



Form 136.4.6  
Rev: G  
Date: 8-9-17

## **SUPPLIER QUALITY CODES**

### **Quality Assurance Requirements Supplement (QAR)**

#### **RECORD OF REVISIONS**

<b>Revision</b>	<b>Date</b>	<b>Description</b>
F	9-12-16	Revised Q09.
G	8-9-17	Revised Q43

## QUALITY CODES

Listed below are explanations of each Quality Assurance requirements. When indicated, these requirements become the SELLER'S OBLIGATION and compliance is required to satisfy the purchase order.

Each Quality Code is individually revision controlled by the date beside the code indicating its last revision.

**Q01A Seller's Quality Control System**

- A. AS 9100: The seller shall provide and maintain a system that complies and is registered as an AS9100 "Quality Management system." Compliance with the provisions of this clause in no way relieves the seller of the final responsibility to furnish acceptable supplies or services as specified herein. This system shall be subject to audit by Spectra Technologies representatives.
- B. ISO 9001 Series/ MIL-Q-9858A: The seller shall provide and maintain a system that complies with ISO 9001 / Mil-Q-9858A, "inspection system requirements." Compliance with the provisions of this clause in no way relieves the seller of the final responsibility to furnish acceptable supplies or services as specified herein. This system shall be subject to audit by Spectra Technologies representatives.
- C. A Quality Assurance System reviewed and approved in writing by Spectra Quality Assurance.
- D. Deleted
- E. AS9120 for Distributors

**Q02A Spectra Source Inspection**

Items to be delivered under this Purchase Order require inspection or surveillance by Spectra Technologies Quality Representative at the Seller's facility/plant. Spectra Technologies inspection of product, prior to shipment, is required unless notified by the Spectra Technologies representative. Sufficient advance notice (48 hours for local, plus travel time for distant locations) must be given to permit scheduling of source inspection. The Seller shall notify Spectra Technologies Purchasing Department when the product is/will be ready for source inspection. Source inspection does not relieve the Seller from the responsibility for compliance with all requirements of this purchase order. Evidence of Spectra Technologies source inspection must accompany or be shown on all shipping documents. Spectra Technologies reserves the right for final acceptance at his facility. It is required that the items submitted for Spectra Technologies source inspection shall have been previously accepted by Seller's inspection.

All supplies, including raw material, components, intermediate assemblies and end products shall be subject to inspection and test by Spectra Technologies Quality Assurance representative at all times and places, including the period of manufacture. During performance of this order, Seller's Quality Control or Inspection system and manufacturing processes are subject to review, verification and analysis by the Spectra Technologies Quality Assurance representative.

**Q03A United States Government Source Inspection**

Government Inspection is required prior to shipment from your plant. Upon receipt of this Purchase Order, promptly notify the Government Representative who normally services your plant, in order that appropriate planning for Government Inspection can be

accomplished. In the event that the Inspection Officer cannot be located, the customer should be notified immediately.

**Q04A Certificate of Compliance/Conformance**

A statement signed by a legally authorized representative of the Seller, including title, shall accompany each shipment, certifying that items being delivered are in full compliance with the Purchase Order, drawings and specifications traceable to the Purchase Order, and objective evidence to that effect can be made available to the customer upon request. However stated or implied, the Seller's Certification of Compliance/Conformance shall constitute a representation by the Seller that:

- A. Materials used are those which have been specified by Spectra Technologies and that items delivered were produced from materials which the Seller has on file, reports of chemical or physical analysis, and any objective evidence of conformance as such materials to be applicable specifications.
- B. Processes used in the fabrication of items delivered were in compliance with applicable specifications as referred to or furnished with the Purchase Order.
- C. The Seller has complied with specifications on all other requirements applicable to the items delivered.
- D. Records constituting objective evidence of the inspections performed in the course of manufacturing, preservation, packaging and packing of said articles shall be retained by the Seller for a minimum of ten years after completion of the Purchase Order unless otherwise stipulated in the Purchase Order, and shall be made available for review by Spectra Technologies on request for the duration of Spectra Technologies contract.
- E. Seller shall, at his expense, obtain certifications from his material and process supplier or furnish certifications for processes performed in-house for all Military Specifications called out on detail drawings of the top assembly parts list. Certification will be construed to mean that the Supplier has all required certifications on file and available by the procuring agency.

The minimum requirements of a Certification of Compliance /Conformance are as follows:

- 1. Date
- 2. Purchase Order Number
- 3. Seller's Name
- 4. Lot Size (as required)
- 5. Sample Size (as required)
- 6. Signature and Title of Authorized Management
- 7. Lot, Batch or other Identification Information (as required)
- 8. Explicit Data Traceability Statement (as required)
- 9. Spectra Technologies Part Number and Revision Level (as required)
- 10. Must Accompany Shipment of Parts

**Q05A Certified Material Test Report**

For those materials identified, a Certified Material Test Report is required. This may be in addition to (as stated in the Purchase Order) Certificate of Compliance/Conformance and differs in that actual test data must be supplied. Test results containing actual data

must be adequate to determine compliance with all applicable requirements of the identified material specifications.

The test report shall contain the following:

1. Name and address of supplier
2. Purchase Order Number
3. Identification of material by specifications, revisions, amendment and date, together with type, grade, size etc.
4. Lot/Batch Number Identification (as required)
5. Quantity of material represented by test results
6. Test results identified by reference to the applicable requirements
7. Quantity tested, sample size and specimen type as applicable
8. Date, signature and title of authorized representative of the contractor that is attesting to the accuracy of the test report content

**Q06A Inspection/Test Report**

Seller shall submit with each shipment an inspection report for the delivered end items or assemblies (identified by part number, part description and serial number, if applicable,) listing those characteristics specified and:

- A. Actual values found during test or inspection
- B. An inspection verification data sheet summarizing the inspections and tests performed. Included must be:
  1. Purchase Order Number
  2. Lot Size (as applicable)
  3. Lot/Batch Number Identification (as applicable)
  4. Inspection Level and/or Severity
  5. Sample Size
  6. Quantity Tested
  7. Number Defective in each Group/Sub-Group

The Seller's Quality Assurance Representative shall sign all reports.

**Q07A Critical and / or Safety Characteristics**

All Critical and or Safety characteristics, inspections or test listed will be 100% inspected by Spectra Technologies upon receipt from our suppliers. All nonconforming material identified by Spectra Technologies will be returned to the supplier for rework and/or replacements. It is required that the supplier verify these items by 100% inspection also.

**Q08A Calibration**

In order to furnish the materials or services required by the Purchase Order, the Seller shall maintain a calibration system that meets the requirements of MIL-STD-45662A, ANSI/NCSL Z540.3, ISO/IEC 10012, or ISO/IEC 17025, Calibration System Requirements. The Purchase Order certificates of accuracy or test reports to accompany deliverable items must certify traceability to standards maintained by the National Institute of Standards and Test (NIST.)

**Q09B Age Control**

The Seller shall have an effective system of age control of items for which acceptability is limited by maximum age. The system must include a method of identifying the age of such items and provisions for the rotation of stock. Seller shall identify each delivered item, package or container of limited shelf life material with the date of cure or manufacture, expiration date, and special storage and handling conditions, in addition to normal identification requirements of name, part or code number, specification number, type, size, quantity, etc. This identification shall be recorded on certification or shipping documents for the material.

Time lapse allowed between manufacturing and receiving dates shall not exceed 20% the shelf life for the material (i.e. Material must have at least 50% of its shelf life remaining upon being received by Spectra Technologies.)

Material shall not exceed 12 months from cure date at time of receipt at the Spectra Technologies facility. Each shipment shall be labeled with the expiration date, part number, quantity, and lot number.

**Q10A Statistical Process Control**

In addition to the quality requirements of associated drawings and/or specifications, the Seller shall implement Statistical Process Control (SPC) in accordance with AS9103, ANSI Z1.1, Z1.2 & Z1.3 and/or ASQC B.1, B.2 & B.3.

The Seller shall review all process/operation parameters for possible application of SPC techniques. Justification shall be provided for each process/operation parameter that controls those characteristics identified on cover if deemed impractical for the application of SPC.

The Seller must submit an SPC plan to Spectra Technologies for review and approval at least 30 days prior to First Article or initial delivery, whichever is first. The plan shall consist of two sections: General and Detailed. The general section shall define overall structure of Seller's SPC program (i.e. training, chart selection, process capability, etc.) The detailed section shall define those process/operation parameters to which SPC will be applied. This section shall also include justification for the characteristics deemed impractical for SPC application. If needed, Spectra Technologies will provide assistance in meeting the above listed requirements. To request assistance contact the Spectra Technologies Buyer who issued the Purchase Order.

**Q11A Source of Supply**

Source of supply required shall be established as indicated. This is to include any Seller procured items that contain source of supply restrictions.

**Q12A Corrective Action Required for Departure from Drawing/Specification**

A report must be submitted to the Spectra Technologies Quality Assurance Department that adequately describes discrepancies and includes a complete assessment of the root cause and corrective action taken to preclude recurrence. Acceptance of the Discrepancy information and the RCCA must be accepted by Spectra Quality Assurance prior to shipment of product.

**Q13A Control of Cast/Molded/Stamped Parts**

Samples of parts must be submitted to Spectra Technologies for each run/lot. Cast or Molded Part Tooling modifications or rework that affect dimensions, require notification to Spectra Technologies and may require a Delta first Article.

**Q14A Supplier Facility/Ownership Changes**

The Seller shall contact the Spectra Technologies Purchasing Department if any changes have been made to the manufacturing facility or company ownership; or it's Legal Name.

**Q15A First Article Inspection**

Spectra Technologies acceptance of a First Article sample is required prior to the production run. The First Article sample shall be identified as such, including the Purchase Order Number, Part Number, and Part Name. The Seller is required to:

- A. Submit a First Article sample for which a Spectra Technologies Representative shall conduct inspection at the Seller's facility.
- B. Submit a First Article sample to Spectra Technologies Receiving Inspection Department.
- C. Submit the first machined or fabricated piece to Seller inspection for review and approval by Spectra Technologies. Spectra Technologies approval must be provided prior to the start of any production. Quantities of parts machined concurrently with the first piece shall be specified by procurement.

In all cases, the Seller shall have performed all non-destructive testing prior to submission, and shall include all actual value data for inspections with the submission. The Spectra Technologies Representative reserves the right to repeat any inspections while evaluating the sample. All destructive testing shall be performed during Spectra Technologies Source Inspection, unless otherwise notified in writing by an authorized Spectra Technologies representative.

**Q16A Acceptance Inspection Equipment**

Acceptance Inspection Equipment (AIE) used to perform the inspections or test of those characteristics listed must be submitted to Spectra Technologies for approval prior to the first shipment of product. Acceptance of product by Spectra Technologies will not be granted prior to approval.

AIE documentation shall contain sufficient information to allow approval in accordance with:

- A. Part number, revision and name
- B. Specification number and paragraph, if applicable
- C. Classification of Characteristic number
- D. Characteristic description and dimension

Submission of Standard Measuring Equipment requires:

- A. Manufacturer
- B. Model number
- C. Accuracy

Functional gauging and laboratory equipment requires:

- A. Gage number
- B. Gage drawing (two copies)
- C. Set-Up, Calibration and Operating Procedures as required.

**Q17A Spectra Technologies Owned Property**

Tooling or equipment acquired with funds provided by the Purchase Order becomes property of Spectra Technologies or the United States government upon Spectra Technologies acceptance of the tooling and resultant products. Acceptance will be indicated by payment of the Seller's Invoice, after which the Seller is directed to identify the hardware with the nomenclature and tooling number provided on the Purchase Order. This requirement shall not be construed to alter or preclude any other terms and conditions for property responsibility made a part of this Purchase Order.

**Q18A Report of Discrepancy for Spectra Technologies Material Review**

The Seller shall notify Spectra Technologies and request material review action for any departure from drawing, specification or other Purchase Order requirements. The initial notification may be by telephone, e-mail or fax, provided that a documented Discrepancy Report is submitted prior to or concurrent with delivery of material. The report must adequately describe all discrepancies and include a complete assessment of cause and corrective action taken to preclude recurrence. The report shall be submitted to Spectra Technologies Purchasing Department, who will arrange for appropriate material review actions. The report may be presented on Seller's standard documentation format.

A copy of the report will be returned to the Seller, showing material review actions taken. Seller shall not ship reportedly discrepant materials without Spectra Technologies authorization.

Seller shall reference the Seller or Spectra Technologies assigned report number on all shipping documents accompanying the discrepant material, and all parts covered by the report shall be segregated and distinctly identified.

**Q19A Product Change Approval /Supplier Qualifications**

The Seller shall not make any changes in product, design, material or processing or in fabrication method without prior approval in writing by Spectra Technologies. In addition, the Seller shall not make any change in purchased parts (i.e. material or design) utilized in the fabrication of items to be delivered under the Purchase Order with out prior approval in writing by Spectra Technologies.

Seller agrees to maintain strict controls to assure that, after the item(s) successfully pass the qualification, no changes will be made to any design, material, part, process, procedure, tooling or test equipment; nor shall they be altered, redesigned or replaced by any other design, material, part, process, procedure, tooling or test equipment, without prior written approval of the Buyer.

The definition of change does not include the following: editorial or administrative changes such as spelling or typographical errors, clarifications, personnel, maintenance, or equipment changes not affecting the qualified product.

In addition, the items shall not be produced at a facility other than the Seller's original facility which produced the acceptable items, without prior written approval of the Buyer.

Upon receipt of such notice from the Seller, the Buyer shall have the right to direct the Seller to repeat all or part of the qualification at Seller's expense and to obtain from the Seller all data necessary to prove the acceptability of the proposed change.

Notwithstanding the above provisions, Seller agrees that the items to be supplied hereunder will conform to all applicable procurement specifications and drawings, as amended.

**Q20A Lot Number Control**

The Supplier is required to establish and maintain a lot numbering control system that complies with MIL-STD-1168. Lot number identification shall be clearly identified on all:

1. Manufacturing and/or processing documentation
2. All product packaging and packing containers
3. And on all shipping and certification documents.

Product failing to meet the identification and traceability requirements shall be rejected by Spectra Technologies, and returned to the supplier at the supplier's expense.

**Q21A Ammunition Data Card Requirements**

The Supplier shall furnish an Ammunition Data Card (ADC) that complies with MIL-STD-1168 with each shipment of product. The ADC shall include the fabrication lot histories of all components used in the end-item fabrication. Failure to supply a signed ADC with the shipment shall be cause for rejection.

**Q22A Disposition of Non-Conforming Material and Supplier Corrective Action Request**

Spectra Technologies reserves the right to refuse acceptance and/or payment for any supplies or services found to be non-conforming (either by the supplier or by Spectra Technologies upon receipt,) upon discovery of defects at Spectra Technologies, Spectra Technologies Quality Assurance shall issue a Supplier Corrective Action Request (SCAR) to be addressed and completed by the supplier, and returned to Spectra Technologies Quality Assurance for review and approval, prior to shipment.

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 Spectra' discretion, be 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 the Spectra Quality rating system and may preclude future awards by Spectra.

**Q23A Repairs**

Under no circumstances shall the Seller perform repairs on parts or materials covered by this Purchase Order without prior authorization by Spectra Technologies. Repairs shall be defined in detail, and requires Spectra Technologies review and approval prior to implementation.

**Q24A Right of Entry**

Spectra Technologies reserves the right of access by the organization, their customer, statutory and regulatory authorities to all facilities involved in the order and to all applicable records.



**Q25A Sub-tier Flowdown**

Spectra Technologies requires that all purchase order requirements are to be flowed down to all sub-tier suppliers and the applicable requirements in the purchasing documents, including key characteristics where required.

**Q26A Other as Specified**

**Q27A Deleted (Expedited Shipping Costs) Not a Quality Requirement**

**Q28A Fraudulent/Counterfeit Part and Material Avoidance, Mitigation and Disposition**

a. **Guarantee of Product Source(s)** – The seller shall ensure that only new and authentic materials are used in products and materials delivered to Spectra Technologies, LLC. The seller may only purchase parts or materials directly from Original Component Manufacturers (OCM); OCM authorized (franchised) distributors, or authorized aftermarket manufacturers. Use of product that was not provided by these sources is not authorized unless first approved in writing by Spectra. The seller must present compelling support for its request (e.g., OCM documentation that authenticates supply chain traceability of the parts to the OCM), and include in its request all actions to ensure the parts thus procured are authentic/conforming parts.

**b. Supply Chain Traceability**

"The seller shall maintain a method of item supply chain traceability that ensures tracking of the supply chain back to the manufacturer of all parts included in assemblies and subassemblies being delivered per this contract. This supply chain traceability method shall clearly identify the name and location of all of the supply chain intermediaries from the manufacturer to the direct source of the product for the seller and shall include the manufacturer's batch identification for the item(s) such as date codes, lot codes, serializations, or other batch identifications

**c. Test and Inspection Requirements**

"When specifically instructed by Spectra the seller shall establish and implement test and inspection activities necessary to assure the authenticity of purchased product, in accordance to the requirements established by the customer, including:

- Supply chain traceability and documentation verification,
- Visual examination
- [see Appendix E of SAE 5553A]

Tests and inspections shall be performed in accordance with defined accept/reject criteria provided or approved by Spectra Technologies, LLC. The seller shall prepare and provide to the Spectra Technologies, LLC records evidencing tests and inspections performed and conformance of the product to specified acceptance criteria.

Tests and inspections shall be performed by persons that have been trained and qualified concerning types and means of test methodology for parts fraud and suspect counterfeiting and how to conduct effective product authentication.

**d. Certificate of Conformance**

The seller shall supply full supply chain traceability including copies of part Manufacturer Certificates of Conformance (C of C).

The Manufacturer and the seller of its products shall complete a Certificate of Conformance (C of C) and full supply chain traceability for all parts.

1. The C of C supplied by the Manufacturer shall be copied and passed through to the end customer. The seller's certificate shall also accompany each shipment of product to the end customer. In no case shall the manufacturer's certificate be altered or show signs of alteration.
2. The seller shall retain copies of certificates with the lot records until the lot is completely shipped.
3. The seller shall retain the product and shipment traceability for a period consistent with the contract requirements.

A Manufacturer's C of C should include the following:

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

**Q29A Special Processes**

Special processes: The Supplier and/or sub-tier Supplier performing a special process shall require approval by Spectra Technologies Quality Assurance. Special processes include but are not limited to: plating, welding, brazing, heat treating, inorganic finishing, nondestructive testing, impregnation of castings, metal spray, soldering, radiography, penetrant inspection and other specified processes imposed by contract specifications or drawing requirements. Each shipment shall be accompanied by one (1) legible and reproducible copy of a certificate for all processes used and the name of the company performing such process.

The supplier is responsible for the quality and conformance, C of C and C of A.

**Q30A Forgings: Test Bars**

The seller shall furnish with each shipment of forgings:

- a) Two (2) test bars produced from the same heat of materials the forging supplied. Test bars must have the same percentage of reduction as the parts supplied.
- b) Test bars shall be permanently identified with the Spectra purchase number, material heat number, lot number, and alloy identification.

**Q31A Serialization**

The seller shall serialize components, subsystems, and assemblies, as required by drawings, specifications, and the purchase contract. Serialization shall be such that duplication of serial numbers will be precluded. The seller's quality control system shall provide traceability of all serialized supplies to the source. When two or more serialized parts are joined in assembly, a list for each assembly serial number with part numbers, change letters, and component serial numbers must accompany each shipment.

The serialization numbering system and process must be approved by spectra Quality Assurance Engineering prior to delivery of product.

**Q32A AS9102 First Article Inspection**

AS9102 - First Article Inspection is required in accordance with AS9102 found at [www.sae.org](http://www.sae.org). Forms provided in the AS9102 or equivalent shall be used to document the results of the first article inspection as required in the specification. These forms may be generated by any media, but must contain all the information required by AS9102 and be documented using the same unit of measure as specified in the technical data package. A copy of the AS9102 F.A.I. report specification shall be submitted to Spectra Technologies Quality Assurance and approval gained before shipment of the product.

**Q33A Audits: Internal / External**

Suppliers shall conduct appropriate internal and external audits. Quality auditing shall apply to all operations and processes that effect quality, including activities ranging from purchasing to materials processing at component suppliers through end item assembly, packaging, and testing. Quality auditors shall assess operations and processes, with diligence, from an independent customer perspective, and with sufficient authority and freedom to tenaciously require potential technical concerns to be adequately addressed and brought to closure with appropriate follow-through. The supplier shall document the conduct and results of all audits on an internal report which shall be maintained on file.

Records of audits shall be provided to Spectra or U.S. Government representatives for review as/if required.

All suppliers shall accommodate Spectra Technologies supplier management or quality audits.

**Q34A Sub-tier Supplier Control**

The Seller shall ensure that their sub-tier suppliers are capable of attaining and maintaining a quality system acceptable to Spectra Technologies for the supplies and services covered by this purchase order. Records of sub-tier supplier's performance shall be maintained and available for review by Spectra Technologies as necessary. The product quality program of the seller shall contain necessary provisions for surveillance of the sub-tier supplier product quality activities to assure satisfactory performance.

**Q35A Foreign Object Debris / Damage**

A FOD prevention program shall be maintained. The program shall include the review of design and manufacturing processes to identify and eliminate foreign object entrapment areas. Work shall be accomplished in a manner preventing foreign objects or material in deliverable items. Work areas and control tools, parts and materials shall be maintained in a manner to prevent FOD incidents.

**Q36A Chemical Analysis (C of A)**

Supply a laboratory certificate of actual chemical analysis and mechanical or physical property test results as specified by the governing material specification with each shipment. A mill analysis or certificate of compliance traceable to the mill heat number is acceptable for metallic wrought products only. Reference the Spectra

Technologies purchase order number on the certification.

**Q37A Record Retention and Storage**

Quality records pertinent to processes, components or end item assembly lots shall be retained for ten years after government acceptance of the associated end item lots. This includes quality records for all components and assemblies contained in the end item assembly lot.

Quality records include production plans, process and work instructions, operating procedures, etc., as well as management reviews and reports from internal and external audits.

The records shall be readily retrievable and stored in an environment that prevents damage, deterioration, or loss. Records may be stored in an electronic format.

**Q38A Tools**

Design or Concept: approval of inspection gages and/or checking fixtures is required. Spectra approval shall be obtained prior to acceptance and payment of any tooling. Inspection tools shall not exceed 10% of the allowable production tolerance as defined by the engineering drawing or specification.

**Q39A Sample Parts**

When samples are specified on the purchase order, materials other than drawing may be specified as well as finish requirements may be omitted. Specific instructions, quantity, and characteristic determination shall be made in writing by Spectra and the Supplier. These samples may be used for CMM, machining, finish or other aspects of the part manufacturing process validation.

**Q40A Digital Product Control**

Configuration Management and Traceability - The supplier shall develop and maintain documented processes to ensure the integrity, security, and configuration control of all Spectra provided datasets, supplier created CAD/CAM/CAI datasets, type design, tool designs, and datasets sent to sub-tier suppliers, used in the fabrication of Spectra contracted products.

**Q41A Supplier Quality Review**

The supplier shall prepare and present to Spectra an annual Supplier Quality Program Review, the status of the seller's performance of Quality and Delivery. The supplier review may also include performance to internal measurements such as but not limited to: First Pass Yields, SPC, Critical Item performance, Safety performance; and any additional Continuous Improvement activities. The meeting template and schedule shall be negotiated.

**Q42A Supplier Part / Process Approval**

First Article and Process Approval submittal is required prior to the first production shipment of product. The following requirements shall be completed by the supplier and submitted to Spectra for review, retention and approval. The original data package is to be retained by the supplier in accordance with the purchase order. Product shall not be shipped prior to FAI and Process approval. Any modifications to these requirements shall be specified within the Purchase Order. Required elements

shall be follows:

1. Master Part Sample(s) shall be permanently identified as “Master” adjacent to the area defined by drawing for part marking via engraving, die stamping, or other method prior to finish processing, suitable for visible identification after processing. A photograph of the master part, displaying the “Master” and part marking per drawing requirement shall be submitted with the FAI package. Master part(s) shall be retained at the Supplier for the life of the Purchase Order, plus two (2) years. (Contact Spectra prior to the disposal of any “Master”)
2. First Article Inspection, using the same unit of measurement as specified in the technical data package, and Test Results completed and submitted per AS9102.
3. Process Flow diagrams generated to include all manufacturing, inspection and special process operations.
4. Process FMEAs performed and submitted.
5. A) Process Control Plan completed for Key, Critical, or Major Characteristics as identified by the Technical Data Package, or by Spectra within the Purchase Order.
5. B) Process Capability Studies and Gage R&R on measuring instruments shall be completed and submitted for these identified characteristics.
6. Work Instructions for all internal manufacturing
7. Quality Assurance plans for part verification
8. Quality assurance plans for control, monitoring, and verification of Sub-tier processes

After First Article sample(s) and data and the Production Process is approved by Spectra, the process is considered “Frozen” and shall not vary without a request for change submitted to and approved by Spectra in advance of any change. Resubmission is required after a 24 month lapse in production, or in the event of process change.

**Q43B Sampling Plans**

At a minimum where the purchase order requires a specific sampling plan, the plan specified on the purchase order shall be followed. Where there is no requirement to use a specific sampling plan and the supplier wishes to use sampling to accept product in place of 100% inspection, the plan used must be statistically valid and must reject the lot when one defect is found (e.g., C=0 plans or Mil-Std 1916). Rejected lots must be 100% inspected prior to release. ANSI ASQ Z 1.4 may be used if the lot in question is rejected on 1 defect regardless of the accept/reject number listed. Any sampling plan that meets the above requirements may be used. Statistically valid plans are available as existing industry, military or Government standards (e.g., ANSI ASQ Z 1.4, or Mil-Std-1916, etc.). Suppliers sampling plans must be submitted to spectra Technologies Quality Assurance Engineering prior to the start of manufacturing for approval.

**Q44A Supplier Change Notification**

Supplier Change Notification Process Supplier shall document a process for notifying Buyer of intended or actual changes described in the following requirements.

1. Change in Quality Management Representative  
Supplier shall promptly notify Buyer’s Authorized Procurement Representative and Supplier Quality Representative of intended or actual changes in the management

representative with assigned responsibility and authority for its quality management system.

**2. Change in Quality Management System**

Supplier shall promptly notify Buyer's Authorized Procurement Representative and Supplier Quality Representative in writing of intended or actual major change to its quality management system that may affect the conformity of its goods or services. Each change to Supplier's quality management system is subject to review by Buyer. Supplier shall include, as part of written notification of change to its quality management system, a list of changed procedures identified by revision level, a description of the intent of the changes and a signed statement that compliance with Buyer's quality system approval has not been diminished.

**3. Change in Manufacturing Line, Facility Location or Process**

Supplier shall promptly notify Buyer's Authorized Procurement Representative in writing of intended or actual change to the manufacturing process that may affect the quality of delivered goods or services. This includes changes to Supplier's and Supplier's subcontractors manufacturing facility location for the contracted goods or services, equipment, or processes for which the product was qualified. Supplier shall promptly notify Buyer's Authorized Procurement Representative in writing of change to its quality control process that may affect the inspection verification of conformity. Notification shall document effect of change to inspection with respect to fit, form, reliability, function, conformity of the Supplier's goods or services. Each change to Supplier's quality control system is subject to review by Buyer and Quality Assurance.

**Q45A Spectra Supplier Assessments**

Spectra 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.

Any such assessment(s) may include, but are not limited to, the following:

- Quality Management Systems
- Order requirements which differ from those previously expressed
- The Supplier's ability to meet the Order requirements
- 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 or processing of the product, and
- Identification of risks (e.g., new technology, short delivery time frame, etc.)

**Q46A Spectra Flowdown of Raytheon Quality Requirements to Spectra's Sub-contract Suppliers**

The supplier shall adhere to the Quality requirements as defined in Q47. These requirements are pass through requirements from a contract to Spectra Technologies from Raytheon, and can be found at: <http://qnotes.raytheon.com>

The supplier shall review the Quality requirements of the contract and if a clear understanding is not attained shall immediately contract the Spectra Technologies Contracting Officer or Program Manager.

- Q47A Spectra Flowdown of Raytheon Quality Requirements - detailed**  
(Quality Engineering to define all pertinent Raytheon Q-notes for flowdown to subcontractors per Raytheon contract requirements.)  
Example: NH, TR, D7, etc....(From The Raytheon Quality Notes)
- Q48A Measurement System Analysis (MSA)**  
The supplier is responsible for submission of an acceptable MSA per ASTM E2782 (Standard Guide for Measurement system analysis) and/or AIAG MSA; providing objective evidence, analysis and data that the measurement system is stable, repeatable and reproducible. Spectra Quality Assurance must approve the submitted MSA before the inspection tooling (AIE) Acceptance Inspection Equipment, and methodology can be used for acceptance of product.
- Q49A Obsolescence:**  
Defined as when a part, tool, or material is no longer in production by the original manufacturer.
- If an obsolescence issue occurs, is imminent, or a potential, the supplier shall notify Spectra Technologies of this condition upon risk identification. The supplier shall identify the part number, nomenclature, and supplier of the item and shall identify the Spectra purchase order and part number that is affected. This activity applies to all materials down to the base or raw material at all sub-tier supplier levels.
- The Supplier shall provide sufficient details that a prudent effort was made to identify an alternate part number that would be technically acceptable. This information must be provided to and approved by Spectra and / or Spectra's customers prior to implementation.
- Q50A Certificate of Analysis (C of A)**  
Components required of a C of A to Spectra Technologies include, but are not limited to the following items.
1. Name, Address, phone number of supplier / manufacturer
  2. Spectra Technologies Purchase order Number
  3. Name of raw material / furnished product & original manufacturers name / or process
  4. Category (component, ingredient, in-process, finished product)
  5. Lot / Batch number and full traceability to the origin of material
  6. Quantity of material(s) / Part(s) tested
  7. Date of manufacture of material being certified
  8. Location of origin of the material being certified
  9. Product Code or Number (may include serial numbers if applicable)
  10. Expiration date of certified material (if applicable)
  11. Stability / Transport statement (if required) e.g. store at -40 Deg F or less
  12. Test Name(s) – may include physical descriptions / properties, chemical tests / analysis, desirable characteristics, will include charts from heat treat ovens etc... and associated Statistical data if required; of which validate the conformance of

the material or testing performed. Should also include chemicals and or equipment used in the testing / analysis

13. Test Specification References and Test Methods performed with revisions defined
14. Calibration records may be requested in validation of the testing equipment utilized (generally requiring certification traceable back to NIST standards)
15. Test Results (all) – with actual values and pass or fail results defined
16. Acceptance Criteria – not less than “x” or more than “y” etc...
17. Certification of compliance to testing results – complies with specification “xxxxx” as set forth in “yyyyy”
18. Date analysis was completed
19. Printed name and signature of the analyst
20. Printed name and signature of the approver, title, and date
21. Page number and total number of pages in the C of A document
22. Expiration date of C of A
23. Batch release date for certified material

**Q51A Physical Configuration Audit (PCA)**

“Physical Configuration Audits (PCAs) - The seller shall perform a PCA on all qualification hardware, with Spectra Quality Assurance engaged for approval of the PCA Plan. The PCA shall be accomplished 30 days prior to FAI / FAT. The PCA shall be conducted on (See Item 1) of each component, sub-assemblies, and assemblies selected at random. Inspection of these samples shall be performed for 100% of all drawing dimensions, characteristics, and associated Technical Data Package (TDP) requirements; including specifications and Quality Assurance Provisions (QAPs) with actual variable data recorded. The contractor shall notify Spectra 14 days in advance of the PCA. Spectra will witness the PCA at its discretion (Spectra’s Customer may also witness the PCA). The contractor shall submit PCA reports (in seller format) to Spectra describing all audits and corrective actions planned. A 100% compliant PCA shall be completed and evaluated for acceptability by Spectra prior to Spectra acceptance of qualification hardware and scheduling of FAT.

- 1: Quantity to be determined and defined on the purchase order based on risk assessment to support a confidence level by Spectra Quality Assurance
- 2: Validation of AIE / AAIE equipment and the Manufacturing and Quality process is required
- 3: Includes Special Processing or Testing requirements by the Supplier or Supplier’s sub-tier
- 4: Includes detail part data and processes if an assembly
- 5: Includes Ballistic testing and results verifications if required
- 6: Includes Functional testing and results verifications if required

**Q52A Commercial off the Shelf (COTS) Item**

**Definition:** The commercial item definition is broad. Commercial items include any item of a type customarily used by the general public, or by nongovernmental entities, for purposes other than governmental purposes that has been sold, leased, or licensed, or offered for sale, lease, or license to the general public (see FAR 2.101). Also included in the commercial item definition is any item that has evolved from a commercial item as described herein, through technical or performance advances, even if it is not yet



available in the commercial marketplace, as long as it will be available in time to satisfy the Government's requirements. Commercially Available Off-the-Shelf (COTS) items are defined at FAR 2.101 and are a subset of commercial items.

This definition taken from the Office of the Secretary of Defense Acquisition, Technology and Log – Commercial Item Handbook (version 2.0)

**Supplier Requirements:**

1. The supplier must furnish the exact part number defined by the Purchase Order and/or drawing. If the part number is different from the part number defined by the PO or drawing prior approval must be granted by Spectra Quality Engineer and Procurement before the product will be accepted by Spectra.
2. If there are defined dimensions, color or other specifications on the drawing and/or technical data package (TDP) they must be within tolerance before the product will be accepted by Spectra.
3. Certificate of Analysis may be required:  YES  NO
4. Certificate of Conformance may be required:  YES  NO