

# TRU Simulation + Training

## SUPPLIER QUALITY ASSURANCE REQUIREMENTS (SQAR) DOCUMENT

## **1 PREAMBLE**

- 1.1 TRU Simulation + Training is committed to working with Suppliers to ensure customer satisfaction through conformance to Quality requirements, competitive costs, improved communication, reduction of variation, elimination of non-value added work and meeting delivery expectations. We intend to establish and maintain long-term relationships with Suppliers who are committed to continuous improvement in quality, delivery, cost, and service. This commitment is an expectation of all Suppliers. Those Suppliers who embrace this philosophy will best position themselves for future opportunities including the possibility of strategic and long-term relationships with TRU. As we explore new markets, we look to our entire supply base for the support and commitment needed to meet or exceed our customer's needs. We believe that evidence of a commitment to continuous improvement includes ISO9000, ISO14000, AS9100, QS9000 (TS16949) certification, proactive supply chain management, productivity improvements, and frequent cost saving proposals. In turn, TRU will deal honestly with our Suppliers, strive to listen to our Suppliers concerns, communicate our requirements, and provide our Suppliers with the appropriate tools to perform at world-class levels. We look forward to continuing our proactive relationship with Suppliers that is mutually beneficial and long term

## **2 INTRODUCTION AND SCOPE**

- 2.1 This Supplier Quality Assurance Requirements document defines specific terms and conditions, including supplier restrictions and quality system requirements applicable when goods and services are acquired by TRU. The restrictions and requirements apply to part numbers (defined by receipt of a TRU drawing and/or specification), Government, Military, and Federal or Industry specifications or standards. The SQAR describes the minimum requirements and processes that are requirements of TRU's purchase orders and subcontracts.

## **3 DEFINITIONS**

- 3.1 "BUYER" shall mean TRU Simulation + Training via its duly authorized Procurement representative (Subcontract Manager or Buyer) as stated in the Purchase Order or subcontract document.
- 3.2 "SELLER" means the supplier. The supplier is the entity to whom the TRU purchase order or subcontract (hereinafter "order") is awarded. The order includes, but may not be limited to the following: manufacturers, distributors, brokers, designers, and other service providers performing the work or supplying the contract items specified by the order. Such contract items may include, but are not necessarily limited to raw materials, finished parts, assemblies, subassemblies, subsystems, commercial off the shelf (COTS) items or services of all types.

## **4 GENERAL REQUIREMENTS**

- 4.1 APPLICABILITY – These general requirements shall apply to Sellers whenever this SQAR is incorporated into the requirements of an order by reference. Other variable requirements specific to the Purchase Order shall be identified as additional quality requirements with the applicable Quality Code and are incorporated by reference when specified on the order.
- 4.2 All purchase order codes can be found at <http://www.trusimulation.com/supplier/codes>
- 4.3 Applicable revision status of such specifications shall be the revision in affect on the date of the Order, unless specified in the Order or related documents. Revision status of procured/deliverable items shall always be as specified in the Order. In the event that the Order conflicts with the requirements of this document, the Order requirement will supersede this document.

## **5 SUPPLIER'S QUALITY SYSTEM REQUIREMENTS**

- 5.1 The Seller shall implement a quality management system which complies with ISO 9001, AS9100 or a system approved by TRU. The Seller should employ advanced quality techniques and tools which foster continuous improvement of Seller's products including services, distribution, fabrication and assembly processes.

## **6 PROCESS REVIEW**

- 6.1 TRU reserves the right to perform process reviews at seller's facility based on risk, which seller agrees to support, without cost to buyer. Such reviews shall be scheduled in advance and shall be scheduled on a non-interference basis. The purpose of a process review is to determine the suitability, adequacy, effectiveness, and consistency of the supplier's processes to meet contractual requirements and to provide a basis of confidence for product/service acceptance. Process reviews address the five key elements of a process (4M+E) necessary to produce the product.

1. Manpower (training, skills, personnel changes, certifications)
2. Material (correct materials, shelf life, nonconformance control)
3. Methods (appropriate inspection points, work instructions, routings, records, corrective actions)
4. Machinery (tools, fixtures, calibration)
5. Environment (temperature, lighting, safety, security)

If conducted, supplier shall have available and will present, upon request, process records relevant to items on the purchase order. Forms are available on the supplier website at <http://www.trusimulation.com/supplier> and include:

- TRU-406-QM-FM-002 Item Change Request Form
- TRU-402-QM-FM-042 Supplier MRB Disposition Request
- AS9102 Supplier First Article Inspection forms

## **7 INDUSTRY SPECIFICATIONS AND STANDARDS**

- 7.1 For all Military, Federal, and Industry specifications and standards specified by the Drawing, Specification, order, or applicable statutory and regulatory requirements, the Supplier shall comply with the revision in affect at the time the TRU order is awarded, or if a change order is issued. TRU reserves the right to request a different revision that would be specified on the Purchase Order.
- 7.2 The requirements of TRU's order, including applicable drawings (including specific drawing notes and annotations), specifications, and statements of work (SOW) supersede workmanship specifications and standards of the seller including those specifications and standards represented as "Industry Standards". If the Seller believes a drawing contradiction exists, the Seller is obligated to procure a clarification via written correspondence to the TRU. The clarification shall be issued by TRU in writing through a drawing revision, Purchase Order (PO) amendment, Material Review Board (MRB) disposition, or another officially sanctioned notification when originated from the TRU Procurement representative. No contractual direction from any TRU employee except the cognizant Procurement representative shall be binding. If Seller accepts direction from other than the Procurement Representative it does so explicitly at Sellers own risk.

## **8 ALTERING DATA ON DOCUMENTS**

- 8.1 The use of any method that causes the original data on documents to be obliterated and unreadable (i.e. the use of correction fluids, correction tape, write-over, or other methods) to correct, modify or otherwise alter the data and/or entries on any certifications, test reports, or other documents required by the Contract, is strictly prohibited. Corrections may be made on inspection reports' providing it is clearly obvious that a correction was made and it is signed (initialed) or stamped by an authorized individual. Upon receipt at TRU, products or services represented by documents that show evidence that they have been corrected or altered in an unauthorized manner are subject to return to the Supplier.

## **9 WORK INSTRUCTIONS**

- 9.1 Suppliers shall maintain work instructions or equivalent control mechanism that directs procedures and processes appropriate for the control of quality and configuration through all stages of production.

## **10 SUPPLIER CONTROL**

10.1 The Seller, as the recipient of the Purchase Order, is responsible for meeting all Purchase Order specified technical and quality requirements, whether the Seller performs the work, or the work is performed by the Supplier's sub-tier sources. When the Supplier uses sub-tier sources for components or to perform work on products and/or services scheduled for delivery to TRU, the Seller shall flow-down on Purchase Orders or Contracts, to his sub-tier sources, all of the applicable technical and quality requirements of the TRU Purchase Order including, when applicable, the requirement to document and control 'key / critical characteristics' and/or 'key processes', and to furnish certifications and test reports required by the applicable Purchase Order requirements.

## **11 CORRECTIVE ACTION SYSTEM**

11.1 The Supplier shall have a functioning system for closed loop corrective action. Seller agrees to provide to the Buyer (TRU Buyer and/or TRU Supplier Quality) corrective action within 30 days from issuance of a Supplier Corrective Action Request (SCAR). Supplier forms will not be accepted. Seller further agrees to:

11.1.1 Conduct a thorough failure/root cause analysis identifying the cause(s) for the discrepancy(ies) noted.

11.1.2 Determine and take the necessary corrective action(s) to prevent recurrence.

11.1.3 Identify whether any previous shipments for the subject or similar parts contain the noted discrepancy.

11.1.4 Identify the effectiveness of the corrective action(s).

11.1.5 The failure/root cause analysis should be conducted using proven techniques such as 5-Why's, Cause and Effect/Fishbone diagrams, Fault Tree diagrams, 8D, etc.

## **12 NONCONFORMING MATERIAL CONTROL**

12.1 Nonconforming material shall be identified, documented, evaluated, segregated, and dispositioned to prevent its unintended use. Unless otherwise stated in the Purchase Order, the Seller is authorized to conduct limited Material Review and disposition of nonconforming products identified by the Seller using the following disposition alternatives:

- rework to applicable requirements,
- scrap, or
- RTV – return to vendor (the Supplier, sub-tier source for rework or replacement).

- 12.2 Nonconforming products are defined as any products that fail to meet the requirements of the TRU engineering drawing, specification, Purchase Order, or other approved product description, including products (such as products under the Supplier's proprietary design control) which fail to meet requirements established and controlled by the Seller or the Seller's sub-tier sources.
- 12.3 The Seller may propose and formally request a "use-as-is" or repair (salvage) disposition from TRU by submitting Form TRU-402-QM-FM-042, "Supplier MRB Disposition Request" <http://www.trusimulation.com/supplier/>, to the TRU Buyer. The Seller's Material Review and nonconforming product disposition records, as well as the Material Review records at the Supplier's sub-tier sources are subject to on-site verification by TRU to ensure that the Seller is in compliance with these requirements.
- 12.4 The Seller shall not ship to TRU any nonconforming products that have not been dispositioned by TRU Material Review Board (MRB) unless authorized by TRU in writing. When TRU MRB dispositioned products are delivered to TRU, the Seller shall reference on the packing list/shipper the MRB document which describes the TRU MRB disposition. When the Supplier's shipment includes products dispositioned by TRU MRB along with conforming products, the products dispositioned by TRU MRB shall be segregated and marked or tagged so as to permit easy identification upon receipt at TRU.

### **13 CALIBRATION SYSTEM**

- 13.1 Seller test and measurement equipment services shall have a calibration system in compliance with the requirements of MIL-STD-45662A, ISO 10012, ISO 17025 or ANSI/NCSL Z540. Calibration procedures must be maintained which provide sufficient information for periodic calibration of inspection, measuring, and test equipment (IM&TE).

### **14 SHELF LIFE MATERIAL CONTROL PROGRAM**

- 14.1 Where supplier deals with shelf life materials subject to degradation or deterioration over time, the supplier shall establish a shelf life and storage control program to ensure that no material that has exceeded its shelf life, at the time of assembly, can be used in the assembly of TRU product. Such a program shall include policies and procedures for:
- 14.1.1 Identifying all items (contained in the Bill Of Material (BOM) of product to be delivered to TRU) that have shelf life limitations and/or special storage requirements.
- 14.1.2 A receiving inspection process that can ensure that all incoming products are still within their shelf life limitation period.
- 14.1.3 A process for physically identifying, labeling, or coding each item so that its shelf life can be readily determined and stating that the item is under shelf life control.
- 14.1.4 A procedure(s) for reviewing (auditing) the status of all items under shelf life controls both in stock and previously issued items/products.

14.1.5 Identifying and tracking repackaged consumables. This should include all appropriate information, such as part number, batch number, receiving information (for tracking), date opened, and expiration date. Note: Repackaged consumables with shelf life/storage condition requirements, on which the status cannot be verified, should be properly disposed of.

## **15 PRODUCT CHANGES**

15.1 Seller shall not make any changes in material(s), software, design, manufacturing source(s), process(es), and tooling which potentially affects the fit, form, or function of the item for items on this PO without notification to the Buyer. Production parts fabricated in advance of Buyer approval shall be at the Seller's risk. Changes must be requested using "TRU-406-QM-FM-002 TRU Item Change Request" and submitted to the Buyer. This document can be found at <http://www.trusimulation.com/supplier/>.

15.2 The Seller's change control system shall assure that the latest applicable drawings, specifications, technical requirements, Purchase Order information, and changes thereto will be available at the time and place of acceptance of material and/or services.

15.3 Buyer reserves the right to test the changed hardware in its system or by using simulators to verify the compatibility of changed hardware prior to accepting said hardware or changes. This includes full re-qualification if necessary.

## **16 SUPPLIER FIRST ARTICLE INSPECTION (FAI)**

16.1 When the Supplier is manufacturing a production TRU part numbered product (defined by receipt of an TRU drawing and/or specification) with a First Article Inspection requirement identified on the PO (Purchase Order Code "2M"), Statement of Work (SOW), or Drawing requirement, a First Article Inspection (FAI) is required in accordance to the requirements of AS9102, "Aerospace First Article Inspection Requirement." In addition to the top assembly, subassemblies that are part of the top assembly shall be included in the FAI report according to the AS9102 specification which can be purchased from SAE at this URL: <http://standards.sae.org/aerospace/>.

16.2 The FAI shall be completed prior to product acceptance and shipment to TRU unless other instructions are provided by the Purchase Order, Statement of Work, or a Material Review Board disposition. Should any of the following conditions apply since the last build of a TRU part numbered product with a previously completed FAI, the Supplier shall perform a full or partial FAI in accordance with AS9102 requirements:

- A change in the design affecting fit, form, or function of the part.
- TRU initiated design changes are represented by a change of the PO item Rev number. (example: Rev 001 changes to Rev 002).
- A change in manufacturing source(s), process(es), inspection method(s), location of manufacture, tooling, or materials that can potentially affect fit, form, or function.
- A change in numerical control program or translation to another media that can potentially affect fit, form, or function.

- A natural or man-made event, which may adversely affect the manufacturing process.
- A lapse in production for two years.

## **17 COMPONENT OBSOLESCENCE MANAGEMENT**

- 17.1 The Supplier shall develop, document, and implement an electronic component management process that addresses all aspects of the product life cycle from design through service, including component selection, application, and standardization and obsolescence management. Supplier's program shall address the following issues:
- 17.1.1 In the event that a component becomes obsolete or otherwise unprocurable, the Supplier's obsolescence management process shall include provisions for alternate parts, end-of-life buys, and/or upgraded parts.
- 17.1.2 When alternate parts are being considered, parts shall be selected from alternate sources, which are form-fit-function replacements and meet the same quality, reliability, and selection criteria as the original parts.
- Note that form-fit-function alternate parts that require modification to the printed wiring board layout also require TRU approval.
- 17.1.3 When end-of-life buys are being considered, the Supplier shall formally notify TRU of its intent and the lifetime buy requirement shall be negotiated and approved by TRU.
- 17.1.4 When alternate parts cannot meet form-fit-function requirements or when upgraded parts are being considered, the Supplier shall formally notify TRU of its intent and shall provide a detailed engineering analysis of the re-screening or testing requirements which will provide form-fit-function equivalency to the original parts. Note that form-fit-function alternate parts that require modification to the printed wiring board layout also require TRU approval.
- 17.2 The Supplier's analysis report to TRU for upgraded parts shall substantially respond to the following questions:
- Reason for change
  - Will the component be substituted into a critical function?
  - List equipment in which new component will be used, and the quantities of each
  - Existing component part number
  - Existing component rated temperature range
  - Operating temperature environment
  - Existing component quality assurance process, e.g. MIL-SPEC screening, etc.
  - New component Part Number
  - New component rated temperature range
  - Operating temperature requirement
  - New component quality assurance process, e.g. MIL-SPEC, screening, etc.
  - What is impact of the substitution on equipment reliability and safety? (Report analysis results)
  - Briefly describe the analysis and results that show the new component will be reliable in this application (e.g., in-service data, etc.)



- 17.3 In the case of out-of-production equipment where obsolescence issues render the equipment to be unsupported, TRU shall be notified of the circumstances that caused the product to be unsupported. TRU and the Supplier will work together to provide timely, accurate, standardized communications to notify customers of an impending product obsolescence and/or discontinuance.

## **18 NOTIFICATIONS/ DISCLOSURES**

- 18.1 The Supplier's system shall provide for timely reporting of nonconformities that may affect product already delivered, including any continuing air-worthiness actions. Notification to the Buyer shall include a clear description of the discrepancy, identification of all suspect parts (to include mfg. dates, serial numbers, quantities, etc.), and material affected by the deficiency, date(s) delivered, any information relating to the Root Cause/Corrective Action steps initiated to address the defective condition, and preventive measures taken to preclude recurrence of the process failure. Modifications of a disclosure (additions or deletions of data) requiring subsequent issuances shall be revision controlled to provide definitive sequencing (i.e. Rev 'A', 'B' etc.).

## **19 SOFTWARE AND HARDWARE CONFIGURATION MANAGEMENT**

- 19.1 The Supplier shall implement and maintain a configuration management process which includes CM planning, identification, change control, status accounting, and CM audits for all product independent to product life cycle (unless clearly identified on the PO). (See ISO 10007 for guidance.)
- 19.2 For all products including software and/or firmware, the Seller shall implement a Software Configuration Management (SCM) system which includes CM planning, identification, change control, status accounting and CM audits for all product independent to product life cycle (unless clearly identified on the PO).
- 19.3 The Seller shall implement a Corrective Action / Problem Tracking System to track software and/or firmware problems/corrective actions to closure.

## **20 COUNTERFEIT PART AVOIDANCE**

### **20.1 Definitions**

- OCM – Original Component Manufacturer/OEM Original Component
- OEM – Original Equipment Manufacturer
- Manufacturer – The supply chain entity that designs and controls the manufacture of an item. The OCM/OEM warrants performance of the item to its published specifications.
- Franchised/Authorized Distributor – A seller that that has a contractual relationship with the OEM/OCM to buy, stock, re-package, and sell its product lines. A Franchised/Authorized Distributor offers the OCM/OEM's full flow through warranty including failure analysis and corrective action support.
- Independent distributor/broker – Any seller that does not have a contractual relationship with the OEM/OCM to stock and sell its products.

- 20.2 Seller shall develop and implement a comprehensive counterfeit parts and assembly avoidance control plan to prevent the introduction of counterfeit parts and assemblies into items delivered to TRU. The plan shall comply with the requirements of AS5553 Counterfeit Electronic Parts, Avoidance, Detection, Mitigation and Disposition.
- 20.3 Incorporation of components or assemblies purchased from other than the OCM/OEM or a franchised/authorized distributor shall be submitted to the Buyer for approval and shall include:
- Furnish unbroken documentation (Certificate of Conformance) of part traceability to the part/assembly OCM/OEM if available.
  - Provide inspection, x-ray, Destructive Physical Analysis (DPA) and testing by a third party PRIOR to acceptance by the Buyer if traceability to the OCM/OEM is not available.
- 20.4 All of the above counterfeit parts avoidance requirements shall be flowed down to sub-tier Suppliers.
- 20.5 If suspect/counterfeit parts are furnished under this Purchase Order and are found in any of the goods delivered hereunder, such items will be impounded by Buyer. The Seller shall promptly replace such suspect/counterfeit parts with parts acceptable to the Buyer and the Seller shall be liable for all costs relating to the removal and replacement of said parts. The Seller shall make replaced suspect/counterfeit parts available for further investigation. Seller agrees that any reporting and investigation service, such as ERAI or a GIDEP alert, indicating that such parts are counterfeit, shall be deemed definitive evidence that Seller's parts contain counterfeit parts.