

SQ-100 Supplier Quality System Requirements Revision H, Dated October 2, 2017

Purpose

The intent of this document is to serve as a requirement and a general guide to the extent that quality control is required for suppliers and subcontractors. For the purposes of this document, suppliers and subcontractors will be collectively referred to as “suppliers” and the Purchase Order (PO) or Subcontractor Agreement issuer will be referred to as “contractor.” “Purchasing Representative” refers to the contractor’s buyer.

Applicability

The requirements contained in this document must be adhered to by the supplier. In the event a supplier desires an exception to the requirements contained herein, a Supplier Deviation Request (Appendix A) shall be submitted to the Purchasing Representative (Buyer) in order to retain the contractor’s Quality Team approval, prior to acceptance of a PO. If a conflict exists between the provisions of this document and those of the PO, the PO shall take precedence.

Supplier Contribution

The supplier is responsible for providing conforming product(s) and/or service(s) regardless of any outsourcing or involvement of sub-tier suppliers at any point in the supply chain.

The supplier shall establish safe practices within its organization in order to protect the life and health of employees, contractors, subcontractors, and other personnel in supplier facilities. These practices will be implemented to prevent loss through injury, disablement, or damage to property, materials, equipment or the environment.

The supplier shall also enforce the importance of ethical behavior within its work place, as well as within any applicable element of its supply chain.

Supplier Interactions with the Contractor

Changes in pricing, delivery specifications, scope of work and other direction shall be communicated to the supplier in writing by the contractor’s Purchasing Representative. Failure to comply with this requirement will be cause for rejection of shipment as nonconforming material and/or disapproval from the contractor’s Approved Vendor List (AVL).

Deviations and Substitutions

The supplier is required to comply with the specific requirements of any associated PO or Subcontract. No deviations, changes and/or substitutions in material, design, specifications, product configuration, or operating performance are permissible unless documented by a change order generated by the contractor’s Purchasing Representative or an approved deviation request. In order to request a change order or deviation, the supplier shall submit a Supplier Deviation Request located in Appendix A, to the contractor’s Purchasing Representative. The Purchasing Representative will forward the request for approval, as required by the contractor’s quality processes. In addition, suppliers shall not provide a substitute part or part number under this PO without written approval from the Purchasing Representative. Failure to comply with this requirement will be cause for rejection of shipment as nonconforming material.

Acronyms

ANSI	American National Standards Institute
ATP	Acceptance Test Plan
AVL	Approved Vendor List
AWS	American Welding Society
CC	Critical Characteristics
CCA	Circuit Card Assembly
C of C	Certificate of Conformance
CARC	Chemical Agent Resistant Coating
CSI	Critical Safety Items
ESD	Electrostatic Discharge
FAI	First Article Inspection
FIFO	First In - First Out
FOD	Foreign Object Damage
FSC	Federal Supply Classifications
GHS	Globally Harmonized System
GIDEP	Government-Industry Data Exchange Program
HAZMAT	Hazardous Material
MIL-SPEC	Military Specification
MTR	Material Test Report
NIST	National Institute of Standards and Technology
ODC	Ozone Depleting Chemical
ODS	Ozone Depleting Substance
OEM	Original Equipment Manufacturer
OCM	Original Component Manufacturer
OSHA	Occupational Safety and Health Administration
PO	Purchase Order
QMS	Quality Management System
QPD	Qualified Product Database
ROHS	Restriction of Hazardous Substances
SCAR	Supplier Corrective Action Request
SDS	Safety Data Sheet
SOW	Statement of Work
SPC	Statistical Process Data
TDP	Technical Data Package

QC-01 Process Control

The supplier shall maintain control and approval of all manufacturing processes, such as welding, soldering, plating, painting and inspection processes used in the fulfillment of any associated PO. The supplier shall maintain objective evidence of process qualification in accordance with applicable specifications; the approval status of which will be subject to review and may be disapproved by the contractor. Any deviation from required materials and/or processes that affect fit, form, or function shall be reported to the contractor's Purchasing Representative in order to obtain contractor's quality approval prior to use or application.

The supplier shall notify the contractor's quality department via the Purchasing Representative identified on the PO of changes to processes, products, or services, including changes of their external providers or location of manufacture, and obtain the contractor's approval prior to delivery of product(s) and service(s).

QC-02 Approval of Products and Services

Supplier acceptance of a PO indicates that the supplier has the full capability and all elements necessary to provide conforming product(s) and/or service(s) to the contractor for all products and/or services

described in a PO. Elements include, but are not limited to, tooling, equipment, capacity and qualified personnel. Delivery of non-conforming product due to insufficient, or inadequate, resources for these elements may result in disqualification from the AVL. Approval is based upon conformity as determined by the contractor's internal inspection and test procedures. Contractor acceptance does not absolve the supplier from providing acceptable product.

QC-03 Release & Disposition of Products and Services

Supplier conformance with this document as well as a PO are required before the release of product(s) and/or services to the contractor. Non-conforming product will not be delivered to the contractor unless prior authorization is received in writing from the Purchasing Representative. The supplier shall also immediately notify the contractor's Purchasing Representative in writing of all non-conformance(s) found after delivery. Any technical data, excess material or other items provided to the supplier by the contractor are subject to approval by the contractor prior to disposition.

QC-04 Right to Access: Surveys and Audits

Upon notice, supplier facilities and operations may be surveyed at any level of the supply chain either before or after the placement of any PO in order for the contractor to verify the supplier has the capabilities necessary to supply a product of consistent quality. When appropriate, the PO will detail any additional rights to inspect the vendor's premises and applicable records by Yulista, the customer and/or appropriate authorities. Upon notice, audits may be conducted to determine compliance with purchase requirements and the requirements of this document.

QC-05 Sub Tier-Suppliers

The supplier is required to assure that their sub-suppliers maintain an adequate inspection and quality system to assure product conformance. Each inspection or testing activity shall have documentation that describes detailed requirements such as parameters to be checked, statistical methods, sampling plan, nonconformance criteria, etc. Suppliers must flow down all requirements on any associated PO or subcontract agreement, including key characteristics, to all sub-suppliers. The use of sub-suppliers does not release the supplier of responsibility for the end product or service to the contractor.

QC-06 Supplier Qualification and Continued Measurement

The supplier shall have a quality management system (QMS) or industrial reputation that is acceptable to the contractor. Suppliers already certified to ISO9001, AS6081, AS9100, AS9110, AS9120, or are FAA Part 145 Repair Station-approved are preferred. One or more of the following will determine qualified suppliers, as well as a suppliers' on-going presence on the AVL: anti-counterfeiting programs; manufacturing and engineering capability surveys; product evaluation; compliance of procured material with PO requirements; quality system audits; and/or the promptness and effectiveness of corrective action taken by the supplier. A supplier's on-going presence on the AVL will be contingent upon satisfactory delivery performance, incoming inspection results, service levels and periodic reviews.

Continued measurement of approved suppliers is based on the aforementioned elements in the form of a supplier rating. This rating will provide comparative measures for determination of procurement sources and is calculated by a combination of the following: product acceptance is 40% of the overall score to include all non-conformances found during any inspection or testing process; on-time delivery performance is 30% of the overall score; customer satisfaction is 30% of the overall score and is calculated based upon the supplier's performance to include response time, frustrated deliveries, field escapes, Supplier Corrective Action Request SCAR(s) and results of source inspections.

QC-07 Supplier Quality System Requirements and Improvements

The supplier's quality system shall include a process that ensures professional services and products are initially tested and periodically re-tested in order to assess the supplier's ability to meet all requirements. All workmanship and engineering specifications shall be documented.

The supplier's quality system should be documented in a quality manual and traceable to a standard subset of procedures and work instructions. It shall be the responsibility of the supplier to perform internal audits on a periodic basis, and to maintain a quality system in compliance with terms agreed upon with the contractor.

The supplier shall establish and maintain a quality improvement program to improve and sustain the quality and reliability of the processes/product. The program shall be active and contain a prioritized list of scheduled quality issues being addressed. Completed internal corrective action reports made by the supplier shall be maintained in a recurrence file. Whenever it is suspected that a quality problem may be a recurrence of a similar problem on which a corrective action has been completed, the supplier's recurrence file shall be examined.

QC-08 Quality Records

Suppliers' quality records for products and deliverables shall be retained by the supplier for the duration of the contract, and thereafter for three (3) years from the inspection and acceptance of the last delivery. At a minimum, records shall include product identification, quantity of product inspected, inspection procedures followed, inspector, tester, quality representative, date of inspection, and number, type, and severity of defects found. These records shall be sufficient to prove conformance to all applicable specifications and drawings. Upon request, these records shall be made available to the contractor within two (2) business days.

QC-09 Training

Supplier personnel performing inspection, testing, assembly, integration and manufacturing shall be trained for the appropriate skill they are performing. When requested, records of such training shall be made available to the contractor. Additional personnel qualifications, if any, will be indicated on a PO.

QC-10 Calibration Control

The supplier's quality organization shall audit records and equipment to ensure that no "out-of-calibration" equipment is being used during testing and inspection of products provided to the contractor. The supplier shall control the calibration of all measuring devices against certified standards traceable to the National Institute of Standards and Technology (NIST). The supplier shall notify the contractor's Purchasing Representative of any items found to be out of calibration that effect any product delivered to the contractor as soon as it is discovered including any time after delivery.

All test equipment shall be validated to assure that it has the accuracy and resolution to measure the parameters being tested. The test equipment shall maintain repeatability within its allowable tolerances. All calibration will be traceable to relevant and appropriate standards. Tools, gauges, test equipment, etc., that are inactive or that do not require calibration shall be so identified.

Supplier calibration control is subject to audit and review by a contractor quality representative.

QC-11 Certificate of Conformance (C of C)

In order to assure conformity to the PO requirements, all deliveries to the contractor shall be accompanied with a certificate of conformance (C of C) provided by an authorized member of the supplier's quality management team. The C of C for electronic components shall contain the original component manufacturer (OCM).

The C of C shall serve as written verification that all parts, materials, processes, and finished items to be supplied under this or any associated PO or subcontract have been inspected, tested, and found to comply with the requirements of the PO. Revisions of referenced military specifications, military standards, drawings and specifications or other revision controlled requirement documents which are invoked by reference on the PO, are in effect as of the date of the PO to include drawings and specifications. A C of C from an original equipment manufacturer (OEM) or OCM of a product can replace a supplier's C of C as long as it can be traced to the original PO.

QC-12 Traceability

Upon request the supplier shall provide objective evidence of the quality of the item supplied; including manufacturing, assembly, inspection, test and special process records. All records relating to special requirements, key characteristics, and critical safety items (CSIs) shall be clearly identified and traceable to the date and place of production, OEM or OCM. Recorded evidence shall provide the degree of traceability required to enable subsequent verification of all aspects of material, manufacture, special processes, personnel certification, variability control charts, assembly and inspection of critical characteristics (CCs).

QC-13 Inspection and Test

Each inspection or testing activity shall have documentation that describes detailed requirements such as parameters to be checked, statistical methods, sampling plan, nonconformance criteria, etc. The supplier is required to perform a final inspection before delivery to the contractor.

When required by a PO or Subcontractor Agreement, an inspection and test plan (ATP) for the control of articles furnished in accordance with this PO shall be prepared and specifically written to outline the product flow from receipt of materials through fabrication, assembly, and test operations. The plan defines the inspection points throughout the manufacturing sequence and describes what, where, and when inspections shall be implemented to control the product. Upon request, this plan will be available for review by the contractor's quality representative.

Inspection and testing results shall be recorded and analyzed using control charts or a similar technique, as appropriate, for the purpose of identifying problem areas and monitoring the effectiveness of the supplier's quality system.

When specified by the PO or contract, statistical process control (SPC) data, in supplier format, is required and should be submitted to the Purchasing Representative for contractor's Quality acceptance.

QC-14 First Part Inspection

When specified by the PO, the supplier shall submit a sample first item for dimensional and functional approval prior to making production item(s). The supplier shall notify the contractor at YASOURCEINSPECTIONREQUEST@YMS-HSV.COM when the item is ready for approval examination. Such examination may be conducted at the supplier's facilities or at the contractor's receiving inspection area.

QC-15 First Article Inspection

A first article inspection (FAI) shall be performed for build-to-print items that are being produced for the contractor for the first time, have not been produced by the supplier within the previous 24 months, and when specified by the PO. It is recommended that the supplier use AS9102 form for the FAI or another format approved by the contractor's quality department. The supplier may request an example of an approved FAI via the Purchasing Representative. Changes to the location of manufacturing, including sub-tier suppliers and outsourced processes, may require a FAI. The supplier should contact

the contractor's Purchasing Representative in order to confirm that they are excluded from this requirement.

Upon completion of FAI, and no later than three (3) business days prior to shipment, the supplier shall notify the contractor at YAISSOURCEINSPECTIONREQUEST@YMS-HSV.COM, to allow the contractor the opportunity to schedule and perform FAI at the supplier's facility. FAI reports shall accompany deliveries to the contractor along with material test reports and C of Cs. The Supplier shall flow down this requirement to sub-suppliers.

QC-16 Source Inspection

A source inspection is an inspection conducted by the contractor's quality representative at the supplier's location. The purpose of a source inspection is to assist the supplier in determining conformance with the PO and the specification requirements. Source inspection neither guarantees final acceptance nor does it relieve the supplier of the responsibility to furnish an acceptable deliverable.

When source inspection is specified by the PO, the supplier shall notify the contractor at YAISSOURCEINSPECTIONREQUEST@YMS-HSV.COM no later than three (3) business days prior to final inspection or testing of the PO deliverables, to ensure the availability of a the contractor's quality assurance representative who will be present to witness the inspection/test.

QC-17 Handling, Storage, Packaging and Delivery

The supplier's packing sheet and invoices are to reflect the same military specification (MIL-SPEC) and supplier's part numbers listed on the PO or subcontractor agreement.

Materials are to be shipped in containers in keeping with good commercial practices to preclude any damage, or loss being incurred during shipping and storage. Materials in boxes shall be shipped in boxes rated for the weight contained. Where the possibility of spoilage exists, items in storage shall be date stamped, coded, etc., and used on a first in - first out (FIFO) basis.

Areas used for handling, storage, packaging, inspection, and test of products or services shall be clean, safe, and well organized to ensure that they do not adversely affect quality or personnel performance. The transporting of material shall be such as to avoid damage to the material and/or installed/completed equipment. Each container should have a consistent number of parts except the final container, which may have a quantity difference. Each container shall be identified with the part number, revision, and quantity.

QC-18 Part Identification

All items supplied to the contractor shall be identified with complete nomenclature and part numbers in accordance with MIL-STD-130 - Identification Marking of U.S. Military Property, or as specified. Reference paragraphs 5.3.1 through 5.3.7 of the standard.

QC-19 Critical Safety Items (CSI) and Limited Life

For all critical and limited life Items, the date of manufacture or shelf life must be supplied with each limited life item. Limited life items provided to the contractor must have a minimum of 50% of their shelf life remaining upon delivery. All records relating to CSIs shall be clearly identified and traceable to the date and place of production, including the OEM or OCM.

QC-20 Design Control and Technical Data Packages (TDP)

For technical data packages (TDPs) such as drawings, the supplier shall establish a process to monitor and review for quality content, errors, and errors per sheet in accordance with requirements specified

in Supplier Technical Data Package Requirements (Appendix B). Appendix B contains additional requirements of suppliers providing TDPs.

QC-21 Foreign Object Damage (FOD)

Material supplied to the contractor shall be manufactured in an environment free of foreign objects, and shall be free of foreign objects upon delivery. The supplier shall have provisions for the prevention of foreign object damage (FOD) and have a course of action to implement in the event it does occur. The supplier will ensure personnel are trained and evaluated on knowledge, awareness, and responsibilities associated with FOD control, prevention, and reporting procedures.

QC-22 Counterfeit Avoidance Plan

The supplier shall have a documented plan to control, detect and avoid supplying counterfeit electronic components, ferrous and non-ferrous metals/raw materials, as well as paint, primers and composite materials to the contractor. The supplier shall immediately notify the contractor via the Purchasing Representative of any suspect counterfeit or fraudulent parts or materiel that may have been used in product delivered to the contractor.

QC-23 Electronic Components & Circuit Card Assemblies (CCA)

The contractor will not accept electronic components from suppliers that are under a "Stop Shipment Order" as determined by the Government Industry Data Exchange (GIDEP).

Distributors of electronic components that are authorized by an OCM or OEM shall provide full traceability back to the manufacturer, and include a copy of the original component manufacturer's C of C with each delivery. Independent distributors or brokers not authorized by an OCM must also provide traceability back to the manufacturer, and include a copy of the OCM's C of C with each delivery. If the original C of C cannot be provided, the supplier must test and assure authenticity IAW AS6081 Fraudulent/Counterfeit Electronic Parts: Avoidance, Detection, Mitigation, and Disposition - Distributors, and provide these results before delivery to the contractor via the Purchasing Representative.

Certification workmanship standards shall comply with IPC J-STD-001 Class 3, IPC/WHMA-A-620 Class 3, IPC-A-610 Class 3, and IPC-A-600, as applicable, unless otherwise specified. electrostatic discharge (ESD) protection shall comply with ANSI/ESD 20.20, as applicable.

Static sensitive parts will be packed in a conductive frame or with leads inserted in conductive elastomer or foam to protect them against electrical charges. External labels shall identify the package on at least two sides as containing static sensitive devices. ESD protection shall comply with American National Standards Institute (ANSI) / Electronic Static Discharge (ESD) 20.20, as applicable. Packaging, and marking, must allow for the administration of FIFO inventory control. It is preferred that all suppliers separate and identify lots containing multiple date codes. Product marking shall be in accordance with drawing requirements and MIL-STD-130 - Identification Marking of U.S. Military Property. Reference paragraphs 5.3.1 through 5.3.7 of the standard.

Electronic components and CCAs being procured are exempt from "lead-free" Restriction of Hazardous Substances directive (ROHS) being pursued by commercial entities. Components that have part finishes (Leads, Packaging, or Contents) greater than 95% tin (Sn) shall contain at least 3% lead (Pb). All components shall conform to IPC/ECA J-STD-002 requirements for solderability. All electronic grade solder alloys shall conform to IPC/ECA J-STD-006 and shall contain at least 36% lead (Pb) unless otherwise approved by the government. When components are available only from "Lead Free" sources the Contractor shall obtain government approval for each task order / delivery order prior to

proceeding. Lead free risk analysis and mitigation strategies for the design in question may be required prior to approval.

Raw material deliveries shall also be compliant with the Counterfeit Avoidance section of this document. Refer to Appendix C for additional workmanship guidelines for electrical box builds and wire harnesses.

QC-24 Paint, Primer and Coatings

The contractor will only accept paint, primer and coatings that are manufactured to military specifications (MIL-SPEC) from qualified product database (QPD) approved manufacturers, as determined by the QPD. The QPD database must be accessed (<http://qpldocs.dla.mil>) to verify that the correct combination of color/type/class, etc. is approved, and a manufacturer for this combination must be used. The QPD-approved manufacturer must be identified on all quotes and material certifications. The supplier is responsible for passing contractor MIL-SPEC purchase requirements to all sub-suppliers, including the OEM. The C of C for all QPD managed MIL-SPEC items must include the original manufacturer of the product.

Suppliers providing painting and finishing services that include chemical agent resistant coating (CARC) paint and/or coatings will complete testing requirements in accordance with (IAW) MIL-DTL-53072 CARC System Application Procedures and Quality Control Inspection. This requirement will be applied to all drawings that call for CARC painting and/or coating, regardless of the source or owner of the drawing.

Paint, primer and coating deliveries shall also be compliant with the Counterfeit Avoidance section of this document and are subject to audit and review by a contractor quality representative

QC-25 Raw Material

All raw material, as well as material to be used for build-to-print or modification projects must be identified per the applicable specification including: plates, bars, extrusions, sheets of aluminum, steel, or other material. The material shall be marked with material type and PO number in indelible ink.

Raw material deliveries shall be accompanied material test report (MTR) to provide evidence that the material used meets the requirements of the drawing. MTRs are required and shall contain a chemical and physical test report, including actual test results from samples representative of the material shipped under this or any associated PO or Subcontract Agreement.

Raw material deliveries shall also be compliant with the Counterfeit Avoidance section of this document.

QC-26 Hazardous Material (HAZMAT)

All material requiring a safety data sheet (SDS) will be in compliance with the Globally Harmonized System for Hazard Communication (GHS) in accordance with The Occupational Safety and Health Administration (OSHA) Hazard Communication Standard 29 CFR 1910.1200 which requires a "downstream flow" of information, addressed as "FAX on Demand" described requirements of the regulation as stated in 1910.1200 paragraphs (g)(6)(i) thru (g)(7)(vii) of the standard.

Suppliers shall not use any Class 1 ozone depleting chemical/ozone depleting substance (ODC/ODS) identified at the manufacture, or in support of items required by the contractor unless a waiver is obtained from the Government via the contractor's Purchasing Representative (Buyer). All suppliers support service activities shall be in compliance with applicable federal, state, and local environmental laws and regulations.

QC-27 Design Control and Technical Data Packages (TDP)

For technical data packages (TDPs) such as drawings, the supplier shall establish a process to monitor and review for quality content, errors, and errors per sheet in accordance with requirements specified in Supplier Technical Data Package Requirements (Appendix B). Appendix B contains additional requirements of suppliers providing TDPs.

QC-28 Welding

Unless otherwise specified on the PO, Statement of Work (SOW) or drawing, all areas to be welded shall meet the welding requirements defined in ANSI and American Welding Society (AWS) Structural Welding Code, as applicable. Supplier welding processes are subject to audit and review upon notice by the contractor quality representative.

Referenced Documents

29 CFR 1910.1200 OSHA Hazard Communication Standard

Additional Workmanship Guidelines for Electrical Box Builds and Wire Harnesses (Appendix C)

American National Standards Institute (ANSI)

American Welding Society (AWS) Structural Welding Code

AS5553 Fraudulent/Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition

AS6081 Fraudulent/Counterfeit Electronic Parts: Avoidance, Detection, Mitigation, and Disposition -
Distributors

AS6174 Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel

AS9100 Quality Management Systems: Aviation, Space & Defense Organizations

AS9102 First Article Inspection (FAI) Requirements

AS9110 Aerospace - QMS Requirements for Maintenance Organizations

AS9120 Quality Management Systems - Aerospace Requirements for Distributors

Electronic Static Discharge (ESD) 20.20, Protection of Electrical and Electronic Parts, Assemblies and
Equipment

FAR 52.246-2 Contractor Inspection Requirements

FAR 52.245-1 Government Property

FAR 52.245-2 Government Property (Fixed Price Contracts)

FAR.52.245-4 Government Furnished Property (Short Form)

FAR.52-245-5 Government Property (Cost Reimbursement, Time and Material, or Labor Hour Contracts)

IPC-A-600 Acceptability of Printed Boards

IPC/WHMA-A-620, Class 3 Requirements and Acceptance for Cable and Wire Harness Assemblies

IPC J-STD-001, Class 3 Requirements for Soldered Electrical and Electronic Assemblies

ISO9001 Quality Management System

IPC/ECA J-STD-002 Solderability Tests for Component Leads, Terminations, Lugs, Terminals and wires

IPC/ECA J-STD-006 Requirements for Electronic Grade Solder Alloys and Fluxed and Non-Fluxed Solid Solders for
Electronic Soldering Applications

MIL-DTL-53072 CARC System Application Procedures and Quality Control Inspection

MIL-STD-130 Identification Marking of U.S. Military Property

Qualified Product Database (QPD) <http://qpldocs.dla.mil>

Request for the use of Prohibited HAZMAT (Appendix D)

Supplier Deviation Request (YF-4.2.1-01, Appendix A)

Supplier Technical Data Package Requirements (Appendix B)

Revisions

Release Date	Revision	Description
10/9/2013	IR	Initial release
6/30/2014	A	Change required shelf life from 75% to 50% in section 2.8 paragraph 6. Requirements for Build-to-Print and other items in section 2.4 paragraph 7.
6/30/2014	B	Added requirement for CARC items to be approved by QPL/QPD
9/5/2014	C	Renamed to RDS-SQ-100 RDS Quality System Requirements. Added to 2.14 Retention of Records: "Upon request, Quality records must be provided for review."
10/6/2015	D	Added exclusions for CofCs from large retail stores, added FOD requirements, added requirements for prohibited HAZMAT, added requirements for GFM/GFE, added requirements for outsourced TDP, edited FAI requirements, added email contact for FAI and Source Inspection. Added RDF-4.2.1-02 Supplier Deviation Request
1/15/2016	E	All material requiring an SDS will be in compliance with the Globally Harmonized System for Hazard Communication (GHS)
8/16/2016	F	Added Appendix A – Supplier Deviation Request with note for parameters. Added Appendix B. Added Appendix C. Added Appendix D. Added Counterfeit Part Avoidance Requirements: for procuring active electronic components.
9/26/2016	G	Revised Appendix B to clarify requirements from supplier. Removed Appendix D Request for the use of Prohibited/Restricted Hazmat and added to clauses
4/12/2017	G-1	Re-numbered quality clauses. "Purchasing Representative" refers to the contractor's buyer. Added: Supplier Contribution, Supplier Interactions with the Contractor, Supplier Process Changes, Approval of Products & Services, Release & Disposition of Products & Services, Requirement for final inspection before delivery, SPC data requirements as noted on PO, Contractor will not accept electronic components from a supplier with a GIDEP Stop Shipment Order, ROHOS relief, IPC/ECA J-STD-002 requirements for solder and tin. Changed supplier deviation request to YF-4.4.4-02
10/1/17	H	Updated QC-23 Electronic Components & Circuit Card Assemblies (CCA) to include circuit card assemblies. Referenced engineering checklist matrix in B.04 Contractor Evaluation of Supplier Performance.

APPENDIX A: SQ-100 SUPPLIER DEVIATION REQUEST

Deviation #:		Date Submitted:	
PO #:		Buyer:	
Part #:		Delivery Order	
Supplier:			

Requirement: Enter the requirement that cannot be met referencing the SQ-100, drawings and/or specifications:

Reason for Deviation: Provide justification for deviation from the SQ-100, TDP, specification, etc. and describe how the deviation will be performed referencing procedures and/or guidelines.

Required Approvals – **Note: This form may not be used to authorize deviations outside the scope of the SQ-100. For technical deviations, the contractor will follow documented internal procedures.**

Purchasing	Print Name		Approval Date
	Sign		
Project Management	Print Name		Approval Date
	Sign		
Supplier Quality	Print Name		Approval Date
	Sign		

APPENDIX B: SUPPLIER TECHNICAL DATA PACKAGE (TDP) REQUIREMENTS

Purpose

This document is intended to communicate the requirements for TDPs supplied to the contractor by subcontractors and suppliers. This includes adherence to the contractor's TDP requirements, as well as all applicable military, aerospace and other acceptable standards. In addition, this document details requirements for supplier review of all drawings and technical documents delivered to the contractor. For the purposes of this document, suppliers and subcontractors will be collectively referred to as "suppliers."

Acronyms

IAW	In Accordance With
PO	Purchase Order
SOW	Statement of Work
TDP	Technical Data Package

B.01 Adherence to Applicable Military, Aerospace, and Acceptable Standards

Unless otherwise specified in the Statement of Work (SOW), all technical documents must meet the requirements of MIL-STD-31000 Technical Data Packages. This standard provides requirements for the deliverable data products associated with a TDP and its related TDP data management products. Elements of the TDP include models, drawings, associated lists, specifications, standards, quality assurance provisions, software documentation, packaging details and all other technical documents.

Unless otherwise specified in the SOW, all technical documents must also meet the requirements of ASME-Y14.100 Engineering Drawing Practices, including appendix and associated documents. This standard establishes the essential requirements and reference documents applicable to the preparation and revision of engineering drawings and associated lists. This standard is to be used in conjunction with ASME-Y14.24 Types and Applications of Engineering Drawings, ASME-Y14.34 Associated Lists, and ASME-Y14.35 Revision of Engineering Drawings and Associated Documents.

Additional standards may be required and referenced in the SOW, purchase order (PO) or in a TDP Option Selection Worksheet provided by contractor's engineering representative. Airworthiness certification may invoke special requirements specified by contractor's customer, and these requirements will also be flowed down to the supplier via the SOW. In the event that any requirements/standards contradict one another, the supplier shall contact the contractor for clarification before proceeding.

B.02 Required Supplier Processes

The supplier shall establish a drawing review process to ensure they meet all contractor requirements, as well as any military, aerospace, or other standards in accordance with (IAW) the SOW and the agreed upon schedule, to include the following:

- Technical review to ensure that drawings meet applicable drafting standards

- Technical document review to ensure that documents provided to the contractor contain adequate details to fulfill their intended purpose (e.g. weight and balance reports, electrical load analysis, structural analyses, or any other document defined in the SOW)
- Internal peer review performed by an engineer other than the engineer who created the drawing
- Manufacturability review to identify potential manufacturability issues

The supplier's process shall include handling of design changes, including both internal management of the changes as well as communication with the contractor when a design change affects product features and/or performance. Suppliers shall evaluate and collect error checking data in order to identify trends, to correct issues and to reduce errors. Upon notice, all supplier processes are subject to audit by the contractor.

B.03 Contractor Engineering Review

After an engineering review by the contractor, feedback will be provided to the supplier in order to correct any issues. Once corrected, the supplier shall resubmit to the contractor for approval. Contractor engineering reviews include the following:

- Early technical drawing review, to identify global errors at the beginning of the project
- Technical drawing review, to monitor adherence to requirements stated in section B.01
- Technical document review to include reports and analysis
- Manufacturability review to identify potential manufacturing issues

B.04 Contractor Evaluation of Supplier Performance

The contractor's supplier quality representative will monitor and evaluate supplier performance based upon on-time delivery and quality measurements. Suppliers are expected to provide TDPs to the contractor with no more than 0.5 errors per sheet. Errors found on early drawings do not count toward the supplier's performance metrics. If errors are found to exceed 0.5 errors per sheet during a technical review, the supplier may be subject to corrective action. Checklists used by the contractor for error checking will be flowed to the supplier via a SOW.

Referenced Documents

ASME Y14.100	Engineering Drawing Practices
ASME Y14.24	Types and Applications of Engineering Drawings
ASME Y14.34	Associated Lists
ASME Y14.35	Revision of Engineering Drawings and Associated Documents
MIL-STD-31000	Technical Data Packages

APPENDIX C: ADDITIONAL WORKMANSHIP GUIDELINES FOR ELECTRICAL BOX BUILDS & WIRE HARNESSSES

Purpose

This document is intended to communicate workmanship guidance to suppliers for assembling and inspecting electrical box build hardware assemblies and wire harness assemblies supplied to the contractor. This includes adherence to contractor TDP requirements as well as all applicable military, aerospace and other acceptable standards. The intent is to address the general requirements for stress relief, wire breakout and securing, wire routing, required service loops to eliminate the potential for chafing, and solder sleeves

In addition, the document details requirements for subcontractor review of drawings and engineering review of any technical documents. Default workmanship requirements are defined in SAE-AS50881D. For areas not addressed by this guideline, IPC/WHMA-A-620, Class 3 requirements become the rule.

C.01 Wiring

Rule of thumb: When not specified on the schematic drawing using paired wire types (shielded or unshielded), the wire with the solid color insulation is considered the positive/primary side wire and the paired same color wire insulation identified with a white line or periodic dots down the side of its insulation is considered the negative/secondary/return side wire.

- Always follow through with the color scheme regardless the color variances.
- Always pair solid line to solid line and or striped/dotted lines likewise.
- Label the end of wires with appropriate wire number approximately six inches from end of wire to be routed during install.

C.02 Wire Stress Relief

Wires exiting connectors and sockets need sufficient stress relief to relieve any tension on the connection. Wires should exit perpendicularly to the face of the connector before bending it in the wire bundle. The bundle tie point should be located sufficiently away from the connector to prevent wire stress. Any breakout of two or more wires should be laced. Wraps are to be placed before, after and on each breakout. Spacing of wraps are to be uniform and tied in such that the desired form of the bundle is maintained. Potential for chafing should be prevented by routing and tying bundles to prevent contact with surrounding components.

C.03 Wire Routing

Potential for chafing should be prevented by routing and tying bundles to prevent contact with surrounding components. Individual wires of a harness should be arranged to run parallel or at right angles to each other wherever possible. Sharp bends which may damage conductors or insulation are to be avoided. When wiring is terminated in a connector, a minimum of 1/2 inch of slack for complete connector replacement should be provided.

C.04 Harness

The harness is laced after all wires have been cut to length, stripped, tinned, and placed in position. As lacing is advanced, the wires should be re-formed to insure a neat and firmly bound

cable; conductors should be arranged to lie parallel without crossovers except when twisting is required. When laced, the cord should be sufficiently tight to minimize slippage but should not cut into the insulation.

C.05 Pins

Pins should be fully seated and validated by the 'Push-Click-Pull' test method.

The IPC/WHMA A-620 Standard, section 19.7.5, reads in part: “the ‘push-click-pull’ method of pushing a contact into the insert until the retaining mechanism clicks and the pulling on the attached lead until it is taut shall be used.”

C.06 Soldering

When heat shrinkable soldering devices are used the solder preform (ring) shall be completely melted and a solder fillet shall wet to the wires in the connection. The wire contour should be visible in the solder fillet. If necessary, heat ends of sleeve to complete shrinkage of sleeve and sealing rings.

The solder preform (ring) and pickoff wire should be centered in the wire insulation opening (window) then shrunk in place. Unless the drawing referenced on the PO dictates otherwise, shield terminations should be terminated approximately 4 to 6 inches from the connector back shell.

Referenced Documents

IPC/WHMA-A-620 – Requirements and Acceptance for Cable and Wire Harness Assemblies
SAE-AS50881D - Wiring Aerospace Vehicle