

**Raytheon Quality Note
TR3**

**Revision - Date
1 – 9/28/2015**

SUPPLIER QUALITY MINIMUM FLOWDOWN REQUIREMENTS

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Revision 1 replaces revision 0 dated 09/19/2013. Revision 1 adds section 9.3

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Section 1.0 Purpose and General Requirements

1.1 Purpose. The purpose of this Supplier Quality Minimum Flowdown Requirements document is to communicate Raytheon minimum quality management system (QMS) requirements for those categories of purchased goods and services described in Paragraph 1.2. These QMS requirements are in addition to and are, therefore, not replacements for or alterations of, other quality requirements set out in any pre-established master agreement, engineering drawing, specification or those of any proposed or existing purchase order or subcontract (referred to herein as an "Order") between your company and Raytheon, except as described in Paragraph 1.4.

1.2 Applicability. All new and existing Suppliers shall adhere to the latest version of these QMS requirements in effect as of the date of their Order when providing goods or performing services for Raytheon. For the avoidance of doubt, these QMS requirements apply to Original Equipment Manufacturers (OEM), contract manufacturers of finished items, Suppliers performing services that are associated with products, and providers of raw materials and components, with the limited exception of Suppliers providing Commercial off the Shelf (COTS) items. Suppliers shall ensure that the applicable QMS requirements are imposed upon all its permitted lower tier suppliers. Because Suppliers are critical to ensuring Raytheon's success in delivering high-quality products and services to Raytheon's customers at the specified time, Raytheon gives preference to long-term relationships with those Suppliers who have achieved, or who are committed to achieving, these QMS requirements.

1.3 Alignment to Standards. The requirements within this document align with the international standards ISO9001:2008, AS9100C, and AS9120.

1.4 Precedence. Additional requirements may be applied to the Raytheon Order in the form of Quality Notes, otherwise known as Q Notes, or as indicated in the Technical Data Package (TDP) and specifications. In the event of conflict or ambiguity, any such additional Q Notes supersede the related QMS requirement in this document.

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1.5 Language. Where required under this QMS or the applicable Order, Supplier's submissions of records, reports, specifications, drawings, inspection and test results and other documentation shall be in English.

1.6 Raytheon Terms. Raytheon terms and conditions of purchase referenced herein (i.e., TC-001 and TC-013) are available on the Internet at the following address: <http://www.raytheon.com/connections/supplier/terms/>.

Section 2.0 Supplier Certification

2.1 Minimum Certification Requirements. By policy, Raytheon may only issue Orders to Suppliers that are on its approved Supplier list. For a Supplier to be approved for entry onto Raytheon' Supplier list, it must be certified through an accredited third party registrar to the latest revision of the International Standards AS9100 or, in the case of distributors, AS9120. Third party certifications must be recognized by one of the following accreditation services:

- Independent Association of Accredited Registrars;
- International Accreditation Forum; or
- International Aerospace Quality Group (OASIS database).

2.2 Substitution and Documentation. At Raytheon' discretion, other third party certifications (e.g. TS16949, Nadcap) may be accepted as a substitute for the above listed standards. Documentation substantiating a Supplier's certifications must be provided to Raytheon upon its request.

2.3 Raytheon Rights. Raytheon reserves the right to (a) make the final determination of the Supplier's compliance to Raytheon quality requirements, (b) change the Supplier's approval status based on the Supplier's performance, (c) conduct assessments of the Supplier's compliance to this QMS, and (d) terminate the Supplier's approval status with Raytheon.

2.4 Raytheon Company Rights. A particular Raytheon business and/or the Raytheon Enterprise Supply Chain organization may impose additional

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certification or regulatory requirements on Suppliers. Such Raytheon business or Enterprise Supply Chain function may accept a supplier's compliance to their QMS at its discretion.

With respect to the following sections, Suppliers are expected to identify and adhere to those sections relevant to the performance of their Order(s).

Section 3.0 First Article Inspection (FAI)

3.1 Applicability. Unless specified otherwise in the Order, this section applies only to Suppliers providing items that are built pursuant to a Raytheon technical data package and/or specifications, including Raytheon directed modifications to supplier designed products.

3.2 Standard. The Supplier shall conform to the requirements of the Aerospace Standard AS9102, Aerospace First Article Inspection (FAI) Requirement. The revision of this Standard effective at the time of the Order applies.

3.3 Notification. The Supplier shall notify the assigned Raytheon Buyer or Raytheon Quality Manager in writing seven (7) days in advance of its readiness to submit FAI documentation for Raytheon' review. If source inspection is required by the Order, the review will take place at the Supplier's site. If source inspection is not required on the Order, Raytheon approval of FAI documentation is required prior to the Supplier's first delivery of the product and / or after a partial FAI, as defined in AS9102.

3.4 FAI Submission. If the Supplier has access to the Raytheon Supplier Portal for Easy Exchange of Data with Raytheon (SPEEDRay), which is tied to the Product Data Management (PDM) system, the required FAI documents shall be submitted through SPEEDRay. If the Supplier does not have access to SPEEDRay, the Supplier shall submit the required FAI documents to the assigned Raytheon Buyer.

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3.5 Exception. Unless specifically called out on the Order, FAI's are not required for rework Orders.

Section 4.0 Calibration

4.1 Requirements. The Supplier shall maintain a documented calibration system for the calibration and maintenance of tooling, inspection, and test equipment. Seller shall have and maintain a calibration system that is compliant to prevailing industry requirements in accordance with one or more of the following standards:

- ISO/IEC 10012
- ANSI/NCSL Z540-1
- ISO/IEC 17025
- ANSI/NCSL Z540.3

Section 5.0 Notification of Changes

5.1 General Notification Requirements. Supplier shall promptly notify the Raytheon Buyer, in writing, of any of the following:

5.1.1 Change in its quality system status resulting in the loss of a third party registrar's certification status;

5.1.2 Change in Supplier's quality organization, process or procedures that materially affects, or may be reasonably expected to affect, the conformity of any item on Order by, or proposed for an Order, including but not limited to the following:

- Design
- Material
- Parts
- Equipment, Tooling, fabrication methods, or processes

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- Any change that shall impact the form, fit or function of the item on Order.

5.2 Raytheon rights. Raytheon shall approve any and all changes prior to implementation under the Order, per AS9100 guidelines. If granted, notification of approval shall be provided by the Raytheon Buyer in writing.

Section 6.0 Deviations / Waiver Requests

6.1 Delivery Prohibited. The Supplier shall not deliver items that incorporate a known deviation from the engineering drawings, technical data packages, or specifications contained in the Order.

6.2 Notification Requirement. The Supplier shall promptly notify the Raytheon Buyer in writing of any potential deviations, waivers, engineering change proposals, and/or specification change notices, whether the resolution plan is known or not. In the event that any deviation, waiver or variance from the requirements of the Order is required, the Supplier shall request Raytheon's prior written approval before proceeding. If required, Raytheon will provide the appropriate Raytheon forms to the Supplier to document the request(s) and the Supplier is responsible for the completion of any such form.

6.3 Written Approval. If the request is approved by Raytheon, its approval will be provided to the Supplier in writing (which may include an electronic response).

Section 7.0 Control of Records / Data Retention

7.1 General Requirements. The Supplier shall retain objective evidence of conformance to the Raytheon Quality requirements for each shipment. Objective evidence includes, but is not limited to, all test and inspection records associated with the verification of compliance to the purchase order requirements. The required evidence shall be retained by the Supplier for a period of 7 years after

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final payment / settlement. Upon request, the objective evidence shall be made available to the Buyer.

Section 8.0 Certificate of Conformance

8.1 General Requirement. Unless otherwise specified on the Order or exempted as described in Paragraph 8.2 below, a Certificate of Conformance (C of C) shall be provided with each shipment containing the following information:

- Supplier's name and address;
- Original Equipment Manufacturers' (OEM) Name (if different than Supplier);
- Raytheon Order number;
- Part number of item, drawing revision, and quantity shipped (as specified on the Order). If the shipped P/N is different from the Order P/N, that fact must be documented on the C of C;
- Serial number(s) or date code(s) or lot/batch/heat number(s), as applicable, of product shipped;
- Statement certifying to the conformance to all Order requirements;
- The signature of the Supplier's authorized official, including printed name, title and date. (Note: electronic signature is acceptable)

8.2 Exemptions. A C of C is not required on rework Orders. A Certificate of Analysis report is considered outside the scope of a C of C and is flowed, if required, as a Supplemental Quality Note.

Section 9.0 Control of Nonconforming Product

9.1 General Requirements. The Supplier shall implement and maintain a quality system that implements effective corrective and preventive action to prevent any nonconformance in materials or products to be delivered under a Raytheon

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Order. The Supplier shall implement and maintain effective, documented processes that provide for the identification, documentation, and disposition of any nonconforming materials and products produced during the performance of any Order. The Supplier shall ensure that non-conforming material is not used for production purposes.

9.2 Handling of Nonconforming Material. The Supplier does not have the authority to process nonconformance(s) or establish a Material Review Board for material specified on a Raytheon Order. All material found to be nonconforming to the Order requirements at the Supplier's facility must be withheld from shipment, reported to the Raytheon Buyer, and made available for analysis by Raytheon. The Supplier shall segregate any such nonconforming material and identify it with clear marking in a nonpermanent method or tagged as such. The Supplier shall undertake any corrective and/or preventive action(s) to eliminate identified nonconformance(s), upon the request of the Raytheon Buyer.

9.3 Letter of Disclosure (LOD)

Upon discovery of nonconforming or suspected nonconforming product that has been shipped to Raytheon, the supplier shall notify Raytheon and submit a formal written LOD within 48hrs. The written notification will consist of the following information as applicable and available.

- Part number and description
- Non-conformance description
- Suspect lot number range (e.g., serial numbers, lot numbers, POs, delivery dates, dates of manufacture)
- Potential effect to performance, reliability, and safety
- Recommended disposition(s) (production and field)
- Containment plan
- Replacement part availability schedules
- Preliminary root cause and corrective action

The supplier will provide updated information as it becomes available.

9.4 Shipment Approval. Any shipment of material previously identified to be nonconforming must be approved in writing by the Raytheon Buyer. If, following Raytheon' analysis, Raytheon elects to approve the shipment of any such

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materials, a copy of Raytheon's authorization to ship document must accompany the material and a copy sent to the Raytheon Buyer.

Section 10.0 Special Processes & Controls

10.1 The Supplier shall identify and control any process, referred to as a Special Process, where the resulting output cannot be verified by subsequent monitoring or measurement. Special Processes are to be performed to the applicable specification(s), revision letter(s) including the type, class, or methods and testing that are required by drawing or specification.

Section 11.0 Supplier Corrective Action Requests

11.1 SCAR Issuance. Raytheon, at its discretion, will issue a Supplier Corrective Action Request (SCAR) when supplied items or services are found to be nonconforming. SCARs are typically issued when the degree of severity warrants such action (e.g., customer complaints, line stoppage, repeat issues, and negative trends over a period of time), but may be issued for any nonconformance.

11.2 Supplier's Responsibilities. The Supplier shall provide an interim response to the Raytheon Buyer within fifteen (15) days of the date of the SCAR acknowledging the SCAR and confirming its intent to investigate and provide a detailed response. The Supplier shall thereafter provide a response in writing to the Raytheon Buyer detailing its planned and implemented containment actions, root cause analysis, and systemic corrective action(s) within thirty (30) days after the date of the SCAR (unless a longer period is set out in the SCAR). The Supplier shall take effective action to permanently eliminate the causes of any nonconformance to prevent a recurrence.

11.3 Response Failure. If the Supplier fails to provide its interim response within the allotted fifteen (15) days from issuance of the SCAR, or if an unacceptable response or no response is received to the SCAR, the matter will be deemed a material breach of the Order. The issue may, at Raytheon's discretion, be

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escalated to the Supplier's upper management. Supplier's non-responsiveness to a SCAR will have an adverse impact on the Supplier's rating in Raytheon's enterprise-wide system and may preclude future awards by Raytheon or other Raytheon entities.

Section 12.0 Outsourcing to Lower Tier Suppliers

12.1 Flow Downs and Responsibility. The Supplier shall ensure that all applicable requirements of the Order are flowed down to its permitted suppliers at any tier. The Supplier shall ensure that the product delivered to Raytheon conforms to all specifications, drawings, third party quality standards (e.g., AS9100, etc.), Government procurement regulations, Public Laws and other requirements as may be specified in the Order. The Supplier shall also ensure

that a provision is included that, in the event of any default or threat of default in performance by a lower tier supplier, Raytheon shall be permitted to have direct access to their management, technical leads, quality personnel and all related data and documentation (excluding proprietary financial information).

12.2 Processes. The Supplier shall have documented, integrated management tools, enablers and resources sufficient to ensure that its lower tiered suppliers do not inhibit the supplier from meeting the requirements of AS9100 in fulfillment of the Order.

12.3 Specified Lower Tier Sources. The Supplier shall ensure that the specific approved / qualified lower tier supplier is used when required by specifications, drawings, statement of work or as otherwise specified in the Order.

Section 13.0 Distributors

13.1 The Supplier shall procure materials and parts only from Original Equipment Manufacturer (OEM) or Original Component Manufacturer (OCM) authorized Distributors. (As used herein, a "Distributor" is defined as any supplier that buys an item from others and re-sells the item without adding any value to such item.

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Repackaging or relabeling shall not be considered a value-added task for the purpose of this definition.) Any Distributor not authorized by the OEM will be considered a Broker and shall be subject to the requirements of TC-013 (Warranty for Goods Obtained from Brokers). Distributors shall be certified to AS9120, at a minimum.

Section 14.0 Raytheon Assessments

14.1 Raytheon Rights. Raytheon reserves the right to perform an assessment(s) of the Supplier's QMS and/ or processes relating to the fulfillment of Order requirements and the Supplier shall provide all reasonable support for any such assessment.

14.2 Scope of Assessment. Any such assessment(s) may include, but are not limited to, the following:

- Quality Management Systems (e.g., PPV)
- Order requirements which differ from those previously expressed (e.g., PAR)
- The Supplier's ability to meet the Order requirements (e.g., PWAR)
- The Supplier's identification of characteristics of the product that are essential for its safe and proper use
- The Supplier's identification of any critical items, including key characteristics and specific actions to be taken,
- Special requirements of the product,
- Identification of risks (e.g., new technology, short delivery time frame, etc.)

14.3 Records. Records of the results of the review and the actions arising from the review shall be identified and maintained.

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Section 15.0 Source Inspection

15.1 Source Inspection Rights. Raytheon reserves the right for itself and any authorized Government personnel, to perform source inspection at the Supplier's facility prior to product delivery. The Supplier shall furnish the necessary facilities, equipment, documentation and personnel in support of this verification activity at no additional cost to Raytheon or the Government.

15.2 Notification. The Supplier shall notify the Raytheon Buyer at least five (5) working days prior to the conduct any formal verification and validation test event, first article inspection, physical confirmation audit, functional configuration audit, projected delivery, or as otherwise specified. This notice requirement applies equally to the Supplier's as well as its lower tier suppliers. If Raytheon has provided an on-site representative, the Supplier is required to notify that representative. Once the Supplier notifies the Raytheon Buyer and confirms the surveillance/inspection/test schedule, the Supplier is responsible for additional notification of events that may affect the established schedule.

15.3 Procurement Package. When indicated as a requirement of the Order, the Supplier is expected to establish and maintain a procurement package for each Order in support of the conduct of any required verifications and/or inspections. The Supplier shall make such procurement package available to the Raytheon Buyer upon request. Supplier's package must include the following as applicable:

- Purchase Order and Change Notices
- Current Configuration of Drawings
- Current Configuration of Specifications, as indicated in the Order
- Subcontract Data Items: e.g., Acceptance Test Procedure (ATP)
- Data Item Letter of Approval
- Deviation/Waiver Documentation

15.4 Scope of Inspections. Specific surveillance/inspection/test activities selected by the Raytheon Buyer may include the review of all aspects of the production processes and system, witnessing of processes, points of test, and in-

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process inspection/test as required verifying conformance to the Order.
Verification activities may include, but are not limited to:

- Supplier's provision of objective evidence of the conformance of the product to the Order requirements (e.g., OEM documentation, Certificate of Conformance, test records, statistical records, and process control records such as calibration, training records and oven logs, etc.;
- Raytheon' review of the required documentation;
- Raytheon' inspection of products upon receipt;
- Delegation of verification to the Supplier or Supplier certification.

15.5 Records. Test and inspection data demonstrating conformance to the lot acceptance requirements as specified in the drawing or specification shall be generated, be ready for review and then be retained in accordance with Data Retention provisions of the Quality requirements of this document.

15.6 Conditions for Shipment. If the Order identifies the requirement for source inspection, the Supplier shall not ship items without surveillance/inspection/test by the designated Raytheon employee, unless one of the following has occurred:

- Written waiver from the Raytheon Buyer (e.g., Source Shipment Authorization (SSA));
- A shipment authorization letter (e.g., authorization to ship form);
- Modification to the Order removing requirement.

15.7 Shipment Documentation. The Supplier must submit source inspection documentation, either hard copy or electronic, with each shipment reflecting the quantity shipped. Failure to include a copy of the Raytheon source inspection documentation or any variation between the quantity verified and the quantity shipped is cause for rejection of the shipment. The quantity shipped must be the exact same as the quantity accepted on the source inspection documentation. Final acceptance shall be at Raytheon's facility.

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15.8 Effect of Source Inspection. Raytheon's acceptance or conduct of any source inspection shall not relieve the Supplier of the responsibility to provide conforming products and/or services hereunder.

Section 16.0 Counterfeit Material

16.1 The Supplier shall implement and maintain policies and procedures that, at a minimum, meet the requirements in TC-001 (Raytheon's General Terms and Conditions of Purchase) and any additional Q Notes applicable to this order that address counterfeit parts and materials.

Section 17.0 Statistical Process Control / Key Characteristics

17.1 Requirement for SPC. If critical characteristics are identified in the Technical Data Package (TDP) or the pre-production review processes for the Order to identify critical characteristics, material supplied shall require Statistical Process Control (SPC) to be utilized and monitored by the Supplier with an SPC system aligned with requirements of AS9103.

17.2 SPC Records and Minimum Level. The Supplier will maintain SPC and appropriate SPC data on file for special part and process characteristics, as required. The Supplier shall control all special, significant, or critical drawing characteristics (unless otherwise specified) with SPC and variable gaging, as applicable. The capabilities must be identified in the Supplier's control plan and subsequently followed. This data may be required with each shipment at the discretion of Raytheon. Critical characteristics will be defined in the Raytheon TDP, when applicable. The minimum acceptable process capability level ("Cpk") is ≥ 1.33 Cpk. The Supplier shall submit a mitigation plan for Raytheon' approval if the process capability falls below 1.33 Cpk.

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Section 18.0 Traceability / Serialization / Markings

18.1 Items provided under this Order may require Traceability, Serialization, and Marking requirements. For items with no Lot Traceability Marking requirements, the date of manufacture shall be considered acceptable.

Section 19.0 Product Preservation

19.1 The Supplier shall preserve the product during internal processing and delivery to Raytheon in order to maintain conformity to requirements. Preservation shall apply to the constituent parts of a product. Preservation of product shall be in accordance with product specifications and applicable statutory and regulatory requirements. The Supplier shall make provisions for the identification, handling, packaging, storage and protection of product, including constituent parts.

Section 20.0 Software (SW) and Configurable Logic (CL)

20.1 Deliverable Software. Unless specified otherwise in the Order, this Section applies to a Supplier that designs, develops, and/or produces deliverable software which may be stand-alone, embedded, or loadable into a target computer. This includes any support software used in the development and maintenance of deliverable software.

20.2 Applicability. Raytheon and the Supplier shall agree on the extent of applicability of this Section for the items below:

- Use of Hardware Description Language (HDL) or high order language as the design source of electronic hardware [e.g., Application Specific Integrated Circuit (ASIC), Programmable Logic Device (PLD)]; and
- Integration of Commercial-off-the-Shelf (COTS) or non-developmental software into a deliverable product.

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20.3 Standard. The Supplier shall conform to the AS9115 supplement, which provides clarification of the corresponding AS9100C quality management system requirements, for deliverable software and associated processes. The Supplier shall also reference ARP9005 for guidance on the control and management of non-deliverable software.

20.4 Quality Flow Downs. Unless otherwise specified via the Order, the minimum software quality flow downs shall be:

- Software Quality Program Plan (SQPP) delivered at least sixty (60) days prior to first article delivery;
- Software Test Plan (STP) delivered at least sixty (60) days prior to first article delivery;
- Software Test Report (STR) delivered in association with first article delivery;
- Software Version Description (SVD) for each approved, unique version of software delivered.

Section 21.0 Packaging Requirements

21.1 The supplier shall preserve the product during internal transportation and delivery to the intended destination in order to maintain conformity to requirements. As applicable, packaging shall include identification, handling, preservation, storage and protection.

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