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# Quality Assurance Provisions (QAPs)

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**QAP-00**  
**General Quality Requirements**

Manufacture and deliver the quantities called for in this purchase order, in accordance with the specifications and drawings listed. If there is a conflict between any QAP contained herein and the applicable specification(s) and drawing(s), the applicable specification(s) and drawing(s) shall prevail.

- 1) The Supplier is responsible for flow down of specification(s), drawing(s), and Purchase Order requirements to sub-tier Suppliers for components and assemblies to include certifications and inspection data.
- 2) Top level drawings and specifications will be listed in the applicable purchase order. It is the responsibility of the Supplier to obtain all drawings and specifications including secondary and general support specifications. Should you be unable to obtain these documents, contact the Buyer.
- 3) Develop/delineate the manufacturing processes and tooling to manufacture, inspect and deliver the quantities required.
- 4) Identify material with a unique lot or identification number to distinguish it from other material that may be similar in design or configuration but serves a different function or purpose or is intended for use on another ammunition item. Refer to QAPs 20 or 23 as required.
- 5) Articles defined in the purchase order are subject to the applicable Supplier Quality Assurance Provisions (QAPs) contained herein. Applicable QAPs are noted in the Buyer's purchase order. Supplier is required to comply with the most current revision (issue date) of Quality Assurance Provisions in effect at the time the order is placed, for the life of the order, unless otherwise notified by Buyer. D&Z QAPs are available for download online. Visit [http://www.dayzim.com/Services\\_and\\_Products/Munitions](http://www.dayzim.com/Services_and_Products/Munitions)
- 6) Articles will not be accepted and payment withheld if the Supplier fails to meet the requirements of the purchase order.
- 7) The Buyer reserves the right to perform quality audits at the Supplier's facility. Reasonable facilities and equipment shall be made available to the Buyer while performing these tasks. Access must be provided to appropriate work areas, AIE, records, inspection/quality plans, etc.
- 8) This document and any resulting contract document are to be considered proprietary information. No disclosure, in whole or in part is permitted without the Buyer's written authorization.
- 9) Costs from defective products submitted to the Buyer will be grounds for consideration from the Supplier. These include but are not limited to:
  - a) Defective product resulting in additional or increased screening and/or inspection steps required for D&Z assembly process
  - b) Unplanned downtime due to supplied product or supplier delivery issues
  - c) Customer rejects due to supplier issues
  - d) D&Z's administrative costs associated with addressing supplier issues
    - i) Travel costs
    - ii) Source Inspection failures
    - iii) Supplier development driven by corrective actions, such as Measurement Systems Analysis, Control Plans, Potential Failure Modes Effects Analysis, etc.
  - e) D&Z Customer Consideration costs will be passed on to supplier for supplier-related issues.

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- f) Costs related to missing scheduled contractual delivery dates.

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**QAP-01**  
***Packing and Marking***

- 1) Unless otherwise directed by this purchase order and referenced specifications and/or drawings, the Supplier shall determine the method of shipment.
- 2) Shipping method must provide adequate protection to prevent damage in transit and/or storage and be conducive to normal material handling practices.
- 3) One Lot Number per pallet.
- 4) Gross Weight of individual containers will not exceed 50 pounds (unless otherwise approved by the Buyer).
- 5) Equal Quantities per Container (except for one clearly marked "Short Pack" container).
- 6) Container marking must face outside of pallet.
- 7) At least one side of each container is to be marked with the following information:
  - a) Buyer Part Number
  - b) Part Name
  - c) Drawing Number OR Specification Number as stated on purchase order
  - d) Lot Number, if applicable
  - e) Quantity
  - f) Purchase Order (PO) Number and line item number

NOTE: The Buyer reserves the right to correct improperly marked shipping containers. Charges resulting from these corrections may be deducted from the Supplier's invoice.

- 8) For screened product, the supplier must include a marking on the outside of the container that clearly indicates the product has been screened.

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**QAP-02**  
***Certificate of Conformance (C of C)***

The Supplier shall submit a Certificate of Conformance (C of C), with each shipment. The Certification of Conformance must originate from the original material manufacturer and shall be a stand-alone document (i.e. not part of a packing slip). Exceptions to this requirement may be approved by the Buyer, upon written request from the Supplier.

- 1) Each Certificate of Conformance (C of C) shall contain the following minimum information:
  - a) Supplier (company name/address)
  - b) Purchase Order (PO) Number

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- c) Drawing Number (including revision level), if applicable
  - d) Specification Number (including revision level), if applicable
  - e) Lot or Batch Number
  - f) Quantity
  - g) Shelf Life Expiration Date (if applicable)
  - h) Statement of Certification: This statement, or similar: *“The items furnished with this shipment are certified to be conforming to the requirements of the purchase order, drawings, and specifications referenced. All certifications, including material certifications, and other inspection and test reports, as applicable, are on file at the Supplier’s facility and are available for review by the Buyer”.*
  - i) Signature of Authorized Supplier Representative
  - j) Typed Name of Authorized Supplier Representative
  - k) Company Title or Position of Authorized Supplier Representative
  - l) Date Signed
- 2) An example of a Certification of Conformance can be obtained from the Buyer upon request.
  - 3) Records that provide objective evidence of conformance must be retained for a period of seven years after final delivery of the items procured.
  - 4) For propellant items, a properly completed Form 214R (Propellant Description Sheet) may be accepted in lieu of a Certificate of Conformance.
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**QAP-03**  
***Certified Material Test Report (CMTR)***

- 1) The Supplier shall submit, with each shipment, a Certified Material Test Report (CMTR) indicating conformance to requirements of the applicable drawings/specifications. Each CMTR must contain the following minimum requirements:
  - a) Material Supplier (company name/address)
  - b) Purchase Order Number
  - c) Identification of material by specification, revision, amendment, and dates, together with size, grade, type, etc.
  - d) Quantity of material
  - e) Test results identified by reference to the applicable requirements, e.g. chemical and mechanical properties. Test results must comply EXACTLY with requirements.
  - f) Date, signature, and title of Supplier representative that is attesting to the accuracy of the test report (In the case of certain electronically produced documents, signature requirement may be waived, in writing, by the Buyer)
  - g) The CMTR must be traceable to the material used to produce each shipment against this purchase order. In addition, records that provide objective evidence of conformance must be retained for a period of seven years after final delivery of the items procured.

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**QAP-04**  
***Shelf Life***

Supplier shall identify all materials and articles that have definite characteristics of quality degradation with age or environment. The Supplier shall affix shelf life information directly on the material container or article as well as annotating on the Certificate of Conformance. This identification shall indicate the date useful life was initiated and the date or cycle at which the useful life will be expended.

The material Shelf life expiration date shall always be at the end of a calendar month.

When environment is a factor in determining useful life, the indication shall include the storage conditions (i.e. temperature, humidity, etc.) required to achieve the stated life. The finished product's shelf life must have 85% still remaining upon receipt at the Buyer's facility, unless authorized by buyer. Shelf life shall not be recertified for the Buyer's product without prior approval.

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**QAP-05**  
***Inspection and Test Records***

- 1) The Supplier shall generate and maintain Inspection and Test Records (e.g. in-process and/or final inspection and test records) providing objective evidence that the material was inspected and/or tested for all critical, special, major, and minor defect characteristics per the requirements of the specification(s) and drawing(s). Inspection and testing must be performed in accordance with specification and drawing requirements. Critical and Special characteristics require a minimum 100% inspection, and in some cases require inspection by Automated Acceptance Inspection Equipment (AAIE) – see item specification for specific requirements. Major and Minor Defect Characteristics are to be inspected in accordance with the sample sizes stated in the specification.
- 2) Inspection records are required to be submitted with product that has been screened at the supplier's facility.
- 3) Inspection and Test Records shall contain the following minimum information:
  - a) Purchase Order (PO) Number
  - b) Lot Number and description of material, component part and/or subassembly
  - c) Description of each Characteristic inspected
  - d) Method of inspection. Include inspection type (visual, gage, etc.) if inspected by Acceptance Inspection Equipment (AIE)
  - e) Inspector performing inspection
  - f) Total quantity in the Lot/Shipment, quantity inspected, quantity accepted, quantity rejected and reason for rejection
  - g) Independent laboratory name and address (if applicable)
- 4) Retention of Inspection and Test Records (at Supplier's facility):
  - a) Retention of inspection and test records are required regardless of submission requirements.

- b) Supplier must ensure that records are available for timely submission to, or auditing by the Buyer's representative or designee.
  - c) Records must be retained at Supplier location for a period of seven (7) years after final delivery of the procured items.
- 5) Sample Size Determination / Application of MIL-STD-1916 (DoD Test Method Standard):
- a) The Department of Defense (DoD) Preferred Methods for Acceptance of Product, MIL-STD-1916, shall be used for this procurement action. All references to MIL-STD-105, MIL-STD-414, MIL-STD-1235, and ANSI Z1.4 appearing in the Technical Data Package (TDP) are replaced by MIL-STD-1916. See paragraph 5(c) below for exceptions to this requirement.
  - b) Verification Levels (VL) shall replace AQLs. If VL levels are not listed in the purchase order, specifications or drawings then they shall be VL Level VII for critical characteristics, VL IV for major characteristics and VL II for minor characteristics.
  - c) In exception to paragraph 5(a) above, acceptance of product in some cases WILL NOT require use of MIL-STD-1916. These exceptions are:
    - i) Specifications which include sampling table or sample sizes.
    - ii) Items which do not meet Section 1 (Scope) requirements of MIL-STD-1916. If in doubt regarding sampling requirements, contact the Buyer for direction.

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#### **QAP-06**

#### ***First Article Sample (FAAT or FAS or FAI) Inspection***

- 1) Perform and submit an acceptable First Article Sample (FAS) as defined in the applicable military specification, drawings, and/or Purchase Order. Supplier must submit a First Article Qualification Test Plan to the Buyer which includes all verifications by examinations, analyses, demonstrations or tests needed to meet all requirements of the drawing(s) and specification(s). Buyer's approval of the First Article Test Plan must be obtained before First Article is performed.
  - a) Sample Size: Sample size for the first article must be per the specification. If no sample size is listed in the specification, contact the Buyer for the appropriate number of samples required.
  - b) Regular production may not begin until the Supplier receives approval of FAS acceptance by the Buyer.
  - c) The FAS must be produced using the same methods, equipment, processes and materials that are to be used for production runs on this contract.
- 2) For First Article Submission, the Supplier will present to the Buyer the specified number of "known good" finished items as verified by 100 percent inspection using approved inspection equipment.
- 3) The Supplier shall submit with the First Article Sample:
  - a) The inspection and test records which show that the material was inspected for all critical, special, major and minor defect characteristics per the requirements of the specification, drawing, and/or Purchase Order.

- b) Inspection Records must show inspections of all unlisted drawing dimensions including all drawing notes for the same number of samples required by the item specification for First Article or the Buyer's specified sample size.
- c) Variable data must be provided using AIE/AAIE approved gages or standard measuring equipment if required by the purchase order.
- d) When variable data cannot be obtained, attribute data will be provided.
- e) Individual parts within the FAS shall be serialized, i.e. identified with numbers which correspond to the inspection records submitted. (Do not physically mark numbers on individual parts without prior approval of the Buyer).
- f) Inspection/test records must contain the following minimum requirements:
  - i) Purchase Order number
  - ii) Lot number and description of Component Part
  - iii) Description of each Characteristic inspected, including drawing notes.
  - iv) Total quantity produced for FAS/First Article amount inspected, amount accepted, amount rejected
- 4) Material Certifications: The Supplier shall provide objective evidence such as material test reports or certificates of analysis to verify conformance of material chemical, physical and mechanical properties for component hardware and materials. The Supplier shall also provide objective evidence to determine conformance of special processes (see QAP 26) including preservation coatings.
- 5) Additional First Article Samples: An additional First Article sample or portion thereof, may be ordered when:
  - a) a major change is made to the technical data
  - b) whenever there is a lapse in production for a period in excess of 90 days, or
  - c) whenever a change occurs in place of performance, manufacturing process, material used, drawing, specification or source of supply.
- 6) When conditions (a), (b), or (c) above occur, the Supplier shall notify the Buyer so that a determination can be made concerning the need for the additional First Article Sample or portion thereof, and instructions provided concerning the submission, inspection, and notification of results.
- 7) Costs of the FAI resulting from production process change, change in the place of performance, or material substitution shall be borne by the Supplier.

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**QAP-07**  
***Documentation and Records***

One copy of the following records/documentation shall be provided with each shipment. An electronic copy of the documents shall also be provided; contact the Buyer for the appropriate e-mail address(s).

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1. Certificate of Conformance, if QAP-02 is required.
2. Certified Material Test Report (CMTR), if QAP-03 is required.
3. Inspection/test Records, if QAP-05 is required.
4. SPC Control Charts, if QAP-13 is required.

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#### **QAP-08**

##### ***Failure Analysis and Corrective Action***

- 1) The Supplier is responsible for notifying the Buyer immediately for each item failing a First Article Acceptance Test and/or Lot Acceptance Test performed at your facility or sub-tier Supplier facility. A preliminary report and subsequent final report with root cause identification and corrective actions (RCCA) shall be submitted to the Buyer.
- 2) The Supplier shall perform RCCA on lots found to be nonconforming after receipt at the Buyer's facility. Notification of nonconformance will be made with a Supplier Corrective Action Request (SCAR) at the discretion of the Buyer. The Supplier shall answer the report as required by the SCAR and return to the Buyer no later than the due date required.
- 3) In the event that product deficiencies are found and documented by the Government (DCMA) in the form of a Quality Deficiency Report (QDR) or Corrective Action Request (CAR), a copy of the QDR or CAR must be forwarded to the Buyer immediately upon receipt.
- 4) Root Cause and Corrective Action (RCCA) is also required for quality management system (QMS) deficiencies identified during QMS and product audits, performed by the Buyer.

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#### **QAP-09**

##### ***Request for Variance (RFV) and Engineering Change Proposal (ECP)***

- 1) Request for Variance (RFV): The Supplier and/or sub-tier Supplier is expected to meet all requirements EXACTLY as specified on the drawing and/or specification (i.e. dimensions, materials, chemicals, plating, passivation, etc.). In the event that discrepancies or variances are identified after acceptance of the purchase order and prior to shipment of product, the Supplier shall immediately notify the Buyer. Product shall not be shipped to the Buyer with known variances.
- 2) A Request for Variance (RFV) may be considered by the Buyer, depending on the type of variance. To be included in the RFV request is a fit/form/function analysis. In the event that discrepancies or variances are identified after acceptance of the purchase order and prior to shipment of product, the Supplier shall immediately notify the Buyer. Product shall remain quarantined at the Supplier until (or if) approved through the Buyer. Submission of the RFV shall be in accordance with DID DI-CMAN-80640 unless otherwise directed by Buyer.
- 3) Engineering Change Proposal (ECP): The Supplier must notify and obtain approval of the Buyer, prior to making any change to the design of the product or material required by this Purchase Order. An Engineering Change Proposal (ECP) shall be submitted to the Buyer for approval, prior to

submitting to the Customer. The Buyer is responsible for making such submission to the Customer. The Supplier will be notified, in writing, of the result of such submission.

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**QAP-10**  
***Change in Design***

- 1) Supplier agrees that the work produced internally and/or the work procured from sub-tier Suppliers under this contract shall comply with the following requirements unless a documented request for change is approved by the Buyer.
    - a) Work shall not be moved to another production facility or moved within your current facility.
    - b) Changes shall not be made to the design, manufacturing processes, inspection and test equipment, and/or materials.
    - c) Source of supply shall not change for materials, manufacturing, components, assembly, and/or special processes (i.e. heat treating, plating, passivating, etc.).
  - 2) If any of the above changes occur and/or if the Supplier's production has been or will be down for 90 days or more between production runs, a First Article, or limited (tailored) First Article will be required, unless waived by the Buyer.
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**QAP-11**  
***Source Inspection***

- 1) The Buyer maintains the right to perform a Source Inspection to evaluate the product or service being procured by this purchase order. This evaluation may take the form of:
  - a) Product Inspection
  - b) Process Verification
  - c) Audits on items affecting product quality such as:
    - i) Acceptance Inspection Equipment (AIE) Calibration
    - ii) Special Processes
    - iii) Work Instructions
    - iv) Statistical Process Control (SPC)
- 2) Reasonable facilities and equipment shall be made available to the Buyer while performing these tasks. Access must be provided to appropriate work areas, AIE, records, inspection/quality plans, etc. The Buyer must be provided the opportunity to inspect all listed characteristics and those unlisted ones specifically identified at the point where acceptance is determined. Before submitting product to the Buyer, it shall have been accepted under the Supplier's inspection plan.
- 3) The Buyer may choose to waive Source Inspection but any such waiver will not jeopardize future opportunities for Source Inspection. The Buyer reserves the right to make final acceptance.

- 4) Notify the Buyer at least 10 days in advance to arrange for representative Source Inspector to be at your facility. The Buyer may direct that the Supplier coordinate source inspection through a Buyer-designated source.
  - 5) The Buyer reserves the right to assign the costs associated with Source Inspection to the Supplier if the Buyer's Inspector arrives and determines that the Supplier is not ready.
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**QAP-12**  
***Government Source Inspection (GSI)***

- 1) Government Source Inspection (GSI) is required prior to shipment from your facility. A copy of the contract covering the item under procurement is furnished by the local Government Quality Assurance Representative (QAR) or DCMA-QAR at the Buyer's Facility to the Defense Contract Management Agency (DCMA) element servicing your facility.
  - 2) Upon receipt of this order, promptly notify the DCMA-QAR who normally services your facility so that appropriate planning for GSI can be accomplished. The Supplier is required to notify the DCMA element in advance of production of ordered material. DCMA must be given opportunity to verify production operations as well as providing inspection of each lot prior to Supplier shipment of lot. Supplier shall not ship ordered material without DCMA having completed the lot inspection. If you are unsure who to contact within the DCMA organization, please contact the Buyer for guidance.
  - 3) GSI does not constitute acceptance; nor in any way replace the Supplier's or Buyer's inspection, or otherwise relieve the Supplier of responsibility to furnish conforming material.
  - 4) If a Government Inspector finds material to be unacceptable, the Supplier shall not ship the material to the Buyer until such time that the Government Inspector's findings have been satisfactorily resolved with the Buyer.
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**QAP-13**  
***Statistical Process Control (SPC) Plans***

- 1) SUPPLIER GENERAL SPC (MANAGEMENT) PLAN: A Supplier General SPC Plan must be submitted prior to scheduling of First Article Acceptance Testing, and must be approved by the Buyer prior to start of any production. The submission shall be in accordance with DID MI-MGMT-80004 unless directed otherwise by Buyer. Once approved by the Buyer changes to the plan require approval by the Buyer, prior to implementation into your Quality Management System. A template will be provided for your use in developing the plan, if requested.

The General SPC Management Plan defines the Supplier's SPC concepts and methodologies, and must be in accordance with ANSI/ASQC B1, B2 and B3 Standards. As a minimum, the plan must address the following:

- a) Define management's SPC responsibilities and involvement and shall include management's commitment to continuous process improvement.
- b) Embrace a total commitment to quality and shall be capable of standing on its own merit.
- c) Describe the policy for applying SPC, including goals and management commitment to SPC.

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- d) List documents that are the basis for the Supplier's SPC program (i.e., ANSI standard, textbooks, Government documents).
- e) Define the SPC management structure within the organization. Identify and include interrelationships of all departments involved in SPC (i.e. Production, Quality, Engineering, Purchasing, etc.).
- f) Identify by job title or position all key personnel within departments involved in the application of SPC.
- g) Describe which functions are performed by key personnel and when these functions are performed (i.e., include personnel responsible for performing inspections/audits, charting and interpreting data; personnel responsible for determining, initiating and implementing corrective action upon detecting assignable causes, etc.)
- h) Identify by job title or position the primary individual responsible for overseeing that SPC training is accomplished.
- i) Describe the qualification program required and in use for all personnel utilizing SPC techniques, including the qualification of trainers.
- j) Identify who is to be trained and the type, extent and length of such training (i.e., on-the job, classroom, etc.)
- k) Identify when refresher training is required and how personnel using SPC techniques are monitored.
- l) Identify the criteria for performing SPC gage capability studies and describe how and when these studies are applied. Repeatability and accuracy of gages should be addressed.
- m) Describe how the process/operation parameters are determined appropriate for SPC application for critical, special and major process/operation parameters (i.e., Pareto analysis; analysis of characteristics with tight tolerances, etc.).
- n) Identify the criteria for performing process capability studies and describe how and when these studies are applied. Describe how the process capability index is calculated and include the frequency of these calculations.
- o) Describe what actions are taken as a result of each process capability study.
- p) Describe the methodologies when process capability is for variable and attribute data.
- q) Determine what constitutes a capable process. When variable data is utilized, capability ( $C_p$ ) shall be determined. Process performance index shall be greater than or equal to 1.33 ( $C_{pk}$ ). For critical parameters/characteristics, the process performance index shall be greater than or equal to 2.0 ( $C_{pk}$ ).
- r) Determine what constitutes a capable process. When attribute data is utilized, process capability/performance shall be the percent beyond the upper/lower specification limit less than or equal to 0.003 percent ( $C_{pk}=1.33$ ).
- s) Describe what actions will be taken if process/operation is sub-marginal or marginal. ( $C_{pk}$  less than 1.33 or less than 2.0 for criticals), or grand average fraction defective is greater than .003 percent.)
- t) Include the analysis of statistical distributions and define all formulas and symbology utilized.

- u) Describe the type of charts to be used (i.e., X bar/R, X bar/S, etc.) and rationale for use; the criteria for selection of sample size, frequency of sampling and rational subgroups.
  - v) Identify the procedures for establishing and updating control limits, including frequency of adjustments.
  - w) Describe the criteria for determining out-of-control conditions (i.e., trends, points beyond control limits, etc.) and the corrective action taken; to include failure analysis when the process is unstable or when nonconforming product has resulted from unstable processes.
  - x) Illustrate out-of-control tests.
  - y) Describe the method of recording pertinent facts on control charts such as changes in raw material, machines, manufacturing methods and environment, and corrective actions taken and describe how control charts are traceable to the product.
  - z) Identify whether Suppliers are required to utilize SPC and describe the extent the vendor's policies and procedures are consistent with in-house procedures.
  - aa) Describe the methods utilized to determine that Suppliers have adequate controls to assure defective product is not produced and delivered.
  - bb) Describe the system utilized to audit Suppliers, what will be audited and how often.
  - cc) Describe what action will be taken when out-of-control conditions exist at sub-tier Supplier facilities.
  - dd) Describe your SPC Audit System. This system, at a minimum, shall consist of auditing compliance with the planned arrangements specified in the General and Detailed SPC Plans followed by a review and analysis of the outcome to include implementation of necessary corrective action.
  - ee) Identify various records to be used in support of SPC and describe their use.
  - ff) Identify retention periods for SPC records.
- 2) **DETAIL SPC PLAN:** An item-specific Detail SPC Plan(s) must be submitted prior to scheduling of First Article Acceptance Testing, and must be approved by the Buyer prior to start of any production; the Detail SPC Plan may also require U.S. Government (USG) approval. Once approved by the Buyer and/or the USG, any changes to the plan requires approval by the Buyer, prior to implementation.
- The Detail SPC Plan(s) shall be in accordance with instructions outlined below. It is recommended that the Buyer's Detail SPC template be used as a format. This template is comprised of descriptions of SPC techniques planned for use, on a characteristic by characteristic basis, for all characteristics identified in the specification as critical, special, and major. The Supplier may provide justification for not using SPC techniques for any or all of the characteristics identified. These justifications must be approved by the Buyer, and may need to be approved by the U. S. Government.
- a) Each Detail SPC Plan must contain the following:
    - i) Supplier name, component name, part number, and applicable specifications.
    - ii) Defect characteristic number and/or defect characteristic nomenclature.
    - iii) SPC applicable (to include chart type, sample size, sample frequency) or SPC not applicable (to include brief justification why not applicable). Justifications must include how the

Supplier's processes are controlled to assure all product delivered to the Buyer is in conformance to specifications and/or drawings.

- iv) Identify the following for each process/operation, by name or characteristic under control:
- (1) Identify process/operation by name or characteristic and provide rationale for selection; justification for non-selection if the parameter or characteristic is identified as critical, special and/or major.
  - (2) Describe how the characteristic is produced; the chain of events, type and number of machines involved, company name and location of manufacturing facility, tolerances maintained, etc.
  - (3) Production and inspection machinery used. Include the production rate, number of shifts and length of shifts plus whether inspection is fully or semi-automatic or manual. If manual, identify the type of gages in use. If the AIE has been approved, make reference to the approved AIE as applicable.
  - (4) Identify the type of charts to be maintained and whether the process or operation is performed in-house or sub-contracted out; identify facility/vendor where process/operation parameters are targeted for SPC, including sub-contractor company name and address.
- b) Control Charts: The Supplier must document (CP) and (CPK) indices and investigations & corrective action for out-of-control conditions. In addition, each chart must show control limits, purchase order number, lot number (if applicable), and defect characteristic number.
- Control charts are to be documented in a manner that assures traceability to the product.

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#### **QAP-14**

#### ***Acceptance Inspection Equipment (AIE)***

- 1) The Supplier shall establish and maintain a documented system for the identification and approval of Acceptance Inspection Equipment (AIE), to include the verification of inspection equipment necessary to meet all purchase order requirements.
- 2) Suppliers are responsible to purchase and maintain inspection equipment to satisfy purchase order requirements.
- 3) A listing of all AIE, including a one-time submittal of gage drawings and of all inspection equipment to be used in the final acceptance of all listed Classification of Defects (critical, special, major and minor) shall be submitted to the Buyer for approval sixty (60) days prior to anticipated use for scheduled production, including First Article samples. AIE and AAIE submissions shall be in accordance with DI-RELI-80322 unless directed otherwise by Buyer.
- 4) Two (2) separate AIE lists are required: One AIE List for inspection of critical, special, and major characteristics and a second AIE List for inspection of minor characteristics. Each AIE List shall include the following:
  - a) ITEM: Part number of the Item to be inspected
  - b) SPECIFICATION: Item Specification of the part to be inspected.

- c) DEFECT CODE: List the Critical, Special, Major, and Minor defect codes as listed in the item specification. For example, C1 (Critical), 101 (Major), Spl A (Special), 201 (Minor)
- d) CHARACTERISTIC: List characteristic as listed in the item specification. For example, "Overall Length of body, max."
- METHODS: List inspection equipment type, brand/model, measuring capacity/units, if commercial equipment, Supplier drawing number/revision.

- 5) Use of approved AIE is mandatory for acceptance of purchased components when AIE is required by the purchase order.
- 6) Calibration: The Supplier and any sub-tier Suppliers shall have a calibration system that is in compliance with the requirements of ANSI/NCSL Z540-1, ISO10012-1 "Requirements for Measurement Processes & Measuring Equipment", or an industry equivalent as approved by the Buyer.
- 7) Standard Measuring Equipment (SME) or Commercial Equipment (CE): The listing for SME and CE, such as micrometers, calipers, gage pins, snap gages, etc., must include brand, model, capacity or range, resolution, and accuracy. See examples below.
- Micrometer, OD, 1" range x 0.0001" divisions, 0.0005" accuracy;
  - Caliper, Dial 6" range x 0.001" divisions, 0.001" accuracy;
  - Gage Standard Commercial Pin, 0.1500 ± 0.0002" diameter, 0.0001" accuracy;
  - Torque Wrench, 0-50 in/lbs x 2 in/lbs divisions x ± 2% accuracy.
- SME entries that call out the brand name should include the statement "or equivalent".
- 8) Supplier-designed AIE: AIE that is described in a design drawing format shall be furnished to the Buyer in PDF format. The design drawing(s) shall include a unique drawing number, revision number, AIE nomenclature, inspected part name, inspected part number, and characteristic to be inspected. List the drawing number and revision on the AIE List, along with gage resolution and accuracy information if not otherwise shown on the design drawing.
- 9) Roll-over Approvals: If the purchase order is a follow-on order for which AIE approval was previously obtained, and if the parameters of the product and the AIE have not changed, "roll-over" approval may be granted. Submit request citing the previous order and the Buyer or government document that approved the AIE, along with a copy of your AIE List.
- 10) Automated Acceptance Inspection Equipment (AAIE): In the event that automated inspection equipment is used to make its own accept/reject decision, the equipment design drawings (including accept/reject standards), software and calibration procedures will be required. Complete description of the AAIE is required to ensure that the equipment is capable to make the correct accept/reject decision. Unless otherwise waived in writing, the AAIE shall be designed to include fail-safe decision-making, i.e. the software designed to default to reject status, with positive action required for accept. The AAIE submittal shall include the method to determine reliability of the equipment. See Military Specification MIL-A-70625 for specific requirements.
- 11) AIE Revisions: Revisions to any approved AIE or method must be submitted to the Buyer for approval sixty (60) days prior to anticipated use for scheduled production, including First Article samples.



- 12) Test Equipment Validation: Unless otherwise waived in writing by the Buyer, the Supplier shall perform validation of all test equipment used for Lot Acceptance Testing. A Test Equipment Validation Plan must be submitted for Buyer approval prior to the validation being conducted. This plan will identify each significant piece of equipment/tooling and the method used to validate each prior to test.
- 13) AIE Approval Withdrawn: The Buyer reserves the right to disapprove any AIE that is not accomplishing its intended use in verifying an inspection or test characteristic.

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#### **QAP-15**

#### ***Measurement System Evaluation/Measurement System Analysis (MSE/MSA) APR/2014***

(a) Definitions. This paragraph defines specific terms utilized throughout the rest of the clause and Data Item Description (DID) (DI-QCIC-81960). This aids in clarifying the MSE requirements.

(1) Acceptance Inspection Equipment (AIE). All equipment (includes AAIE defined below), special and standard, including dimensional gages, measuring equipment, test fixtures, electronic and physical test equipment, and other test equipment used for examination and test of a product to determine conformance to the Technical Data Package (TDP) which may include drawings and specifications (e.g., Detail, Performance, Weapon specifications, and QAPs).

(2) Automated Acceptance Inspection Equipment (AAIE). AIE in which the inspection and acceptance determination of the product is performed, in whole or in part, in an automatic manner.

(3) Contractor Inspection Equipment. [Buyer]-approved equipment utilized by the contractor to perform examination and tests to assure conformance to contract requirements.

(4) Commercial Inspection Equipment. Industry-developed inspection equipment of universal application, without limitations to a specific part or item, which is advertised or cataloged as available to the trade or to the public on an unrestricted basis at an established price. Examples follow:

(i) Standard Test Equipment. Multiusage equipment that is specific to a function rather than to an item. It includes such items as hardness testers, tensile strength testers, meters, weighing devices, standard gear testers, ohmmeters, voltmeters, and oscilloscopes.

(ii) Standard Measuring Equipment (SME). Multipurpose equipment and standards used for performing measurements. It includes such items as micrometers, rulers, tapes, height gages, and protractors, etc. Standards include visual inspection equipment such as scratch and dig standards, surface finish comparator, color standards (FED-STD-595), etc.

(5) Nondestructive Testing. The development and application of technical methods to examine materials or components in ways that do not impair future usefulness and serviceability in order to detect, locate, measure and evaluate flaws; to assess integrity, properties and composition; and to measure geometrical characteristics. NDT includes Radiography/Radioscopic, Ultrasonic, Eddy Current, Magnetic Particle, and Liquid Penetrant.



(6) Measurement System Analysis (MSA). Per ASTM E2782 (Standard Guide for MSA), paragraph 3.1.7, MSA is any of a number of specialized methods useful for studying a measurement system and its properties.

(b) Scope. This clause establishes requirements for design, supply, performance, and maintenance of AIE used for product inspection and acceptance. In addition, this clause establishes requirements for the preparation, submission, and approval of AIE documentation.

(c) AIE. The contractor shall provide all AIE necessary to ensure conformance of components and end-items to contract requirements. AIE shall include inspection, measuring, and test equipment whether [Buyer] furnished or contractor furnished (including commercially acquired) along with the necessary specifications and procedures for their use (see ISO 10012, paragraph 6.2.1). The AIE shall not create or conceal defects on the product being inspected. All AIE documentation shall contain sufficient information to permit evaluation of the AIE's ability to test, verify, and/or measure the applicable characteristics or parameters (see DI-QCIC-81960).

(d) AIE Designs & [Buyer] Furnished Gages. AIE designs are of two types – Government designs (see d.1) and contractor designs (see d.2). When applicable, Government designs or Government furnished gages are designated in the TDP/contract; responsibility for all other AIE is assigned to the contractor. The designs, associated inspection procedures, and theory of operation shall have the level of detail to demonstrate capability of the proposed AIE to perform the required inspection.

(1) Government AIE Designs. Government AIE designs may consist of detailed drawings necessary for the fabrication and use of the AIE. Unless otherwise specified, the contractor may submit alternate or modified contractor designs of Government AIE designs.

(2) Contractor AIE Designs. Contractor AIE design drawings shall meet the requirements of ASME Y14.100, ASME Y14.5 and ASME Y14.43 and may include commercial inspection equipment. ["Commercial inspection equipment" is defined as shown in paragraph a.4 above. It shall be fully described by catalog listings or other means which provide sufficient information to permit identification and evaluation by the [Buyer] and may include illustrations and engineering data.] Designs shall be submitted for any special fixture(s) to be used. Unless otherwise specified, Gage Tolerancing Policy shall be in accordance with ASME Y14.43, "Absolute Tolerancing (Pessimistic Tolerancing)."

(3) Visual Inspection. Visual inspection standards used for the acceptance/rejection of product shall be submitted for approval.

(e) AIE Package Submittals. The contractor shall prepare the AIE package submittal in accordance with DIQCIC-81960 in the applicable Contract Data Requirements List (CDRL – DD Form 1423). In addition, the contractor shall adhere to the following requirements:

(1) Designs for Approval. Contractor designs and/or the submission for the use of Government designs shall be approved by the [Buyer]. Partial submission of AIE designs is permissible in order to expedite the approval process; however, the response date for design review will be based on the date of the final complete submission of designs.

(2) Correspondence in English. The contractor shall ensure all AIE correspondence and documentation are submitted in English.

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(3) Units of Measurement. The units of measurement within the AIE package submittal shall be consistent with the requirements of the Technical Data Package (TDP).

(4) AIE Flow Down. The contractor shall flow down AIE requirements to sub-contractors at any tier who are performing acceptance inspections.

(f) Characteristics for Inspection. AIE documentation for Critical, Special, and Major characteristic inspections shall be submitted to the [Buyer] for approval in accordance with (IAW) the CDRL (DI-QCIC-81960). AIE for Minor characteristic inspections shall be submitted to the [Buyer] for approval IAW CDRL (DI-QCIC-81960) and [as required by the Buyer].

(1)  Listed Minor (characteristics displayed on specifications and/or drawings)

(2)  [Buyer] selected list (as attached or as provided herein)

(3)  Not submitted

(g) Automated Acceptance Inspection Equipment. The AAIE shall accept only conforming material. All characteristics requiring AAIE per the TDP shall utilize inspection equipment with a minimum demonstrated reliability of 99.8% at a 90% confidence level to detect non-conforming material unless otherwise specified [by the Buyer].

(1) Reliability of \_\_\_\_% at a \_\_\_\_% Confidence Level for Critical/Special Characteristics

(2) Reliability of \_\_\_\_% at a \_\_\_\_% Confidence Level for Major Characteristics

(3) For inspection of major and minor characteristics where contractor utilizes AAIE when it is not required by the TDP, the AAIE package shall be submitted to the [Buyer] for approval. If the Minor characteristic is not listed in paragraph f.2 or not required for submittal in paragraph f.3, then the AAIE requirements (e.g., verification, calibration, prove-out, etc.) of the inspection shall still be performed.

(4) All AAIE packages submitted to the [Buyer] for approval shall be in accordance with MIL-A-70625 (Automated Acceptance Inspection Equipment Design, Testing and Approval of). Furthermore, the contractor shall be responsible for producing the acceptance and rejection verification standards/masters representative of the characteristics the AAIE is designed to inspect. The verification standards and frequency of use require [Buyer] approval prior to use. When verification standards are used for the VL-VII "sampling plan" per MIL-STD-1916, verification standards and frequency of use shall require [Buyer] approval prior to use.

(5) If the AAIE accepts a critical characteristic "reject" standard the contractor shall notify the [Buyer] and act in accordance with paragraph f of the Critical Characteristic Control Clause. In addition, if the AAIE accepts a major and/or minor characteristic "reject" standard the contractor shall act in accordance with paragraph 8.3 of ISO 10012 or paragraph 5.2.3 of ANSI/NCSL Z540.3.

(6) All AAIE [may] be required to pass a [Buyer]-approved Acceptance (Prove-Out) Test. The contractor shall conduct this test per the approved test plan and shall submit a test analysis report for approval. See applicable CDRL (DI-QCIC-81960). This test shall be performed at the contractor's facilities

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whose manufacturing system has had the AAIE fully integrated and calibrated as per paragraph (j) of this clause. The contractor shall allow [Buyer] personnel access to this facility and unobstructed monitoring of this test.

(7) The contractor shall notify the [Buyer] prior to a modification and/or relocation of the [Buyer]-approved AAIE. The modified AAIE designs shall be submitted for approval. The modified and/or relocated AAIE shall require submission of the acceptance test plan (prove-out) and results for review and approval prior to use. The modified and/or relocated AAIE shall be in accordance with paragraphs (g)(1) – (g)(6).

(h) Measurement System Analysis (MSA). The contractor is responsible to ensure all AIE is, at a minimum, stable, repeatable, and reproducible for all characteristics. Refer to ASTM E2782 and/or AIAG MSA for guidance. The contractor shall provide objective evidence, including the MSA assessment plan, associated data, and analysis, which demonstrates the AIE is, at a minimum, stable, repeatable, and reproducible [for characteristics as directed by the Buyer].

Approval of submitted MSA(s) must be granted before the corresponding AIE can be used or continue to be used for acceptance of product. If at any time following approval of the AIE and MSA the AIE is disapproved, then the MSA shall be disapproved. After the resubmitted AIE is approved, the MSA shall be conducted on the approved AIE and resubmitted for approval.

(i) Robust AIE System. The contractor shall ensure the AIE and its use is not negatively affected by any manufacturing/inspection environmental stimuli including, but not limited to production rate, noise, temperature, humidity, and vibration.

(j) AIE Calibration and Verification. The calibration system shall be in accordance with ISO 10012 or ANSI/NCSL Z540.3. All AIE shall be subjected to scheduled calibration intervals to ensure that the equipment will accept only conforming product and reject all non-conforming product for the duration of the approved calibration period. AIE shall be subjected to periodic verification to ensure that the equipment will continue to accept and reject product with the same consistency as it did at the time of its previous calibration.

(k) Non-Destructive Testing (NDT). Contractor shall submit detailed plans for qualifying and certifying NDT personnel and plans for qualification and ongoing use of NDT methods used for inspecting product. If requalification of NDT personnel and/or NDT methods is required, then the applicable plans shall be submitted.

(1) Personnel performing NDT examinations shall be qualified and certified in accordance with the standard practices prescribed by NAS 410 (NAS Certification & Qualification of NDT Personnel), ANSI/ASNT-CP- 189 (ASNT Standard for Qualification and Certification of NDT Personnel), or SNT-TC-1A (Recommended Practice for Personnel Qualification and Certification in NDT), and additional procedures that may be identified by the [Buyer]. Acceptance of product using NDT shall be performed by personnel at a level of qualification consistent with that defined in the applicable standard.

(2) The NDT method(s) shall be applied in accordance with ASTM E 543 (Standard Specification for Agencies Performing Nondestructive Testing) and the current nationally recognized standard practices appropriate to the NDT method(s) employed, such as ASTM E-1742 (Standard Practice for Radiographic Examination) and SAE-AMS-STD-2154 (Inspection, Ultrasonic, Wrought Metals, Process

For). Each application technique shall identify the standard(s) utilized. Non-destructive testing includes, but is not limited to, the following types of testing: Radiography/Radioscopic, Ultrasonic, Eddy Current, Magnetic Particle, and Liquid Penetrant.

(l) Contractor Alternate Inspection Method(s), Modifications and/or Relocation of AIE (Non-Automated) After [Buyer] Approval. If the contractor proposes an alternate inspection method and/or modifies the AIE design(s) affecting hardware, software, or procedures after [Buyer] approval the intended change(s) shall be submitted to and approved by the [Buyer] prior to implementation. If an AIE is relocated and the relocation risks the integrity of the inspection system, notify the [Buyer] to determine information needed to assess impact to AIE. See CDRL (DI-QCIC-81960).

(m) Responsibility for AIE Package Submittal. The contractor shall submit the AIE design documentation package within contractual timeframes per CDRL (DI-QCIC-81960). The [Buyer] will provide approval or disapproval within the timeframe specified in the CDRL. Disapproval of the AIE package will require re-submittal and subsequent [Buyer] review in accordance with the CDRL requirements. The AIE package and any required prove-outs must be approved prior to First Article (FA) (if required) or production start-up if FA is not required.

(n) [Buyer]'s Right to Disapprove AIE. The [Buyer] reserves the right to revoke approval of any AIE that is not satisfying the required acceptance criteria at any time during the performance of this contract. See CDRL (DI-QCIC-81960).

(o) omitted for the purpose of this document

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#### **QAP-16**

#### ***Process Capability, Control and Improvement (PCCI) MAY/2011***

(a) The Contractor shall establish a Process Control System that Includes, but is not limited to, procedures, systems and software. This Process Control System shall complement the requirements of an ISO 9001-2008 or equivalent Quality Management System as well as all contract quality requirements. Statistical Process Control (SPC), when utilized, shall be implemented in accordance with ISO 11462-1 and ANSI/ASQC B1, B2, and B3 or equivalent. A Process Control Plan (PCP), which describes actions and methods to assure production processes will be in a state of control, shall be submitted to the [Buyer] for review and acceptance as stipulated on DD Form 1423 and DI-MGMT-80004. Demonstration of process capability in accordance with the accepted PCP shall be accomplished prior to or at first article (if required) or prior to start of production. Acceptance of product shall be contingent on verification of acceptable process capability in accordance with the accepted PCP, provided all other contractual requirements are met. The [Buyer] reserves the right to withhold acceptance of product when there is evidence of noncompliance to the PCP. Should a finding of noncompliance to the PCP be made, a corrective action plan shall be submitted to the [Buyer].

(b) Characteristics for process control [will be determined by the Buyer].

[ ] (1) Characteristics for process control are attributes or features whose variation have a significant effect on product fit, form, function, performance, service life or producibility, that require specific actions for the purpose of controlling variation. Characteristics for process control result from an

in depth [Buyer]-only review and analysis as specified in Technical Data Package (TDP) documentation as required below:

- (1.1) [Buyer] selected list, see paragraph g below
- (1.2) As listed key characteristics

(2) Characteristics for process control are attributes or features whose variation have a significant effect on product fit, form, function, performance, service life or producibility, that require specific actions for the purpose of controlling variation. Characteristics for process control shall be determined using an in-depth Contractor review and analysis as specified in the PCP documentation. The [Buyer] reserves the right to identify any characteristics for process control as well as any additional characteristics identified in paragraph g.

(3) Characteristics for process control are features within a product, subassembly, part and process whose variation from nominal (i.e., target value) significantly impacts safety, performance in terms of customers requirements, or final cost of a product. Special controls should be applied where the cost of variation justifies the cost of control. These shall be developed from an in depth [Buyer]-Contractor review and analysis of design as specified in paragraph g below.

(c) The Contractors analysis shall include processes and operations under the control of the prime Contractor and those under the control of sub-Contractor including subtier suppliers. The Contractor shall create a process flow chart for the entire process (including manufacturing, inspection and material handling) and perform Process Failure Modes and Effects Analysis (PFMEA) for all processes identified on the process flow chart [If option b(3) is selected, a PFMEA and process flow chart will not be necessary]. The Contractor shall identify, define and document specific controls applicable for each process and operation that affects all characteristics required for control by this clause. The Contractor shall: (a) conduct process capability studies on all process and operation parameters affecting characteristics for process control; (b) verify that all automated inspection equipment used to validate process capability has been properly calibrated and certified; and (c) conduct Measurement System Analysis (MSA) studies on all applicable corresponding measurement systems utilized to monitor process capability.

(d) The Contractor shall prepare and implement a PCP. The PCP shall be based upon and include the process flow chart, PFMEA [If option b(3) is selected, a PFMEA and process flow chart will not be necessary], process capability studies and Measurement System Analysis (MSA) for all process and operation parameters affecting characteristics for process control. For each characteristic, the PCP shall describe the entire process (including manufacturing, inspection and material handling), control methods and action plans for all out of control conditions and process capability at the stated production rates. When utilizing statistical methods, a process capability index such as Cpk shall be calculated. A characteristic for process control shall be considered to have an acceptable (and capable) process if it has a Cpk of at least 2.00 for Critical characteristics, 1.33 for all other characteristics selected for control, or as stated as follows: -1-. The Contractor shall notify the [Buyer] when the minimum process capability values (Cpk) of 2.00 for Critical characteristics and 1.33 for all other characteristics for process control, or the alternative established minimum Cpk values, are no longer being maintained.

(e) In accordance with MIL-STD-1916 the Contractor may request, in writing, that alternate methods of acceptance be evaluated once the processes and applicable operation parameters have been

demonstrated to be both stable and capable. Any alternate methods may not be implemented until accepted by the Contracting Officer.

(f) Corrective Action Requests (CARs) and Requests For Deviations (RFDs) generated for identification of product nonconformances shall result in an evaluation of the Process Control Plan (PCP). The evaluation will consider addition of new characteristics for process control to the contractually required process control list and require implementation of actions per paragraphs (c) and (d) above with submittal to the [Buyer] for acceptance. If the CARs and RFDs are related to characteristics, processes and/or operations already identified in the PCP then those actions required by paragraphs (c) and (d) will be reassessed and submitted to the [Buyer] for acceptance. The [Buyer] reserves the right to withhold acceptance of product until the revised PCP is accepted by the [Buyer].

(g) If box b(1)[1.1], b(2) or b(3) are checked above, the selected characteristics and applicable tools, techniques, control methods or method of analysis to obtain these are specified [by the Buyer].

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#### **QAP-17**

##### ***Quality Management System***

- 1) The Supplier is to provide and maintain a quality management system capable of producing product that meets specification and/or drawing requirements. The quality and inspection plan will include the procedures for calibration of test and measuring equipment, when applicable.
- 2) Sub-tier Suppliers shall provide and maintain a quality management system (QMS) capable of producing product that meets specification and/or drawing requirements.
- 3) The [Buyer] reserves the right to audit or examine the adequacy of your QMS, including your manufacturing processes and inspection system. The audit scope shall be the contractor's quality/inspection plan, procedures, company quality manual, subcontractor requirements related to product quality, applicable military specifications/standards and the purchase order. In the event that discrepancies are found, corrective action will be required no later than the due date provided by the [Buyer].

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#### **QAP-18**

##### ***Quality Management System***

- 1) The Supplier shall provide and maintain a quality management system (QMS) that is registered by an accredited third party registrar and compliant with the current revision of ISO 9001, ISO/TS16949, AS9100 or other internationally recognized quality standard or specification. A copy of the Supplier's certificate of registration and Quality Manual shall be submitted to the Buyer upon request.
- 2) Sub-tier Suppliers shall provide and maintain a quality management system (QMS) capable of producing product that meets specification and/or drawing requirements.
- 3) The Buyer reserves the right to audit or examine the adequacy of your QMS to the standard to which the Supplier is registered. This could include both Supplier and your sub-tier Supplier's

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manufacturing processes and inspection system. The audit Scope shall be the Supplier's quality/inspection plan, procedures, quality manual, subcontractor requirements related to product quality, applicable military specifications/standards and the purchase order. In the event that discrepancies are found, corrective action will be required no later than the due date provided by the Buyer.

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#### QAP-19

##### ***Heat Treat Marking Requirement for Non-manufactured Wood***

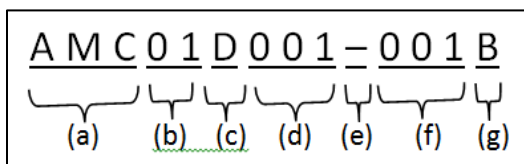
- 1) Suppliers of wood boxes, pallets and associated components that contain non-manufactured wood packaging material (WPM) shall follow the heat treatment process and marking requirement of ACV00831 and this QAP.
- 2) Note 5 of ACV00831 states:
  - a) The ISPM-15 certification marks for pallets, skids, filler assemblies, and other dunnage assemblies shall be stenciled or branded, avoid the use of red or orange for stencils. The pallets or skids shall be marked on two opposite corner end posts. See figure 2 on sheet 2 for details. Dunnage assemblies, to include filler assemblies, shall be marked on two opposite sides as depicted in figures 3 and 4 on sheet 2.
  - b) The U. S. Government has interpreted this requirement to imply strapping boards or other loose items that are intended to become part of a pallet assembly when loaded shall be marked on two opposite sides.

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#### QAP-20

##### ***Lot Numbering and Product Traceability***

- 1) Product delivered on this purchase order must be new product. If the Supplier has previously manufactured product that meets requirements of this purchase order and would like to use this product to fulfill this purchase order, it must be approved by the Buyer prior to shipment.
- 2) The supplier is responsible to comply with the lot numbering system requirements stated in MIL-STD-1168, (per the revision stated in the Buyer's contract – Rev. B or Rev. C). The minimum number of characters used is 13 (see example below). The following illustrates the construction of the lot number:



- a) Manufacturer's Identification Symbol.
- b) Year of Production.
- c) Month that production was started on the lot.



- d) Lot Interfix Number.
- e) Identification of First Article Lot. See next paragraph 3)e) for explanation.
- f) Lot Sequence Number.
- g) Ammunition Lot Suffix (for reworked lots only).

3) The various parts of the lot number are explained in the following paragraphs.

- a) Manufacturer's Identification Symbol: Identifies the Supplier which manufactured or supplied the item or material. This number is assigned by the Government (USG). If a manufacturer's identification symbol has not been previously obtained from the USG, or if any clarification is needed, contact the Buyer.

If a one or two character manufacturer's identification symbol is used, the remaining positions of the three (3) character field is filled by dashes (-); e.g., A--, AB-, etc.

- b) Year of Production: The last 2 numbers of the year in which manufacture of the lot was initiated (started). The Supplier is responsible for the correct application and placement of the year of production code into the lot number.
- c) Month of Production: The single alpha code reflects the month of the year in which the manufacture of the lot was initiated (started) and is assigned as follows. NOTE: The letter "I" is not used.

A = January	E = May	J = September
B = February	F = June	K = October
C = March	G = July	L = November
D = April	H = August	M = December

The Supplier is responsible for the correct application and placement of the month of production code into the lot number.

- d) Lot Interfix Number: The three digit interfix number indicates the basic material, process, drawing and specification. Any change in any of these basic conditions requires a change in the interfix number. Any such change requires authorization by the Buyer. See MIL-STD-1168 for additional information. The Supplier is responsible for assigning the interfix number to be used unless the Buyer directs otherwise in writing.
- e) Identification of First Article Lot: When first article lots are required by the contract, replace the hyphen between the lot interfix number and the lot sequence number with a capital "A". For example:
  - i) AMC01B001A001 (Indicates interfix 001 – first submission)
  - ii) AMC01C001A002 (Indicates interfix 001 – second submission)
  - iii) AMC01M002A001 (Indicates interfix 002 – first submission, etc.)

- f) Lot Sequence Number: The three digit lot sequence number identifies a lot according to the sequence of production within each lot interfix number. The lot sequence number within each interfix begins with "001" and continues ("002", "003", etc.) until the lot interfix is changed. Generally, a new lot sequence number will be used each time the Supplier begins production against a new purchase order line item. See MIL-STD-1168 for additional information. The Supplier is responsible for the assignment of the lot sequence number and for making changes as necessary.



- g) Ammunition Lot Suffix Number – Application of the Ammunition Lot Suffix Number is intended for ammunition items as defined by MIL-STD-1168. Always contact the Buyer before planning rework of ammunition items.

The ammunition lot suffix, when required, becomes an integral part of the lot number and is applied directly after the sequence number as shown below. Lot suffixes consist of one (1) capital alpha character. The suffix is used in identifying lots which are reworked. The lot suffix is assigned in alphabetical sequence starting with the letter “A”. Lots reworked twice are marked with “B”. Each subsequent rework is shown by the use of the next letter alphabetically except that letters E, I, O and X are not used in this series. For example: Lot ABC01J006-002 is an original production lot which was rejected and later reworked. After rework, the lot number becomes ABC01J006-002A.

- 4) Traceability refers to the ability to identify the original manufacturer’s lot numbers, date codes, inspection and test data as required by the specification(s). MIL-STD-1168 lot numbering is not required for all material. Contact the Buyer for guidance. Even if parts and material do not require MIL-STD-1168 lot numbering, product traceability and lot control are still required under this purchase order. The Supplier must be able to provide, on demand, positive traceability through the use of lot, batch or serial numbers from raw materials to manufactured lots, including any special processes and testing. Material and supporting documentation furnished under this purchase order agreement shall be identified with a unique date code or lot number for each lot (manufacturer/heat number/lot number/batch number/etc.), traceable to the raw material(s) used in their fabrication.

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**QAP-21**  
***Ammunition Data Card (ADC)***

- 1) Supplier shall submit to the Buyer, the first ADC for a unique NSN/FRN and Contract Delivery Order or Purchase Order Number for preapproval prior to the submitting a Sample ADC into WARP for USG approval. ADC submissions shall be in accordance with DI-MISC-80043 unless directed otherwise by Buyer. Electronic submission of ADC’s into WARP shall occur concurrently with every delivery.
- 2) WARP (Worldwide Ammo Data Repository Program): Ammunition Data Cards shall be prepared and annotated in accordance with MIL-STD-1168 and shall follow the format required by the Worldwide Ammunition-data Repository Program (WARP). This shall also include, if required on the DD Form 1423, a Report of Contractor Lot Acceptance/Ballistic Testing. Prior to gaining access to WARP, the Supplier’s personnel involved in the preparation of ammunition data cards shall obtain a user id and password for the Army Electronic Product Support (AEPS) network at <http://aeps.ria.army.mil/aepspublic.cfm>. If you cannot access the URL listed, please contact the Buyer.
- 3) For ammunition items that require performance testing after conformance inspection, the Supplier shall enter “pending test” in the disposition block of the ADC.
- 4) Ammunition data cards shall be annotated with the government Procuring Acquisition Number (PAN) for each applicable Request for Deviation (RFD), Engineering Change Proposal (ECP) and Warranty clause information if applicable.

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**QAP-22**  
**Safety Data Sheets (SDS)**

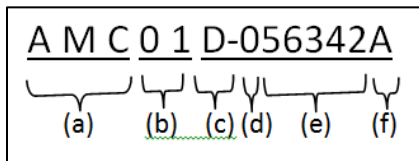
The Supplier shall provide a copy of the Safety Data Sheets (SDS) with initial shipment.

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**QAP-23**  
**Propellant-Specific Requirements**

1) Lot numbering

- a) The lot numbering system of MIL-STD-1168 applies. The appropriate manufacturer's identification symbol and the correct month and year of production must be applied. Propellant lot serial numbers shall include all numeric characters and will be obtained from the contracting officer.
- b) Propellant lot numbers shall not exceed fourteen characters in length and no characters shall be separated by spaces. The minimum number of characters used shall be 13. This occurs only if no lot number suffix is added.
- c) Regular production lots shall be identified by retaining the numeric character "0" (zero) immediately after the hyphen in the propellant lot number, while those lots not of regular production, included in the non-standard lots shall be identified by replacing that numeric character "0" (zero) with the appropriate lot identifier code.



- a. Manufacturer's Identification Symbol.
  - b. Year of Production.
  - c. Month of Production.
  - d. Identifier Code for Standard Propellant Lot (a single digit).
  - e. Serial Number (5 digits)
  - f. Ammunition Lot Suffix (see explanation below).
- d) Lot suffix number: The lot suffix, when required, becomes an integral part of the lot number and is applied directly after the serial number as shown below. Lot suffix consists of one alpha character and is a capital letter. The suffix is used in identifying lots which were reworked or re-blended. The lot suffix is assigned in alphabetical sequence starting with the letter "A". Lots reworked or re-blended twice are marked with "B". Each subsequent rework or re-blend is shown by the use of the next letter alphabetically except that letters E, I, O, and X are not used in this series.

EXAMPLE: Lot ABC01D-056342 original production lot rejected. After rework or re-blending, the lot number becomes ABC01D-056342A. The suffix letter becomes an integral part of the lot number.

- 2) The producer of propellant is required to submit a five pound sample within thirty days to the following address:  
U.S. Army REDCOM-ARDEC  
ATTN: Commander, AMSTA-AAR-AEE-W, Building 938  
Picatinny Arsenal, NJ 07806-5000
- 3) The Supplier shall send a copy of the propellant description sheet to the Buyer with each shipment of propellant. Propellant cannot be accepted without this document.
- 4) The Supplier shall input propellant description sheet data from each lot into the WARP/LATR system.

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#### **QAP-24**

##### ***Inspection and Test Records for Ten-Piece Sample***

- 1) The Supplier shall provide records with the first lot/shipment that show inspection results for all drawing dimensions including all notes on the drawings.
  - a) Sample size for inspection and documentation shall be ten (10) pieces, unless otherwise directed by the Buyer in writing.
  - b) Variable data shall be collected and provided when possible.
  - c) When variable data cannot be obtained, attribute data will be provided.
  - d) Individual parts within the ten (10) piece sample shall be serialized, i.e. identified with numbers which correspond to the inspection records submitted (Do not physically mark numbers on individual parts without prior approval of the Buyer).
- 2) Inspection records shall contain the following minimum requirements:
  - a) Purchase Order Number
  - b) Lot Number (as applicable) and Description of Component Part
  - c) Description of Each Characteristic
  - d) Total Amount in the Lot/Shipment, Amount Inspected, Amount Accepted, Amount Rejected
- 3) The Supplier shall retain these records for a period of seven years after final delivery of the procured components.

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#### **QAP-25**

##### ***MRB Authority, Rework and Repair of Nonconforming Material***

- 1) The Supplier does not have Material Review Board (MRB) authority. The Supplier only has the authority to scrap, sort and perform Built-In Rework or Standard Re-processing. Rework, unless previously approved by the Buyer, must be submitted to the Buyer for review and approval.

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- 2) BUILT-IN REWORK: Work instructions that have been previously reviewed and approved by the Buyer.
  - 3) STANDARD RE-PROCESSING: Approval is not required to “re-run” parts through previously defined operations using normal production equipment and/or gaging.
  - 4) REWORK:
    - a) Definition: The reprocessing of nonconforming material to make it conform completely to the drawings, specifications or contract requirements.
    - b) Authority: Rework is allowed provided rework procedures are approved by the Buyer. Whenever rework procedures are submitted, they shall also include a description of the cause of the nonconformance and a description of the actions taken or to be taken to prevent recurrence. The Rework procedure shall contain a provision for re-inspection which may exceed the Technical Data Package requirements (e.g. 100% inspection instead of sampling inspection), and shall provide that the reworked items have met reprocessing requirements.
  - 5) REPAIR:
    - a) Definition: The reprocessing of nonconforming material in accordance with approved written procedures and operations to reduce, but not completely eliminate, the nonconformance. The purpose of repair is to bring nonconforming material into a usable condition. Repair is distinguished from rework in that the item after repair still does not completely conform to all of the applicable drawings, specifications or contract requirements.
    - b) Authority: Repair is not allowed.
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**QAP-26**  
***Special Process Conformance***

- 1) Special processes are those processes where the resulting output cannot be verified by subsequent monitoring or measurement and, as a consequence, deficiencies become apparent only after the product is in use or the service has been delivered. Examples include soldering, x-ray, welding, brazing, passivation, magnetic particle and penetrant inspection, heat treating, plating, chemical film or surface treatment). For these processes, see below for specific requirements.
- 2) The Supplier must maintain objective evidence, subject to Buyer review, as follows:
  - a) The special process was performed by a qualified source. If a sub-tier Supplier is performing the special process, written documentation establishing the basis for your selection(s) must be furnished to the Buyer for approval. The Buyer reserves the right to disapprove the basis for sub-tier Supplier selection.
  - b) A process plan, work instruction or inspection plan was developed and approved by the Buyer prior to performing the work.
    - i) If the special process plan has already been submitted and approved, please verify it is current and only resubmit if process has been changed, prior to continued manufacturing of this product.
    - ii) Special process plans shall include name and address of Supplier performing process, the specification(s) that the process meets, and date. Special process plans shall include a

- process flow or steps with parameters that demonstrate process is in control. For example: time, temperature, voltage, etc. with ranges.
- c) The special processes were performed in accordance with the requirements of the applicable specification. Results and/or objective evidence of applicable compliance testing (e.g. Salt Spray, High Humidity, Passivation testing per ASTM A967 Section 1.4, etc.) shall be available for review upon request.
  - d) Supplier shall furnish copies of this objective evidence upon request.
- 3) A Certificate of Conformance for special processes performed at your facility or any sub-tier facility shall be submitted with each shipment and attached to the packing list. Each Certificate of Conformance (C of C) must contain the following minimum information:
- a) Name and address of Supplier of the process being performed.
  - b) Lot or batch number.
  - c) Identification of process by specification, revision, dates, together with types, grade, size, etc. This shall meet the drawing requirements EXACTLY.
  - d) Quantity processed.
  - e) Signed certification with title of the authorized representative of the Supplier and/or sub-tier Supplier that is attesting to the accuracy of the test report.
  - f) Date signed.

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**QAP-27**  
***Critical Characteristics Clause AUG/2016***

This clause applies to Suppliers providing product that contain Critical Characteristics. Should this clause not apply in its entirety, the [Buyer] will define the critical characteristics requirements to the Supplier; otherwise, the Supplier must comply with all requirements in this QAP.

(a) The contractors processes shall be designed with the objective of preventing the creation or occurrence of non-conforming critical characteristics (see paragraphs d & e). The contractor shall establish, document and maintain a product specific, critical characteristics control (CCC) plan that shall be submitted to and approved by the Procuring Contracting Officer (PCO) IAW DD Form 1423 and DI-MGMT-80004. The CCC plan shall include or reference all procedures, work and handling instructions and process controls relating to any critical characteristics. Mistake Proofing techniques of the material handling and inspection systems shall be a part of the CCC Plan. Guidance for developing this plan and submitting Critical Plans of Action (CPOA) (paragraph g) can be found at <http://www.ardec.army.mil/organizations/QESA/>.

(b) The contractor shall assure its critical processes are robust in design, capable and under control, with the objective of not generating any critical non-conformances. The contractor shall calculate, document, clearly identify, and have a schedule that routinely assess the reliability and effectiveness of its critical processes to prevent generating critical non-conformances as identified in the CCC Plan.

(c) An inspection and verification system shall be employed that will verify the robustness of all critical processes. The contractor shall calculate, document, clearly identify, and have a schedule that routinely assess the reliability and effectiveness of its inspection and verification system to detect and prevent critical non-conformance escapes as identified in the CCC Plan. The [Buyer] expects that a contractor will allow zero critical escapes. To demonstrate its critical escape risk the contractor will utilize the nonconformance escape risk goal provided below.

(1) Unless otherwise specified immediately below, the calculated critical non-conformance escape risk is 1 in a million (.000001) items delivered. Or:

Alternate calculated Critical Non-conformance Escape risk:

Unless otherwise approved by the PCO, the non-conformance escape risk is the sum of the individual characteristic escape rates. The probability of escape for a single characteristic shall be calculated by multiplying the non-conformance rate(s) entering the inspection system(s) by the error rate of the inspection system(s). These escape rates are then summed and shall not exceed the tolerable critical non-conformance escape risk.

(2) Within 45 days after award, the contractor can elect to submit a phased-in approach on how the non-conformance escape risk will be achieved over a period of time not to exceed 180 days from the date of first article approval, or from initiation of production when first article is not required. Submission will require approval by the Government and is subject to a technical review and analysis. Allowance for a phased-in approach will then become a part of the contract. Disapproval of the contractors submission does not relieve the contractor of its obligation to comply with the terms of this clause.

(3) Based on the maximum error rate defined for the inspection system, the contractor shall develop a test procedure to demonstrate the error rate. As part of the test plan the contractor shall include sufficient test quantities to assure 90% statistical confidence in the resultant rates unless otherwise approved by the PCO. Once established, the contractor shall have a documented schedule to routinely monitor the non-conformance and inspection system error rates to assure they do not exceed the maximum rates allotted.

(d) As a result of previous practices, the governments technical data may refer to Critical I, Critical II, and Special characteristics. The use of the term "critical characteristics" within this clause includes Critical I, Critical II and Special characteristics and the use of the term "critical nonconformances" includes those nonconformances pertaining to Critical I, Critical II and Special characteristics. Unless otherwise stated in Section C, these characteristics shall be subject to all requirements of this clause.

(e) In addition to critical characteristics defined in the governments technical data (drawings, specifications, etc.), the contractor shall also identify and document in its contractor developed technical data all known material, component, subassembly and assembly characteristics whose non-conformances would likely result in hazardous or unsafe conditions for individuals using, maintaining or depending upon the product. All additional critical characteristics identified by the contractor shall comply with the critical characteristic requirements of the technical data package, supplemented herein. The Critical Item Characteristic List (CICL) review process shall be included in the CCC Plan. The contractor's additional critical characteristics shall be classified in accordance with guidance located at

<http://www.ardec.army.mil/organizations/QESA/> and shall be submitted to and approved by the PCO prior to production (DI-SAFT-80970A).

(f) In the event that a critical non-conformance is found anywhere in the production process, the contractor, as part of its CCC Plan, shall have procedures in place to ensure:

(1) The non-conformance is positively identified and segregated to ensure that nonconforming product does not inadvertently remain in or reenter the production process. This control shall be accomplished without affecting or impairing subsequent non-conformance analysis. Final disposition of non-conforming product shall be documented and audited for traceability.

(2) The operation that produced the non-conforming component or assembly and any other operations incorporating suspect components or assemblies are immediately stopped. (See para h. for exceptions)

(3) The [Buyer] is immediately notified of the critical non-conformance (electronic mail) (DI-SAFT-80970A).

(4) Any suspect material is identified, segregated and suspended from any further processing and shipment.

(5) An investigation is conducted to determine the root cause of the non-conformance and the required corrective actions. An evaluation shall also be conducted with regard to suspect material to ensure that no additional critical non-conformances are present. A report of this investigation shall be submitted to the [Buyer] (DI-SAFT-80970A). The use of the DID report shall not delay notification to the [Buyer] as required in f(3) above.

(6) A request to restart manufacturing or to use any suspect material associated with the critical non-conformance is submitted to the [Buyer] (DI-SAFT-80970A). Restart of production shall not occur until authorized by the PCO, unless previously addressed in the approved CCC Plan. The [Buyer] will respond to a restart request within 3 working days. All objective evidence of the investigations to date shall be available for review at the time of restart. Suspect material shall not be used without PCO approval.

(7) The procuring activity reserves the right to refuse acceptance of any suspect material until the root cause or reasonably likely cause of the critical non-conformance has been identified, corrective action has been fully implemented and sufficient evidence has been provided to exclude non-conforming material from the conforming population.

(g) The contractor may develop alternative plans and provisions, collectively referred to as a Critical Plan of Action (CPOA), relative to [Buyer] or contractor identified critical characteristics. All CPOAs are independent and shall be evaluated by the [Buyer] for this contract. The CPOA and any subsequent revisions submitted IAW DD Form 1423 and DI-MGMT-80004 require PCO approval prior to implementation. Unless otherwise specified at time of approval, contractor shall review and evaluate CPOAs for currency and process improvements at least on an annual basis and submit results to the PCO. Unless otherwise approved by the PCO, each critical characteristic shall require a separate CPOA. If the CPOA includes other documents by reference they shall be submitted upon request. Guidance for the development of a CPOA can be found in the referenced guidance located at paragraph a of this clause.

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(h) The contractor may continue production with an approved CPOA provided that the critical non-conformance is consistent with the failure mode(s) and rates established in the CPOA. Failure to meet all CPOA requirements will require the contractor to revert back to paragraph f requirements.

(i) If a critical non-conformance is discovered beyond its designated inspection point and prior to [Buyer] acceptance the contractor shall take actions specified in paragraph f above. If a critical non-conformance is discovered after [Buyer] acceptance the [Buyer] has the right to invoke the requirements of paragraph f with respect to the contractors remaining production under this contract.

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## QAP-28

### *Critical Characteristics Clause MAY/2010*

This clause applies to Suppliers providing product that contain Critical Characteristics. Should this clause not apply in its entirety, the Buyer will define the critical characteristics requirements to the Supplier; otherwise, the Supplier must comply with all requirements in this QAP.

- 1) The Supplier's processes shall be designed with the objective of preventing the creation or occurrence of non-conforming critical characteristics. The Supplier shall establish, document and maintain a product specific, critical characteristics control (CCC) plan that shall be submitted to and approved by the Buyer, IAW DD Form 1423 and DI-MGMT-80004. The CCC plan shall include or reference all procedures, work and handling instructions and process controls relating to any critical characteristics. Mistake-Proofing techniques of the material handling and inspection systems shall be part of the CCC Plan. Guidance for the development of a CCC plan can be found at the Picatinny Arsenal website:  
<http://www.pica.army.mil/PicatinnyPublic/organizations/ardec/orgchart/quality.html>. If you cannot access the URL listed, please contact the Buyer.
- 2) The Supplier shall assure its critical processes are robust in design, capable and under control, with the objective of not generating any critical non-conformances. The Supplier shall calculate, document, clearly identify, and have a schedule that routinely assesses the reliability and effectiveness of its critical processes to prevent generating critical non-conformances as identified in the CCC Plan.
- 3) An inspection and verification system shall be employed that will verify the robustness of all critical processes. The Supplier shall calculate, document, clearly identify, and have a schedule that routinely assesses the reliability and effectiveness of its inspection and verifications system to detect and prevent critical non-conformance escapes as identified in the CCC Plan. The Buyer and the Government expect that a Supplier will allow ZERO CRITICAL ESCAPES. To demonstrate its critical escape risk the Supplier will utilize the non-conformance escape risk goal provided below:
  - a) Unless otherwise specified immediately below, the calculated critical non-conformance escape risk is 1 in a million items delivered, OR:
    - i) Alternate calculated Critical Non-conformance Escape risk. **Note:** For this purchase order, alternate calculated critical non-conformance escape risk is not applicable.
    - ii) Unless otherwise approved by the Buyer, the non-conformance escape risk is the sum of the individual characteristic escape rates. **Note: If the component or subassembly you are supplying is assembled into a munitions item that contain additional critical characteristics, your critical non-conformance escape rate must be less than 1 in a million**



**items delivered. Contact the Buyer to determine your allowable escape risk, before acceptance of this purchase order.**

- iii) The probability of escape for a single characteristic shall be calculated by multiplying the non-conformance rate(s) entering the inspection system(s) by the error rate of the inspection system(s). These escape rates are then summed and shall not exceed the tolerable critical non-conformance escape risk.
- b) Within 45 days after award, the Supplier can elect to submit a phased-in approach on how the non-conformance escape risk will be achieved over a period of time not to exceed 180 days from the date of First Article approval, or from initiation of production when First Article is not required. Submission will require approval by the Buyer and the Government and is subject to a technical review and analysis. Allowance for a phased-in approach will then become a part of the Supplier's contract (Purchase Order). Disapproval of the Supplier's submission does not relieve the Supplier of its obligation to comply with the terms of this clause.
- c) Based on the maximum error rate defined for the inspection system, the Supplier shall develop a test procedure to demonstrate the error rate. As part of the test plan the Supplier shall include sufficient test quantities to assure 90% statistical confidence in the resultant rates unless otherwise approved by the Buyer. Once established, the Supplier shall have a documented schedule to routinely monitor the non-conformance and inspection system error rates to assure they do not exceed the maximum rates allotted.
- 4) As a result of previous practices, the Government's technical data may refer to "Critical I", Critical II", and "Special" characteristics. The use of the term "critical characteristics" within the clause includes Critical I, Critical II and Special characteristics and the use of the term "critical non-conformances" includes those non-conformances pertaining to Critical I, Critical II and Special characteristics. Unless otherwise stated, these characteristics shall be subject to all requirements of the USG CC clause.
- 5) In addition to critical characteristics defined in the Government's technical data (drawings, specifications, etc.), the Supplier shall also identify and document in its Supplier developed technical data all known material, component, subassembly and assembly characteristics whose non-conformances would likely result in hazardous or unsafe conditions for individuals using, maintaining or depending upon the product. All additional critical characteristics identified by the Supplier shall comply with the critical characteristic requirements of the technical data package. The Critical Item Characteristics List (CICL) review process shall be included in the CCC Plan. The Supplier's additional critical characteristics shall be classified in accordance with guidance located at [https://qa.pica.army.mil/QAW/qaw\\_p/safety\\_policy/htm](https://qa.pica.army.mil/QAW/qaw_p/safety_policy/htm) and shall be submitted to and approved by the Buyer and the PCO prior to production (DI-SAFT-80970A).
- 6) In the event that a critical non-conformance is found anywhere in the production process, the Supplier, as part of its CCC Plan, shall have procedures in place to ensure:
  - a) The non-conformance is positively identified and segregated to ensure that nonconforming product does not inadvertently remain in or reenter the production process. This control shall be accomplished without affecting or impairing subsequent non-conformance analysis. Final disposition of non-conforming product shall be documented and audited for traceability.
  - b) The operation that produced the non-conforming component or assembly and any other operations incorporating suspect components or assemblies are immediately stopped. See paragraph 8 of this QAP for exceptions.
  - c) The Buyer must be IMMEDIATELY NOTIFIED of the critical non-conformance (electronic mail).
  - d) Any suspect material is identified, segregated and suspended from any further processing and shipment.
  - e) An investigation is conducted to determine the root cause of the non-conformance and the

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required corrective actions. An evaluation shall also be conducted with regard to suspect material to ensure that no additional critical non-conformances are present. A report of this investigation shall be submitted to the Buyer. The use of the DID report shall not delay notification to the Buyer as required in paragraph 6c of this QAP .

- f) A request to restart manufacturing or to use any suspect material associated with the critical non-conformance is submitted to the Buyer. Restart of production shall not occur until authorized by the Buyer unless previously addressed in the approved CCC Plan. The Buyer will review and forward the restart request to the Government who will respond to a restart request within 3 working days. All objective evidence of the investigations to date shall be available for review at the time of the restart. Suspect material shall not be used without the Buyer's approval.
  - g) The Buyer and the Government reserve the right to refuse acceptance of any suspect material until the root cause or reasonably likely cause of the critical non-conformance has been identified, corrective action has been fully implemented and sufficient evidence has been provided to exclude non-conforming material from the conforming populations.
- 7) The Supplier may develop alternative plans and provisions, collectively referred to as a Critical Plan of Action (CPOA), relative to Government, the Buyer's, or Supplier identified critical characteristics. All CPOAs are independent and shall be evaluated by the Buyer and the US Government for this contract/Purchase Order. The CPOA and any subsequent revisions submitted IAW DD Form 1423 and DI-MGMT-80004 require Buyer's and customer/US Government approval prior to implementation. Unless otherwise specified at the time of approval, the Supplier shall review and evaluate CPOAs for currency and process improvements at least on an annual basis and submit results to the Buyer. Unless otherwise approved by the Buyer, each critical characteristic shall require a separate CPOA. If the CPOA includes other documents by reference they shall be submitted upon request. Guidance for the development of a CPOA can be found at the Picatinny Arsenal website:  
<http://www.pica.army.mil/PicatinnyPublic/organizations/ardec/orgchart/quality.html>.
- 8) The Supplier may continue production with an approved CPOA provided that the critical non-conformance is consistent with the failure mode(s) and rates established in the CPOA. Failure to meet all CPOA requirements will require the Supplier to revert back to paragraph 6 of this QAP, i.e. STOP production and request RESTART approval from the Buyer.
- 9) If a critical non-conformance is discovered beyond its designated inspection point and prior to the Buyer or Government acceptance, the Supplier shall take actions specified in paragraph 6 of this QAP. If a critical non-conformance is discovered after the Buyer or Government acceptance, the Buyer and the Government have the right to invoke the requirements of paragraph 6 of this QAP with respect to the contractor's remaining production under this contract.

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## QAP-29

### ***Process Control Documentation***

The Supplier shall establish and maintain a Master List of all Process Control Documents (PCDs) affecting safety, quality, performance, reliability, and storage life. The PCD Master List shall be in spreadsheet or other suitable format that identifies the document name, number, revision level, and date. The Supplier shall submit this PCD Master List to the Buyer at the time of First Article. The Supplier is responsible for the adequacy of all process documentation including control of changes in accordance with a formal configuration management system. Prior to changing a PCD affecting the above criteria (safety, quality,

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performance, reliability, and storage life), the Supplier must submit a written request for change and obtain the Buyer's written approval.

Upon implementation of any changes, the Supplier shall resubmit an updated PCD Master List. The Buyer shall be provided access to PCDs at the Supplier facility for review to ensure that PCDs are being followed.

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**QAP-30**  
***Certified Inspector Training***

- 1) All operators or inspectors performing visual inspections on characteristics classified as "critical" per the governing specifications shall be qualified and certified. This will include documented evidence that the operator has been tested via an attribute Repeatability and Reproducibility (R&R) Study. See Automotive MSA Manual for guidance in designing an effective R&R Study. If further guidance is needed, please contact the Buyer.
  - a) This will entail presenting to the operator a group of parts that includes, unknown to the operator, a number of critical defects.
  - b) The operator must be capable of consistently (3 times or more with varying numbers of defects) identifying and removing these defects without fault.
  - c) Testing must be done in the same environment (i.e. lighting, distractions, noise, humidity, etc.) where the actual production inspection will occur.
  - d) Once an assurance is gained, these operators will be considered qualified and will be certified for that particular visual defect recognition. If an operator is required to inspect for multiple defect recognitions at the same time the test needs to be constructed in such a manner as to include these multiple defects on a concurrent basis as opposed to consecutive basis, as this will be representative of what the operator will experience in production.
- 2) Record of this testing, qualification and certification needs to be kept and retesting needs to be scheduled on a pre-determined basis (i.e. monthly/quarterly/semi-annual/other). A log needs to be kept and clearly displayed so as to identify who the certified operators are for each visual inspection.
- 3) Only certified operators shall be permitted to perform these operations. Work instructions for applicable operations need to identify that the operation requires a certified operator/inspector to run. These records will be subject to review by the Buyer.

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**QAP-31**  
***Pre-Approval of Energetic Materials***

Supplier shall submit to the Buyer, for Pre-Approval of Energetic Materials prior to use in build of saleable product. Supplier shall provide Energetic Materials certifications with Lot Number traceability to original Manufacturers with each shipment.

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**QAP-32**  
***Explosive Description Sheets***

Acceptance Description Sheets for each batch of Explosives are required to be uploaded by the Supplier into the "Description Acceptance" (Desc. Acc.) section of the WARP website, <https://mhpwarp.redstone.army.mil><<https://mhpwarp.redstone.army.mil>>. MIL-STD-1171A, provides the information required on the description sheets. If you cannot access the URL listed, please contact the Buyer.

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**QAP-33**  
***Lot Acceptance Test Report (LATR)***

Each lot accepted is to be uploaded by the Supplier into the LATR (Lot Acceptance Test Report) module of the WARP system in accordance with DID DI-NDTI-80809 unless directed otherwise by Buyer. If guidance is needed for uploading Lot Acceptance Reports in WARP, please contact the Buyer.

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