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1. Purpose and scope

1.1. Purpose

This general equipment fabrication specification (hereafter “specification”), when invoked, outlines the design, fabrication, assembly, testing, quality assurance, and documentation requirements for fabricated equipment procured by WRPS (Buyer). This is to be used in conjunction with the applicable datasheet, which can modify, add or delete requirements and/or quality clauses. Refer to the associated equipment datasheet(s) and/or drawings for detailed requirements. All associated documents will be identified in procurement documents.

1.2. Scope

This specification, when invoked, shall be used in conjunction with the associated drawings, equipment datasheet and quality requirements that applies to all organizations involved with fabrication of the specified equipment for the Buyer. Equipment specific datasheets that identify QL-3 quality requirements are also included as part of this Express of Interest (EOI) package.

1.3. Definitions

Approval: A written statement from an authorized Buyer representative.

Buyer: The organization responsible for establishment or procurement requirements and for issuance or administration, or both, of procurement documents.

Certificate of Compliance: A written statement, signed by a qualified party, attesting that the items or services are in accordance with specified requirements and accompanied by additional information to substantiate the statement.

Certificate of Conformance: A written statement, signed by a qualified party, certifying that the items or services comply with the specific requirements of the purchase order.

Certified Material Test Reports: A certification from the manufacturer that include actual results of all chemical analysis, tests, examination, and treatments required by the material specification.

Certified Test Report: A written and signed document, approved by a qualified party that contains sufficient data and information to verify the actual properties of items and the actual results of all required tests.

Certified Welding Inspector (CWI): A person with current certification as an AWS Certified Welding Inspector in conformance with the provisions of AWS QC1.

Drawing: Documents, usually depicting physical requirements, produced by WRPS or others that may provide additional information or requirements about the equipment being fabricated

Datasheet: Documents that provide additional information and requirements about the equipment being fabricated. This specification is intended to be used with an associated datasheets.

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Hold Point: A point in the fabrication/manufacturing sequence of operational steps when an inspection must be completed by an authorized Buyer quality representative prior to work proceeding to the next operational step. Work may not proceed beyond the designated operational step without either an authorized Buyer quality representative completing the inspection, or receipt of a written waiver from an authorized Buyer quality representative.

Note: The required amount of advance notification to be given to Buyer will be specified in design or procurement documents.

Non-conformance: A deficiency in characteristic, documentation, or procedure that renders the quality of an item unacceptable or indeterminate. Examples of non-conformance include; physical defects, test failures, incorrect or inadequate documentation, or deviation from prescribed processing, inspection or test procedures.

Progress Report: Biweekly statements of progress/updated schedule including status of major activities, milestones accomplished, variances and impact to overall schedule.

Qualified Party: A person or organization competent and recognized as knowledgeable to perform the specified functions.

Repair: The process of restoring a non-conforming characteristic to a condition such that the capability of an item to function reliably and safely is unimpaired, even though that item may not conform to the original requirement.

Rework: The process by which an item is made to conform to the original requirements by completion or correction.

Supplier: Any individual or organization who furnishes items or services in accordance with a procurement document. An all-inclusive term used in place of any of the following: vendor, seller, contractor, subcontractor, fabricator, consultant, and their sub-tier levels.

Weld Map: A listing of all welds, showing location, weld procedure, welder and NDE results.

Weld Repair Map: A listing of all repairs made by welding showing location, weld procedure, welder, and NDE results.

Witness Point: A point in the fabrication/manufacturing sequence of operational steps when an authorized Buyer quality representative must witness the performance of the designated operational step, unless the Buyer elects not to be present after the Buyer has received the required notification of the Witness Point. Written authorization to proceed is not required by the Buyer.

Note: The required amount of advance notification to be given to the Buyer will be specified in design or procurement documents.

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2. References

General references as applicable. Detailed references will be provided on the applicable equipment datasheets and drawings as part of the Request for proposal (RFP) when the design is finalized.

- 2.1. ASME BPVC Section IX, Welding and Brazing Qualifications.
- 2.2. ASME BPVC Section II, Materials and/or ASTM Material Standards.
- 2.3. ASME BPVC Section III, Division I, Subsection NF, Article NF 5000, Examination.
- 2.4. ASME BPVC Section V, Nondestructive Examination.
- 2.5. ASME NQA-1 – Quality Assurance Program Requirements for Nuclear Facilities.
- 2.6. Department of Energy (DOE) Order 414.D, Quality Assurance.
- 2.7. Steel Structures Painting Council, SSPC-SP1 Solvent Cleaning.
- 2.8. ASNT SNT-TC-1A Nondestructive Testing (NDT).
- 2.9. NQA-1 Appendix 2a-1 Nonmandatory Guidance for the Qualification of Inspection and Test Personnel.
- 2.10. AWS QC1 Standard for AWS Certification of Welding Inspector.
- 2.11. AWS D1.1, Structural Welding Code – Steel.
- 2.12. AWS D1.6, Structural Welding Code – Stainless Steel.
- 2.13. ASTM A435, Straight-Beam Ultrasonic Examination of Steel Plates.

3. General Requirements

3.1. Order of Precedence

- 3.1.1. The equipment shall conform to the drawings. Drawing requirements take precedence over datasheet and specification requirements.
- 3.1.2. Equipment datasheets are intended as additions (or deletions) to the requirements in the General Equipment Fabrication Specification. Equipment datasheet(s) requirements shall take precedence over the specification requirements.
- 3.1.3. In the event of any conflicts between this specification and any referenced documents, it shall be the responsibility of the Vendor to notify Buyer and obtain a

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resolution from the authorized Buyer representative using the RFI process. This also applies to any activities subcontracted by the Vendor.

3.2. QA Program

- 3.2.1. The Vendor's Quality Assurance Program (or the ability to meet the QA clauses as outlined in the specific datasheets) shall be submitted for review/approval prior to the start of fabrication.
- 3.2.2. Work shall be performed in accordance with the Vendor's approved QA program.
- 3.2.3. A contract Manufacturing Schedule is will be required in response to the RFP. The hold points and witness points shall be shown on the manufacturer's production schedule.
- 3.2.4. A notice of non-conformance shall be submitted for approval to the authorized Buyer representative for all non-conformances dispositioned as "use as is" or "repair" at a minimum. See datasheet quality clauses for specific non-conformance reporting requirements.
- 3.2.5. All deliverable documentation shall be complete, accurate, legible, and reproducible. Before delivery, documents shall be reviewed by qualified Buyer personnel for technical adequacy and appropriate content. The Vendor shall attest, in writing, to the accuracy and completeness of the information contained in the final deliverables.
- 3.2.6. The Vendor shall, during the performance of the contract, submit proposed changes to their approved quality assurance program to the Buyer for review and concurrence prior to implementation.
- 3.2.7. The Buyer shall coordinate with Vendor to conduct scheduled and periodic oversight of activities and products associated with the fabrication contract.

3.3. Equipment Numbering

See ILAW Container Transport Pallet Datasheet, Section 3.3.

3.4. Documentation

- 3.4.1. The required procedures, qualifications and documentation listed in the "Quality Clauses" attachment of this specification (Attachment 8.1) are identified in the associated equipment datasheet(s). Explanations of each specific clause are included in Attachment 8.2. Prior to starting any fabrication, all dates shall be agreed to with Buyer Technical Representative (BTR).
- 3.4.2. Required records and documentation are defined in the equipment datasheet(s). All required information shall be supplied to, and reviewed by, the Buyer prior to final equipment acceptance.

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- 3.4.3. Manufacturer shall provide Buyer a Certificate of Compliance, certifying that the equipment was fabricated in accordance with the purchase order, including all drawings, codes, standards and specifications. A record of any approved variances or deviations shall be attached.

4. Material Requirements

- 4.1. All material shall be as listed on the drawings. In the event that the manufacturer wishes to substitute a material, prior approval from the Buyer is required.
- 4.2. Materials that are marked CM in the drawing BOM shall have a Certificate of Conformance. A copy shall be included in the QA documentation package.
- 4.3. Materials marked QL-3 shall have certified material test reports (chemicals and physical) provided by the material manufacturer or an independent laboratory. A copy of this Certified Material Test Report (CMTR) shall be included in the QA documentation package. Traceability of material to the applicable certification shall be maintained throughout receiving, manufacture, final assembly, testing and acceptance.
- 4.4. Any changes to the materials and engineering requirements approved by the Buyer must follow all applicable QA procedures, as well as any applicable references from Section 2.
- 4.5. Materials used in the performance of this order shall be new (not used or reconditioned) and not of such age or deterioration as to impair the usefulness or safety of the equipment.
- 4.6. Unless stated otherwise, smaller plates and structural shapes may be welded together to form larger plates and structural shapes. Full penetration welds are required. All welding and NDE must meet the requirements of this Specification and the applicable code or standard requirements.
- 4.7. Unless otherwise stated in the equipment datasheet(s) or drawings, all defined material thickness for purchased plate and/or sheet materials are nominal.
- 4.8. All bolts, other than commercial grade, shall be manufactured in the United States. Commercial grade dedication of foreign manufactured fasteners may be used in lieu of US manufactured fasteners if approved by Buyer.
- 4.9. All weld material shall have CMTRs provided by the weld material manufacturer.

5. Fabrication Requirements

5.1. Welding

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- 5.1.1. All welding procedures used in performance of this order shall be written and qualified per Reference 2.11, 2.12 (as applicable) or as specified on the applicable datasheet. A copy of the welding procedures and weld procedure qualifications shall be submitted for Buyer review and approval prior to fabrication.
- 5.1.2. All welders used in performance of this order shall be qualified per Reference 2.11, 2.12 (as applicable) or as specified on the applicable datasheet. Welder qualification records shall be available for review by Buyer.
- 5.1.3. Starts, stops and pauses in seam weld layers shall be staggered. Longitudinal seam welds in concentric shells shall be located at staggered radial locations.

5.2. Painting

- 5.2.1. Carbon steel surfaces shall be coated as required by the purchase order, equipment datasheet(s) and/or as specified by the Buyer. Components, other than carbon steel, shall not be coated.
- 5.2.2. Prior to blasting and painting, all grease, oil, salts, chemicals and other contamination shall be removed per SSPC-SP1 (Reference 2.7) (solvent cleaning).
- 5.2.3. Carbon steel surfaces shall be prepared and painted in accordance with the requirements of the paint manufacturer. After completion of surface preparation, any residue shall be removed by air blasting or vacuum cleaning. Inspection shall be made of bolted joints and crevices, to preclude build-up of dirt, blast media and other contaminants.
- 5.2.4. Threaded and machined surfaces shall not be painted. These areas shall be masked or removed during the painting process.
- 5.2.5. Initial application of primer or paint shall be applied within 8 hours of surface preparation and cleaning and before any visible rusting occurs.

5.3. Cleanliness

- 5.3.1. The completed items shall be free of contamination such as metal chips, weld spatter, rust, scale, lubricants, dirt, lint, sandblasting grit, etc.

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6. Testing and Inspection

6.1. General

- 6.1.1. The manufacturer shall perform the inspection and/or tests required to substantiate that the supplies and services provided under this order conform to the equipment datasheet(s), drawings, specifications, and requirements listed and/or referenced herein. All QL-3 sub-assemblies and final products will be inspected based on a Buyer approved Quality Assurance Inspection Plan (QAIP).
- 6.1.2. All supplies (including raw materials, components, intermediate assemblies and end products) shall be subject to inspection and/or test by Buyer.
- 6.1.3. The manufacturer and subcontractors or suppliers during the duration of this contract shall allow Buyer authorized personnel access to all areas where items covered by this order are being prepared. The manufacturer shall provide the Buyer, upon request, with qualified Quality Assurance personnel and adequate inspection facilities to assist the Buyer in performing their oversight and inspections. Buyer personnel shall have free access at the manufacturer's or subcontractor's facility for any in process work and verification of the manufacturer's Quality Assurance Program.

6.2. Non-Destructive Examination (NDE) Requirements

- 6.2.1. The manufacturer shall submit for Buyer approval all NDE procedures that will be utilized during the fabrication and testing of the equipment. Approval prior to use shall be obtained from the authorized Buyer representative.
- 6.2.2. A copy of all NDE test reports shall be supplied to Buyer.
- 6.2.3. For non-destructive examinations to be performed by the manufacturer's or subcontractor's personnel, personnel qualifications shall be in accordance with Reference 2.8. A copy of these NDE personnel qualifications shall be available for Buyer review.
- 6.2.4. Visual inspection personnel, if not qualified per reference 2.8 shall be a CWI or qualified per Reference 2.9. A copy of the Visual Inspection personnel qualifications shall be available for Buyer review.
- 6.2.5. For plate material that is greater than 2 inches, ultrasonic testing shall be done within 6 inches of any lifting or tie down lug. All testing shall be in a 0.5 inch grid pattern. Acceptance shall be per Reference 2.13 Section 6.1 and Supplement S1.

6.3. Weld Inspection Requirements

- 6.3.1. All welds shall be visually inspected in accordance with Reference 2.11 or 2.12 (as applicable). Acceptance criteria shall be per the requirements of Reference 2.11 or 2.12 (as applicable).

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6.4. Load Test

- 6.4.1. All fabricate lifting points shall be load-tested. The load-test shall be at 1.5 times the design load for the lift point, listed on the drawing or in the equipment datasheet(s). A load test procedure shall be submitted for Buyer approval prior to performance of the load test.
- 6.4.2. Loading shall be in the expected or limiting direction and held for a minimum of 10 minutes.
- 6.4.3. After load testing, load bearing welds and critical areas of the lifting device shall be inspected in accordance with the NDE requirements of section 6.3.1. It is recommended that similar NDE tests be performed prior to load testing.
- 6.4.4. Load test is not required for lift points using a procured lifting component, (e.g. hoist ring) if provided with a load test certificate and installed in accordance with manufacturer's instructions and criteria for attachment.

6.5. Dimensional Inspection Requirements

- 6.5.1. The Vendor shall verify all critical dimensions.
- 6.5.2. Critical dimensions are to be listed by the Buyer on drawings and/or applicable datasheet. Documentation that the end product meets the dimensional requirements shall be provided by a dimensional conformance report.
- 6.5.3. Dimensions not meeting the tolerance requirements of the drawing require an NCR and a disposition from the Buyer. Dimensions not meeting the tolerance requirements and dispositioned "Use- as-is" and accepted by the Buyer shall be shown on an As Built drawing. The As Built drawing shall be included in the QA Data Package.

7. Packaging, Shipping, and Storage

- 7.1. The Buyer QA representative shall review the QA data package prior to final acceptance. The requirements for the QA data package will be listed in the datasheet.

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8. Attachments

- 8.1. Quality Clauses
- 8.2. Quality Clause Explanation

Note: The contractual requirements will appear in the appropriate datasheet with an X in the “Req” column designating those items that are applicable.

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Attachment 8.1: Quality Clauses

Type	Spec No.	Title	Req
Supplier Quality Assurance Program and flow down	QS01	Quality Assurance Program Submittal and Pre-Award Evaluation	
	QS02	Accredited QA Programs for Scientific Investigation and Calibration Services	
	QS03	DOE O 0333P Quality Assurance Requirements and Description (QARD)	
	QS05	Sub-tier Requirements Flow-down	
	QS06	Right of Access	
	QS07	Stop Work	
	QS08	Price Anderson Amendments Act Regulatory Liability	
	Design and Engineering Services	QS10	Use of Software for Design Calculations or Analysis
QS12		Design Calculations	
QS13		Design Output	
QS14		Design Verification – Review	
QS15		Design Verification-Qualification Testing	
QS16		Procurement of Commercial-Off-the-Shelf (COTS) software	
Items - New, CGI, and S/CI	QS20:	New and Unused	
	QS21	Suspect Counterfeit Materials	
	QS22	Commercial Grade Item Dedication – ASME	
	QS23	Commercial Grade Item Dedication – EPRI	
	QS24	Identification and Traceability of Items	
	QS25	Serialization of Items	
	QS26	Identification of Age Control Items	
Manufacturing, Fabrication and Source Verification	QS30	Initial Visit	
	QS31	Manufacturing, Inspection and Test Plan	
	QS32	Witness and Hold Points	
	QS33	Source Verification	
	QS34	Certificate of Conformance	
	QS36	Nonconformance Documentation and Reporting	
	QS37	Nonconformance Documentation and Corrective Action and/or Condition Reports	
	QS44	Inspection and Test Data	

Type	Spec No.	Title	Req
Inspection and Test Data	QS45	Inspection and Test Report	
Materials & Certifications	QS50	Fasteners	
	QS51	Electrical	
	QS52	Piping	
	QS53	Certified Material Test Report (CMTR)	
	QS54	Certificate of Analysis	
	QS55	Material Safety Data Sheets (MSDS)	
Welding and NDE	QS70:	Special Processes	
	QS71:	Personnel Qualification	
	QS72	Certified Weld Inspector (CWI)	
	QS73	Welding Procedures and Qualifications	
	QS74	First Weld – Hold Point	
	QS75	Welding Fabrication	
	QS76	Non-destructive Examination Process	
	QS77	Liquid Penetrant Material Certification	
	QS78	Fit-up and Welding	
Calibration and M&TE	QS80:	Calibration of Instrumentation	
	QS81:	Certificate of Calibration	
Final Data Package, Shipping & Receiving	QS90	Packaging/Shipping Procedures	
	QS91:	Receiving Inspection	
	QS92:	Supplier Data Verification Package	
	QS93:	Supplier Quality Shipment Release	
	QS94:	Storage Handling and Maintenance Requirements	
	QS95	Records Retention and Storage	

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Attachment 8.2: Quality Clause Explanation

QS01 Quality Assurance Program Submittal and Pre-award Evaluation

The Offeror/Supplier shall submit their QA program manual that addresses the QA requirements as identified in the Contract, Statement of Work, or applicable QA program requirements specification. The Supplier's QA program, written for compliance with a QA program standard other than the one imposed in the contract, may be acceptable if it complies with the QA program requirements specified.

The Buyer shall evaluate the Offeror's QA program prior to contract award. This evaluation may include an evaluation of QA program implementation at the Offeror's facilities. If a change to the Offeror's QA program is required, it will be identified to the Offeror for resolution prior to contract award. A deficient or inadequate QA program may be used as the basis to deny award of this contract.

The supplier shall, during the performance of this contract, implement, maintain, and perform work in accordance with their approved QA program and implementing procedures; and shall submit proposed changes to their QA program to the Buyer for review prior to implementation.

QS02 Accredited QA Programs for Scientific Investigation and Calibration Services

When purchasing analytical services to support scientific investigation, data to support scientific investigation or commercial calibration services from calibration laboratories accredited by a nationally recognized accrediting body, a QA Program is not required to be imposed. These procurements are to be controlled in accordance with applicable provisions for planning and control of purchased material, equipment and services, except the requirement for supplier qualification audit.

QS03 DOE O 0333P, Quality Assurance Requirements and Description (QARD)

As identified in the Contract, Statement of Work, or applicable QA program requirements specification, the Offeror/Supplier shall implement, maintain, and perform work in accordance with a QA program manual and implementing procedures that, in addition to NQA-1, adequately address the requirements of DOE/RW 0333P, Quality Assurance Requirements and Description (QARD), as applicable. The applicable QARD requirements shall be the parallel requirements of NQA-1 specified as applicable to the scope of work.

QS05 Sub-Tier Requirements Flowdown

When subcontracting any portion of this contract or when procuring structures, systems, components, items and materials, the supplier is required to flow down the applicable QA program requirements to the supplier. The Buyer reserves the right, at any time, to verify that applicable QA requirements have been correctly selected and imposed on supplier's sub-tier contractors and suppliers.

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QS06: Right of Access

The Buyer and Client representative, reserve the right to access the supplier's facility, including any lower tier subcontractor facility, to verify the quality of work, and to perform source inspections, surveillances, and audits at any stage of the work.

QS07: Stop Work

The Supplier's documented quality system shall provide for issuance of a Stop Work Order when the Supplier, the Buyer, or the Client identifies significant conditions adverse to quality or safety during performance of the work.

QS08: Price Anderson Amendments Act Regulatory Liability

The item(s) or service(s) required by the Purchase Order/Subcontract is related to nuclear or radiological safety, and is therefore subject to the Price-Anderson Amendments Act – 1988 (PAAA) and federal regulations 10 CFR 820, 10 CFR 830 Subpart A, and/or 10 CFR 835. Failure to implement and comply with the requirements of this Purchase Order/Contract or failure to provide factual information with regard to the quality of the product(s) or service(s) rendered could result in enforcement action by the Department of Energy (DOE) Office of Price Anderson Enforcement. Enforcement can result in civil penalties and/or criminal prosecution.

Design and Engineering Services

QS10: Use of Software for Design Calculations or Analysis

The Supplier shall implement and maintain a quality assurance program in accordance with applicable requirements of the Contract, Statement of Work, or applicable QA program requirements specification for control of software used for calculation or analysis where the results are not checked by alternate methods.

- a. The Supplier shall identify the software and version used or applied with each document, calculation, and/or analysis which shall be traceable to a documented verification and validation.
- b. Verification and Validation shall be documented covering the range of the results and shall be conducted in accordance the applicable QA program. A copy of the verification and validation package shall be provided with each calculation or analysis.
- c. The Contractor shall define the quality assurance (QA requirements) methodology applied during activities utilizing software. The Supplier shall identify what industry standard or commercial practice methodology is followed for the design, development, testing, and change control of their software.
- d. The Supplier shall describe the process for reporting and documenting software problems/errors, evaluating impacts of problems on measurements and uses, and determining the appropriate corrective action(s).

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QS12: Design Calculations

Design calculations for the item(s) shall be provided to the Buyer for approval, prior to initiating final design. Engineering calculations and analyses shall be fully checked by a qualified individual other than the originator, and shall be signed and dated as checked. All final submittals of calculations shall be bound and shall include the title and purpose of the calculation, a table of contents or index, complete list of references, design basis and complete list of assumptions (if any), methodology, and sufficient information to allow independent verification of the calculation. Calculations which are performed by computer or with computer assistance shall include a description of the hardware and software used, a description of the model employed if applicable, verification documentation of the computer program, and a copy of the computer input and output. All revisions to submitted calculations, as a result of comments by the Buyer or design changes by the Supplier, however minor, shall be resubmitted.

QS13: Design Output

Reproducible copies of applicable specifications, drawings, and/or descriptive catalog sheets shall be submitted as required by the Purchase Order. Product data shall include descriptive material, such as catalog data, diagrams, color charts, and other data published by the manufacturer, as well as evidence of compliance with safety and performance standards. To demonstrate conformance to the specified requirements, catalog numbers alone will not be acceptable. The data shall include the name and address of the nearest service and maintenance organization that regularly stocks repair parts. Product data submittals shall reference the applicable specification or drawing, and be complete for each item of work.

QS14: Design Verification – Review

Prior to release of the conceptual/preliminary/final design output, the Supplier shall:

- Schedule and conduct design review(s) as required by the Purchase Order.
- Notify the Buyer a minimum of 14 days in advance of scheduled design review meetings.
- Develop design review report documentation.
- Submit design review documentation as required by the Purchase Order.
- Notification to the Buyer shall include the meeting agenda and one reproducible copy of each document that constitutes the design output.

Design review documentation shall include:

- Design criteria.
- Applicable design input and output documentation.
- Review criteria.
- Actions and Personnel Assignments.

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QS15: Design Verification-Qualification Testing

Qualification testing shall be performed by the Supplier as required in the Purchase Order and Technical Specifications. Supplier use of lower-tier suppliers in the performance of qualification testing is subject to the approval of the Buyer prior to initiating test activities.

Qualification test documentation shall be submitted for approval as required by the Purchase Order before initiating final design work.

Qualification test procedures shall address the following for each performance parameter:

- Part No.
- Design Document No.
- PO/SUBCONTRACT No.
- Set-up Requirements.
- Test Sequence.
- Test Duration.
- Calibration Requirements.
- M&TE Requirements.
- Personnel Qualifications.
- Test Inputs/Outputs.
- Environmental Conditions.
- Data Recording Requirements.
- Failure Definitions.
- Failure Response Requirements.
- Items S/C I

QS16: Procurement of Commercial-Off-The-Shelf (COTS) Software

The Supplier shall provide User documentation describing the functionality and application of test cases.

The Supplier shall report software errors to the Purchaser and, as appropriate, the Purchaser shall report software errors to the Supplier and/or Client as appropriate. When errors are identified by the Supplier, the following information shall be provided to Atkins by the Supplier:

- (1) how the error relates to appropriate software engineering elements;
- (2) how the error impacts use of the computer program;
- (3) and how to avoid the error pending implementation of corrective action.

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Items - New, CGI, and S/C Items

QS20: New and Unused

Unless otherwise specified, all materials, components, and parts, required by the Purchase Order, including those permanently installed into systems, subsystem, and/or assemblies, shall be new and unused. Refurbished, rebuilt, or modified items are strictly prohibited unless specifically authorized in writing by the Buyer.

QS21: Suspect/Counterfeit Materials

Unless otherwise specified, items required by the Purchase Order shall be procured directly from the original manufacturer or an authorized master distributor. Items delivered under this Purchase Order will be inspected by the Buyer for indications of suspect or counterfeit conditions. Detection by the Buyer of any suspect or counterfeit item leading to evidence of deliberate misrepresentation of any supplied item, may result in an investigation into the validity of certification, fraud, and/or forgery. Additional information and guidance, including the DOE Suspect Headmark List, may be obtained at via internet from various DOE (.gov) sites.

Supplier is responsible for all costs associated with the discovery, removal and replacement of materials and equipment that contain or exhibit suspect or counterfeit item characteristics and conditions. Any materials furnished as part of this Contract which have been previously found to be suspect/counterfeit by the Department of Energy shall not be accepted.

QS22: Commercial Grade Item Dedication – ASME

When used by the Supplier, dedication of commercial grade items shall be performed in accordance with their Buyer approved procedure per ASME NQA-1. Supplier shall submit for Buyer approval their procedure describing the dedication process, the plan/approach for the affected item, and the results from implementation of the plan. Items subject to this process must be approved by the Buyer prior to use in the final assembly.

QS23: Commercial Grade Item Dedication – EPRI

Commercial Grade Item (CGI) dedication, if required, shall be in accordance with the specified requirements of the Electrical Power Research Institute (EPRI) NP-5652. However, neither Method 2 nor Method 4 may be used as the sole method to accept CGI. All CGI dedication packages shall be sent to the Buyer for approval. Existing components on Buyer-supplied equipment may be subject to the CGI dedication process.

QS24: Identification and Traceability of Items

Unless otherwise specified by the Purchase Order, procured items and materials shall be marked or physically identifiable and traceable to the PO and raw material heat/melt/lot. Physical material marking (such as stenciling, stamping, free handwriting, or printing) shall be used for identifying steel products and this marking shall be maintained on items until use.

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QS25: Serialization

The Supplier shall serialize all parts, components, subassemblies, and assemblies as required by this Purchase Order. Unless otherwise specified, each item shall be serialized sequentially and consecutively. Unless specified, serial number schemes shall be developed, controlled, and implemented by the Supplier.

QS26: Identification of Age Control Items

The Vendor shall identify each item, assembly, package, container, or material, having limited shelf life, with the cure date or date of manufacture and the expiration date. The Vendor shall specify any storage temperatures, humidity and environmental conditions which should be maintained. Material shall **NOT** be furnished having less than 75 percent of total shelf life available at time of shipment.

Manufacturing, Fabrication and Source Verification

QS30: Initial Visit

Prior to the start of manufacturing, the Buyer's Quality Representative or designee, may conduct a visit to review with management and appropriate staff, the requirements and performance expectations associated with work to be performed in accordance with the Purchase Order.

QS31: Manufacturing, Inspection and Test Plan (Traveler)

The Supplier shall submit a Manufacturing, Inspection and Test plan as required by this Purchase Order for Buyer approval. The plan shall detail the fabrication, assembly, installation, inspection, examination, and/or test processes to be performed. The plan shall be submitted prior to Supplier initiation of any manufacturing, inspection, or test activity, for incorporation of Buyer source inspection witness and hold points.

QS32: Witness and Hold Points

The Supplier shall notify the Buyer's Technical Representative (BTR) a minimum of 10 working days prior to the time any Hold / Witness points are reached.

Hold and Witness points are defined as follows:

- Hold (H): Fabrication feature/activity that requires witness / inspection by the Buyer's Quality / Technical representative before further fabrication is allowed to proceed. A hold point cannot be passed without written authorization from the Buyer.
- Witness. (W): Inspection at the option of Company. Work may proceed upon verbal release by the Buyer Quality Representative or one hour after scheduled time of witnessing.

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QS33: Source Verification

All items are subject to source verification by the Buyer’s Quality Representative at the Supplier’s facility. Supplier shall notify Buyer at least 10 days in advance of the time items will reach any Witness or Hold point established by the Buyer in the Procurement Package. Suppliers are responsible for source verification inspections of sub-supplier products.

QS34: Certificate of Conformance

The Vendor shall provide a legible/reproducible Certification of Conformance. Vendor’s authorized representative responsible for quality shall sign the Certification of Conformance.

This Certification of Conformance shall, as a minimum:

1. Identify the appropriate Contract number under which the material, equipment, item or service is being supplied
2. Identification of items, part number and/or serial number of item
3. Vendor/Manufacturer shall warrant that all items furnished meet the requirements of the Contract.
4. Identification of any nonconformance associated with the item.

One copy of the documentation, unless otherwise specified, shall accompany the applicable item shipped.

QS36: Nonconformance Documentation and Reporting

All nonconformances identified at the Vendor’s facility with a proposed disposition of “Use-As-Is” or “Repair” shall be approved by the Buyer before any corrective action is taken by the Vendor on the nonconformance.

Use-as-is: A disposition, with technical justification that a nonconforming item will satisfactorily perform its intended function without repair or rework.

Repair: A disposition, with technical justification, that a nonconforming item will meet the requirements listed in the disposition statement of the nonconformance report and will satisfactorily perform its intended function, after repair.

Nonconformances shall be documented by the Vendor on the Vendor’s nonconformance form. After documenting the nonconformance, proposed disposition and technical justification, the form/waiver shall be forwarded to the Buyer and the form/waiver shall be returned to the Vendor with a disposition of approval or rejection.

The Vendor may take corrective action on the nonconformance only after the form/waiver is approved by the Buyer. The Vendor’s completed nonconformance form shall be shipped with the affected item.

QS37: Nonconformance Documentation and Corrective Action and/or Condition Reports

All nonconformances, corrective action reports and condition reports identified at the Vendor's facility shall be transmitted within 5 days of initiation. Nonconformances shall be documented by the Vendor on the Vendor's nonconformance form. The Vendor may take corrective action on the nonconformance only after the form/waiver is approved by the Buyer. The Vendor's completed nonconformance form shall be shipped with the affected item.

Nonconformance reports with a proposed disposition of "Use-As-Is" or "Repair" shall be approved by the Buyer before any corrective action is taken by the Vendor on the nonconformance.

Use-as-is: A disposition, with technical justification that a nonconforming item will satisfactorily perform its intended function without repair or rework.

Repair: A disposition, with technical justification, that a nonconforming item will meet the requirements listed in the disposition statement of the nonconformance report and will satisfactorily perform its intended function, after repair.

Corrective action and/or condition reports shall provide a corrective action plan and actions verified prior to closure. If a causal analysis was performed for a condition adverse to quality, the analysis shall be included with the deficiency report. All deficiency reports i.e., nonconformance, corrective action report, condition report shall be included in the final documentation package.

Inspection and Test Data

QS44: Inspection and Test Data

Inspection or test data required by this Purchase Order shall include the following, as applicable:

- Part, Drawing, and Specification No.
- Serial No.
- Heat/melt Identification of Raw Material.
- Lot Identification of Each Item.
- Characteristic Subject to Inspection.
- Inspection Sequence.
- Acceptance Criteria and Source.
- Inspection Results.
- Examination Method.
- Measure & Test Equipment (M&TE).
- Inspection Setup.
- Environmental Conditions.
- Test Personnel Identification.
- Dated Approval Signature by Supplier authorized representative.

QS45: Inspection and Test Report

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The Vendor shall submit legible, reproducible copies of Inspection/Test Reports.

The report(s) shall include the following:

1. Identification of the applicable inspection and/or test procedure utilized.
2. Resulting data for all characteristics evaluated, as required by the governing inspection/test procedure.
3. Traceability to the item inspected/tested, (i.e., serial number, part number, lot number, etc.).
4. Signature of the Vendor's authorized representative or agency which performed the inspections/tests.

One copy of the documentation, unless otherwise specified, shall accompany the applicable item(s) shipped.

Materials, and Material Certifications

QS50: Fasteners

High Strength fasteners (i.e. grades 5, 8, 8.2, A325, and A490) received under this Purchase Order, shall exhibit both grade marks and the manufacturer's identification symbol (head mark), as required by the applicable fastener specification. Mixed lots and fasteners without head markings, or with head markings identified on the United States Department of Energy (DOE) Head mark List, are prohibited.

QS51: Electrical

Electrical items and equipment received under this Purchase Order, shall exhibit legible amperage and voltage ratings, operating parameters, and the product manufacturers' labels and identification. Items shall be supplied in the manufacturer's original packaging, and as applicable to the item, exhibit the Underwriters Laboratory (UL) or Factory Mutual (FM) labels.

QS52: Piping

Piping and piping system components delivered under this Purchase Order shall be supplied in the manufacturer's original packaging and/or containers, as applicable to the item. Piping products (pipe, fittings, flanges, etc...) shall clearly exhibit and maintain all markings as required by the applicable ordering data or specification(s). Piping system components (valves, pumps, etc...) shall clearly exhibit and maintain all markings as required by the ordering data or specifications and the original manufacturers' labels and identification.

QS53: Chemical and Physical Certified Material Test Report (CMTR)

The Supplier shall provide Certified Material Test Report(s) (CMTR) for material delivered under this Purchase Order as defined in the contract documents. CMTR documentation shall be legible and reproducible. CMTR documentation, as applicable, shall include:

- Identification of actual chemical and physical tests performed on a representative sample of the material heat/melt/lot and the results of each test performed.

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- Heat/Melt/Lot No.
- Applicable specification.
- Statement of Test Results Certification.
- Identification of Testing and Certifying organization.
- Traceability to the material and/or end item(s) delivered.
- Buyer's Purchase Order No.
- Physical marking/labeling of material is required to maintain CMTR Traceability. As a minimum, marking shall include:
 - Specification Designation.
 - Heat/Melt/Lot No.
 - Manufacturer Identification.
- Unless otherwise specified, CMTR documentation shall be delivered with shipment (WS) to the final destination.

QS54: Certificate of Analysis

The Supplier shall certify the constituents by analysis of the required item/materials, as required. The analytical measurements shall be traceable to the National Institute of Standards and Technology (NIST). Certificates of Analysis shall include:

- Analyzed concentrations.
- Analytical accuracy.
- Date of manufacture.
- Applicable lot number, packaging/markings, item count, sizes, pressure. (as applicable)
- Date of expiration/shelf life (as applicable).
- Statement of NIST traceability.
- Signature of Supplier's certifying authority, to include position title and date.

Unless otherwise specified by the Purchase Order, Certificates of Analysis shall be submitted w/shipment and materials with less than 75% of remaining shelf-life shall not be shipped to the Buyer.

QS55: Material Safety Data Sheets (MSDS)

The Supplier shall provide with shipment MSDS for chemicals and hazardous materials supplied, to satisfy the procurement documents. Hazardous materials shall be clearly identified.

Welding and NDE

QS70: Special Processes

Special processes used by the Supplier, such as welding, heat treatment, and nondestructive testing shall be performed in accordance with applicable AWS or Supplier-qualified and approved procedures. Supplier-qualified procedures (as allowed by the applicable code) shall be submitted for Buyer review and approval as required by this Purchase Order and shall include the following:

- Process Parameters.
- Process Control Measures.
- Environmental Conditions.
- Qualification Requirements.
- Calibration Requirements.
- Acceptance Criteria and Source.
- Records.

QS71: NDE Personnel Qualification

The Supplier shall submit personnel qualifications for all applicable NDE methods, in accordance with this Purchase Order. Personnel qualification shall comply with the Supplier's SNT-TC-1A based Written Practice and include the following, as applicable:

- Qualifications of Certifying Authority.
- Identification of Certified Personnel.
- Basis of Certified Personnel Qualification.
- Nondestructive Testing (NDT) Method and Certification Level.
- Initial Certification and Certification Expiration Date(s).
- Current and valid annual visual acuity examination, to include color perception.

QS72: Certified Weld Inspector (CWI)

Supplier personnel performing weld inspections shall be Certified Weld Inspectors (CWI) in accordance with the requirements specified in AWS QC-1 or SNT-TC-1A. The following documentation shall be available for Buyer review prior to start of fabrication:

- Current AWS/SNT-TC-1A CWI certificates.
- Current and valid visual acuity examination. (Annual for SNT-TC-1A, 3 years for AWS CWI)
- Visual weld inspection procedures.

QS73: Welding Procedures and Qualifications

Welding procedures, and welders, shall be qualified in accordance with the applicable requirements of AWS or ASME specifications as required by the procurement documents. The Supplier shall submit to the Buyer for approval copies of Welding Procedure Specifications (WPS), Procedure Qualification Records (PQR) (if applicable), and Welder Performance Qualification Test Records (PQTR) that will be employed in the performance of welding.

Changes and revisions to welding documentation must be re-submitted to the Buyer for approval prior to use.

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When subcontracting any portion of this work, the Vendor is required to invoke the applicable quality assurance program requirements on sub-tier vendors.

QS74: First Weld - Hold Point

A first weld demonstration for each welding process shall be a mandatory hold point and shall be witnessed by a Buyer Quality representative (BQR) prior to use of the weld process in any fabrication activity. Weld procedures and qualifications records for welds to be used shall be qualified in accordance with QS73 prior to the first weld and shall be available at the site of first weld demonstration. First weld shall be demonstrated by a qualified welder and a qualified weld inspector shall be present to inspect first weld.

Buyer shall be notified 10 days prior to First Weld Hold point or as specified in procurement documents.

QS75: Welding Fabrication

The Supplier shall maintain weld data for each weld, in accordance with this Purchase Order. Weld data records shall include the following, as applicable:

- Weld Map.
- Weld Date.
- Weld ID.
- Weld Procedure and revisions.
- Acceptance Criteria.
- Fit-up Inspection.
- Welder ID.
- Filler Metal Heat/lot No.
- Base Metal Heat No.
- NDE Method and Results.

QS76: Non-destructive Examination Process

Non-destructive examination (NDE) personnel shall be qualified and certified in accordance with the recommended guidelines of the American Society of Non-destructive Testing's (ASNT) SNT-TC-1A unless otherwise specified in the Purchase Order.

- NDE qualification and certification procedures
- Personnel Level I, II, and III qualifications and certifications which include objective evidence of NDE training, formal education, examinations, experience, date of hire, and current visual acuity (less than one (1) year old) and color differentiation examination records.
- NDE method/examination procedures that are in accordance with the applicable codes/standards specified in procurement documents.

All NDE reports shall be traceable to the item examined, include all essential examination parameters, and signed and dated by the NDE examiner. All NDE reports and radiographs shall be available for Buyer review.

When subcontracting any portion of this work, the Vendor is required to invoke the applicable quality assurance program requirements on the sub-tier vendors.

QS77: Liquid Penetrant Material Certification

A certification of contaminant content shall be available for Buyer review for each batch of penetrant, cleaner, developer, or emulsifier provided for use. The certification shall include the test results which meet the requirements of ASME Section V, Article 6, and the latest mandatory addenda, or procurement specified addenda.

QS78: Fitup and Welding

For fit-up and welding hold/witness points, the fabricator's certified welding inspector shall be present for this activity. The Atkins Buyer Quality Representative shall verify, one time only for the first use, the Atkins approved Welding Procedure Specification for each process (GTAW, GMAW, FCAW, SMAW, etc.).

Calibration and M&TE

QS80: Calibration of Instrumentation

The Supplier shall implement and maintain a calibration system in accordance with ANSI/NCSL Z540-1, American National Standard for Calibration, or an equivalent standard. The Buyer may accept accreditation of the Suppliers calibration system by a National Cooperation for Laboratory Accreditation (NACLA) approved accreditation body, in lieu of Buyer review and approval.

QS81: Certificate of Calibration

The Supplier shall provide a Certificate of Calibration report, traceable to the instrument or component requiring calibration, using standards whose calibration is traceable to the National Institute of Standards and Technology, or other documented evidence must be submitted stating the basis of the calibration.

The Certificate of Calibration shall include:

- Identification of the item being calibrated.
- Date calibrated.
- Identification of the calibration source.
- Calibration results (data and status) including any out of calibration conditions.
- Calibration action taken (adjusted, repaired, new value assigned, de-rated, etc.).
- Signature of Certifying Authority

Final Inspection and Shipping

QS90: Packaging/Shipping Procedures

The Vendor shall prepare and submit, prior to use, procedures for the packaging and shipping items during the performance of this Contract. The procedures shall include as appropriate cleanliness inspections prior to packaging, use of preservatives and coatings, descriptions of specially designed shipping containers, handling and rigging procedures, final inspections, and the type of transfer and shipping vehicles. Examples of the packing and shipping inspection forms shall be included in the procedures.

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QS91: Receiving Inspection

All deliverables required by this Purchase Order will be inspected and/or tested for acceptance by the Buyer at the final destination. Inspections/tests performed are intended to verify product compliance with the Purchase Order requirements to include all physical and chemical characteristics and all required documentation. All discrepancies in product quality and/or documentation will be documented and reported in accordance with the Buyers internal procedures. All reported discrepancies require resolution prior to acceptance and payment.

QS92: Supplier data Verification Package

The Supplier shall prepare and submit with shipment, a compilation of documents as evidence that completed work and required documents meet the requirements of the procurement documents. Unless stated otherwise in the procurement documents, this package is to be reviewed and approved by the Buyer's Quality Representative prior to the item being released for shipment. The Buyer will provide the signed Supplier data Verification Package Form to the Supplier as a release for shipping.

QS93: Supplier Quality Shipment Release

The Supplier shall obtain a Supplier data Verification Package the authorized Buyer Quality Representative prior to shipment of items required by this Purchase Order to the specified final destination. The SQR shall be documented and included with Shipment Data. Items received by the Buyer without the required SQR documentation will not be accepted.

QS94: Storage Handling and Maintenance Requirements

The Supplier shall provide any storage, handling and maintenance requirements associated with items and materials being supplied as part of this Purchase Order.

QS95: Records Retention & Access

Records maintained by the Supplier at their facility or other location shall be retained in accordance with procurement document requirements or until project completion and shall, upon request, be accessible to the Purchaser or their designated alternate, e.g., Client organization.