



**Document Code**

ARSB-O&G-001

**Title**

Supplier Quality Requirements

**Applicability**

GE Oil & Gas

**Process Owner**

GE Oil & Gas Global Supply Chain Quality Leader

**Issue Date**

04.02.2008

**Revision**

0

**Cause of Revision**

New issue

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## 8. ADDENDUM A -Tech. Specification For Vendor Supplied Documentation-Qualification Book (Electronic)



## 1. General Overview

The present quality document ARSB-O&G-001 has been generated for GE Oil & Gas business from the process specification P28A-AL-0002 rev. G, applicable for GE Energy business.


When P28A-AL-0002 is required either directly or indirectly by a GE Oil & Gas procurement document dated prior to the effective issue date of this document (ARSB-O&G-001), the applicable document is to remain P28A-AL-0002 Rev G. If the procurement document is dated on or after the effective date of this document, then references to P28A-AL-0002 shall be considered references to ARSB-O&G-001 as Supplier quality requirements official document applicable for GE Oil & Gas business.

- P28A-AL-0002 is available at the following link:  
<http://www.gepower.com/about/suppliers/en/document.htm>
- ARSB-O&G-001 is available in Support Central Supplier Quality community, at the following link: [http://supportcentral.ge.com/products/sup\\_products.asp?prod\\_id=29003](http://supportcentral.ge.com/products/sup_products.asp?prod_id=29003)
- ARSB-O&G-001 is published in GE Oil & Gas Supplier Portal, Supplier Quality Library folder, available at the following link:  
[http://www.gepower.com/businesses/ge\\_oilandgas/en/about/supplier\\_portal.htm](http://www.gepower.com/businesses/ge_oilandgas/en/about/supplier_portal.htm)



**2. Historical Trace**

In order to trace the various releases of the document P28A-AL-0002, valid before the present ARSB-O&G-001 issue date, all its revisions are reported in the table attached forth herein.

| <br><b>GE Energy</b><br>Schenectady, NY 12345 |  | PROCESS SPECIFICATION<br><b>P28A-AL-0002</b> |             |
|--|--|--|-------------|
|  |  | Page 1 of 24                                 |             |
| <b>SUPPLIER QUALITY REQUIREMENTS</b>   |  |  |             |
| DOCUMENT REVISION STATUS: DETERMINED BY THE LAST ENTRY IN THE "REV" AND "DATE" COLUMN  |  |  |             |
| REV.   | DESCRIPTION  | SIGNATURE                                    | REV. DATE   |
| -  | DEFINES SUPPLIER QUALITY REQUIREMENTS; THIS SPECIFICATION WILL REPLACE INTERNAL QMS 6.6.1 CURRENTLY REFERENCED ON PURCHASE ORDERS. CREATING REQUIREMENTS IN A SPECIFICATION FORMAT ALLOWS SUPPLIERS ACCESS TO DOCUMENT. (JS WEISS) | CR TRIPEPI                                   |             |
| A  | ADDED NDT DOCUMENTS AND D50A155; ADDED NOTES TO SECTIONS REFLECTING QUALIFICATION OF WELDING PROCESSES, AND USE OF THIS SPECIFICATION BY PSSO IN GE BANGOR, ME. (WH CHILDS, JR.)   | CR TRIPEPI                                   | 1999 MAR 15 |
| B  | GENERAL UPDATE TO REFLECT CHANGES TO SUPPLIER QUALIFICATIONS. (WL MORAGNE)   | CR TRIPEPI                                   | 2001 JAN 10 |
| C  | EDITORIAL REVISION. (TE CONKLIN)   | CR TRIPEPI                                   | 2001 JUL 23 |
| D  | COMPLETELY REVISED SPECIFICATION TO COMMUNICATE SUPPLIER QUALITY REQUIREMENTS GEPS -WIDE. (L WILLIAMS)   | CR TRIPEPI                                   | 2002 DEC 04 |
| E  | GENERAL UPDATE. (AM CARTER)  | CR TRIPEPI                                   | 2005 MAR 02 |
| F  | REVISED RECORD RETENTION REQUIREMENTS. (AM CARTER)   | CR TRIPEPI                                   | 2005 MAR 17 |
| G  | SIMPLIFIED DOCUMENT BY RE-ORGANIZING INFORMATION AND ELIMINATING REDUNDANCIES; MODIFIED TYPE C DEFINITION; ADDED REFERENCE TO P295-AL-0001; COMPLETELY REVISED SPECIFICATION; DCI NO. 07002067. (JF SWEENEY)                       | CR TRIPEPI                                   | 2007 APR 30 |
| PREPARED BY: <b>W.H. CHILDS, JR.</b><br>ORIG. ISSUE DATE: <b>May 19, 1995</b>  |  |  |             |

DT-ALL



### 3. Scope

This quality document provides the General Quality Requirements for all GE Oil & Gas external direct material suppliers.

This quality document applies to all purchased direct material used in GE Oil & Gas delivered goods and services.

### 4. Responsibility

This document applies to all GE Oil & Gas business locations.

Responsibility for updating this procedure lies with the GE Oil & Gas Global Supply Chain Quality Leader or a person delegated by the GE Oil & Gas Global Supply Chain Quality Leader.

Each functional member of GE Oil & Gas Global Sourcing can propose an update to the present release.

Review and check activities are under responsibility of a Quality Assurance member of GE Oil & Gas Global Sourcing.

The final approval of the present document release and update is allowed only by the GE Oil & Gas Global Supply Chain Quality Leader.

### 5. Applicable Documents

In addition to the general requirements specified herein, alternate applicable business-specific technical requirements will be communicated to Supplier as required (examples, ASME, API, etc...). Unless otherwise indicated, the latest document revision shall apply.

#### 5.1. International Standards

ISO 9001:2000 Quality Management Systems Requirements



## 5.2 Hierarchy of Documents

Supplier - the Purchase order is the governing document which transmits GE Oil & Gas requirements to the Supplier.

## 6. Definitions

6.1 Supplier - Unless noted otherwise, refers to the corporation, company, partnership, sole proprietorship or individual with whom GE Oil & Gas places a Purchase Order.

6.2 Purchaser - The GE Oil & Gas business or its business associate.

6.3 CTQ - Critical To Quality.

6.4 Sourcing Quality Engineer (SQE) - GE Oil & Gas representative who defines the qualification and production quality requirements, and is the key interface with the supplier relative to qualifications, process improvements, nonconforming material dispositions, corrective actions, and surveillance auditing.

6.5 Sourcing Representative - GE Oil & Gas representative who negotiates price, delivery, terms and conditions, and places the purchase order for qualification and production. The Sourcing Representative is also the official contact between the supplier and GE Oil & Gas.

6.6 Field Service Notice (FSN) - A Field Service Notice documents non-conformances identified by GE Oil & Gas field engineers and authorizes the field to perform warrantable equipment repairs.

6.7 Frozen Process - A manufacturing method, process, procedure or control that was approved by the GE Oil & Gas Qualification Team. The connotation of a "Frozen" process is typically reserved for a Type A and B1 commodity or process.

6.8 Manufacturing Process Plan (MPP) - A detailed, step-by-step list of operations and requirements by which component(s), or service(s) are manufactured.



6.9 Product Quality Plan (POP) - A detailed, step-by-step list of operations and requirements in which a supplier identifies a process of how, what, why, when and who will perform tests or inspections and the applicable acceptance criteria. This may also be referred to as a Quality Control Plan (QCP) or equivalent names depending on the specific GE Oil & Gas business.

6.10 Qualification Package - All required documentation for qualification as defined in Addendum A.

6.11 Non-conformance Notice (NCN) - A GE Oil & Gas nonconformance report initiated during processing through a GE Oil & Gas factory or location. This also may be referred to as Quality Control Report (QCR) or a Nonconformance Report (NCR) or different names depending on the specific GE Oil & Gas business.

6.12 Customer Claim Management (CCM) - All nonconformities found in post-installation.

6.13 Customer Complaint Reports (CCR) - Reports initiated by or at our Customers request to document a concern, complaint or product problem.

6.14 Special Process - A process whose results cannot be fully verified through subsequent nondestructive inspection and testing of the product and where processing deficiencies may become apparent only after the product is in use.

6.15 Supplier Deviation Request (SDR) -A request initiated by the supplier to deviate from purchase order technical requirements (drawings, specifications, engineering instructions, etc.) This may also be referred to under different names depending on the specific GE Oil & Gas business.

6.16 Item Type Classifications - One of five categories into which GE Oil & Gas production components/materials are classified. These categories are A, B1, B2, C and R. Determination of specific item classification type is made by the GE Oil & Gas qualification team.

- **Type A** Metallurgical or chemically intense process or product with significant potential impact on the safe operation, performance or reliability of the machine or system. These items are typically GE Oil & Gas designed and requiring one or more special processes.



Examples: Investment castings, forgings, large castings, metallic raw material, and rotor bolting.

- **Type B1** Moderately complex components or assemblies that have no or limited special processes. These components may be designed by GE Oil & Gas per detail drawings or designed by the supplier to a GE Oil & Gas functional specification.  
Examples: Fabrications, complex machined components.
- **Type B2** Same as B1 except typically assigned to components that are customer specific, or of limited production volume where process changes by the supplier would not be anticipated.  
Examples: Auxiliary skids, project specific fabrications
- **Type C** Less complex parts with little impact on safe operation, performance or reliability or components controlled on the industry level.  
Examples include components available to other companies to purchase (i.e. "off the shelf") which require little or no customization in order to meet GE Oil & Gas drawing or specification requirements, catalog items, simple machine parts, standard measuring devices.
- **Type R** Repair process that can but not necessarily include metallurgical or chemically intense sub processes. These processes are typically designed by GE repair engineering (RE) and require one or more special processes.  
Examples: weld repair, braze repair, coating application.

## 7. Requirements

### 7.1 Introduction

7.1.1 Purpose - The purpose of this Supplier Quality Requirements specification is to establish a set of procedures, practices and expectations pertaining to the quality of items purchased by GE Oil & Gas. The requirements set forth herein will ensure a consistent, quality based relationship between GE Oil & Gas and all its direct material suppliers.



7.1.2 General Guidelines - It is the responsibility of the supplier to define and implement a detailed quality system that ensures all products supplied to GE Oil & Gas conform to drawings and/or applicable specifications, and meets all the requirements set forth in this document. Any applicable industry standards (such as ANSI, AGMA, API, etc.) must also be incorporated into the system. This system must be made available to GE Oil & Gas for review upon request.

7.1.3 Communication - The GE Oil & Gas purchase order designates the Sourcing Representative who is the primary contact with the supplier for commercial issues. The SQE is the primary quality and technical contact and will be assigned by Sourcing Quality management as appropriate. Changes to purchase order requirements shall not be accepted by the supplier without a formal purchase order change, an approved SDR or through cleared nonconforming material reports (e.g., NCN). The supplier must identify and notify GE Oil & Gas of its designated point of contact for the qualification process.

## 7.2 Quality System

7.2.1 Minimum Quality System Requirements - The supplier must maintain a documented quality system to ensure control and conformance to the requirements of GE Oil & Gas drawings and specifications. Compliance to this requirement must be demonstrated by either of the following:

- Providing a copy of a current ISO 9001:2000 certification, or
- Successful completion of a quality management systems audit to the requirements of ISO 9001:2000 by GE Oil & Gas or GE Oil & Gas designated representatives, such as a third party auditor. The acceptance criteria for passing the quality systems audit shall be determined by the SQE and based on the criticality of product, service or manufacturing process used by the supplier.

7.2.2 Control of Special Processes - Suppliers must have specific, documented and controlled procedures for each special process performed. Special processes include, but are not limited to:



1. Brazing
2. Cleaning - Chemical and Mechanical
3. Coating
  - Diffusion coating
  - Thermal Spray
4. Die Casting
5. Eddy Current Testing
6. Forging and Hot Forming
7. Heat Treatment
  - Annealing
  - Nitriding
  - Stress Relief
8. High alloy cold forming
9. Hydrostatic testing
10. Investment casting
11. Liquid penetrant evaluation
12. Magnetic particle evaluation
13. Melting and raw Material Production
14. Nitriding/Carburizing/boriding
15. Non-Conventional Machining
  - STEM Drilling
  - ECM (Electro-Chemical Machining)
  - ECDM (Electro Chemical Discharge Machining)
16. Other forms of NDE
  - Fluorescent Penetrant
  - \*Thermal / Infrared
  - Thermoelectric Potential
17. Plating
18. Plating and surface preparation
19. Radiographic evaluation
20. Sand Casting
21. Screw machining
22. All Shot Peen, including GASP
23. Stamping
24. Superalloys machining
25. Grinding on Superalloys (Shrouds, Nozzles, Buckets)
26. Ultrasonic evaluation
27. Tool and Die Making
28. Welding
29. Babbitting of Bearings
30. Blade Extrusion Process
31. Electro-Discharge Machining (EDM)
32. Flame Hardening – Buckets
33. Laser Drilling, Cutting, Marking, cladding, welding
34. Macroetching
35. Metallography
36. Painting
37. Pickling (Rust removal) and Etching
38. Spin Pits - Cold Spin, \*Hot Spin
39. \*Spray Coating
  - Powder
  - Smoothcoat
40. Tenon Peening
41. Vacuum Plasma Spray (VPS)
42. \*Waterjet Strip



## 7.2.2.1 Process Specific Approval Requirements

### Welding

Suppliers, including sub-tier suppliers, performing welding as a primary value added process or when required by the SQE due to the critical nature of the weld shall be qualified in accordance with procedures and technical specifications proper applicable in GE Oil & Gas. Submittal of procedures for review and approval may be required. This certification may be performed by a third party, as required by GE Oil & Gas.

### NDE

Suppliers, including sub-tier suppliers, performing NDE shall be qualified in accordance with procedures and technical specifications proper applicable in GE Oil & Gas. Submittal of procedures for review and approval may be required. This certification may be performed by a third party, as required by GE Oil & Gas.

7.2.3 Record Retention -The supplier shall have a written procedure for the documentation and retention of quality and product records for products supplied to GE Oil & Gas as applicable and determined by the SQE during qualification. The record retention period shall be a minimum of ten (10) years unless otherwise specified by GE Oil & Gas. Records shall include, but are not limited to, product quality or inspection and test plans and results, material specifications, qualification documentation and certificates of conformance. Specific component record requirements may be specified in GE Oil & Gas purchase orders, contracts or specification. It is the responsibility of the supplier to determine the appropriate storage means to meet the retention requirement and allow for timely retrieval of records.

## 7.3 Supplier Approval

In order to receive a GE Oil & Gas production purchase order, a supplier must be *approved* per GE Oil & Gas Global Sourcing Quality Management System procedures. Criteria for approval could include, but is not limited to, the following:

- properly executed Mutual Non-Disclosure Agreement (MNDA),



- acknowledgement of compliance with GE Oil & Gas integrity guidelines,
- a documented quality system, technical capability,
- EHS compliance/employment practices,
- properly executed Terms & Conditions (T&C's) as required by the scope of supply and business segment,
- financial viability,
- customer service aptitude,
- strategic value.

The supplier approval process is performed prior to a purchase order being issued to the supplier. Once the approval process has been successfully completed, a supplier code will be issued to the supplier.

Different business segments may have additional applicable requirements.

## 7.4 Supplier Qualification

7.4.1 General Requirements - Once approved the supplier must be qualified for a specific process, part or commodity family. Through the qualification process, the supplier demonstrates ability to repeatedly provide high quality parts in accordance with requirements and expectations of the GE Oil & Gas business purchasing the material. A qualification program is defined and documented by a GE Oil & Gas qualification team. The supplier is required to perform the qualification using the documented qualification program plan as communicated by the SQE. Once the qualification program has been completed to the satisfaction of the qualification team and the supplier has received the approved Supplier Qualification Approval form (6.2.3.A), the supplier is then considered qualified to provide the specific process, part or commodity family.

Qualification is required in, but not limited to, the following cases:

- (1) A new or existing supplier is manufacturing production material for the first time for GE Oil & Gas
- (2) A design or process change has occurred at the supplier or at GE Oil & Gas, significantly changing the processing, form or function of the product
- (3) An existing supplier or critical sub-tier supplier changes its manufacturing location. Note: Reassessment of supplier approval will also be required when a manufacturing location is changed.



- (4) Quality issues arise at the supplier, putting current qualifications in doubt.
- (5) As required by GE Oil & Gas.

7.4.2 Sub-tier Suppliers - If a supplier chooses to outsource a process, the supplier is fully responsible for qualifying all sub-tier suppliers to GE Oil & Gas requirements and notifying GE Oil & Gas of this qualification. GE Oil & Gas reserves the right to

- 1) review the supplier's process for selection, qualification, and surveillance of sub-tier suppliers,
- 2) to approve, or disapprove, sub-tier supplier qualifications,
- 3) audit and monitor the sub-tier supplier's processes and facilities when deemed necessary. This requirement also applies if the supplier is a sales representative or distributor that procures from sub-tier suppliers for manufactured parts or assemblies.

The planned use and manufacturing location of any sub-tier supplier must be clearly identified in the MPP during the qualification process. Upon successful completion and qualification of the primary supplier, the sub-tier supplier identified as part of that qualification must not be changed without prior approval from GE Oil & Gas. This requirement shall also be applicable to GE Oil & Gas directed sub-tier suppliers.

7.4.3 First Piece Qualification (FPQ) -When required as part of a qualification program, an FPQ must be performed. This requires the supplier to manufacture a first piece of the item as outlined in the applicable GE Oil & Gas specifications and/or as defined by the appropriate Sourcing Quality and Engineering personnel. First Piece Qualification documentation must be submitted to GE Oil & Gas for review and approval. Upon successful completion of the FPQ, a supplier may request release of the material for shipment to GE Oil & Gas. Confirmation of this release must be documented and placed with the item to be shipped, as well as retained for the supplier's record. If the qualification program has been successfully completed, the supplier will receive an approved Supplier Qualification Approval Form (6.2.3.A) from the SQE. If the qualification program has not been completed, this release must be received from the SQE in the form of an approved SDR or other business specific document for accepting material noncompliant with GE Oil & Gas specifications and/or procedures prior to shipment. Materials shipped



without written authorization from the SQE will be considered non conforming material and may be shipped back to the supplier at their expense, or incur additional labor back-charges to the supplier.

**7.4.4 Pilot Lot Qualification (PLQ)** - A pilot production lot may be required as determined from GE Oil & Gas specifications or processes. In addition, the qualification team may require a pilot lot or additional pilot lot testing to verify control of the supplier's processes upon final qualification.

**7.4.5 Characteristic Accountability and Verification (CAV)** - When required by the qualification program, a CAV form must be completed and maintained by the supplier. The CAV form must include, at a minimum, the following items:

- (1) Identification of components
- (2) Characteristics and feature accountability
- (3) Inspection and test results
- (4) Manufacturing Planning
- (5) Production Product Acceptance Criteria

Product acceptance criteria must be established during the qualification process review of the CAV form. Once the level of inspection and product acceptance requirement has been determined and specified on the CAV form, it must be applied to all production components hereafter to ensure controlled processes for maintaining drawing features and characteristics.

**7.4.6 Process Risk Assessment** - When required by the qualification team, the supplier must perform a risk assessment of its manufacturing and quality assurance processes to evaluate the effectiveness of these processes to consistently produce the component, or provide the qualified service. The appropriate cross-functional supplier personnel must perform this risk assessment with the assistance and participation by the GE Oil & Gas Qualification team members as necessary. One format for this assessment is a Failure Modes & Effects Analysis (FMEA).

**7.4.7 Detailed Drawing, Manufacturing and Producibility Review** - Prior to part manufacturing, the supplier may be required to participate in a detailed drawing review with the GE Oil & Gas Qualification Team to ensure suppliers' thorough



understanding of drawing requirements and specifications during the qualification process. For Supplier Designed, non Build to Print (Functional Spec/Sourcing Controlled) type A, B1 and B2 items, the supplier may be required to participate in an Engineering Capabilities Assessment and Supplier Design Reviews with the GE Oil & Gas Qualification Team.

7.4.8 Manufacturing Process Plan An **MPP** must, at a minimum contain the following information:

(1) A list of all applicable GE Oil & Gas specifications, ordering sheets, outline drawings, and special process specifications/instructions along with the latest revision letter/number.

(2) List of Weld Procedure Specifications (WPS) and Procedure Qualification Records (PQR) used in the manufacture of the part.

NOTE: Welders and procedures must be qualified in accordance with ASME Section IX or similar governing agency specified on purchase order from GE Oil & Gas business.

(3) Identification of all component parts and sources.

(4) Identification of all critical sub-tier suppliers. Critical sub-tiers include but are not limited to Raw Material and any special process supplier.

(5) A sequence plan of all major and critical manufacturing and inspection steps with appropriate sign-off documentation. Supplier proprietary processes may be handled with the SQE directly.

(6) The manufacturing location.

(7) When applicable, a visual weld inspection procedure according to GE Oil & Gas docs.

Once the MPP is approved, the MPP shall be considered part of the purchase order requirements even if not explicitly referenced on the purchase order.



7.4.9 Product Quality Plan The PQP must, at a minimum, contain the following information:

- (1) Clear identification of the item, component, or system to which the PQP is applicable.
- (2) Listing of all technical documents that govern the inspection or test activity (i.e. supplier documents, GE Oil & Gas specifications, industry codes/standards).
- (3) Identification of the test or inspection criteria in an itemized listing. Each line item must identify what is to be inspected (to the characteristic level), how it is to be inspected, what frequency it is to be inspected, when the inspection or test is to be performed (in the sense of the manufacturing process), who is to perform the inspection (e.g., Operator, Inspector, etc.), and the acceptance criteria. Each item must include provision for sign off by the party performing the inspection.
- (4) Identification of Project specific inspections and tests.
- (5) Completion of each inspection and test will be accompanied by appropriate sign-off documentation. Each inspection and test must be signed-off during the execution of the PQP.
- (6) Clear definition of GE Oil & Gas and customer involvement in the inspection and test activities. This includes but is not limited to in-process inspections, customer witness and hold points, document reviews and GE Oil & Gas and/or customer release inspections.
- (7) Identification and verification of CTQs and inspection methods. CTQs can be identified by purchase orders, specifications, drawings, or by the appropriate SQE.
- (8) Detailed planning of packaging and preservation for shipment and storage.

The PQP or QCP may be included as part of the MPP or submitted as a separate document. In all cases, the PQP must be approved by the SQE.



## 7.4.10 Specific Item Type Qualification Requirements

- **Type A Qualification Requirements** Special control of the MPP applies. An MPP must be submitted to GE Oil & Gas for an SQE review and approval by a GE Oil & Gas Materials and Process Engineer (MPE) prior to manufacture of the product. This includes any imbedded or separately referenced special process procedures.

Following MPP approval or metallurgical engineer approval, GE Oil & Gas Materials and Process Engineering will issue a unique MPP approval number and the process will become a “Frozen Process” that the supplier must follow unless a waiver is obtained or the MPP is revised. Materials & Process Engineering must approve revisions to a frozen MPP.

- **Type B1 Qualification Requirements** An MPP must be submitted to GE Oil & Gas for an SQE review and approval prior to manufacture of the product. If required by the qualification team, the supplier must not change the MPP after completion of the qualification process without notifying and obtaining the approval of SQE.
- **Type B2 Qualification Requirements** An MPP must be submitted to GE Oil & Gas for an SQE review and approval prior to manufacture of the product.
- **Type C Qualification Requirements** For material classified as Item Type C, a CAV form or equivalent is required for an SQE review and approval. The CAV form will contain all characteristics as identified on the drawings and specifications.
- **Type R Qualification Requirements** For Type R items, the Repair Engineer (RE) defines the qualification requirements. The RE is responsible for working with the SQE to define and control the item type listing. The RE is responsible for the final approval of the MPP and other qualification documents, and for R type qualifications the RE may execute the SQE responsibilities for their specific components or services.



#### 7.4.11 Qualification Documentation

Qualification records, MPPs, material certifications, and related documentation records are subject to periodic review by GE Oil & Gas. GE Oil & Gas also reserves the right to request submittal of these records at any time.

A CAV form or equivalent form is required at time of shipment of the part. This is only required on the first piece unless specifically required by the SQE on subsequent orders or as indicated on the purchase order.

An Electronic Qualification Book must be submitted in accordance with requirements as outlined in Addendum A. Any deviations from these requirements must be accepted at the discretion of the SQE.

#### 7.4.12 Qualification Approval Form

Upon successful completion of the qualification program and receipt of the Supplier Qualification Approval Form (6.2.3.A), the supplier is released to fulfill subsequent purchase orders received from GE Oil & Gas. This qualification form indicates that, at the time of qualification and based on data provided by the supplier, the manufacturing process used to produce the component(s) or perform a process was capable of complying with GE Oil & Gas drawing and specification requirements. Qualification approval does not relieve the supplier of the full responsibility, on subsequent orders, to assure the manufacturing processes remain in control and the product or process supplied meets all drawing and specification requirements, unless formal, written approval for a deviation is obtained from GE Oil & Gas via an SDR or equivalent process.

### 7.5 GE Oil & Gas Supplier Policies and Requirements

#### 7.5.1 GE Oil & Gas Policy for Specification Transmittal to Suppliers

7.5.1.1 It is incumbent upon the supplier to review with the Sourcing Representative and/or SQE the appropriate document retrieval methods that may be specific to their business. It is also the responsibility of the supplier to review specification revisions with the Sourcing Representative



and/or SQE on a continuous basis to ensure that the correct revisions are being worked to. When suppliers receive a new purchase order, it is the supplier's responsibility to verify they have the latest revision of the specification called out on the drawings and purchase order.

7.5.1.2 Unless otherwise notified by GE Oil & Gas, suppliers are required to implement specification revisions on all existing and future purchase orders except where parts have already entered the manufacturing process. Any exceptions to this policy must be negotiated between the GE Oil & Gas Sourcing representative and supplier. If the supplier does not have the latest revision of any relevant specification as described in the latest GE Oil & Gas purchase order, it is the supplier's responsibility to request the latest revision of the specification.

## 7.5.2 Source Inspection and Test Witness Requirements

7.5.2.1 GE Oil & Gas and/or its customer may elect to inspect parts, and/or witness subassemblies at the supplier's facility during processing, testing, or at final inspection. All source inspection and test witness requirements are to be identified and coordinated through the GE Oil & Gas SQE, Quality Assurance, quality representative or other designated representative.

7.5.2.2 It will be the responsibility of the supplier to notify GE Oil & Gas in advance, when material will be ready for inspection according to PO requirements.

7.5.2.3 GE Oil & Gas and/or customer acceptance of product does not relieve the supplier of its obligations to supply components that meet drawing and purchase order requirements.

## 7.5.3 Supplier Deviation Request (SDR) Procedure

7.5.3.1 The supplier must submit a Supplier Deviation Request (eSDR) or equivalent to the SQE or business specific designate, for material which is identified as non-conforming. SDRs must also be submitted by the supplier for approval of alternate materials, processes, drawing errors, drawing



changes, and other deviations to the PO requirements. The request must include a complete description of the deviation, drawing number, zone of referenced area, material specification, the quality affected, and special processes involved in the repair (if applicable). Additionally, the specific material covered by the SDR must be identified on the SDR. For serialized parts, the serial number(s) must be identified; for non-serialized parts, the specific purchase order(s) must be identified. Non-conforming material may not be accepted or repaired without prior GE Oil & Gas approval.

7.5.3.2 The supplier is to promptly notify the GE Oil & Gas SQE of any quality related issues that develop with regard to GE Oil & Gas purchase orders.

7.5.3.3 The supplier shall not presume approval of the SDR until a dispositioned copy is made available to the supplier. In the eSDR or equivalent system, the disposition is complete when the SDR has been "cleared" or has passed through Status Code 8 (if eSDR tool is in place). The supplier may act on the disposition at that time, including shipping hardware that has been accepted in the SDR disposition.

7.5.3.4 If requested by the SQE, the supplier must send a copy of the approved SDR along with the part(s) at the time of shipment. Additional markings may also be required at the discretion of the SQE.

7.5.3.5 SDRs are "one-time" exceptions to GE Oil & Gas requirements. Unless the SDR involves a drawing change, GE Oil & Gas, expects the non-conformance(s) to be eliminated on subsequent deliveries.

7.5.3.6 SDRs should be submitted by the primary supplier (the Seller on the Purchase Order). Any deviations (e.g. drawing changes, material substitutions, etc.) related to a sub-tier supplier's scope should be submitted through the primary supplier. If a sub-tier supplier has a GE Oil & Gas - issued supplier code, then, with concurrence from the responsible SQE, the sub-tier supplier may be permitted to submit the SDR directly to GE Oil & Gas.



## 7.5.4 Corrective Action Procedure and Requirements

All suppliers are required to identify cause and actions for containment, correction, and prevention for any non-conformance to prevent reoccurrence. When a Non-Conformance Notice (NCN) at a GE Oil & Gas location or factory, a Field Service Notice (FSN), a Customer Complaint Reports (CCR) or a Customer Claim Management (CCM) at a customer site, or other equivalent non-conforming material control document is initiated, the supplier may receive a copy of the document along with a formal request for cause and containment action. This request of Root Cause Analysis (RCA) and consequent corrective action/preventive action is managed by the referenced SQE, to whom all informations and responses have to be provided by the Supplier. All reports are tracked by GE Oil & Gas and response is required. Actions remaining open longer than the specified period may result in disqualification of the supplier.

A cause and corrective action response must include the following:

(1) Identified root cause(s) of the non-conformance.

(2) Short & Long Term Action Plans

- Actions to identify, locate, and contain any components or materials that have shipped or are in process that may have similar non-conformances (Containment). If such material is already at a GE Oil & Gas or a customer site location, contact the Sourcing Quality Engineer immediately
- Corrective actions to address the existing non-conformances. These are actions intended to minimize the impact of the non-conformances on the customer in terms of quality and delivery
- Preventive actions designed to eliminate the root cause(s) and prevent future recurrence of the non-conformance. The supplier must provide and maintain documented evidence that the actions have been accomplished.

(3) Owner and completion dates of the actions' implementation. If the non-conformance is incorrectly charged to a supplier, this should be denoted on the corrective action request and sent to both the Sourcing representative and the SQE.

## 7.5.5 Supplier Manufacturing Location Change Requirements

All suppliers are required to notify their respective Sourcing representatives and SQEs in the event the supplier's manufacturing location changes from that specified on the approved MPP for a given item. Notification must take place prior



to manufacturing product and must be in writing. GE Oil & Gas reserves the right to reject any and all products not meeting the location requirements stated on the qualification form and/or approved MPP. The supplier will be responsible for shipping and handling charges that will be applied to any products rejected for this criterion. This requirement also applies to sub-tier supplier relocations

### 7.5.6 Process Capability

The supplier must measure and record data for all CTQ or Critical To Process (CTP) identified on the drawings and specifications and by the SQE. The supplier must regularly analyze the CTQ data for process capability and supply periodic reports to the SQE. Under the direction of the SQE, the supplier may be requested to execute improvement projects based on the process capability analysis.

## **8. Notes**

Various process or procedure forms (e.g. SDR forms, frozen process change request forms, etc.) referenced in this specification may be obtained from the appropriate GE Oil & Gas Sourcing representative.



**ADDENDUM A**  
**Electronic-Qualification Book**

This addendum defines the requirements for preparing and submitting an Electronic-Qualification book for inclusion into GE Oil & Gas e-SQM, or Sourcing Quality Electronic Library.

1.0 Qualification Documentation Requirements As the final requirement of the Qualification Process, the Supplier must submit one Electronic- Qualification book to GE Oil & Gas for all Qualifications

2.0 Qualification Book Requirements The Electronic- Qualification Book requires the following items, preferably in this order

| Section # | Quality Form Name   | Quality Form Description  |
|-----------|---|---|
| N/A       | Cover Sheet   | None  |
| N/A       | Table Of Contents   | None  |
| 1         | GE Oil & Gas Purchase Order   | Provide Copy of GE Oil & Gas Purchase Order for this Project  |
| 2         | GE Specifications/GE Oil & Gas Drawings                               | Provide a list of all GE Oil & Gas Specifications, and GE Oil & Gas Drawings, including Revision level.   |
| 3         | Supplier Drawings   | Provide copy of all Supplier generated drawings, including Revision level.  |
| 4         | Supplier Product Quality Plan (PQP)                                   | Provide a copy of the Supplier Product Quality Plan (PQP), signed and dated by the Supplier Quality Representative  |
| 5         | Supplier Manufacturing Process Plan (MPP)                             | Provide a copy of the Supplier Manufacturing Process Plan (MPP), signed and dated by the Manufacturing Representative and/or the Sub-Tier Suppliers used. |
| 6         | Characteristic Accountability and Verification Forms (CAV)            | Provide a copy of the CAV report for this project.  |
| 7         | GE Oil & Gas Qualification Program, GE Oil & Gas Product Quality Plan | Provide a copy of the GE Oil & Gas Qualification Program, and or GE Oil & Gas Product Quality Plan for this Project                                       |
| 8         | Bill of Materials (BOM)   | List to include Item #, description, model, etc...  |



|    |                                      |   |
|----|--------------------------------------|---|
| 9  | Component Conformance                | Include C of C for all major components: e.g., pump curves, testing certifications, calibration certificates, and relevant data sheets  |
| 10 | Design Calculations                  | Provide a copy of all design calculations for applicable Components/Systems (Pipe Stresses, Pipe Supports, Pressure Vessels, Lifting Lugs) per Domestic and International Codes   |
| 11 | Code Compliance                      | Provide a copy of all documents to validate this commodity meets all Domestic and International Code Compliances for the following but not limited to: CSA,CRN,IEC,CE,PED,ATEX,NEC  |
| 12 | Material Test Reports                | Provide copies of Material Test Reports for all material used on this Project to include, but not limited to the following: Piping, Structural Steel, Bolting materials (Bolts, nuts, washers), Tubing, Raw Materials, Welding Consumables                                |
| 13 | Welding Procedures                   | Provide a copy of the Welding/ Brazing Procedure, Specification, and all welder qualification records used on the Project.  |
| 14 | Nondestructive Testing               | Provide copy of all Nondestructive Testing procedures. Provide copy of NDT Personnel list qualified to perform NDT on this project. It includes but not limited to Suppliers written NDE Practice Per. ASNT SNT-TC-1A   |
| 15 | Castings and Forgings                | Provide all procedures, data and charts for the following processes: casting, machining, forging, bar stock   |
| 16 | Mechanical Testing and Heat Treating | Provide copy of all Hardness testing, Heat Treatment, Stress Relieving, Metallography, and Grain Etch procedures and results  |
| 17 | Surface Preparation and Painting     | Include all Metal Preparation, Prep for paint, paint procedures along with QA Paint data, signoffs, and paint specifications  |
| 18 | Calibration                          | Provide copy of all calibration procedures and certificates for all devices that were used and calibrated on this   |
| 19 | Functional Testing                   | Provide a copy of all Mechanical, Electrical, and Functional Tests performed. This should include testing procedures, documented data of all testing performed and signoffs that equipment passed testing.  |
| 20 | Proof Test, Type Test                | Provide Procedures and results for all Proof Tests, and Type tests performed on this Project ASNI Referenced. Include the methods to be used in all type and proof testing, either by ANSI, ASME, IEEE, IEC, NEMA or other standard procedures, or by written description |



|    |   |   |
|----|---|---|
| 21 | Flushing and Cleanliness                  | Provide a copy of the Flushing procedure and cleanliness procedure used to verify cleanliness per GE Oil & Gas business specification |
| 22 | Preservation and Packaging                | Provide a copy of procedures and data to verify compliance in accordance with GE Oil & Gas specifications.                            |
| 23 | Repair/Rework                             | Provide any Rework procedures and results   |
| 24 | Supplier- Inspection Reports              | Provide a copy of all Inspection reports, travelers, and other quality documents used in the Suppliers Facility                       |
| 25 | Critical to Quality (CTQ) Data            | Provide any Critical to Quality (CTQ) Data defined by the SQE for this project  |
| 26 | Supplier Deviation Record List            | Provide a copy or List all SDRs used on this Project  |
| 27 | Photographs of the Equipment              | Provide photos of the completed Commodity   |
| 28 | Packing List                              | Provide a copy of the Packing List  |
| 29 | GE Oil & Gas - Certificate of Conformance | Provide a copy of the C of C that is submitted to The GE Routing Center   |
| 30 | SQE Final Inspection Report               | Provide a copy the SQE's Final Inspection Report in this section  |

There may be cases where a hardcopy of the Qualification Book is also required. This requirement will be at the SQE's request.

### 3.0 Applicable Sections and Documents

The Supplier and the SQE shall discuss prior to submission of the Electronic-Qualification Book which Sections and Documents are applicable to the Commodity

### 4.0 Electronic- Qualification Book Format

Documentation is to be supplied in an Electronic Format, (PDF) is preferred. The Qualification Book shall be supplied on a CD labeled accordingly and sent to the SQE.

### 5.0 Qualification Book (Hardcopy)

There may be cases where a hardcopy of the Qualification Book is also required. This requirement will be at the SQE's request.