 GE Energy Materials and Processes Engineering	PROCESS SPECIFICATION P28A-AL-0001
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CRITICAL TO QUALITY (CTQ) PROCESS CAPABILITY DATA COLLECTION

DOCUMENT REVISION STATUS: DETERMINED BY THE LAST ENTRY IN THE "REV" AND "DATE" COLUMN


REV.	DESCRIPTION	SIGNATURE	REV. DATE
-	OUTLINES THE REQUIREMENTS AND GENERAL INSTRUCTIONS FOR TRACKING CRITICAL TO QUALITY (CTQ) CHARACTERISTICS IDENTIFIED BY GENERAL ELECTRIC POWER GENERATION (GEPG). THE PROCESS APPLIES TO ALL DRAWINGS, SPECIFICATIONS OR CONTRACTUAL DOCUMENTS THAT IDENTIFY CTQs REQUIRING THE ESTABLISHMENT AND TRACKING OF PROCESS CAPABILITY. (C. BENFER)	CR TRIPEPI	
A	ADDED DEFINITIONS THAT RELATE DIRECTLY TO EXTRANET AND CTQ WEB APPLICATION; CHANGED ALL GEPG TO GEPS AND CHANGED ALL GENERAL ELECTRIC POWER GENERATION TO GENERAL ELECTRIC POWER SYSTEMS; UPDATED RESPONSIBILITIES TO REFLECT CHANGED ROLES FOR THE EXTRANET; UPDATED SUPPLIER RESPONSIBILITIES; UPDATED SECTION 5 (REPORTING REQUIREMENTS FOR CTQ CHARACTERISTICS); DELETED EXHIBIT 1 IN APPENDIX A. (J. FAZZONE)	CR TRIPEPI	2001 MAY 08
B	REMOVED REFERENCE TO SUPPLIER EXTRANET FOR THE DELIVERY OF CAPABILITY DATA; ADDED THE USE OF A TEMPLATE FOR THE SUPPLIER TO PROVIDE CAPABILITY DATA TO GEPS; TEMPLATE MUST BE APPROVED BY THE SQE OR APPROVED GE PERSONNEL. ALSO, ADDED GE MAY REQUEST ALL DATA POINTS THAT WERE USED TO CALCULATE CAPABILITY. (J. DOWNS)	CR TRIPEPI	2001 APR 09
C	ADDED "CRITICAL TO PROCESS" (CTP) INFORMATION AND "CRITICAL TO QUALITY" (CTQ) DEFINITION; CHANGED ALL GEPS TO GEEN AND CHANGED ALL GENERAL ELECTRIC POWER SYSTEMS TO GENERAL ELECTRIC ENERGY. (MJ SULLIVAN)	CR TRIPEPI	2004 MAY 19
D	COMPLETELY REVISED SPECIFICATION. (R. PHILIPP)	CR TRIPEPI	2006 JAN 11
E	ADDED GAGE R&R REQUIREMENTS; INCREASED RECORD RETENTION REQUIREMENTS; GRAMMATICAL REVISIONS MADE FOR CLARIFICATION; DCI NO. 09001129. (R. PHILIPP)	CR TRIPEPI	2009 MAR 23

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PREPARED BY:	C. BENFER
ORIG. ISSUE DATE:	February 24, 1998

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CRITICAL TO QUALITY (CTQ) PROCESS CAPABILITY DATA COLLECTION

1. SCOPE


- 1.1 This document outlines the requirements and general instructions for tracking Critical to Quality (CTQ) characteristics identified by General Electric Energy (GEE). The process applies to all drawings, specifications or contractual documents that identify CTQs.
- 1.2 The intent of this specification is to define the concepts and responsibilities for the determination of process capabilities for Critical to Quality characteristics. Additionally, the document will identify reporting requirements for process capability data.
 - 1.2.1 The documentation generated from tracking CTQs can be a resource to GEE and their suppliers for:
 - 1.2.1.1 Documentation and control of processes.
 - 1.2.1.2 Evaluation of root cause and corrective action for non-conformances.
 - 1.2.1.3 Problem investigations.
 - 1.2.1.4 Process and product control and continuous improvement.
 - 1.2.1.5 Alignment of Engineering requirements to process capabilities.
 - 1.2.1.6 Design for Six Sigma (DFSS).
- 1.3 This procedure is in addition to and in no way limiting, superseding or a substitution for any contractual obligation as required by the applicable procurement documents.

2. APPLICABLE DOCUMENTS

None

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3. DEFINITIONS

- 3.1 **Critical to Quality Characteristic (CTQ)** – Those Characteristics of an item which if nonconforming, may prevent or seriously affect the unit performance, reliability, producibility, or customer satisfaction of a component.
- 3.2 **Critical to Process Characteristic (CTP)** – Those Characteristics of a process that combine to define a Critical to Quality Characteristic; or are deemed essential for quality assurance purposes. A CTP may be a critical characteristic defined by the GE SQE.
- 3.3 **Gage Repeatability and Reproducibility (Gage R&R)** - A Gage R&R study will estimate variation within individual measurement equipment devices or individual operators (repeatability); and the variation between different pieces of equipment or different operators (reproducibility). This type of study is essential in understanding and eliminating measurement error from process performance measurements.
- 3.4 **Sourcing Quality Engineer (SQE)** - Defines the qualification and production quality requirements and is the key interface with the supplier relative to qualifications, process improvements, non-conforming material dispositions, corrective actions, and surveillance auditing.
- * 3.5 **Process Capability Study** - A systematic procedure for assessing the capability of a process or product to meet required specification limits. This study may require the selection of CTPs/CTQs, measurement and collection of appropriate data, completion of a Gage R&R study, establishment of statistical process control, and comparison of the process variability to the applicable process or product specification tolerance.
- * 3.6 **Process Capability Study Report** - contains a description and evaluation of each activity identified in the process capability study definition.

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4. RESPONSIBILITIES

4.1 GEE Engineering

4.1.1 Engineering will identify the CTQs on GEE drawings and/or specifications that require process capability feedback.

4.2 GEE Sourcing Quality Engineer

4.2.1 The Sourcing Quality Engineer (SQE) is the primary interface between the Supplier and Engineering.

4.2.1.1 The GEE Sourcing Quality Engineer will identify to the supplier the CTQs requiring process capability feedback.

4.2.1.2 The Sourcing Quality Engineer (SQE) will identify any CTPs that require process capability feedback. For those drawings, which do not contain any CTQs, there may be CTQs or CTPs identified by the GEE SQE.

4.2.1.3 The SQE may request a process capability improvement study for CTQ/CTPs deemed to have a low process capability index number.

4.3 Supplier

4.3.1 The Supplier is responsible for CTQ/CTP data collection, process capability analysis and providing reports to the GE SQE as requested.


4.3.2 The Supplier is required to implement a Process Capability Study to drive process capability improvement projects as defined by the GEE SQE. These projects may require a Gage R&R study.

* The Gage R&R percent (%) of tolerance criteria is calculated to determine the inherent variability of the measurement system. If the measurement system's gage R&R (%) is less than 10 percent (%) of the tolerance, then the system is acceptable. When the R&R (%) is inclusive of 10 and 30 percent (%), this may be acceptable based on the classification of the characteristic, application, customer input, technology, risk analysis, etc. A gage R&R % greater than 30 percent (%) is considered not acceptable. To use a device with > 30 % R&R requires agreement from the GE SQE who may require tightened manufacturing (or inspection) tolerances to offset the gage variability for approval. Note: Manufacturing tolerances are not GE drawing tolerances, which can only be changed by the cognizant GE engineer.

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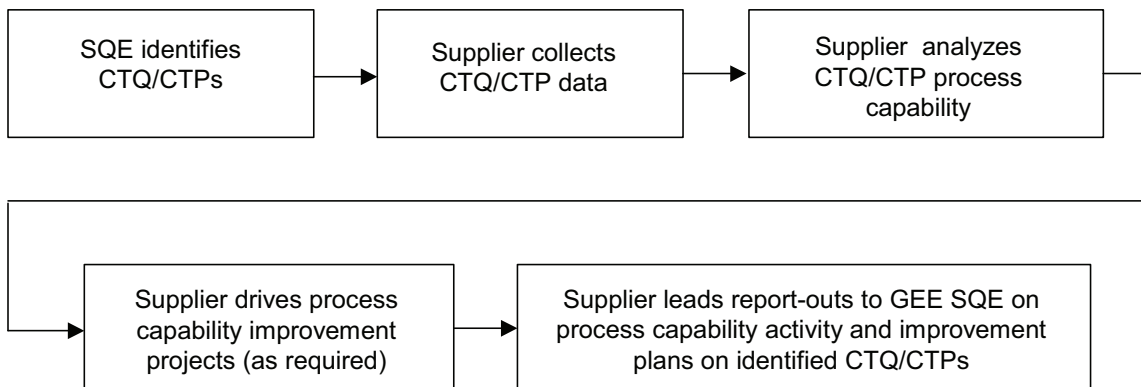
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- 4.3.3 Process capability study reports will be provided to the GE SQE at the periodic frequency requested by the SQE.
- 4.3.4 Suppliers who receive Purchase Orders from GEE are responsible to communicate to their sub-tier Suppliers for GEE products: the CTQs requiring process capability, GE Specification P28A-AL-0001, and the process for tracking process capability, along with all other specifications and drawings.
- 4.3.5 All aspects and features of the Supplier's response to requirements under this specification are subject to review and approval of the SQE.
- 4.3.6 It is the Supplier's responsibility to contact their GEE Sourcing Quality Engineer with any questions related to compliance with this specification.

5. REQUIREMENTS



6. RECORD RETENTION

- * 6.1 CTQ measurement data, process capability reports, and improvement plans, if any, will be retained by the supplier for no less than ten (10) years. These records shall be made available to the GEE SQE upon request.

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