compliance with documented procedures defined in the GSO Quality Systems Manual. As

appropriate, GSO will draw upon support from GEE Systems Technology and the Manufacturing Departments.

7.5 Production and Service Provision

7.5.1 Control of Production and Service Provision

Department or local level procedures detail, as necessary, the requirements to ensure:
a) the availability of information that describes the characteristics of the product,
b) the availability of work instructions and procedures define the manner of production, installation and servicing, where the absence of such procedures could adversely affect quality,
c) the use of suitable production, installation and servicing equipment in an environment necessary to achieve the quality results desired,
d) the availability and use of monitoring and measuring devices,
e) the implementation of monitoring, measurement and control of process parameters and product characteristics,
f) the compliance with all engineering and quality requirements, including applicable commercial codes and standards, as well as supporting quality plans or other documented procedures,
g) suitable maintenance of equipment to ensure continuing process capability

7.5.2 Validation of Processes for Production and Service Provision

GEE Systems organizations shall validate any process where the resulting output cannot be verified by subsequent monitoring and measurement. This includes any processes where deficiencies become apparent only after the product is in use or the service has been delivered. Validation shall demonstrate the ability of these processes to achieve planned results.

GEE Systems organizations shall establish arrangement for these processes including, as applicable,
a) defined criteria for review and approval of the processes
b) approval of equipment and personnel,
c) use of specified methods,
d) requirements for records, and
e) revalidation.

7.5.3 Product Identification

All production material is adequately identified in accordance with methods of identification detailed at the local level and may consist of one or more of the following methods:

a) COPICS/FMS/Routing paperwork attached to the material, with the material in its container or at the workstation where work is currently being performed.
b) Quality Control travelers, routing or other tags as defined in local level procedures.
c) Metal stamping
d) Color-coding (raw material)
e) Temporary markings such as paint stick, 'Marks-alot', etc.

7.5.4 Product Traceability

1. Traceability to Source
All production items is traceable to source at least through the incoming inspection and material release activities. Local level or Engineering procedures will define the detailed requirements as to the traceability to source.

2. Traceability to Customer
COPICS is an MRP production and inventory and control system. In general, parts will begin manufacture without customer identification and will normally be tracked, processed and "inventoried" individually or in lots by drawing number without uniquely being identified with a customer. It is not until an order demand is to be satisfied at shipping are many parts/components specifically identified with an individual customer. All standard quality inspections/tests will be applied to such parts as dictated by the local quality planning.

There are contractual requirements, as well as internal requirements, which dictate that specific parts/components will be identifiable and traceable to customer. The demand may vary from contract to contract for the same part. It also may vary in the sense that the requirement may take effect at varying points in the production cycle. Local level or Engineering procedures will define the detailed requirements as to the traceability to customer.

7.5.5 Preservation of Product

Department Quality Systems or local instructions include documented procedures which address the following:

1. Methods of handling that prevent damage or deterioration;

2. Adequate storage or stockroom areas that prevent the damage or deterioration of product.
3. The packing, packaging and marking requirements for the shipment of product. When appropriate, consideration will be given to any special requirements due to the export of product to international destinations and the method of transportation to be used.
4. The adequate preservation of product gives consideration to the following:
    a. in-process, short term and long term requirements;
    b. expected length of time needed to be effectively preserved;
    c. the environment in which product will be shipped / stored;
    d. engineering approval of chemicals used, if necessary.

7.6 Control of Monitoring and Measurement Devices

GEE requirements apply to all inspection, measuring and test equipment (hereafter referred to as IM&TE) used in the development, design, manufacture, inspection and testing of materials, parts or assemblies of GEE Systems products. Local level documented procedures ensure that:

a) IM&TE shall be selected and used in a manner which ensures that the measurement uncertainty is known and is consistent with the measurement capability and accuracy required.
b) All IM&TE that can affect product quality are identified, and calibrated and adjusted at prescribed intervals, or prior to use.
c) Calibration will be against certified equipment or standards having traceability to recognized national standards, such as NIST. Where no such standards exist, the basis for calibration will be determined and documented.
d) Documented calibration procedures exist for each type of IM&TE detailing the checking/calibration method, acceptance criteria and action to be taken when results are unsatisfactory.
e) Identification of IM&TE to enable the calibration status to be determined.
f) Records are maintained and the retention period defined.
g) Procedures exist to assess and document the validity and/or impact of inspection and test results when IM&TE is found to be significantly out of defined limits.
h) The environmental conditions are suitable for the calibrations being carried out.
i) The handling, preservation, and storage of IM&TE is such that the accuracy and fitness for use is maintained.
j) Consideration is given to safeguards from unauthorized adjustments which would invalidate the calibration setting.

8 Measurement, Analysis and Improvement

All GEE Systems organizations plan and implement the monitoring, measurement, analysis and improvement processes needed to
a) demonstrate conformity of the product and contractual requirements,
b) ensure conformity of the quality management system, and
c) continually improve the effectiveness of the quality management system.

8.1 Customer Satisfaction

GEE Systems organizations monitor information relating to customer perception as to whether the organization has fulfilled customer requirements. The primary method used on a continuing basis to satisfy this requirement throughout GEE Systems in the Field Service Notice (Complaint) System. This system is administered by Product Service who accomplishes an initial evaluation and forwards to the responsible organization for corrective or preventive action.

Additional sources of customer related information may include

- customer surveys
- feedback on product performance
- performance to contract and other customer requirements
- delivery and service information, and
- market and competitive information.

8.2 Internal Audit

An auditing program is documented and implemented to assure that quality activities and related results comply with planned arrangements and to determine the continued effectiveness and compliance with the quality system.

The responsibility for control of the audit program, including the selection of auditors, will be defined. Audits shall be scheduled on the basis of the status and the importance of the activity to be audited.

Auditors are selected who are knowledgeable of the requirements to be met and of the limitations of the processes. It is encouraged that audits be performed by personnel independent of those having direct responsibility for the activity being audited. Selection of auditors and conduct of audits shall ensure objectivity and impartiality of the audit process. Auditors shall not audit their own work.

Audit results are documented. Noncompliances are investigated and managed in accordance with documented local corrective action procedures. Management will take timely and effective corrective action. Audit results will also be presented in the Management Review / CAB processes in accordance with documented local procedures. Follow-up and verification activities are performed to assure effectiveness of the corrective action.

8.3 Monitoring and Measurement of Processes

GEE Systems organizations apply suitable methods for monitoring and, where applicable, measurement of the quality management system processes. These methods shall demonstrate the ability of the processes to achieve planned results. When planned results are not achieved, corrective action shall be taken, as appropriate, to ensure conformity of the product.

At a minimum, organizations identify their critical processes and identify measurement methods and perform those measurements in order to evaluate and manage process performance. A 'critical process' may be defined as one which, if not performing as planned, will result in a breakdown of the quality system or the possibility of shipping nonconforming product. Local organizations are encouraged to 'process map' such critical processes as a method of documenting the necessary controls and achieving the consistency of application needed.

8.4 Monitoring and Measurement of Product

Documented department level procedures are established and maintained identifying the requirements for inspection and testing activities which verify that the specified requirements for the products have been met. The required inspections and tests are be identified in quality plans or similar quality routing.

8.5 Control of Nonconforming Product

Nonconforming product is that which does not meet specified requirements and will include, but not be limited to, product which:

a) deviates from Engineering drawings and specifications, including process and test parameters;
b) has been processed out of sequence to planning or procedures without proper authorization;
c) is in nonconformance with special contract or customer requirements;
d) when required by local instruction, deviates from in-process specifications or parameters although still within final engineering requirements.

e) represents incomplete work leaving one area for another where there are no other procedures addressing such material.

Appropriate lower level Quality Systems document procedures which assure that all product which deviates from specified requirements is controlled to a degree necessary to prevent unintended use or installation. Such producers include, as necessary, the following:

a) The manner by which such material will be identified and documented (note: in this case "documented" will mean either in paper or electronic form).
b) The acceptable means for tagging or otherwise identifying such nonconforming material and, where practicable, the physical separation of same.
c) Defined responsibilities relating to the initiation of nonconformance reports, the processing of such reports and the authority for the evaluation and disposition of such material. When nonconforming material is reviewed and dispositioned by a formal Material Review Board (MRB), procedures will address the MRB function including the attendees required to constitute and official MRB.
d) Routines for assuring that all nonconforming material is dispositioned, and when required by that disposition, all repair / rework is accomplished and verified, prior to shipment.
e) When nonconforming product is corrected, it shall be subject to reverification to demonstrate conformity to the requirements.
f) The additional identification and handling of material dispositioned as 'rejected' or 'scrap'.
g) When the approved disposition requires the shipment of nonconforming product, documented procedures will address required 'Waiver to Ship' routines, notification of the site/installation functions and, as necessary, the records required in manufacturing or engineering (record drawings) recording the as-shipped condition
h) Procedures allowing for the notification of the customer when required by contract or agreement.

8.6 Analysis of Data

GEE Systems organizations determine, collect and analyze appropriate data to demonstrate the suitability and effectiveness of the Quality Management System and to evaluate where continual improvement of the system can be made. This includes data generated as a result of monitoring and measurement and from other relevant sources. The analysis of data provides information relating to:

a) the plans, goals and objectives of the organization,
b) the effectiveness of specific quality system processes such as corrective action,
c) customer satisfaction,
d) conformance to product requirements,

e) characteristics and trends of processes and products, and
f) suppliers.

Analysis of data is used to determine the root cause of existing or potential problems, and therefore guide decisions about the corrective and preventive actions needed for improvement.

8.7 Improvement

GEE Systems organizations continually improve the effectiveness of the Quality Management System through the use of the quality policy and measurement systems and feedback relating to
a) customer satisfaction
b) quality objectives
c) audit results,
d) analysis of data,
e) corrective and preventive actions, and
f) management review.

The Six Sigma quality initiative is a General Electric corporate - wide program with the objective of making quantum 'breakthroughs' in the quality of goods and services provided our internal and external customers. It is the major GEE Systems activity which aims to improve the effectiveness and efficiency of GEE processes. The Six Sigma Quality Initiative is under the direction of the GEE Systems Quality Leader and encompasses all functions of GEE Systems.

8.8 Corrective Action

Department level Quality Management Systems include documented procedures on the local corrective action procedures and specific requirements. Such procedures address, as appropriate:

a) The sources of corrective action, such as customer complaints, product and process nonconformities, audit results, internal failure costs, statistical data, etc.
b) The responsibilities and mechanisms of the corrective action process.
c) Guidelines as to the response and timeliness requirements (these should be to a degree appropriate with the magnitude of the problem).
d) Follow-up requirements for effectivity.
e) Incorporation of appropriate corrective actions into the management review process.

8.9 Preventive Action

The STG Global Supply Chain Quality Management System

MFGGLO-GEZ-0010
Rev: 1.2

Department level Quality Management Systems define, as appropriate, the responsibilities and mechanisms of preventive action. Sources of information to identify preventive action initiatives may include, but not be limited to:

a) Internal failure costs;
b) QCR analysis data;
c) External failure costs, including customer complaints;
d) Manufacturing quality data;
e) Audit reports, whether internal or third party;
f) Statistical techniques;
g) Corrective action data;
h) Trends, indicators or other analysis;
i) Other sources as appropriate.

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