



MATERIAL SPECIFICATION AE-MS0014

Supplier Manual

Revision: K

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REVISIONS

Rev. Level	Issue Date (mm/dd/yyyy)	Paragraph Affected	Remarks
-	09/15/2006	All	Initial Release.
A	02/07/2012	16.5, 21.0, All	Added Supplier Positive Recall. Changed record retention to 10 years. Revised whole document, and added Appendix A.
B	06/22/2012	All, 11.5 Appendix A	Re-formatted document. Replaced certified supplier program with dock-to-stock program. Added counterfeit parts prevention to Appendix A.
C	12/04/2012	Appendix A 11.4, 11.5	Added Supplier GSI requirement. Added dock-to-stock procedure as a reference document
D	02/05/2013	6.0, 11.4 Appendix A	Added AE-MS0001 and AE-MS0002 as reference documents. Changed Certified to Compliant
E	05/14/2013	Appendix A	Added NAS 412 as FOD ref document
F	09/20/2013	Appendix A	Added Conflict Minerals, Added Qualified Personnel
G	01/16/2015	8.10, 9.2 11.4.1 11.4.2 11.4.3 Appendix A	Changed to Supplier Quality Engineer. Added "and forwarded to Supplier Quality Engineer" Added "PUI's Supplier Quality Engineer" Changed to Supplier Quality Engineer Added "Verification of the effectiveness of the countermeasure"
H	04/14/2015	Appendix A	Updated FAI requirements
I	11/10/2015	11.4.3 Appendix A	Changed Quality Assurance to Supplier Quality Engineer Updated requirements for Corrective Action Requests Added CAR response within 45 days
J	3/29/16	Appendix A 12.11	Changed Appendix A to 12.0. Added Labeling Preservation, Packaging, and Shipping
K	12/2/2016	7.0 12.11 12.27	Added statement about forms record retention Added J-STD- 033 Added ", quantity, and date code (when applicable)" Section Added



1.0 Purpose

This manual defines the essential elements of a supplier quality system and the requirements of such a system to assure the quality and on-time delivery of products supplied to Projects Unlimited Inc., (also referred to as PUI) Aerospace and Electronics Division, and Aerospace Wiring Solutions (AWS) Division.

This document provides a guide for PUI suppliers but is not intended to supersede any applicable contract or specification requirement. When conflicts occur, the order of precedence shall be:

- 1.1 The contract/purchase order
- 1.2 The engineering drawing
- 1.3 Specifications called out on the engineering drawing and or associated documents
- 1.4 This document

2.0 Scope

Effective management for quality shall be clearly prescribed by the supplier. The supplier must assume full responsibility for the quality, delivery and reliability of all materials and services provided to PUI. The PUI Purchasing Department is the main communication link between suppliers and other functions within PUI.

The requirements within this manual are based upon current industry standards and the International Organization for Standardization (ISO) Quality System Guidelines. PUI suppliers are expected to review, understand and comply with the requirements of the contract and of this manual. In addition, each supplier shall develop and maintain an effective quality system based on defect prevention rather than defect detection and support a continuous improvement program to improve quality, reduce flow time, and produce products at a competitive cost.

3.0 Safety Precautions (N/A)

4.0 Tools and Equipment (N/A)

5.0 Materials (N/A)

6.0 Reference Documents

- 6.1 ISO9001:2008
- 6.2 AS9100
- 6.3 AE-QS0028 Supplier Dock-to-Stock Program
- 6.4 AE-MS0001 Control of Purchases (Supplier Control)



6.5 AE-MS0002 Selection of Suppliers

7.0 Forms

Forms shall be filed and stored per CM-DS0001F7, Record Retention List.

7.1 Supplier Quality System Questionnaire CM-QS0017F1

8.0 Definitions

8.1 **CSCI** - Computer Software Configuration Item. Computer software revisions and versions as specified by contract or design engineering.

8.2 **CSI** – Customer Source Inspection

8.3 **ECN** – Engineering Change Notice

8.4 **ECO** – Engineering Change Order

8.5 **FAI** – First Article Inspection

8.6 **FOD** – Foreign Object Damage

8.7 **RFQ** – Request for Quotation

8.8 **Safety Assurance** – The identification of safety critical components or portions thereof those failures that could lead to a catastrophic failure (could result in death, injury, loss of property or environmental harm).

8.9 **SOW** – Statement of Work

8.10 **SQE** – Supplier Quality Engineer

8.11 **SRV** – Supplier Request for Variation

8.12 **SSE** – Supplier Substantiation of Engineering

9.0 Responsibilities

9.1 **Buyer/Purchasing (PUI)** – Responsible for issuing the purchase order, communicating the requirements of this manual to suppliers, flow-down of purchase order requirements and monitoring delivery dates for accuracy.

9.2 **Supplier Quality Engineer (PUI)** – Responsible for inspecting delivered material for compliance, issuing supplier corrective actions for non-conformances, review/disposition of supplier corrective action responses, conducting on-site quality systems surveys and review/disposition of supplier self-surveys.

9.3 **Receiving (PUI)** – Responsible for receiving delivered material in a timely fashion.



9.4 Supplier – Responsible for compliance to the requirements listed in 12.0 of this procedure. If the supplier wishes to take exception to any of these items, it is the Supplier’s responsibility to communicate these exceptions to the Buyer.

10.0 Equipment Maintenance (N/A)

11.0 Procedure

11.1 Supplier Performance Monitoring/Rating - Suppliers are rated based upon a twelve calendar month average for quality and on-time delivery. The minimum rating for approved suppliers is a composite score of 80%. The quality rating is calculated by the number of non-conforming parts (pieces) received divided by the total quantity received for each month.

The on-time delivery rating is calculated by the number of parts (pieces) received late/early to the Purchase Order contract date divided by the total number of parts received each month. A composite score is re-calculated monthly based on the supplier’s performance over the twelve-month period. Allowances are made for months with no activity.

Rating	Quality	On Time Delivery
Gold	>95%	>95%
Silver	85%-95%	85%-95%
Red	<85%	<85%

Rating	Composite Score
Approved	>80%
Conditional	60% - 80%
Disqualified	<60%

11.2 Requests For Quotation (RFQ) - The supplier shall review the requirements related to the product. This review shall be conducted prior to the suppliers’ commitment to supply products to PUI, and shall ensure that:

- a. Product requirements are clearly defined and understood.
- b. The supplier has the ability to meet engineering and purchase order requirements.
- c. Order requirements are resolved between the supplier and PUI Purchasing.
- d. The supplier shall maintain records of the review and actions arising from the review.



- 11.3 **Contract/Purchase Order Review** - The PUI Purchase Order is an important document that the supplier must be thoroughly familiar with and completely understand. It is the contract to which work must comply. Failure to provide documentation or to meet any Supplier Quality Requirements and, if applicable, Supplier Instructions (S.I.) shall be reason for rejection of the product and/or delay payment to the supplier.

If product requirements are changed, the supplier shall ensure that relevant documents are amended and that relevant personnel are made aware of the changed requirements. The purchase order may contain or make reference to additional documentation, which specify standard requirements for the order. These attachments may include the following:

- a. Supplier Instruction (S.I) This document is part of the P.O. and contains specific instructions regarding the manufacture, inspection and test of the specified part number.
 - b. Engineering Change Order (ECO) or Engineering Change Notice (ECN) Documents a change to the engineering drawing and or specification and must be incorporated into the product.
- 11.4 **Supplier Approval Process** - The quality of our purchased products is a crucial part of the preventive-oriented quality system implemented by PUI. Several preventive controls have been established to assure that quality and delivery requirements of purchased materials are consistently met. These controls include:
- a. Supplier Approval (ref. AE-MS0002)
 - b. Supplier Performance Monitoring/Rating (ref. AE-MS0001, AE-MS0002)
 - c. Part Qualification
 - d. Supplier Dock-to-Stock Program (ref. AE-QS0028)

11.4.1 **Self-Survey** - The supplier evaluates their quality system by completing the Supplier Quality System Survey (CM-QS0017F1). The form is returned to the attention of the applicable PUI Buyer and forwarded to the Supplier Quality Engineer. The questionnaire is reviewed and evaluated by PUI's Supplier Quality Engineer.

11.4.2 **PUI On-Site Survey** – When necessary, PUI's Supplier Quality Engineer may conduct an on-site audit at the Supplier's facility. Results are recorded using the Supplier Quality System Survey (CM-QS0017F1).

11.4.3 **Approval Status** – Once the Quality System Survey is completed and returned to the Buyer, the Supplier Quality Engineer shall review and disposition the supplier as Approved, Disapproved or Conditionally Approved.

If Approved, PUI evaluates the quality and delivery rating monthly. If disapproved, the appropriate code is assigned in the database and no purchase orders may be placed with the supplier without the approval of the Supplier Quality Engineer or their designee.



- 11.5 **Supplier Dock-to-Stock Program** - Suppliers who have maintained consistent high levels of quality, on-time delivery, responsiveness, process improvement and have implemented a superior quality system may be nominated for participation in PUI's Dock-to-Stock Program (AE-QS0028). This program recognizes suppliers that provide on-time and defect-free goods and allows for material to bypass receiving inspection.

12.0 Supplier Requirements

12.1 Certificate of Conformance (CofC)

- a. The seller shall provide with each shipment of material or parts a Certificate of Conformity (C of C) which contains:
- b. Statement of conformance to purchase order, applicable specifications, and drawing requirements with signature of authorized representative
- c. Seller's name, address, and contact information
- d. Name of the manufacturer, if different from the seller
- e. Purchase order (PO) number
- f. Part number as it reads on the buyer's PO
- g. Specification product is built or processed to
- h. Drawing revision (when applicable)
- i. Parts list revision (when applicable)
- j. Lot, batch, date code, or serial number. Listing of serial number is required for serialized assemblies
- k. Statement that test results or documents verifying the conformity of product is available for review by the purchaser
- l. A C of C to these requirements shall be available for review for lower level components procured by the seller and its sub-tier build to print suppliers.

12.2 Calibration of Acceptance Equipment

Seller's gaging, measuring, and testing equipment used for the manufacture and acceptance of products on this purchase order shall be calibrated against standards traceable to the National Institute of standards or International Standards.

12.3 Changes in Design, Material, Process, Location or Organization

Seller is required to notify the purchaser if any of the following conditions change:

- a. Manufacturing location
- b. Manufacturing process
- c. Special processes
- d. Calibration system



- e. Workmanship standards
- f. Ownership or critical personnel
- g. Quality system

12.4 Configuration Control

The seller may not vary from the drawing or parts list specified by the purchase order without written approval of buyer. Seller shall establish, document and implement a configuration management process to ensure:

- a. Manufacture of product per contract or purchase order
- b. Clear documentation of the configuration of the product
- c. Maintenance of all products configuration history

12.5 Control of Non-conforming Material

The seller shall have an effective documented system for the control of non-conforming product including the following:

- a. Identification
- b. Segregation
- c. Disposition

The seller shall notify the Buyer and Supplier Quality Engineer immediately, within 24 hours of discovery if non-conforming product has been delivered to the buyer.

12.6 Corrective Action Request

When non-conforming materials are found the seller may be issued a CAR. Once a CAR is issued to the Supplier, PUI will ask for an RMA Number, Shipper preference, and the Supplier's Account number so that the part can be returned at the Supplier's expense. The Supplier shall send the requested information to PUI within 24 hours. The Company that accepted the PO is responsible for issuing the RMA Number. Distributors shall issue the RMA Number for the defective part.

The CAR must be answered within 45 days; any abnormal delays in response may affect the seller's quality rating. The Corrective Action shall be effective and permanent in preventing the root cause. Objective evidence shall be included with the response (ie: updated Work Instructions, Test data, changes to traveler/router, etc.).

The seller's Quality Assurance System shall provide means for:

- a. Detection of non-conformances
- b. Containment of suspect product
- c. Thorough root cause investigation



- d. Failure analysis, if required
- e. Effectivity by date, serial/lot number
- f. Effect of failure on previously shipped items
- g. Verification of the effectiveness of the countermeasure.

Statements such as “cautioned operator”, “changed tool”, “retraining”, and “modified operation” are not acceptable responses.

12.7 Electrostatic Sensitive Device (ESD) Program

When ESD requirements are specified on buyer drawings, the seller shall maintain an ESD program which meets the requirements of:

- a. ANSI/ESD S20.20 or
- b. JEDEC JESD 625

12.8 F.A.I.R (First Article Inspection Report)

All FAI requirements shall be flowed down to all subcontractors who manufacture custom build to print subassemblies or detail parts. All FAIRs shall be completed and recorded per AS9102. The FAIR may be submitted on AS9102 or any approved form compliant to AS9102.

FAIR shall be completed on a production part. All parameters and notes on the drawing(s) must be inspected or tested and reported. Actual measurement and recording are required for all parameters per AS9102. A FAIR must include submission of:

- a. AS9102 forms 1, 2, 3 completed per AS9102 requirements.
- b. All raw materials certificates of conformance (listed on form 2)
- c. All special process certificates of conformance (listed on form 2)
- d. All test reports (listed on form 2)
- e. A drawing/parts list package which contains the documents which define the configuration of the FAI (ballooned characteristics required)
- f. All AS9102 compliant subassembly FAIRs required to build the FAI part not previously submitted to buyer
- g. A full FAIR, or partial FAIR for affected characteristics, is required when any of the following events occur:
 - h. A first time build
 - i. A change in design affecting form, fit or function of the part



- j. A change in manufacturing source, process, location of manufacture, tooling or materials that can potentially affect form, fit or function.
- k. A lapse in production for two years or as specified by the customer
- l. If a change occurs from drawing revision roll from preproduction revision to production revision (partial FAI)

12.9 FOD Program

The seller shall establish and document a system to prevent, detect and eliminate FOD (foreign object debris) and potential FOD (foreign object damage) in accordance with NAS 412

12.10 MRB Authority

Material review authority is not delegated to the seller unless authorized by the buyer. The seller shall provide a non-conformance report to the buyer for any non-conforming product requiring MRB disposition to repair or use-as-is. Buyer approval of a non-conformance report shall contain the final disposition by the buyer's material review board prior to shipment.

12.11 Labeling, Preservation, Packaging and Shipping

Labeling, Preservation, Packaging and Shipping shall conform to all the requirements specified on the drawing, specifications, purchase order and to the following:

- a. All items shall be wrapped and/or bagged and enclosed in cartons, boxes, or other containers that will provide protection for contamination and physical damage
- b. Parts and Packaging shall be marked with the correct part number, quantity, and date code (when applicable). If multiple packs and/or boxes are in the main package (box, bag, etc) each individual package shall be identified.
- c. All ESD sensitive parts shall be processed and packaged in accordance with J-STD-033, MIL-STD-1686, ANSI-IPC-A-610, ANSI/ESD S20.20 or JEDEC JESD 625.
- d. Shipments that contain multiple containers shall be identified relative to the total number of containers, e.g. 1 of 3, 2 of 3, 3 of 3 etc.
- e. Materials with differing POs shall be packaged separately

12.12 Quality Assurance System Requirements:

Seller shall have an established and documented quality system compliant to AS9100, ISO 9001:2008 or equivalent, or a PUI QA Approved Survey.

12.13 Records Retention

- a. The seller's quality, manufacturing, and purchasing records that were used to produce the products shall be retained for 10 years from the date of the last



shipment. The seller shall maintain sufficient records of inspection, tests, and other quality assurance activities.

- b. Records shall provide objective evidence of the quality operations performed, the results obtained and corrective actions taken. Such records shall be available to the buyer. Where such records are traceable by serial number or lot designation to material supplied to the buyer, they shall be retained for a period of at least 10 years from the date of shipment to the supplier. At the expiration of this period the buyer has the right to request delivery of such records.
- c. Test reports and inspection records shall be provided with each shipment of product unless noted otherwise on the purchase order.

12.14 Returned Non-conforming Materials

- a. Non-conforming material returned to the seller shall be subjected to the same quality requirements of the original purchase order. The items shall be re-tested and re-inspected as required by the purchase order specifications.
- b. New quality assurance documentation, reflecting the re-test and re-inspection results shall be generated and included with the returned materials.

12.15 Right of Access

The buyer reserves the right of access for all their representatives, their customer and regulatory authorities (accompanied by the buyer) to all facilities involved in the order and all records applicable to the order.

12.16 Shelf Life Control:

For all age sensitive materials and/or temperature sensitive materials.

- a. The seller shall maintain a documented system for controlling and monitoring the life of age and temperature sensitive materials.
- b. The seller shall also provide documentation with shipments stating when the useful shelf life was initiated by the manufacturer. When the shelf life will expire, documentation shall include batch or lot code information.
- c. The seller shall ensure that a minimum of 75% useful shelf life remains at time of shipment, unless otherwise stated in the purchase order.

12.17 Source Inspection, Government or PUI

- a. Items requiring source inspection will be inspected at the seller's facility by a buyer quality representative
- b. Seller is required to provide five working days advance notice to the buyer
- c. Evidence of buyer source inspection will be included with the shipping document and C of C



12.18 Government Source Inspection

- a. Government source inspection is required prior to shipment from your plant. Upon receipt of a purchase order requiring GSI, seller shall promptly notify and furnish a copy of the purchase order to the government representative who normally services your facility.
- b. The government representative shall be notified 2 days in advance of the time the product is ready for inspection. If the representative is an itinerant, 14 days advance notification is required. In the event that a government inspector cannot be located the buyer should be notified immediately.
- c. Evidence of GSI shall be included with shipping documents. Furnish the government inspector copies of all reports of non-conformances received and obtain their signature on your replies of corrective actions taken.
- d. The Supplier is responsible for coordinating corrective actions with their own Government representative for defective material subjected to Government source inspection.

12.19 Statistical Process Control

PUI reserves the right to request statistical data of any process at any time. When it is requested by the buyer on the PO, objective evidence shall be provided in each shipment of items on that PO. The seller shall have an SPC plan and record approved by the buyer prior to shipment, which shall contain the following information:

- a. PO number
- b. Part number and revision level
- c. Part nomenclature
- d. Manufactured lot size
- e. SPC control characteristics
- f. Characteristics verified/inspected, but not subject to SPC
- g. Inspection media used
- h. Sample size/inspection frequency
- i. Type of control chart being used and control limits
- j. Reaction to out-of-control conditions by operators

12.20 Sub-Tier Flow Down

All requirements in this document shall be flowed down to subcontractors who provide build to print parts.



12.21 Receiving/Acceptance Sampling

The sampling plan for a seller that performs incoming acceptance sampling shall meet the requirements of ANSI Z1.4 or shall be approved by the buyer's quality manager.

12.22 Workmanship/Work Instructions

Any processes done manually by an operator shall have specific work instructions to aid the operator in building a product conforming to the drawing/parts list and any applicable standards referenced on the drawing. The work instructions shall be controlled by revision level and any changes must be approved by the buyer prior to being implemented.

12.23 Material Safety Data Sheets

Material Safety Data Sheets must accompany or precede any shipment of materials or chemicals when applicable. Package must be labeled in accordance with MIL-STD-129 or recognized equivalent.

12.24 Counterfeit Parts Prevention

- a. Seller shall establish and maintain a Counterfeit Parts Prevention program using industry standard AS-5553 as a guideline.
- b. Only new and authentic materials are to be delivered to Projects Unlimited, Inc. Parts and materials shall be traceable to the applicable original equipment manufacturer.
- c. Seller is prohibited from shipping material to Projects Unlimited, Inc. for which a GIDEP alert has been issued.
- d. Procurement of material from independent brokers or from sources that are not franchised by the OEM is prohibited without written authorization from Projects Unlimited, Inc.

12.25 Conflict Minerals

On August 22, 2012, the Securities and Exchange Commission (SEC) adopted the Conflict Minerals Final Rule which imposes new disclosure requirements on publicly-traded companies as part of the Dodd- Frank Wall Street Reform and Consumer Protection Act.

The new rule requires companies along with their suppliers to disclose their use of conflict minerals-tin, tantalum tungsten and gold-and determine whether these minerals originate from the Democratic Republic of Congo (DRC) or its surrounding countries (Angola, Burundi, Central African Republic, Rwanda, South Sudan, Tanzania, Uganda and Zambia).

The seller shall notify PUI if Conflict Minerals are used in Seller's product. If they are, the seller will provide the determination that these minerals are deemed necessary to the functionality or production of their product.



12.26 Qualified Personnel

The supplier shall maintain a training system to ensure that personnel are appropriately trained for the jobs they're performing.

12.27 Wire Harness Supplier Rework Performed at PUI

If rework is performed at PUI the following steps shall occur:

- a. Supplier will issue a C of C for the rework that was performed.
- b. QA will verify all rework performed on Harnesses that are installed in the Chassis.
- c. Receiving Inspection will verify rework performed on the Harness only.