American Ordnance LLC
QUALITY ASSURANCE PROVISIONS

GENERAL QUALITY REQUIREMENTS

The scope of the supplier's efforts includes the following as defined in this purchase order:

Manufacture and deliver the quantities called for in this purchase order, in accordance with the specifications and drawings listed.

Develop/delineate the manufacturing processes and tooling to manufacture, inspect and deliver the quantities required.

Articles defined in the purchase order are subject to the applicable supplier quality assurance provisions contained herein.

Articles will not be accepted by AO, and payment will be withheld if the supplier fails to meet the requirements of the purchase order.

The supplier should contact AO with questions/improvements so AO can provide assistance in correcting the problems if needed.

Preliminary evaluation samples can be provided at any time for AO to review and provide assistance in improving a process.

This document and any resulting subcontract document are to be considered proprietary information to American Ordnance. Your firm is expected to treat such information with the same degree of care it uses to handle its own proprietary information and it shall not be duplicated or used for any other internal purposes than those directly related to your performance of this order. No disclosure, in whole or in part, of any AO proprietary information is permitted without the written authorization of AO.

AO will list top level drawings and specifications in the applicable purchase order. It is the responsibility of the seller to obtain all drawings and specifications as well as secondary and general support specifications. Should you be unable to obtain these documents, contact the buyer.

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.

QAP-01

PACKING AND MARKING

Supplier shall comply with the following:

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 AO LLC)
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:
    - AO Part Number
    - Part Name
    - Drawing Number OR Specification Number as stated on purchase order
    - Lot Number, if applicable
    - Quantity
    - PO Number

NOTE: AO LLC reserves the right to correct improperly marked shipping containers. Charges resulting from these corrections may be deducted from the seller's invoice.

QAP-02

CERTIFICATE OF COMPLIANCE

The supplier shall submit, with each shipment, a certificate signed by their authorized representative, stating that the raw materials used, and articles furnished to AO LLC, are in conformance with applicable requirements of the purchase order, drawings, specifications, and that supporting documentation is on file and available to AO LLC upon request. Each Certificate of Compliance should contain the following minimum information:

- Supplier
- Purchase Order Number
- Lot or Batch Number
- Quantity
- Shelf Life Expiration Date (if applicable)
- Statement of Certification which shall include:
    - References to drawings, specifications, and other requirements called out on the purchase order
    - This statement, or similar: "*All certifications, including material certifications, and other inspection and test reports, as applicable, are on file at this facility and are available for review by AO LLC*"
- Signature by Authorized Representative (Except as otherwise directed, in writing, by AO representative)
- Typed Name of Authorized Representative

QAP-02 CONT'D

- Company Title or Position of Authorized Representative
- Date Signed

An example of a Certification of Compliance can be obtained from AO LLC upon request. In addition, retain these records for a period of seven years after final delivery of the items procured. For propellant items, a properly completed Form 214R (Propellant Description Sheet) may be accepted in lieu of a Certificate of Compliance.

QAP-02A

CERTIFICATE OF COMPLIANCE – DOCUMENT SOURCE

The Certificate of Compliance or a Raw Material Certification which the supplier submits shall originate from the original material manufacturer.

QAP-03

RAW MATERIAL CERTIFICATION

The supplier shall submit, with each shipment, a Certified Test Report (CTR) indicating conformance to requirements of the applicable drawings/specifications. Each CTR should contain the following minimum requirements:

- Name and address of material supplier
- Contract #
- Identification of material by specification, revision, amendment, and dates, together with size, grade, type, etc.
- Quantity of material
- Test results identified by reference to the applicable requirements
- 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 AO representative)

The CTR is to be traceable to the material used to produce each shipment against this contract. In addition, retain these records for a period of seven years after final delivery of the items procured.

QAP-04

SHELF LIFE

Manufacturing date and shelf life is to be noted on the label. AO LLC does not accept material if more than 15 percent of the indicated shelf life has elapsed upon receipt.

QAP-05

INSPECTION AND TEST RECORDS

The Supplier shall produce and maintain 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 the AO LLC contract requirements. The Inspection and Test requirements must meet specifications and drawings unless otherwise specified by the purchase order. Critical and Special characteristics require 100% inspections. Major Defects shall require sample sizes as called out in specifications or purchase order. These records must be traceable to the material shipped.

1) Inspection and Test Records shall contain the following minimum information:
- Purchase Order Number
- Lot Number and Description of Component Part
- Description of Each Characteristic Inspected
- Total Amount in the Lot/Shipment, Amount Inspected/Amount Accepted/Amount Rejected
- Independent laboratory name and address (if used)

2) Requirements to submit Inspection and Test Records with shipments:
- **a)** Supplier shall be notified to **"Submit and Retain"** or **"Retain Only"** by AO Supplier Quality Assurance Department.
- **b)** Submission of Inspection and Test Records:
  - If Supplier is notified to **"Submit and Retain"**, the Supplier shall submit Inspection and Test Records **with each shipment** in accordance with QAP 7A or 7B.
  - If Supplier is notified to **"Retain Only"**, then Supplier is **not** required to submit Inspection and Test Records with each shipment.

3) Retention of Inspection and Test Records (Retention is required **regardless** of submission requirements):
- Supplier must ensure that records are available for timely submission to, or auditing by AO representative or designee.
- Records must be retained at Supplier location for a period of seven years after final delivery of the procured items.

4) Sample Size Determination / Application of **MIL-STD-1916** (DoD Test Method Standard):
- **a)** The Department of Defense (DoD) Preferred Methods for this 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.
- **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 IV for major characteristics and VL II for minor characteristics.
- **c)** In exception to the statement in a) above, some cases will NOT require use of MIL-STD-1916…
  - **i)** Items 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 AO Supplier Quality for direction.

QAP-06

FIRST ARTICLE SAMPLE (FAS) INSPECTION

Perform and submit an acceptable FAS as defined in the applicable military specification, drawings and/or this purchase order. **Note: Sample size for the first article must be per the specification. If no sample size is listed in the specification, contact AO for the appropriate number of samples required**. Regular production may not begin until the supplier receives approval of FAS acceptance by AO LLC. The FAS must be produced using the same methods, equipment, processes and materials that are to be used for production runs on this contract. The supplier will present to AO LLC the specified number of "known good" finished items as verified by 100 percent inspection using approved inspection equipment. The supplier shall submit with the first article samples 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 the AO LLC contract requirements. In addition, 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 AO specified sample size. Variable data must be provided using AIE approved gages when possible or standard measuring equipment. When variable data cannot be obtained, attribute data will be provided. Individual parts within the first article sample shall be identified with numbers which correspond to the inspection records submitted (Do not physically mark numbers on individual parts without prior approval of AO Supplier Quality). Inspection records should contain the following minimum requirements:

- Purchase Order Number
- Lot Number and Description of Component Part
- Description of Each Characteristic and Note Inspected
- Total Quantity Produced For FAS/First Article Amount Inspected/Amount Accepted/Amount Rejected

In addition, retain these records for a period of seven years after final delivery of the items procured.

QAP-07A

DOCUMENTATION

One copy of required documentation shall be sent with each shipment. In addition, a copy of all required documentation for each shipment may be mailed under separate cover to:

American Ordnance LLC
Attn: Incoming Inspection
2280 Hwy 104 West, Suite 2
Milan, TN 38358-3177
Phone No 731-686-6586

NOTE: This documentation is extremely important to American Ordnance and is required for final acceptance of material. Documentation may be faxed to: Incoming Inspection Supervisor, Fax No. 731-686-6132.

QAP-07B

DOCUMENTATION

One copy of required documentation shall be sent with each shipment. In addition, a copy of all required documentation for each shipment may be mailed under separate cover to:

American Ordnance LLC
Attn: Purchasing
17575 Hwy 79
Middletown, IA 52638-9701
Phone No 319 753-7801

NOTE: This documentation is extremely important to American Ordnance and is required for final acceptance of material. Documentation may be faxed to: Purchasing, Fax No. 319 753-7924.

QAP-08

CORRECTIVE ACTION

The supplier shall perform corrective action on lots found to be non-conforming, during either Source Inspection or after receipt at the Buyer's facility. Notification of non-conformance will be made with a Supplier Corrective Action Request (SCAR) at the discretion of Supplier Quality. The supplier shall answer the report as required and return to AO LLC no later than the due date required.

In the event that discrepancies are found and documented by the Government (DCMA) in the form of a Quality Deficiency Report (QDR), a copy of the QDR must be forwarded to AO LLC immediately upon receipt.

QAP-09

CHANGES IN DESIGN

The supplier must notify and obtain approval of the Customer, through AO LLC, 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 AO LLC for approval, prior to submitting to the Customer. AO LLC is responsible for making such submission to the Customer. The supplier will be notified, in writing, of the result of such submission.

QAP-10

PRODUCTION PROCESS/LOCATION, MATERIAL, TECHNICAL CHANGES, SCHEDULING

If major changes are made or will occur in production processes, type of material, specification/technical data and/or the supplier's production has been or will be down for 90 days or more between production runs, notify AO LLC to determine if a First Article, or limited First Article is required. Some examples of major changes to a production process include (1) installation of new production machines, (2) relocation of production machine, (3) major modification to existing machines.

QAP-11

SOURCE INSPECTION

AO 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 any or all of the following:

- Product Inspection
- Process Verification
- Audits

Audits may be performed on item affecting product quality such as:

- Measurement & Test Equipment (M&TE) Calibration
- Special Processes
- Work Instructions
- Statistical Process Control (SPC)

Reasonable facilities and equipment shall be made available to the AO LLC Representative while performing these tasks. Access must be provided to appropriate work areas, M&TE, records, inspection/quality plans, etc. AO LLC 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 AO LLC, it shall have been accepted under the terms of your inspection plan. After acceptance by AO LLC, the product may be submitted to the Customer if required.

AO LLC may choose to waive Source Inspection but any such waiver will not jeopardize future opportunities for Source Inspection. AO LLC reserves the right to make final acceptance of the product or service. AO LLC reserves the right to assign the costs associated with Source Inspection to the supplier if the AO LLC Source Inspector arrives for a scheduled inspection and determines that the supplier is not ready for the performance of inspection. **Notify AO LLC at least one week in advance to arrange an AO LLC representative to be at your facility. Earlier notification would be appreciated.**

QAP-12

GOVERNMENT SOURCE INSPECTION (GSI)

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 QAR at AO LLC to the Defense Contract Management Agency (DCMA) element.

Upon receipt of this order, promptly notify the DCMA Government Representative 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.

GSI does not constitute acceptance; nor in any way replace the supplier's or purchaser's inspection, or otherwise relieve the supplier of his responsibility to furnish conforming material. When inspection at the supplier's plant is performed by the Government, such inspection is not considered by the purchaser as evidence of effective inspection by the supplier. If a Government Inspector finds material to be unacceptable, the supplier does not ship the material to AO LLC until such time that the Government Inspector's findings have been satisfactorily resolved with AO LLC.

STATISTICAL PROCESS CONTROL (SPC) PLANS

A Supplier SPC General (Management) Plan is to be approved by AO LLC prior to any production. The SPC Management Plan is to be in accordance with instructions outlined in the requirements listed below. Management SPC Plan submission is required prior to scheduling of First Article Acceptance Testing. This plan requires approval by American Ordnance. A template can be provided for your use in developing this General Plan.

(Management) Plan. Any changes to this plan require approval by AO LLC. AO recognizes that suppliers and/or subcontractors play a key role in continuous improvement. If suppliers and/or subcontractors do not practice SPC and the philosophy of continuous improvement, AO's own improvements will be minimized. Current suppliers without a SPC program are encouraged to develop one.

The Supplier SPC General (Management) Plan Requirements are as follows:

1. The SPC Management Plan defines the supplier's SPC concepts and methodologies to be in accordance with ANSI/ASQC B1, B2 and B3 Standards. As a minimum, the plan addresses the following:

- SPC Plan to define management's SPC responsibilities and involvement and shall include management's commitment to continuous process improvement.
- SPC Plan to embrace a total commitment to quality and shall be capable of standing on its own merit.
- SPC Plan to describe the policy for applying SPC, including goals and management commitment to SPC
- SPC Plan to list documents that are the basis for the contractor's SPC program (i.e., ANSI standard, textbooks, Government documents).
- SPC Plan to define the SPC management structure within the organization. SPC Plan to identify and include interrelationships of all departments involved in SPC (i.e. Production, Quality, Engineering, Purchasing, etc.).
- SPC Plan to identify by job title or position all key personnel within departments involved in the application of SPC.
- SPC Plan to 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 determining, initiating and implementing corrective action upon detecting assignable causes, etc.)
- SPC Plan to identify by job title or position the primary individual responsible for overseeing that SPC training is accomplished.
- SPC Plan to describe the qualification program required and in use for all personnel utilizing SPC techniques, including the qualification of trainers.
- SPC Plan to identify who is to be trained and the type, extent and length of such training (i.e., on-the job, classroom, etc.)
- SPC Plan to identify when refresher training is required and how personnel using SPC techniques are monitored.
- SPC Plan to 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.
- SPC Plan to 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.).
- SPC Plan to 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.
- SPC Plan to describe what actions are taken as a result of each process capability study.
- SPC Plan to describe the methodologies when process capability is for variable and attribute data.
- SPC Plan to determine what constitutes and capable process. When variable data is utilized capability (Cp) shall be determined. Process performance index shall be greater than or equal to 1.33 (Cpk). For critical parameters/characteristics, the process performance index shall be greater than or equal to 2.0 (Cpk).
- SPC Plan to 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 (Cpk=1.33).
- SPC Plan to describe what actions will be taken if process/operation is sub-marginal or marginal. (Cpk less than 1.33 or 2.0 for criticals) or grand average fraction defective is greater than .003 percent.)
- SPC Plan to include the analysis of statistical distributions and define all formulas and symbology utilized.
- SPC Plan to 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.
- SPC Plan to identify the procedures for establishing and updating control limits, including frequency of adjustments.
- SPC Plan to 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.
- SPC Plan to illustrate out-of-control tests.
- SPC Plan to 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.
- SPC Plan to identify whether suppliers are required to utilize SPC and describe the extent the vendor's policies and procedures are consistent with in-house procedures.
- SPC Plan to describe the methods utilized to determine that suppliers have adequate controls to assure defective product is not produced and delivered.
- SPC Plan to describe the system utilized to audit suppliers, what will be audited and how often.
- SPC Plan to describe what action will be taken when out-of-control conditions exist at subcontractor or vendor facilities.

- SPC Plan to describe the contractor's 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.
- SPC Plan to identify various records to be used in support of SPC and describe their use.
- SPC Plan to identify retention periods of SPC records.

Detailed SPC Plans (item specific) are to be approved by AO LLC prior to any production. The Detailed SPC Plans are to be in accordance with instructions outlined in the Supplier Detailed SPC Plan Requirements listed below. Detailed SPC Plan submission is required prior to scheduling of First Article Acceptance Testing. This plan requires approval by American Ordnance. It is recommended that AO LLC's Form 760S be used as a format. These plans are 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 accepted by American Ordnance LLC.

1. Each Detailed SPC Plan contains the following:

    - Component name
    - Defect characteristic number and/or defect characteristic nomenclature
    - 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 A.O. LLC is in conformance to specifications and/or drawings.**
    - List the Production Machinery used for each characteristic subject to SPC
    - List the Inspection Equipment used for each characteristic subject to SPC
    - Define the production steps (example could be a flowchart of the process)

Control Charts - The supplier is expected to document (CP) and (CPK) indices and investigations & corrective action for out-of-control conditions. In addition, each chart is expected to 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.

1) Requirements to submit Control Charts with shipments:
   a) Supplier shall be notified to **"Submit and Retain"** or **"Retain Only"** by AO Supplier Quality Assurance Department.
   b) Submission of Control Charts:
      - If Supplier is notified to **"Submit and Retain"**, the Supplier shall submit Control Charts **with each shipment** in accordance with QAP 7A or 7B.
      - If Supplier is notified to **"Retain Only"**, then Supplier is **not** required to submit Control Charts with each shipment.

2) Retention of Control Charts (Retention is required **regardless** of submission requirements):
      - Supplier must ensure that records are available for timely submission to, or auditing by AO representative or designee.
      - Records must be retained at Supplier location for a period of seven years after final delivery of the procured items.

QAP-14

ACCEPTANCE INSPECTION EQUIPMENT (AIE)
The supplier's AIE designs (drawings or descriptions), including any changes, are to be approved by AO and/or the Government prior to any production, including First Article Inspection unless it is determined the First Article is to be conducted at AO's risk.. AIE submission is required two weeks after Purchase Order award. If AIE submission cannot be completed within two weeks, supplier is required to submit a milestone plan and date for completion within the same two weeks after Purchase Order award. Two copies of each design or description, identified to the characteristic to be inspected and to the contract number, are to be submitted to AO.

Use of approved AIE is mandatory for acceptance of parts. The Supplier is responsible for assuring the AIE is in calibration.

Instructions for Supplier Inspection Equipment List
Suppliers to submit to the AO AIE Point of Contact, a list of all inspection equipment and their procedures to be used to inspect parts for the purchase order.

The supplier's list to include all instruments, measuring and test equipment (M & TE) and their instructions for use for their part(s) acceptance in accordance with purchase order specifications. Standard Measuring Equipment (SME), commercial equipment such as micrometers, calipers, gage pins, snap gages, etc., to be described in detail, examples below:

Micrometer, OD, 1" range x .0001" divisions;
Caliper, Dial 6" range x .001" divisions;
Gage Standard Commercial Pin, .1500 ± .0002" diameter.
Torque Wrench, 0-50 in/lbs x 2 in/lbs divisions x ± 2% (accuracy)

QAP-14 CONT'D

Commercial Equipment (CE) to be listed by brand, model and capacity/range. Supplier-designed M & TE which are unique designs are to be furnished on a drawing format with instructions for use. These drawings to indicate unique design number, revision, M & TE nomenclature, inspected part name, number, and characteristic being inspected. List the drawing number and revision on the Inspection Equipment List.

Requirements Example

ITEM: List part number effected.

SPEC: Item Specification used to perform inspection.

CODE: List the Critical, Special, Major, and Minor characteristics as listed in the item specification. I.e., "C1 (Critical), 101 (Major), Spl A (Special), 201 (Minor)"

CHARACTERISTIC: List characteristic as listed in the item specification. i.e. "Overall Length of body, max."

METHODS: List inspection equipment type, brand/model, measuring capacity/units, if commercial equipment, supplier drawing number/revision.

NOTE: Upon approval of the submitted designs, a copy of the government approval will be forwarded to the supplier for their record.

If the purchase order is a follow-on order on which AIE approval was obtained, and if the parameters of the product and the AIE have not changed, "rollover" approval may be granted. Submit letter, FAX, or email citing the previous order and the AO or government document that approved the AIE.

In the event that automatic inspection equipment is used to make its own accept/ reject decision, the drawings, software and calibration procedures relevant to making the accept/reject decision will be required. Other pertinent information may be requested from the supplier by AO during the review of any submittal on an as needed basis. See Mil-A-70625 for specific requirements. When a revision to any approved inspection equipment or method is anticipated, it must be submitted to AO 60 days prior to intended use for evaluation and approval. Approval of an initial design does not imply approval of subsequent revisions.

QAP-15

QUALITY SYSTEMS

The supplier is to provide and maintain a quality program or system in accordance with MIL-Q-9858.
ISO 9001-2000 registration or QS 9000 registration is an acceptable alternative. A copy of the Supplier's Quality Manual is to be submitted to AO LLC upon request.

In addition, AO LLC reserves the right to audit or examine the adequacy of your quality/inspection program. The basis for any audit shall be the contractor's quality/inspection plan and 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 AO LLC.

QAP-16

QUALITY SYSTEMS

The supplier is to provide and maintain a quality program or system in accordance with MIL-I-45208.
ISO 9001-2000 or TS16949 registration is an acceptable alternative. A copy of the Supplier's Quality Manual is to be submitted to AO LLC upon request.

In addition, AO LLC reserves the right to audit or examine the adequacy of your quality/inspection program. The basis for any audit shall be the contractor's quality/inspection plan and 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 AO LLC.

QAP-17

OTHER QUALITY SYSTEMS

The supplier is to provide and maintain a quality and inspection system capable of producing product that meets specification and/or drawing requirements. The quality and inspection plan includes the procedures for calibration of test and measuring equipment, when applicable.

In addition, AO LLC reserves the right to audit or examine the adequacy of your quality/inspection program. The basis for any audit shall be the contractor's quality/inspection plan and 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 AO LLC.

QAP-18

QUALITY SYSTEMS

The supplier is to provide and maintain a quality program or system in accordance with ISO 9001:2000 or ISO 9001:2008. TS16949, AS9100 or other International recognized registration are acceptable alternatives. A copy of the Supplier's Quality Manual is to be submitted to AO LLC upon request.

In addition, AO LLC reserves the right to audit or examine the adequacy of your quality/inspection program. The basis for any audit shall be the contractor's quality/inspection plan and 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 AO LLC.

QAP-19

QUALITY SYSTEMS

The supplier is to provide and maintain a quality program or system that complies to ISO 9001: 2000 Tailored per AO LLC's requirements. A copy of the tailored requirements can be obtained from AO LLC. ISO 9001:2000 registration is an acceptable alternative. A copy of the Supplier's Quality Manual is to be submitted to AO LLC upon request.

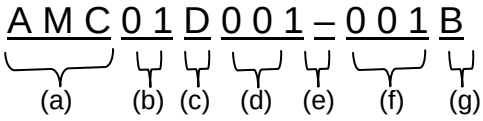
In addition, AO LLC reserves the right to audit or examine the adequacy of your quality/inspection program. The basis for any audit shall be the contractor's quality/inspection plan and procedures, company quality manual, subcontractor requirements related to product quality, applicable military specifications/standards and the purchase order. In the event that discrepancies are found, corrective action will be required no later than the due date provided by AO LLC.

QAP-20

LOT NUMBERING

Special Note: Due to lot numbering restrictions, product delivered on this purchase order must be new product. If the supplier has previously run product that meets requirements of this purchase order and they would like to use to fulfill this purchase order, it must be previously approved by American Ordnance, LLC prior to shipment.

The lot numbering system of MIL-STD-1168 applies and the supplier is responsible to assure this specification is followed. The minimum number of characters used is 13 (see example below). The following illustrates the construction of a number.



(a) Manufacturer's identification symbol (assigned by Government).
(b) A two digit numeric code identifying the year that production of lot was started.
(c) A single alpha code signifying the month that production of lot was started.
(d) Lot interfix number (assigned by Supplier)
(e) This dash is replaced with an A for First Article lots. (See para. e)
(f) Lot sequence number
(g) Ammunition lot suffix (for reworked lots only).

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. If a manufacturer's identification symbol has not been previously obtained, or if any clarification is needed, contact AO 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. 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 month of production is a single alpha code assigned as follows:

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

NOTE: The letter "I" is not used.

The single alpha code reflects the month of the year in which the manufacture of the lot was initiated. 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 purchaser. See MIL-STD-1168 Paragraph 4.1.4.4 for additional information. The Supplier is responsible for assigning the interfix number to be used unless AO directs otherwise in writing.

e. Identification of First Article Lots - 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".

Example: AMC01B001A001 (Indicates interfix 001 - first submission)
AMC01C001A002 (Indicates interfix 001 - second submission)
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 Paragraph 4.1.5.3 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 Paragraph 3.2. Always contact AO Supplier Quality 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) alpha character and it is a capital letter. The suffix is used in identifying lots which are being 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.
Example: Lot ABC01J006-002, original production lot, is rejected. After rework, the lot number becomes ABC01J006-002A. The suffix letter becomes an integral part of the lot number.

QAP-21

AMMUNITION DATA CARDS
The supplier prepares ammunition data cards in accordance with MIL-STD-1168 and submits a copy to AO LLC with each shipment. Data card distribution requirements of MIL-STD-1168 do not apply.

QAP-22

MATERIAL SAFETY DATA SHEETS (MSDS)
The supplier shall provide a copy of the MSDS with initial shipment.

QAP-23

PROPELLANT LOT NUMBERING
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 range from "00001" to "99999" and will be obtained from the contracting officer.

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.
Regular production lots shall be identified by retaining the numeric character "0" 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" with the appropriate lot identifier code.

EXAMPLE:
ABC01D-056342A
/ / \ \ \ \
a b c d e f

(a) Manufacturer's identification symbol.
(b) A two digit numeric code identifying the year of production.
(c) A single alpha code signifying the month.
(d) A one digit code signifying regular production propellant lots or nonstandard propellant lots as specified in the following paragraphs.
(e) A five digit number representing the serial number.
(f) Ammunition suffix (the alpha suffix), (only when applicable).

Lot suffix number – The 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 alpha character and are a capital letter. The suffix is used in identifying lots which

QAP-23 CONT'D

were reworked or reblended. The lot suffix is assigned in alphabetical sequence starting with the letter "A". Lots reworked or reblended twice are marked with "B". Each subsequent rework or reblend 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 reblending, the lot number becomes ABC01D-056342A. The suffix letter becomes an integral part of the lot number.

QAP-24

INSPECTION AND TEST RECORDS FOR TEN PIECE SAMPLE

The supplier must provide with the first lot/shipment records that show inspection results of all drawing dimensions including all notes on the drawings. The sample size to be inspected and documented is ten (10). Variable data must be collected and provided when possible. When variable data cannot be obtained, attribute data will be provided. Individual parts within the ten piece sample shall be identified with numbers which correspond to the inspection records submitted (Do not physically mark numbers on individual parts without prior approval of AO Supplier Quality).

Inspection records shall contain the following minimum requirements:

- Purchase Order Number
- Lot Number (as applicable) and Description of Component Part
- Description of Each Characteristic
- Total Amount in the Lot/Shipment, Amount Inspected/Amount Accepted/Amount Rejected

In addition, retain these records for a period of seven years after final delivery of the items procured.

QAP-25

REWORK AND REPAIR OF NONCONFORMING MATERIAL

1. Rework and Repair are defined as follows:
    - Rework – The reprocessing of nonconforming material to make it conform completely to the drawings, specifications or contract requirements.
    - Repair – 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.
2. Rework procedures along with the associated inspection procedures shall be documented by the supplier and submitted to American Ordnance. **Rework procedures are required to be approved by both American Ordnance and the Government Quality Assurance Representative (QAR) prior to implementation**.
3. Whenever the supplier submits a rework procedure for American Ordnance and Government review, the submission shall also include a description of the cause for the nonconformances and a description of the action taken or to be taken to prevent recurrence.
4. The rework procedure shall also contain a provision for re-inspection which will take precedence over the Technical Data Package requirements and shall, in addition, provide American Ordnance and the Government assurance that the reworked items have met reprocessing requirements.
5. **REPAIR OF NONCONFORMING MATERIAL IS NOT ALLOWED.**

QAP-26

SPECIAL PROCESSES CONFORMANCE

Supplier and/or any subtier supplier engaged in special process (e.g. soldering, x-ray, welding, magnetic particle and penetrant inspection, heat treating, plating, chem. film or surface treatment) may have the special processes audited by AO.
Any sub-tier supplier performing special processes or special tests must be qualified. Written documentation establishing the basis for your selection(s) must be furnished to AO for approval. AO reserves the right to disapprove the basis for supplier selection.
You must maintain objective evidence, subject to AO review that:

- The special process was performed by a qualified source.
- The special processes were performed in accordance with the requirements of the applicable specification.

Supplier shall furnish copies of this objective evidence upon request.

QAP-27

PROPELLANT MANDATORY REQUIREMENT
The supplier must assure the following requirements are met:

1. The producer of propellant is required to submit a five pound sample within six months of manufacture to the following address:

   U.S. Army REDCOM-ARDEC
   ATTN: Nathan Zink AMSTA-AAR-AEE-W, Building 938
   Picatinny Arsenal, NJ 07806-5000

2. The producer of propellant is required to submit a copy of the propellant description sheet to the following address:

   Marcia Garrison
   SFSJM-QAP
   Rock Island Arsenal, Building 350, 4th Floor
   Rock Island, IL 61299-6000

3. In addition, the supplier must send American Ordnance LLC a copy of the propellant description sheet with each shipment of propellant. Propellant cannot be accepted without this document.

QAP-28A

CRITICAL CHARACTERISTICS CLAUSE (7 MAY 2001)

a. The supplier's processes shall be designed to prevent the creation or occurrence of critical nonconformances. The contractor shall establish, document and maintain specific procedures, work and handling instructions and process controls relating to any critical characteristics.

b. The supplier shall assure his critical processes are robust in design such that product and performance are relatively insensitive to design and manufacturing parameters. A robust design anticipates changes and problems. Robust processes shall be designed to yield less than one nonconformance in one million.

c. An inspection/verification system shall be employed that will verify the robustness of your critical processes. Maximum use should be made of automated inspection equipment to accomplish verification of product quality. Mistake proofing techniques of your material handling and inspection systems are encouraged.

d. Previous Practices/Special Characteristics. As a result of previous practices, the government's technical data may refer to "Critical" (not annotated with I or II) and "Special" characteristics. Characteristics classified as "Critical" (not annotated with a I or II) shall be subject to all requirements herein associated with Critical (I) characteristics and level I Critical nonconformances. Unless otherwise stated in Section C, characteristics classified as "Special" shall be subject to all requirements herein associated with Critical (II) and Level (II) Critical nonconformances.

e. Supplier Identified Critical Characteristics List. Not including critical characteristics defined in the government's technical data (drawings, specifications, etc.), the supplier shall identify and document all material, component, subassembly and assembly characteristics whose nonconformances may 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, supplemented herein. The supplier's additional critical characteristics shall be classified as "Critical (I)" or "Critical (II)", and shall be reviewed and approved by American Ordnance prior to manufacturing (DI-SAFT-80970A). The following definitions are provided.

Level I critical nonconformance: A nonconformance of a critical characteristic that judgment and experience indicate would result in hazardous or unsafe conditions for individuals using, maintaining or depending upon the product; or a nonconformance that judgment and experience indicate would prevent performance of the tactical function of a weapon system or major end item. The following (as a minimum) are classified as Level I critical nonconformances:

(1) A nonconformance that will result in a hazardous or unsafe condition (often referred to as a single point failure).

(2) A nonconformance that will remove or degrade a safety feature (such as those in a safe and arm device or fuzing system).

(3) A nonconformance that will result in violation of mandatory safety policies or standards.

Level II critical nonconformance: A nonconformance of a critical characteristic, other than Level I. This includes the nonconformance of a characteristic that judgment and experience indicate may, depending upon the degree of variance from the design requirement, the presence of other nonconformances or procedural errors,:

(1) result in hazardous or unsafe conditions for individuals using, maintaining or depending upon the product, or

(2) prevent performance of the tactical function of a major end item.

f. In the event that a Critical level (I) nonconformance is found anywhere in the production process, the contractor, as part of his quality system, shall have procedures in place to ensure:

(1) The nonconformance is positively identified and segregated so that there is no possibility of the item inadvertently re-entering the production process. This control shall be accomplished without affecting or impairing subsequent defect analysis.

(2) The operation that produced the defective component or assembly and any other operations incorporating that component or assembly is immediately stopped.

(3) American Ordnance is immediately notified of the critical nonconformance (telephonically and electronic mail.) (DI-SAFT-80970A).

(4) Any suspect material (material in process that may contain the same defect) is identified, segregated and suspended from any further processing.

(5) An investigation is conducted to determine the cause of the deficiency and required corrective actions. A report of this investigation shall be submitted to American Ordnance (DI-SAFT-80970A).

(6) A request to restart manufacturing or to use any suspect material associated with the critical nonconformance is submitted to American Ordnance (DI-SAFT-80970A). Restart of production shall not occur until the investigations are complete or upon authorization from American Ordnance Purchasing. All objective evidence of the investigations to date shall be available for review at the time of restart. Suspect materiel found to be nonconforming shall not be used without American Ordnance approval.

g. The supplier may develop alternative plans and provisions relative to American Ordnance or Supplier identified Critical level (II) characteristics. The provisions shall be submitted to American Ordnance for advanced approval and shall address the following:

(1) Complete explanation of potential failure mode(s) together with supporting historical and statistical data.

(2) Pre-established plan of action (POA) to be taken when a critical nonconformance occurs and a description of controls to ensure there is no possibility of the nonconforming item inadvertently entering the production process.

(3) Means of tracking nonconformance rate, investigative results and corrective actions taken.

(4) Method to immediately verify that a produced critical nonconformance is consistent with the identified failure mode(s) and does not exceed the historical nonconformance rate.

The supplier can resume production with specific government approval based upon the pre-approved alternate plans and provisions for Critical (II) characteristics and level (II) Critical nonconformances.

h. If a critical nonconformance is discovered during further processing or loading, the original supplier or manufacturer who introduced the critical nonconformance shall bear responsibility for the nonconformance.

i. The American Ordnance Supplier Quality Assurance Representative will perform the surveillance actions necessary to ensure compliance with this clause.

(End of Clause)

QAP-28B

CRITICAL CHARACTERISTICS CLAUSE (FEB 2004)

(a) The supplier's processes shall be designed to prevent the creation or occurrence of critical nonconformance. The contractor shall establish, document and maintain specific procedures, work and handling instructions and process controls relating to any critical characteristics.

(b) The supplier shall assure his critical processes are robust in design such that product and performance are relatively insensitive to design and manufacturing parameters. A robust design anticipates changes and problems. Robust processes shall be designed to yield less than one nonconformance in one million.

(c) An inspection/verification system shall be employed that will verify the robustness of your critical processes. Maximum use should be made of automated inspection equipment to accomplish verification of product quality. Mistake proofing techniques of your material handling and inspection systems are encouraged.

(d) Previous Practices/Special Characteristics. As a result of previous practices, the government's technical data may refer to "Critical" (not annotated with I or II) and "Special" characteristics. Characteristics classified as "Critical" (not

annotated with a I or II) shall be subject to all requirements herein associated with Critical (I) characteristics and level I Critical nonconformance. Unless otherwise stated in Section C, characteristics classified as "Special" shall be subject to all requirements herein associated with Critical (II) and Level (II) Critical nonconformance.

(e) Supplier Identified Critical Characteristics List. Not including critical characteristics defined in the government's technical data (drawings, specifications, etc.), the supplier shall identify and document all material, component, subassembly and assembly characteristics whose nonconformance may 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, supplemented herein. The supplier's additional critical characteristics shall be classified as "Critical (I)" or "Critical (II)", and shall be reviewed and approved American Ordnance prior to manufacturing (DI-SAFT-80970A). The following definitions are provided.

Level I critical nonconformance.
A nonconformance of a critical characteristic that judgment and experience indicate would result in hazardous or unsafe conditions for individuals using, maintaining or depending upon the product; or a nonconformance that judgment and experience indicate would prevent performance of the tactical function of a weapon system or major end item. The following (as a minimum) are classified as Level I critical nonconformance:

(1) A nonconformance that will result in a hazardous or unsafe condition (often referred to as a single point failure).

(2) A nonconformance that will remove or degrade a safety feature (such as those in a safe and arm device or fusing system).

(3) A nonconformance that will result in violation of mandatory safety policies or standards.

Level II critical nonconformance.
A nonconformance of a critical characteristic, other than Level I. This includes the nonconformance of a characteristic that judgment and experience indicate may, depending upon the degree of variance from the design requirement, the presence of other nonconformance or procedural errors,:

(1) Result in a hazardous or unsafe conditions for individuals using, maintaining or depending upon the product, or

(2) Prevent performance of the tactical function of a major end item.

(f) In the event that a Critical nonconformance is found anywhere in the production process, the contractor, as part of his quality system, shall have procedures in place to ensure:

(1) The nonconformance is positively identified and segregated so that there is no possibility of the item inadvertently re-entering the production process. This control shall be accomplished without affecting or impairing subsequent defect analysis.

(2) The operation that produced the defective component or assembly and any other operations incorporating that component or assembly are immediately stopped.

(3) American Ordnance is immediately notified of the critical nonconformance (telephonically and electronic mail.)(DI-SAFT-80970A).

(4) Any suspect material (material in process that may contain the same defect) is identified, segregated and suspended from any further processing.

(5) An investigation is conducted to determine the cause of the deficiency and required corrective actions. A report of this investigation shall be submitted to American Ordnance (DI-SAFT-80970A).

(6) A request to restart manufacturing or to use any suspect material associated with the critical nonconformance is submitted to American Ordnance (DI-SAFT-80970A). Restart of production shall not occur until the investigations are complete or upon authorization from American Ordnance Purchasing. All objective evidence of the investigations to date shall be available for review at the time of restart. Suspect materiel found to be nonconforming shall not be used without American Ordnance approval.

(g) The supplier may develop alternative plans and provisions relative to American Ordnance or Supplier identified Critical level (I) and Critical Level (II) characteristics. The provisions shall be submitted to American Ordnance for advanced approval and shall address the following:

(1) Complete explanation of potential failure mode(s) together with supporting historical and statistical data.

(2) Pre-established plan of action (POA) to be taken when a critical nonconformance occurs and a description of controls to ensure there is no possibility of the nonconforming item inadvertently entering the production process.

(3) Means of tracking nonconformance rate, investigative results and corrective actions taken.

(4) Method to immediately verify that a produced critical nonconformance is consistent with the identified failure mode(s) and does not exceed the historical nonconformance rate.

The supplier can resume production without specific American Ordnance approval based upon the pre-approved alternate plans and provisions for Critical (I) characteristics and level (I) Critical nonconformance and Critical (II) characteristics and level (II) Critical nonconformance.

(h) If a critical nonconformance is discovered during further processing or loading, the original supplier or manufacturer who introduced the critical nonconformance shall bear responsibility for the nonconformance.

(i) American Ordnance Supplier Quality Assurance Representative will perform the surveillance actions necessary to ensure compliance with this clause.

(End of clause)

QAP-28C

1) The supplier's processes shall be designed to prevent the creation or occurrence of critical nonconformances.

   a) Level I critical nonconformance: A nonconformance of a critical characteristic that judgment and experience indicate would result in hazardous or unsafe conditions for individuals using, maintaining or depending upon the product; or a nonconformance that judgment and experience indicate would prevent performance of the tactical function of a weapon system or major end item.

   b) Level II critical nonconformance: A nonconformance of a critical characteristic, other than Level I. This includes the nonconformance of a characteristic that judgment and experience indicate may, depending upon the degree of variance from the design requirement, the presence of other nonconformances or procedural errors.

2) The Supplier shall establish, document, and maintain a Critical Characteristics Control Plan which covers any procedures and processes relating to the critical characteristics. Maximum use should be made of automated inspection equipment to accomplish verification of product quality. Mistake proofing techniques of your material handling and inspection systems are encouraged.

3) An inspection/verification system shall be employed that will verify the robustness of critical processes. This system shall include maintaining a log of critical defect occurrences.

4) In the event that a Critical nonconformance is found anywhere in the production process, the supplier, as part of his quality system, shall have procedures in place to ensure:

   a) Ceasing of production activities on the affected item; notification of American Ordnance Supplier Quality and Buyer; and requesting direction from American Ordnance Supplier Quality as to how to proceed.

   b) The nonconformance is positively identified and segregated so that there is no possibility of the item inadvertently re-entering the production process.

   c) Any suspect material (material in process that may contain the same defect) is identified, segregated and suspended from any further processing.

   d) An investigation is conducted to determine the cause of the deficiency and required corrective actions. A report of this investigation shall be submitted to American Ordnance.

5) If a critical nonconformance is discovered during processing or loading at American Ordnance, the original supplier or manufacturer who introduced the critical nonconformance shall bear responsibility for the nonconformance.

6) American Ordnance reserves the right for American Ordnance Supplier Quality or its representatives to perform surveillance actions to ensure compliance with this clause.

QAP-28D

CRITICAL CHARACTERISTICS CLAUSE E-I1 52 .246-4553 JUNE 2009

a. The supplier's processes shall be designed with the objective of preventing the creation or occurrence of non-conforming critical characteristics (see paragraph d & e). The supplier shall establish, document and maintain a product specific, critical characteristics control (CCC) plan that shall be submitted to and approved by AO, IAW DD Form 1423 and DI-MGMT-80004. Form AO-0039 shall be used by AO for review and disposition (Approve, Reject, or Conditional Approval) of the CCCP and CPOA (if required). The completed document shall be kept electronically in the Supplier Profile folder. 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 developing this plan and submitting Critical Plan of Action (CPOA) (paragraph g) can be found at http://www.pica.army.mil/PicatinnyPublic/organizations/ardec/orgchart/quality.shtml, or on AO's website.

b. 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.

c. 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. AO 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:

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 (fill-in -1-):

   Unless otherwise approved by AO, the non-conformance escape risk is the sum of the individual characteristic escape rates.

   The possibility 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 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 AO 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.

3. 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 AO. 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 allocated.

d. 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 in Section C, these characteristics shall be subject to all requirements of this clause.

e. In addition to critical characteristics defined in the Government's technical data (drawings, specifications, etc.), the supplier 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 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 and shall be submitted to and approved by AO and the PCO prior to production (DI-SAFT-80970A)

f. In the event that a critical non-conformance is found any where in the production process, the supplier, 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) AO Purchasing and Supplier Quality must be IMMEDIATELY NOTIFIED of the critical non-conformance (electronic mail). AO Supplier Quality will notify the Business Unit who will notify the PCO.

(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 AO. The use of the DID report shall not delay notification to AO 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 AO. Restart of production shall not occur until authorized by AO unless previously addressed in the approved CCC Plan. AO 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 with out AO approval.

(7) AO 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.

g. The supplier may develop alternative plans and provisions, collectively referred to as a Critical Plan of Action (CPOA), relative to Government, AO or supplier identified critical characteristics. All CPOAs are independent and shall be evaluated by AO and the Government for this contract/Purchase Order. The CPOA and any subsequent revisions submitted IAW DD Form 1423 and DI-MGMT-80004 require AO 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 AO. Unless otherwise approved by AO, 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 or on the AO web site.

h. 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 f requirements i.e. STOP production and request RESTART approval from AO.

i. If a critical non-conformance is discovered beyond its designated inspection point and prior to AO or Government acceptance, the supplier shall take actions specified in paragraph f above. If a critical non-conformance is discovered after AO or Government acceptance, AO and the Government have the right to invoke the requirements of paragraph f with respect to the contractor's remaining production under this contract.

QAP-28E

CRITICAL CHARACTERISTICS CLAUSE (MAY 2010)

a. The supplier's processes shall be designed with the objective of preventing the creation or occurrence of non-conforming critical characteristics (see paragraph d & e). The supplier shall establish, document and maintain a product specific, critical characteristics control (CCC) plan that shall be submitted to and approved by AO, IAW DD Form 1423 and DI-MGMT-80004. Form AO-0039 shall be used by AO for review and disposition (Approve, Reject, or Conditional Approval) of the CCCP and CPOA (if required). The completed document shall be kept electronically in the Supplier Profile folder. 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 developing this plan and submitting Critical Plan of Action (CPOA) (paragraph g) can be found at http://www.pica.army.mil/PicatinnyPublic/organizations/ardec/orgchart/quality.html, or on AO's website.

b. 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.

QAP-28E CONT'D

c. 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. AO 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:

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 (fill-in -1-):

   Unless otherwise approved by AO, the non-conformance escape risk is the sum of the individual characteristic escape rates.

   The possibility 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 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 AO 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.

3. 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 AO. 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.

d. 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 in Section C, these characteristics shall be subject to all requirements of this clause.

e. 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 and shall be submitted to and approved by AO and 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 supplier, 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) AO Purchasing and Supplier Quality must be IMMEDIATELY NOTIFIED of the critical non-conformance (electronic mail).

AO Supplier Quality will notify the Business Unit who will notify the PCO.

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(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 AO. The use of the DID report shall not delay notification to AO 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 AO. Restart of production shall not occur until authorized by AO unless previously addressed in the approved CCC Plan. AO 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 AO approval.

(7) AO 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.

g. The supplier may develop alternative plans and provisions, collectively referred to as a Critical Plan of Action (CPOA), relative to Government, AO or supplier identified critical characteristics. All CPOAs are independent and shall be evaluated by AO and the Government for this contract/Purchase Order. The CPOA and any subsequent revisions submitted IAW DD Form 1423 and DI-MGMT-80004 require AO 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 AO. Unless otherwise approved by AO, 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 or on the AO web site.

h. 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 f requirements i.e. STOP production and request RESTART approval from AO.

i. If a critical non-conformance is discovered beyond its designated inspection point and prior to AO or Government acceptance, the supplier shall take actions specified in paragraph f above. If a critical non-conformance is discovered after AO or Government acceptance, AO and the Government have the right to invoke the requirements of paragraph f with respect to the contractor's remaining production under this contract.