



SUPPLIER QUALITY REQUIREMENTS (SQR)

**Revision 2
As of 4/8/21**

Supplier Quality Requirements (SQRs)

Listed below are the current JWF Supplier SQR's. All non-applicable SQR's have been removed from this manual.

SQR02 **DFAR Compliant Material**

Flow down & requirements from customer. FAI, DFARS (GPA country if non-specialty metal. Links below with all DEFAR's & GPA countries listed.)

DFAR's Countries: https://www.acq.osd.mil/dpap/dars/dfars/html/current/225_0.htm

GPA Countries: https://www.wto.org/english/tratop_e/gproc_e/memobs_e.htm

Above links are for reference only. The countries can change at any time. It is the supplier's responsibilities to check current info.

SQR03 General Workmanship Requirements. All finished surfaces shall be protected against foreign material and damage during manufacture and storage prior to delivery. Material shall not be treated or touched up in any manner to conceal defects and shall be free from defects which adversely affect the performance or longevity of the item. Salvaging operations (e.g., hammering to shape, straightness, bending), welding or other means for the repair of defects in materials shall not be performed unless specifically authorized by the procuring activity. Evidence of poor workmanship include the following: scratches in excess of drawing and specification requirements, burrs, corrosion and non-specified oxidation, tool scores, gouges, deformations, knife edges, fins, excess metal, and missing or damaged protective finish. Unless otherwise allowed per the drawing, finished parts shall not have seams, laps, laminations, cracks, visible steps, or sharp edges and corners. These conditions may affect serviceability, functioning, appearance or safety.

SQR04 JWFI First Article Inspection. First Article Inspection (FAI) is required on this order.

Two (2) First Article Inspections are required.

Submit two (2) separate First Article Inspection Reports for the first two (2) parts/assemblies built.

The FAI requirement is mandatory on PO numbers ending in "-06" or if the PO contains a statement requiring FAI. Otherwise, FAI may be waived if:

- No part configuration changes have occurred (revision changes),
- No more than Six Month break in production,
- No formal corrective action has been requested by JWFI,
- Part is manufactured at the same facility (same supplier),
- Manufacturing process has remained the same. This includes:
 - Any method that effects the generation of a design characteristic including routing sequence , methods of machining, machine programming, different machine from what was used to produce FAI, or assembly and test),
 - Tooling - Any part specific manufacturing designed fixture that holds the part during manufacturing.
 - Materials - Those design characteristics specified on drawings that define the material type that the item is to be fabricated from.
 - A change in numerical control program or translation to another media that can potentially affect fit, form or function. Numerical control translation is defined as taking an existing NC program and transferring it to another programmable software or post processing software

SQR's

- Inspection method(s) - Gauging designed by the manufacturing facility to accept design features.
- Any supplier sub-tier suppliers and special processors have not changed,
- Location of manufacture (the physical site of product manufacture, inspection, assembly and test.
- A natural or man-made event, which may adversely affect the manufacturing process.

First Article Inspection (FAI) must be performed using the latest revision of JWFI forms on the web site <http://jwfds.com/wordpress1/supplier-portal>. First Article Inspection (FAI) shall be performed **prior** to product acceptance and/or shipment to JWFI.

Commercial off the Shelf (**COTS or Catalog items**) and standard hardware **are not subject to FAI**. For Custom/Modified off the Shelf assemblies and sub-assemblies, only the modification is subject to FAI.

FAI report Instructions:

All forms listed below MUST have the Printed Name & Signature of the person who prepared and approved the form.

Form 1: Part Number Accountability: To be used only when two (2) or more parts make up an assembly. This form is used to identify the parts that are being first-article inspected and associated subassemblies or detail parts. All material and part Certificate of Compliances (CoC) must be attached. All lower level assembly and part FAI's must be attached and follow the same format.

Form 2: Product Accountability - Raw Material, Specifications, Special Process(s), and Functional Testing: To be used only when special processes are involved – Reference SQR 21 for a list of special process. This form is used if any raw material, specification, special process or functional testing is defined as a Design Requirement. All special process data and Certificate of Compliances (CoC) must be attached.

Form 3: Characteristic Accountability, Verification and Compatibility Evaluation: To be used on all FAI parts. Every drawing characteristic (every note, dimension, geometric tolerance, drawing requirement, etc.) must be “ballooned” on a drawing and the associated characteristic transferred to Form 3. This includes:

- The reference location on the drawing,
- The requirement,
- The actual measurement or result,
- What was used to verify/validate the characteristic requirement,
- Purchase Order Number ,
- Raw Material Heat Number,
- Raw Material Grade,
- Ballooned drawing for every note and every part dimension (notes first),
- All Notes Verified that apply to PO – Acknowledged by an “X” as complies or by data. Blank if not part of PO contract. N/A if not applicable to the part,
- All Dimensions Validated that apply to PO – Acknowledged by an “X” as acceptable with measurement data that apply. Blank if not part of PO contract.

FAI reports must be physically sent with the shipment.

Reference the latest revision of the Supplier First Article Inspection Guide on the JWF web site <http://jwfds.com/wordpress1/supplier-portal>. This guide is to be used to help the supplier send the correct documents with the shipment. The Guide does not have to accompany the shipment.

SQR05 Production Process Freeze. When this SQR is imposed by purchase order, any process utilized in the production of the supplier's, JWFI approved, First Article that JWFI identifies as critical must be adhered to. This includes all specified equipment, tooling, process steps and sequencing involved in the production of the completed article including any outside processing. The First article production piece will be submitted with the critical process description and any associated method sheets, this will be the mandated process for continued production of the products. Any changes to any aspect of the manufacturing processes designated as critical must be submitted to JWFI and approved prior to implementation of those changes in the frozen critical process. Failure to adhere to this requirement will subject the product to material rejection. JWFI will work expeditiously to support the supplier's request for change in processes identified as critical and will provide such approval in writing noting the nature of the changes and affectivity date, serial number, and/or lot/date code.

SQR06 Certificate of Compliance. Certificate of Compliance data shall be provided with each shipment. The CoC shall contain the following information and certification statement:

1. Company Name,
2. Company Address,
3. JWFI Purchase Order Number,
4. Part Number (as it appears on the PO),
5. Part Revision,
6. Quantity,
7. Serial Number(s) – if applicable,
8. Work order number(s) – if applicable,
9. Certification Statement: *“It is hereby certified that all material, parts, assemblies, and/or final product(s) furnished under this purchase order as listed herein are in compliance with the requirements of the purchase order, drawing(s), and/or specification(s). It is further certified that the product(s) furnished under this purchase order have been inspected and tested. Applicable supporting inspections, testing, and/or material/part specifications and test data not required as a deliverable under this purchase order are on file and available for review upon request”.*
10. Name of Person Certifying – Including Title,
11. Date

JWFI suggests that the supplier use the Certificate of Compliance Form located on the web site. This will speed up the receiving process and help your supplier scorecard rating.

SQR07 Raw Material Certification. The Supplier shall furnish a Certification of Test or a Mill Certification for raw material specified in this purchase order. The Raw Material Certification shall list material identification and shall identify, condition, chemical and physical properties data, heat number, and manufacturer or producer. Raw Material Certification data shall be

provided with each shipment. The Raw Material Certification shall contain the following information:

1. Company Name,
2. Company Address,
3. Material Description/Specification,
4. Quantity,
5. List material identification, condition, actual chemical and physical properties data and percentages, heat number, and manufacturer or producer, etc. – as applicable
6. Heat Number(s)
7. Lot Number(s) – if applicable
8. Country of Melt
9. Country of Manufacture
10. Person Certifying – Including Title,
11. Date
12. Attach applicable ballistic test certification – if armor material. This certification must be signed and dated by person/laboratory certifying

- SQR08 **JWFI Source Inspection.** Upon receipt of this purchase order requirement, the supplier shall contact JWFI Supplier Quality Engineering so that mandatory in-process and/or final inspection points can be agreed upon. Following establishment of the mandatory inspection points, the supplier shall notify the JWFI Supplier Quality Engineering at least five (5) working days prior to when items will be ready for the mandatory inspection point. The Supplier shall ensure that the JWFI Source Inspection Report is provided with each shipment.
- SQR09 **Government Source Inspection.** On receipt of this purchase order/subcontract, promptly furnish a copy to the Government Representative who normally services your facility. Prior to the start of fabrication, Government mandatory in-process and/or final inspection points must be agreed upon. Evidence of Government acceptance must be indicated on the packing sheet accompanying each shipment. In the event the representative or office cannot be located, contact JWFI Procurement.
- SQR10 **Acceptance Test Reports.** Include with each shipment a copy of the results of the lot or item acceptance test required by the applicable procurement specification. Where quantitative limits are established by the specification, the report shall indicate the limit and actual values obtained. The report must contain the signature of an authorized representative of the agency performing the tests.
- SQR11 **Material Traceability.** The supplier shall maintain systematic controls to ensure capability of tracing backwards to materials from which fabrication originated and forward to determine the location of like articles or materials within a level of process or assembly. Traceable data shall be provided when specified and must be traceable by serial number and requires that the end item be serialized. The assemblies/components or sub-assembled which make up the end item must be identifiable by a heat number, lot number, a part number, and/or a serial/lot number. Traceability shall extend to include evidence of the completion of each fabrication operation, specific test, and inspection on each subassembly and the final assembly. This evidence shall consist of a mark or check to indicate completion, a stamp or initial identifying the person performing the operation, and a date of completion.

- SQR12 **Customer Parts List.** Hardware supplied to this purchase order must be certified to the revision level as specified on the drawing.
- SQR15 **Identification of Limited Life (Shelf Life) and Temperature Sensitive Materials:** The supplier is required to provide items with at least a (1) year shelf life from the date of the JWFI purchase order. The date of manufacture and expiration date (month and year) is required.
- Temperature sensitive materials shall be marked and maintained within the limits specified for product during storage and shipment.
- SQR16 **Document Retention – Inspection and Testing Records.** Supplier shall retain verifiable evidence of inspection and tests performed and results obtained for a period of ten (10) years minimum after shipment. These records shall be identified to associated articles, including heat and lot numbers of materials, and unit or lot serialization as applicable. These records shall indicate the nature and number of observations made the number and type of deficiencies found, the quantities approved and rejected, and the nature of the corrective action taken.
- SQR17 **Commercial Welding Requirements – General.** Where welding processes are utilized the supplier shall adhere to the requirements of the American Welding Society. Where supplier generated Workmanship Standards are to be used the supplier shall submit, to JWFI, a copy for review.

All points to be welded shall meet the welding requirements defined in ANSI / AWS D1.1 and / or D14.3, D1.2, D1.3 and ANSI / AWS B1.11 as applicable.

Weld Procedures and Workmanship Specimens shall be furnished to the address listed below at least ten (10) days in advance of production welding. The specimens are to be fabricated using the submitted welding procedure specification (WPS). Following (WPS) approval by JWFI, the "weld specimen" and the "approved procedure" will be returned and is to be maintained by the supplier during the terms of the contract. For all parts that have been in continuous production and have not been affected by design changes, resubmission of weld specimens shall not be required unless the previously approved procedure is rejected.

*Weld Procedures and Workmanship Specimens
Attention: Quality Assurance Weld Engineer
JWF Industries
84 Iron Street
Johnstown, PA 15907*

- SQR18 **Military Welding Requirements – General.** Where welding processes are utilized the supplier shall adhere to the applicable military standard (i.e., MIL-W-12332, MIL-W-46132, MIL-STD-1595, etc.) as stated on the drawing or specification. Where supplier generated Workmanship Standards are to be used the supplier shall submit, to JWFI, a copy for review.

Weld Procedures and Workmanship Specimens shall be furnished to the address listed below at least ten (10) days in advance of production welding. The specimens are to be fabricated using the submitted welding procedure specification (WPS). Following (WPS) approval by JWFI, the "weld specimen" and the "approved procedure" will be returned and is to be maintained by the supplier during the terms of the contract. For all parts that have been in continuous production and have not been affected by design changes, resubmission of weld specimens shall not be required unless the previously approved procedure is rejected.

Weld Procedures and Workmanship Specimens
Attention: Quality Assurance Weld Engineer
JWF Industries
84 Iron Street
Johnstown, PA 15907

SQR19 Structural Welding Requirements – General. This clause defines requirements for structural welding. Application of these requirements does not relieve the supplier from responsibility to furnish acceptable supplies. A Quality Assurance Procedure (QAP) shall be documented.

As a minimum the QAP must describe drawing control, raw material inspection, detail part inspection, receiving inspection (for purchased parts / services), final inspection, calibration, and weld procedures. The QAP will be reviewed by JWFI prior to welding.

Material and process data (i.e. mill certifications and special process data) must be on file at your facility or your sub-tier supplier's facility. Piece part and assembly inspection records, including sub-tier supplier records must also be on file and shall be available to JWFI upon request.

Welding Procedure Specifications (WPS's) shall be defined for all welding (refer to ANSI/AWS D1.1, section 3).

Welders, welding operators and tack welders shall be qualified (refer to ANSI/AWS D1.1, section 4).

Weld inspection shall be in accordance with ANSI/AWS D1.1, section 6, frequency as follows:

- Fit up inspection shall be performed 100% on all welds on the first production unit and on 25% of the welds on the balance of the units to be produced.
- In process weld inspection (visual on each pass) shall be performed 100% on all welds on the first production unit and on 25% of the welds on the balance of the units to be produced.
- 100% fit-up inspection of "complete penetration" joints for all production weldments.
- Final weld inspection (visual) shall be performed 100% on all welds.

All activities performed after welding will require certification and 100% inspection for critical dimensions/features defined by JWFI prior to manufacture. This includes but is not limited to special processes.

Weld Procedures and Workmanship Specimens shall be furnished to the address listed below at least ten (10) days in advance of production welding. The specimens are to be fabricated using the submitted welding procedure specification (WPS). Following (WPS) approval by JWFI, the "weld specimen" and the "approved procedure" will be returned and is to be maintained by the supplier during the terms of the contract. For all parts that have been in continuous production and have not been affected by design changes, resubmission of weld specimens shall not be required unless the previously approved procedure is rejected.

Weld Procedures and Workmanship Specimens
Attention: Quality Assurance Weld Engineer
JWF Industries
84 Iron Street
Johnstown, PA 15907

SQR20 3rd Party Weld Certification (CWI). For suppliers performing welding as a primary value added process, inspection by a Certified Weld Inspector (CWI) is required. This certification may be performed by a third party, as required by JWFI, and may include:

- AWS (American Welding Society) Certified Fabricator
- ASME (American Society of Mechanical Engineers) boiler and pressure Vessel Fabrication Stamp Holder
- CWB Certification
- Major proof of qualification (Class E) in accordance with DIN 18800 part 7 “Steel structures, execution and manufacturer qualification”
- PED (Pressure Equipment Directive) Certification
- AISC (American Institute of Steel Construction) Certification
- Other suitable certifying bodies as determined by GEE

SQR21 Special Processes and Special Process Approvals. Special process suppliers and sub-tier suppliers such as welding, heat treating, plating, coating, and non-destructive testing, etc. must be performed by a JWFI approved supplier, JWFI customer approved supplier, or a NADCAP approved supplier. The current approval status of processing sub tier suppliers must be confirmed by JWFI prior to performing the process. Contact JWFI to determine current approval status. Sub-contract processing of product, that the suppliers were contracted to perform is prohibited by JWFI. Suppliers shall perform all processes, with the exception of those mentioned above. All deviations to this requirement require the written approval of JWFI. Special Processes are, but not limited to:

- Welding
- Brazing
- Chemical Film
- Anodize
- Alodine
- Impregnation
- Passivation
- Painting, coating, and surface preparation
- Shot blasting/peening (to enhance mechanical or performance properties)
- Soldering
- Chemical cleaning
- Plating
- Die casting
- All forms of Non-Destructive Examination (NDE)
- Forging and hot forming
- Heat treatment

- High-alloy cold forming
- Investment casting
- Melting and raw material production
- Non-conventional machining (ECM, EDM, STEM)
- Sand casting
- Stamping

When special process specifications (e.g. heat treat, soldering, welding, chemical film treatment, NDT, etc.) are a contract and/or drawing requirement, the supplier is responsible for maintaining a system to control special processes performed at his facilities and special processes performed at lower-tier facilities. Supplier shall perform systematic periodic evaluation of personnel equipment, methods, and material required in these special processes to assure positive control at all times. Objective evidence of these evaluations shall be maintained and made available to JWFI upon request. If such systems are not maintained by the supplier, all special processes must be performed by a JWFI Approved Supplier. To identify JWFI Approved Suppliers, contact JWFI Purchasing. JWFI reserves right to require approval and/or accomplish surveillance, review or audit of all aspects of supplier's special process prior to and/or during the period of performance of this order.

- SQR23 **Liquid Penetrant Inspection per ASTM E1417.** Personnel performing Penetrant Inspections shall be trained in accordance with applicable special process specifications. Personnel performing Penetrant Inspections shall be certified to SNT-TC-1a or NAS 410. Records of personnel certifications and sub tier supplier special process approvals shall be on file and available for review.
- SQR24 **Ultrasonic Inspection per AMS-STD-2154.** Personnel performing Ultrasonic Inspections shall be trained in accordance with applicable special process specifications. Personnel performing Ultrasonic Inspections shall be certified to SNT-TC-1a or NAS 410. Records of personnel certifications and sub tier supplier special process approvals shall be on file and available for review.
- SQR25 **Radiographic Inspection per ASTM E1742.** Personnel performing Radiographic Inspections shall be trained in accordance with applicable special process specifications. Personnel performing Radiographic Inspections shall be certified to ANT-TC-1a or NAS 410. Records of personnel certifications and sub tier supplier special process approvals shall be on file and available for review.
- SQR26 **Magnetic Particle Inspection per ASTM E1444.** Personnel performing Magnetic Particle Inspections shall be trained in accordance with applicable special process specifications. Personnel performing Magnetic Particle Inspections shall be certified to SNT-TC-1a or NAS 410. Records of personnel certifications and sub tier supplier special process approvals shall be on file and available for review.
- SQR31 **Mercury-Free Certification.** Material furnished under this SQR shall be free of mercury or the presence of mercury related contaminates. Compliance with this requirement shall be certified by the supplier and sub-tier supplier(s). Certification to accompany each shipment.
- SQR32 **Verification of Purchased Product.** During the performance of this order, JWFI, JWFI's customers, and/or a regulatory agency including an authorized government representative reserve the right to attend, review, verify and participate in the Supplier's Quality Systems and

associated manufacturing processes including inspection and testing of any work related to this contract. This activity must be performed in such a manner to not disrupt normal processing and shall be conducted on a non-interference basis. The customer may provide an assessment of requirements and processes related to the performance of this contract. JWFI' shall be afforded the right to verify at the suppliers premises (or supplier's subcontractor's premises) that the supplier's product (or supplier's subcontracted product) conforms to all specified requirements. Any JWFI' customer shall be afforded the same right.

SQR33 Identification, Cleanliness, Preservation and Packing Requirements. The supplier shall accomplish identification, cleaning, preservation and packaging per the following:

- **Raw Materials:**

- 1. Sheet and Coil Product:**

- Material must be free from rust and scale by means other than blasting
- Each item (JWFI part number) or bundle must be clearly identified with the following info to be applied by stencil or with a sticker with prior approval.
 - JWFI PO number
 - JWFI Part number and description as on PO
 - MTR Heat number

- 2. Plate Product:**

- Material must be blasted and free from rust and scale
- Each item (JWFI part number) or bundle must be visibly separated with blocking and each plate identified with the following info to be applied by stencil or with a sticker with prior approval.
 - JWFI's PO number
 - JWFI's Part number and description as on PO
 - MTR Heat number
 - Grain direction – (Only if cut down)

- 3. Armor Products – Armor produced from Plate, Sheet or Coil**

- Material must be blasted free from rust or scale
- Each item (JWFI part number) or bundle must be identified with the following info to be applied by stencil or with sticker with prior approval.
 - JWFI's PO number
 - JWFI's Part number and description as on PO
 - MTR Heat number
 - Grain direction – Plate Only (if cut down)

- 4. Structural Shapes:** Each item (JWFI part number) must be bundled or packaged separately and each bundle or package identified with the following info by tag or sticker.

- JWFI's purchase order number
- JWFI's Part number and description as on PO
- JWFI's full description
- MTR Heat number

- **Component Parts and Hardware:** Marking will be made using a contrasting nonpermanent ink which will not bleed through final painting/coating/finishing. We recommend Dykem Rinz Off Water Removable Temporary Ink.

Part will be marked with the part number as referenced on the PO

Items less than four (4) inches square should be bagged and tagged with above information unless customer specified on the part drawing, items over four (4) inches square should be marked in the lower left hand corner when viewing the component drawing.

Pallets must be in good condition and capable of standing up to the weight of the load being shipped.

Parts should arrive at JWFI's facilities without damage and in a similar condition as when they were shipped. Supplier compliance to the guidelines below is mandatory. Failure to comply will produce the same reaction as nonconforming parts.

Sheet and Coil Product:

- Must be delivered on a flatbed truck.
- Must be tarped and protected from the weather.
- If loaded with a crane. Each item (JWFI part number) must be separated with blocking and stacked tightly. Blocking must run parallel with the length of the trailer. Blocking must be a minimum of 4 inches from the edge of the material per side so it can be unloaded with a sheet lifter. Each lift or bundle CANNOT exceed 10,000 pounds.
- If loaded loose with a fork truck. Each item (JWFI part number) must be separated with blocking. Each bundle or lift must be loaded from the side of the truck, not from the rear. The blocking on bottom must run so the material can be accessible from the side of the truck. Each lift CANNOT exceed 3,000 pounds.
- If packaged on a skid and loaded with a fork truck. Each item (JWFI part number) must be clearly identified. If multiple items (JWFI part numbers) are packaged together, each item must be clearly separated and identified within the package (not outside of package). The skid must be loaded from the side of the truck, not from the rear. Each skid CANNOT exceed 3,000 pounds.

Plate Product/Master Plates (96"x240"/96"x288"):

- Must be delivered on a flatbed truck.
- Must be tarped and protected from the weather.
- Crane or fork truck loading.
- Each item (JWFI part number) must be separated with blocking. Blocking must run the width of the trailer. Blocking must be a minimum of 5" from the edges of material per side for crane unloading. Each lift **CANNOT** exceed **20,000 pounds**. Blocking must be between each lift.

Structural Shapes:

- Must be delivered on a flatbed truck.
- Must be tarped and protected from the weather.
- Crane loaded only.
- Each Item (JWFI part number) must be separated by bundle or lift and blocked so it is accessible without difficulty. Each bundle or lift CANNOT exceed 10,000 pounds.

Component Parts:

- Oversized items should be on pallets large enough so the item does not extend beyond the pallet
- Gross pallet weight may not exceed 3,000 lbs
- Any item over 40 lbs in weight should have a method by which the item can be transported on a fork truck
- Parts must be clearly and visibly separated in carton/containers. Do not mix multiple part numbers in cartons. The part number and quantity shipped should be clearly indicated on the carton.
- Large boxes should be no higher than 32 inches from the floor
- Pallets that are reusable should be clearly marked as such.

SQR35 Calibration Quality System Requirements. The Supplier's Calibration System shall conform to the requirements of the elements described in ISO 10012 and is subject to review and approval at all times by JWFI. Third party registration by an accredited registrar will be accepted. Any Supplier declaring system compliance to ISO 10012 with no formal accredited registrar will be reviewed. The Supplier's system will be subject to review and approval at all times by JWFI. The Supplier's signed certification must state:

1. Traceability to the National Institute of Standards and Traceability,
2. Tool or gage number, and
3. Contract number.

SQR43 Fastener Quality Requirements. The Supplier shall have a system which controls threaded steel fasteners Grade 5 and higher as defined in SAE-J429 and metric fasteners with strength designations of 8.8 and higher as defined by SAE-J1199, or DIN standards with equivalent strength designations.

These fasteners may be supplied to JWFI either bulk or as part of a subassembly.

The system shall ensure:

- Traceability of fastener lots back to the manufacturer
- Objective evidence that the fasteners meet all technical requirements
- Grade 8.1 or 8.2 fasteners are not acceptable

Fastener records shall be made available to JWFI upon request. A material certification is not required.

SQR47 Qualified Products List. The supplier providing products such as primers, enamels, oils, welding rod, batteries, switches, regulators, etc., direct to JWFI are responsible to furnish these products as listed on the applicable Qualified Products List (QPL) or have been approved for inclusion on such list. QPL records shall be made available to JWFI upon request. Supplier shall have access to the QPL records for a minimum of 7 years.

SQR49 Control of JWFI Furnished Material/Equipment, JWFI's Customer's Furnished Material/Equipment, and/or Government Furnished Material/Equipment. Raw material supplied by JWFI, JWFI' Customer, and/or the Government to be used in the supplier's finished product shall be inspected upon receipt for evidence of acceptance and be maintained throughout the manufacturing process per FAR 45.5 requirements. Equipment, tools, gauges, etc. supplied by JWFI, JWFI' Customer, and/or the Government to be used while processing the supplier's finished product shall be inspected upon receipt for evidence of acceptance, calibrated (if applicable and should be checked to assure due date does not affect period of performance), and maintained throughout the manufacturing process per FAR 45.5 requirements. The supplier must support JWFI during periodic customer/government audits.

JWFI Furnished Material/Equipment, JWFI's Customer's Furnished Material/Equipment, and/or Government Furnished Material/Equipment must be segregated and stored from other material.

SQR50 Requirement for 100% Inspection by the Supplier. The Supplier shall perform 100% inspection of all items to ensure conformance to drawing and specification requirements. Evidence of such inspections must be on file and available for review by JWFI Supplier Quality Assurance.

SQR53 Tensile Test. The tensile examinations and tests shall be conducted with testing equipment certified annually to ASTM E8 in accordance with the specified requirements of the applicable drawing.

SQR54 Charpy Impact Test. The charpy impact examinations and tests shall be conducted with testing equipment certified annually to ASTM E23 in accordance with the specified requirements of the applicable drawing.

SQR55 Macro-Etch Examination. Macro-etch results shall contain the examination and test performed, and shall include the material data on each specimen or sample. In no instance shall a sample face deformed by shearing or exhibiting flowed metal be selected or inspected for macro acceptance.

SQR56 Hardness Test. Brinell hardness testing shall be performed in accordance with ASTM E10. Rockwell hardness tests shall be performed in accordance with ASTM E18. The following applies to forgings and/or castings:

- A minimum of two hardness tests shall be conducted. One test for the thinnest cross-section and one test for the thickest cross section, if possible. Surface decarburization or any form of superficial hardening shall be removed, prior to hardness testing, by grinding or other suitable means. Material removal is .12 maximum for forgings and .03 maximum for castings. Preparation shall be carried out in such a way that any alteration of the surface hardness (e.g., heat or cold-working) is minimized. Care should be taken to avoid over-heating or cold-working the surface. The tested work piece surface must

be representative of the material. ASTM E1077 may be used as a reference for decarburization.

- Dimensions do not apply in areas tested for hardness. All hardness readings shall conform to the requirements of the drawing and conversions to HRC values will include rounding up (xx.5 or higher) or down (xx.4 or lower), if applicable.

SQR57 **Case Hardness Depth.** "Case depth" identified on a drawing is usually "total case depth." The recommended practice of measuring depth of case hardness is in accordance with ANSI/SAE J423. When case depths are specified on the drawing, the contractor shall record and maintain certified test reports of the case depth tests conducted and retain the tested specimens from each heat treat batch. The test reports shall contain, as a minimum case depth test data as follows:

- Test specimen identification, material, item nomenclature, heat treat batch number, drawing number and/or specification with revision symbol, date of drawing and/or specification.
- Test method, test conditions, characteristic measured, number of specimens tested, and specific test results obtained.

SQR60 **Heat Treat Report.** Each shipment shall be accompanied by a legible and reproducible copy of the detailed heat treatment cycle used. Details to include: Drawing requirement, specification, date, time, and temperature and quench method as applicable. Inspection reports must accompany the heat treat report. The report must contain the signature and title of the authorized representative of the agency performing the tests and inspections.

SQR66 **Hydraulic Preservation, Packaging, and Cleanliness.** Unless otherwise specified, all uncoated or unprotected ferrous and nonferrous metal surfaces (internal and/or external) shall be protected against rust and corrosion for a minimum of sixty (60) days from the date of shipment. If a corrosion-protected ferrous or nonferrous metal is to be imported into the United States, the corrosion protection substance must be certified to be in compliance with the Toxic Substance Control Act (TSCA) prior to leaving U.S. Customs. They shall be suitably packed to prevent shipping and handling damage. All openings (i.e., fuel, hydraulic, electrical connections, etc.) shall be adequately protected by closures to prevent contamination or damage. All fuel system and hydraulic components shall be free from visible contaminants, foreign material, rust or burrs. Internal cleaning of components shall be performed by flushing with a suitable solution or dry filtered air. Fuel system components shall be protected with corrosion-protective compound compatible with DF-1, DF-2 and JP8. Hydraulic components shall be protected with corrosion-protective compound compatible with standard hydraulic oils.

SQR67 **Wooden Pallets and Containers – Non-Manufactured Coniferous Wood Products.** All wooden pallets and wood containers produced entirely or in part of no manufactured softwood species shall be constructed from heat-treated coniferous material. This material must be certified accordingly by an accredited agency recognized by the American Lumber Standards Committee (ALSC) in accordance with Non-manufactured Wood Packaging Policy and Non-manufactured Wood Packaging Enforcement Regulations both dated May 30, 2001. Supplier shall maintain on file at their facility a certificate of conformance from the accredited heat treat facility.

SQR68 **Key Characteristics and Variation Management.** JWFI shall provide and identify Key Characteristics in which the Supplier must control. These shall be either (1) JWFI's Designs (and/or JWFI's customer's designs) and (2) Supplier's Designs. The Supplier shall collect Key

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Characteristic data and recorded data on JWFI approved control plan system. JWFI may also identify process parameters as key. When denoted, these key process parameters are considered as key characteristics and must be controlled accordingly. If key characteristics have not been provided, the supplier must evaluate for them. All parts, including first articles, required to be manufactured to this Key Characteristic Flow down requirement requirements shall be represented on a control plan, or equivalent, with the Key Characteristics block completed prior to going into production. The information on this form, or equivalent documentation, is auditable and must be revised as necessary.

1. JWFI Designs – When JWFI's drawing, specification, and/or Purchase Order includes "key characteristic" requirements, the Supplier shall utilize Variation Management (i.e., statistical process control methods) to ensure key characteristic integrity. Key characteristics are identified by the "KEY" symbol or word on the drawing, specification and/or Purchase Order. The Supplier shall develop control plans for applicable key characteristics and shall have a Cpk goal of 1.33 or better. VM/SPC data shall be retained by the Supplier and shall be provided to JWFI as part of their quality metrics. For more information regarding VM guidelines, see standard AS9103.
2. Supplier Designs – When Suppliers' designs include "key characteristics," the Supplier shall utilize Variation Management (i.e., statistical process control methods) to ensure key characteristic integrity. Key characteristics are defined as the features of a material, process or part whose variation has a significant influence on product fit, performance, service life, or manufacturability. The Supplier shall document a Variation Management system that emphasizes control of identified key characteristics and mitigates or eliminates them during the design effort. The Supplier shall submit the identified Key Characteristic(s) to JWFI for concurrence. For more information regarding key characteristics and Variation Management guidelines, see standard AS9103. VM/SPC data shall be retained by the Supplier and shall be provided to JWFI as part of their quality metrics. The Supplier shall develop control plans for applicable key characteristics and shall have a Cpk goal of 1.33 or better.

SQR 71 BAE Combat Systems Paint Requirements. This Supplier Quality Requirement (SQR) is for coating and painting process suppliers for JWFI's customer BAE US Combat Systems (formerly BAE Ground Systems) ONLY.

Exterior Paint Requirements:

For exterior vehicle components as defined by BAE Systems drawing/paint specification, substitute MIL-C-53039 or MIL-C-46168 Color 33446, 686 TAN in lieu of MIL-C-53039 or MIL-C-46168 color 34094, 383 GREEN, unless otherwise specified on the JWFI Purchase Order.

The following additional BAE Systems Quality Alert (date release: November 18, 2008) also applies to this order:

Marking Requirements:

1. As a minimum, all items submitted to BAE Systems shall be positively identified with the supplier site number and part number. This can be accomplished with stamps, etching, and the use of tags or bulk marking methods for smaller items (no more than 25 items per container). If a part is large enough to be marked, it shall be marked. MIL-STD-130 and drawings are for use as a guide. The top level assembly, as identified on

the purchase order, shall be marked. Sub-assemblies need not be marked unless the purchase order or drawing dictates marking or the sub-components are not attached to the major assembly.

Examples of identification:

SUPPLIER SITE NUMBER: V000124
PART NUMBER: 12553820

- a. Supplier Site Number: The assigned Supplier Site Number can be found on the first page of the purchase order under Supplier Site. The prefix "V" or VEN shall be included in the marking to identify the number as the Supplier Site Number
 - b. Part Number: All parts shall be identified with the complete BAE Systems part number. The part number is shown directly under the Item block on the purchase order.
2. All serialized items, hydraulic hoses, tubes, wiring harnesses, cables, wire assemblies, and buses require part marking per the drawing and or specification.

Reference: Paragraph 17 of BAE Ground Systems PQR Rev 01 document.

Painted Product:

1. All parts requiring a final finish applied by the supplier or their sub-tier shall have **a date or lot number** stamped on the parts traceable to when and where the parts were finished and what materials (batch/lot numbers) were used. The company applying the finish shall also be identified by the use of an ink stamp or other means of identification. Adhesive labels are not acceptable. This marking shall be in the vicinity of the part marking.
2. Only painters from the BAE Systems Recommended Painter list shall be used for finish applications on all BAE Systems product, unless permission to use another painter is approved in writing by Procurement Quality Assurance.

Finish (pretreatment) marking requirements have been rescinded from last Quality Alert.

CARC Paint Requirements:

Due to the influx of CARC painted part rejections from BAE Systems suppliers, the following measures are being revisited:

1. Application. Application and inspection of coatings shall be per the specifications listed on the drawing. If no specification is noted, use MIL-DTL -53072.
2. Dew point requirements for painting. All BAE Systems product must be five degrees Fahrenheit above the dew point before applying any finish. Other requirements as identified in the applicable specifications also apply.
3. Adhesion tests of finished product. Checks per the applicable specifications shall be made to determine the dry film thickness and adhesion of the CARC system on painted components. Testing shall be performed daily on production components or representative samples in an area of uniform film thickness. A minimum of two samples from each lot of components painted in a continuous process, not to exceed one shift of production, shall be tested. Test for dry film thickness in accordance with applicable

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specifications. A "lot" of components are identified as a work shift and or painter, to include color of topcoat, type of paint, and lot/batch number of both topcoat and primer.

4. Painted components.
 - a. Acceptance of sample components shall represent acceptance of all components painted at that facility during the shift/lot represented by that test.
 - b. Rejection of sample components shall represent rejection of all components painted at that facility during the shift/lot represented by that test. All components represented by that test shall be 100% inspected and reworked to assure conformance to applicable requirements.

These requirements are not new but are within specifications and requirements that are flowed down within BAE Systems purchase orders. All evidence shall be documented and available for review by JWFI and BAE Systems when required. JWFI and/or BAE Systems also reserve the right to increase the frequency of the testing requirements as deemed necessary. Any questions to the above requirements shall be addressed to the JWFI Buyer.

SQR 73 Kongsberg Ballistic Resistant Materials. This Supplier Quality Requirement (SQR) is applicable to all ballistic resistant materials intended to provide protection against gunfire. Ballistic material must meet the following minimum performance requirements and methods of test for ballistic and weight properties:

- STANAG 4569 or NIJ Level III (7.62 mm x 51 NATO Ball; V=833 M/sec)

Proof of ballistic testing and acceptance to the above ballistic specifications from a qualified laboratory must be sent with the material certifications.

SQR77 Production Part Approval Process (PPAP). The purpose of PPAP is to determine if all customer responsible requirements are properly understood by the suppliers and that the supplier's manufacturing process has the capability to produce product consistently meeting these requirements during an actual production run at the quoted production rates.

If SQR77 is issued please contact JWF Quality Control thru your "Buyer" to establish the PPAP submission level and to coordinate or resolve any issues.

****Reference <http://farsite.hill.af.mil/> for all FAR & DFAR Requirements****

SQR80 DFAR 252.225-7008 Restriction on Acquisition of Specialty Metals.

SQR81 DFAR 252.225-7009 Restriction on Acquisition of Certain Articles Containing Specialty Metals.

SQR82 DFAR 252.225-7014 Preference for Domestic Specialty Metals, Alt 1.

SQR83 FAR 52.225-1 Buy American Act – Supplies.

SQR84 DFAR 252.225-7001 Buy American Act and Balance of Payments Program.

SQR85 **FAR 52.225-5 Trade Agreements Act.**

SQR86 **DFAR 252.225-7030 Restriction on Acquisition of Carbon, Alloy, and Armor Steel Plate.**

SQR87 **ASME - SA/SF Type Materials with appropriate certs**

All material supplied must be ASME SA, SB or SFA type material and be stated so on the material test report(s).

SQR 88 **ASME – ID Marking for Parts/Material processed by the supplier**

Suppliers that cut ASME Code pipe to lengths other than the common mill lengths. The supplier must apply the following information to each piece before shipment:

1. ASME material type and grade
2. Heat number
3. Company name performing the cutting

SQR89 **ASME – ID Marking for Parts/Material purchased by ETC**

All parts/ materials purchased to ASME Code must have the following information applied to each piece before shipment:

1. ETC part number
2. ASME Code material specification
3. Type and Grade on material
4. Heat Number

SQR90 **ASME – ID Marking for Parts/Material sub-contracted for ETC**

All parts/materials sub-contracted must have the following information applied to each piece before shipment:

1. ETC part number
2. ASME Code material specification
3. Type and Grade
4. Heat number

Supplier must also send Form U2A if parts/material are rolled and welded from plate.

SQR91 **ASME – ID Marking of Fittings / Flanges / Heads (MSS Requirements)**

All supplied Fittings / Flanges / Heads must be marked to Manufacturers Standardization Society (MSS) Specification. All parts/materials purchased must have the following on the part:

1. Trademark or Manufacture Name
2. Material Type and Grade
3. Melt
4. Size
5. Country of origin

SQR92 **100% NDT inspection of Armor Edge Condition**

All parts/material supplied from MIL-DTL-46100 or MIL-DTL-12560 Armor must have 100% non-destructive testing performed on the cut edge to look for cracks. Any cracks found are considered non-conforming and must be rejected. The non-destructive testing method can be

Liquid Penetrant Testing (PT) or Magnetic Particle Testing (MT). For NDT inspection personnel requirements, reference SQR 23 or SQR 26. NDT test report must be sent with the shipment or e-mailed to the buyer prior to shipment.

SQR93 Hardness Testing for Armor to determine the thermally cut Heat Effected Zone

A onetime documented Rockwell "C" hardness test must be conducted on armor parts made from MIL-DTL-46100 or MIL-DTL-12560 material. This test shall be determined by taking Rockwell C hardness test at 1/16" increments from the edge. This test will determine the Heat Effected Zone and must be done for every size of armor cut into parts and for every piece of equipment (laser, plasma, etc.) used to make the parts.

Heat effected zone:

1. $\leq \frac{1}{2}$ " thickness shall not exceed 1.2 times the plate thickness
2. $> \frac{1}{2}$ " thickness shall not exceed 5/8" from the cut edge

SQR 94 API Tank Bolting

Physical properties: 11,350 lbs. minimum breaking load.

Tension Test: Threads must meet minimum tensile load.

Head Test: Tension test failure must be in the threaded portion.

Number of Test: A lot sampling of 1 in 5000 pcs must be tested.

If one test fails two additional samples must pass to approval the lot of 5000 pieces.

SQR 95 KOG-DIR-0038

Parts manufactures must comply with directive KOG-DIR-0038.