JSC Engineering, Technology, and Science Contract

Quality Requirements

Attachment J-24

J24-1 SUPPLY CHAIN TRACEABILITY

For equipment manufactured, fabricated, or assembled and intended for use in space-flight applications, critical Ground Support Equipment, or when directed by Task Order, the Contractor shall maintain a method of item traceability that ensures tracking of the supply chain back to the manufacturer of Electrical, Electronic or Electro-mechanical (EEE) parts included in assemblies and subassemblies. This traceability shall clearly identify the name and location of all supply chain intermediaries from the manufacturer to the direct source of the product for the Contractor and shall include the manufacturer's batch identification for the item(s) such as date codes, lot codes, serializations, or other batch identifications. This clause does not apply to Commercial Off-the-Shelf equipment (i.e. end-items) unless directed by Task Order.

J24-2 SINGLE LOT/DATE CODE

The full quantity each part number of date code controlled Electrical, Electronic or Electro-mechanical (EEE) parts, for each project, provided under this contract for space-flight applications, critical Ground Support Equipment, or when directed by Task Order must have a single lot/date code. The Contractor shall obtain written approval from the Contracting Officer with concurrence from the JSC Parts Control Board prior to delivering goods that do not meet this single lot/date code requirement. The Contractor shall provide a copy of this written authorization at the time of delivery.
When mixed lot/date codes are authorized, the DD250, Material Inspection Record, shall list individual lot/date codes and quantity. Multiple lot/date codes shall not be co-mingled. In addition, the individual part containers shall be marked with the lot/date code and quantity.

J24-3 EEE PART CERTIFICATE OF CONFORMANCE

The Contractor shall obtain and approve Electrical, Electronic or Electro-mechanical (EEE) part manufacturer's Certificate of Conformance (CofC) for EEE parts procured for use in space-flight applications, critical Ground Support Equipment, or when directed by Task Order. The manufacturer's CofC shall, at a minimum, include the following:

1. Manufacturer's name and address
2. Manufacturer's and/or buyer's part identification number
3. Batch identification for the item(s) such as date codes, lot codes, serialization, or other batch identifications
4. Signature or stamp and date, with the title of the seller's authorized personnel signing the certificate.

J24-4 WORKMANSHIP REQUIREMENTS

The Contractor shall comply with the following standards, as applicable, in the design, manufacture, fabrication, or assembly of equipment suitable for space-flight applications, critical Ground Support Equipment, or when directed by Task Order:

- IPC 2221, "Generic Standard on Printed Board Design"
- IPC 2222, "Sectional Design Standard for Rigid Organic Printed Boards"
- IPC 6011, "Generic Performance Specification for Printed Boards"
- IPC 6012, "Qualification and Performance Specification for Printed Boards"
- IPC J-STD-001ES, "Space Applications Electronic Hardware Addendum to J-STD-001E Requirements for Soldered Electrical and Electronic Assemblies (Except Chapter 10)"
- NASA-STD-8739.1, "Workmanship Standard for Polymeric Application on Electronic Assemblies"
- NASA-STD-8739.4, "Crimping, Interconnecting Cables, Harnesses and Wiring"
- NASA-STD-8739.5, "Fiber Optic Terminations, Cable Assemblies, and Installations"
- S312-P-003B, "GSFC Procurement Specification for Rigid Printed Boards for Space Applications and Other High Reliability Users"

NASA Technical Standards for workmanship are available electronically at https://standards.nasa.gov

J24-5 FASTENER INTEGRITY

The Contractor shall comply with JPR 8730.2, "JSC Fastener Integrity Testing Program" for the manufacture, fabrication, or assembly of equipment suitable for space-flight applications, critical Ground Support Equipment, or when directed by Task Order.

J24-6 WIRE INTEGRITY

The Contractor shall comply with JSC 49879, "JSC Electrical Wire and Cable Integrity Compliance Program" for the manufacture, fabrication, or assembly of equipment suitable for space-flight applications, critical Ground Support Equipment, or when directed by Task Order.

J24-7 ELECTROSTATIC DISCHARGE (ESD) PROTECTION PROGRAM AND

PACKAGING

The Contractor shall comply with JPR 8730.1, "Electrostatic Discharge Control Requirements for the Protection of Electronic Components and Assemblies" for work conducted onsite at the Johnson Space Center. For work conducted offsite or subcontracted to a vendor, the Contractor shall ensure ANSI/ESD S20.20-2007, "Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)" is imposed and followed when said work involves ESD sensitive equipment. The Contractor shall comply with MIL-STD-1576, Military Standard: Electroexplosive Subsystem Safety Requirements and Test Methods For Space Systems for Electrically Initiated Explosive Devices.

J24-8 FOREIGN OBJECT DEBRIS (FOD) AND CONTAMINATION CONTROL

The Contractor shall comply with JPR 5322.1 "Contamination Control Requirements Manual".

J24-9 GUARANTEE OF PRODUCT SOURCE(S)

The Contractor shall ensure that only new and authentic parts or materials are used in products delivered to NASA for space-flight applications, critical Ground Support Equipment, or when directed by Task Order. The Contractor may only purchase parts directly from the Original Component Manufacturers (OCMs); OCM-authorized suppliers (e.g. franchised distributors), or authorized aftermarket manufacturers. Use of product that was not provided by these sources is not authorized unless first approved in writing by the Contracting Officer and, in the case of an Electrical, Electronic or Electro-mechanical (EEE) part, the JSC Parts Control Board. The Contractor must present compelling support for this request (e.g. OCM documentation that authenticates traceability of the parts to the OCM) and include in its request all actions to ensure the part(s) or material is authentic and conforming to specification. The Contractor shall provide a copy of this written authorization at the time of delivery.

J24-10 CERTIFICATE OF CONFORMANCE FOR RAW MATERIALS

The Contractor shall obtain and provide for each deliverable product a legible raw material manufacturer's test report (e.g. mill test report) that states the lot of material furnished has been tested, inspected, and found in conformance with applicable material specifications. The test report will list the specifications, including revision numbers or letters, to which the material has been tested and/or inspected and the identification of the

material lot to which it applies. When the material specification requires quantitative limits for chemical, mechanical, or physical properties, the test report will contain the actual test and/or inspection values obtained.

The Contractor shall comply with JWI 8730.7, "Validation Testing of Raw Materials".

This clause is only applicable to material procured for the manufacture, fabrication or assembly of equipment suitable for space-flight applications, critical Ground Support Equipment, or when directed by Task Order. This clause is not applicable to Commercial Off-the-Shelf products.

For instances where the Contractor is unable to obtain a legible manufacturer's test report (written in the English language), the Contractor shall request the services of the JSC Receiving Inspection and Test Facility (RITF) or an independent testing laboratory accredited by a nationally recognized laboratory accrediting organization, e.g. Nadcap, to obtain actual chemical, mechanical, and physical properties.

J24-11 CERTIFICATE OF CONFORMANCE – PRODUCTS

The Contractor shall provide a certification with each shipment of equipment suitable for space-flight applications, critical Ground Support Equipment, or when directed by Task Order to attest that the parts, assemblies, subassemblies, or detail parts conform to the order requirements. Certifications must contain the following:

- Customer's order number
- Product name
- Part identification number and, if applicable, serial number
- Name and address of the manufacturing or processing location
- If applicable, the true manufacturer's part identification, lot, heat, batch, date code, and/or serial number
- Quantity and unit of measurement (each, box, case, gallons, etc.)
- Signature of company official and date

J24-12 LIMITED OPERATING LIFE ITEMS

The Contractor shall collect data and maintain records of operating time or cycles for all items designated as Limited Operating Life Items by drawings or specifications. Records will include the total elapsed time or cycle for each operation, cumulative time or cycles starting with the first functional test remaining time or cycles. A copy of this data will be included within the Acceptance Data Package for each deliverable item traceable to the

individual item by part identification number and serial number.

J24-13 LIMITED LIFE AND AGE CONTROLLED (SHELF LIFE) ITEMS

Products suitable for space-flight applications, critical Ground Support Equipment, or when directed by Task Order require submittal of date of manufacture when shelf life is based on date of manufacture, or date of shipment from the manufacture when shelf life is based on date of shipment, as appropriate, based on specified method of shelf life determination.

Upon shipment, shelf life remaining shall meet the minimum shelf life specified on the order. If no shelf life is specified, seventy five (75) percent of the shelf life shall be remaining on products.

Certification must contain the following:

- Contract number
- Part identification number
- Manufacturer's name, lot, heat, batch, date code, and/or serial number (as applicable)
- Date of manufacture
- Date of shipment from manufacturer (as specified on the Order)`
- Organization's name and Organization's point of contact
- Date

J24-14 SPACE-FLIGHT HARDWARE PROCUREMENT

The Contractor shall include the following statement in all subcontracts and purchase orders placed by it in support of this contract for space-flight applications, without exception as to the amount or subcontract level:

"**FOR USE IN HUMAN SPACE FLIGHT; MATERIALS, MANUFACTURING, AND WORKMANSHIP OF THE HIGHEST QUALITY STANDARDS ARE ESSENTIAL TO ASTRONAUT SAFETY.**

IF YOU ARE ABLE TO SUPPLY THE DESIRED ITEM(S) WITH A HIGHER QUALITY THAN THAT OF THE ITEM(S) SPECIFIED OR PROPOSED, YOU ARE REQUESTED TO BRING THIS FACT TO THE IMMEDIATE ATTENTION OF THE PURCHASER."

J24-15 SPECIAL PROCESS CERTIFICATION

Certain special processes are required to comply with this contract for the manufacture, fabrication, assembly, testing, or operation of equipment suitable for space-flight applications, critical Ground Support Equipment, or when directed by Task Order. Special processes shall be performed only by sources that have been surveyed and qualified/approved by the Contractor or NASA to perform those tasks. The Contractor shall provide data/documentation into the NASA Supplier Assessment System database (http://sas.nasa.gov) showing evidence of special processor qualification and/or certification to perform special manufacturing, assembling, and testing as required by the contract. The Contractor may elect to use only NASA approved sources (e.g. Nadcap accredited sources).

A special process certification shall be provided with each shipment of item(s) delivered on this contract. Special process certifications may be in the supplier format but shall include the following:

- NASA contract number
- Part identification number(s)
- Serial and/or lot numbers of the hardware processed (if applicable)
- Material process specification and revision identifier
- Objective evidence demonstrating compliance with the applicable process (e.g. temperature charts and hardness test results for heat treatment, destructive test results.)
- Certification statement declaring the special process was performed per the applicable drawing or specification requirements
- Contractor's name and address
- When special processor is other than the Contractor, provide a certification of compliance from the special processor stating the special process was performed per the applicable drawing or specification requirements. Certifications must include the processor's name, address, and be signed and dated by a company official.
- Each certification must be signed and dated by a company official of the Contractor and/or processor attesting to the acceptance of the process performed to the required specification(s).

Note: A special process, as used in the context of this clause, is any process or service provision where subsequent monitoring or measurement cannot verify the resulting output. This includes any process where deficiencies become apparent only after the product is in use or service has been delivered. Examples may include, but are not limited to: Heat Treat, Nondestructive test or inspection, chemical or mechanical coatings (e.g. anodize, passivation), welding, unique or uncommon processes.

J24-16 SOFTWARE DEVELOPMENT

The Contractor shall develop software, firmware, and complex electronics (software development portion) in accordance with NPR 7150.2, "NASA Software Engineering Requirements".

J24-17 JSC DESIGN AND PROCEDURAL STANDARDS

The Contractor shall comply with JSC-STD-8080,"JSC Design and Procedural Standards". This clause is only applicable for the design, manufacture, fabrication, assembly, or test of space-flight equipment, Ground Support Equipment, or when directed by Task Order.

J24-18 PRESSURE VESSELS AND PRESSURIZED SYSTEMS

The contractor shall comply with JPR 1710.13, "Design, Inspection, and Certification of Pressure Vessels and Pressurized Systems," Section 1.3.c, for all JETS contractor-operated ground based Pressure Vessels/Systems (PV/S) on JSC property and JSC owned PV/S on JETS contractor property.