GENERAL DYNAMICS
Ordnance and Tactical Systems

QUALITY ASSURANCE PROCUREMENT REQUIREMENTS (QAPR)

PURPOSE

This Quality Assurance Procurement Requirement (QAPR) defines the quality requirements for this purchase order (PO). **Applicable quality requirements shall be listed by the specific clause number.** Additional or supplemental requirements may also be specified in the body of the purchase order, and do not supersede the terms and conditions of the purchase order. Compliance with this QAPR and all additional or supplementary PO requirements does not relieve Seller of the final responsibility to furnish acceptable supplies or services. Compliance to stated requirements may be subject to General Dynamic's on-site verification. Herein the Buyer will be addressed as "General Dynamics–OTS (GD-OTS)."

DEFINITIONS

- The term "Purchase Order" refers to the Purchase Order, Sub-Contract, or other written agreement between the Buyer and the Seller (Supplier), in which this document is incorporated by reference.
- The term "Buyer" refers to GD-OTS acting by and through its division issuing the Purchase Order.
- The term "Seller" refers to the legal entity that is the contracting party with the Buyer with respect to the Purchase Order. The Seller is the supplier to the Buyer.

A General Requirements

General requirements labeled A through O are applicable to all purchase orders.

B Government Source Inspection (GSI)

Government Source Inspection (GSI) may be required on this order. Refer to the body of the Purchase Order for applicability. If GSI is required, contact the Defense Contract Management Agency (DCMA) Quality Assurance Representative (QAR) who services your facility. If a DCMA representative cannot be located, inform the General Dynamics-OTS Buyer. Evidence of the Government acceptance must be shown on the inspection or shipping documents.

C Post Award Review

After award of the Purchase Order and prior to commencement of work, a Post Award Review will be conducted. This review may be by telephone or in person at the buyer or seller's facility. The purpose of this conference is to ensure that a complete understanding of the QAPR clauses and contract requirements is achieved.

D Supplier Responsibility

It is the responsibility of the supplier to satisfy all requirements of the purchase order, including drawing/specification requirements, quality requirements, and deliverable documentation requirements such as Certifications of Conformance, Supplier Inspection reports, etc. All required documentation for each shipment of deliverable purchased product must be provided either prior to or concurrent with the shipment's receipt at General Dynamics-OTS' facility unless specifically authorized otherwise by General Dynamics-OTS. It is General Dynamics requirement that procured hardware is processed using production equipment, tooling and process planning. A supplier's inability to satisfy these requirements may result in an on-site audit, General Dynamics directed inspections, or third-party inspections performed at the supplier's expense.

NOTE: It is the supplier's responsibility to notify General Dynamics of any possible exception to compliance with any or all requirements as published within the purchase order, drawings, or specifications.

E Records

The Seller shall maintain adequate records of all required inspections and tests, including such records or certifications provided to the Seller.

NOTE- ALL CERTIFICATION ARE TO BE SUBMITTED ELECTRONICALLY TO THE FOLLOWING EMAIL ADDRESS: certs@gd-ots.com

F Control of Nonconforming Material

The Seller shall establish and maintain an effective and positive system for identifying, segregating, and controlling material found not to conform to requirements. Rework and repair are prohibited.

Authority to ship non-conforming material must be obtained prior to shipment. For any Seller departure from the requirements of this purchase order, drawing or specification, Seller may submit to General Dynamics-OTS (through Supply Chain Management) a Request for Variance form requesting disposition of the product. Root cause of the non-conformance and systemic actions to prevent recurrence shall accompany the request. Non-conforming material delivered without prior written approval is subject to return in accordance with the purchase order.

G Drawing and Specification Control

The Seller's system shall assure that only correct, current drawings and specifications as detailed in the contract and/or Purchase Order are used for fabrication, processing, and inspection and testing.

H Prohibited Practices

- Unauthorized repair - Seller shall not repair non-conforming product by any means without prior approval by General Dynamics-OTS.

- Processes, Materials, or Procedures: The Seller shall not change any process, material, or procedure without prior written consent of the GD-OTS Buyer. This specifically includes the Quality Management System and attending Quality Manual. As to any product which has been subjected to Buyer or Government specified qualification procedures qualifying the Seller's product or to permit the Seller to become a qualified source for the product, the Seller shall not change any process, material, or procedure from that used for qualification without prior notification and subsequent written approval by the Buyer or the Government, as appropriate.

- If this purchase order requires acceptance of a first article inspection, Seller shall not submit product from a production run for General Dynamics-OTS acceptance prior to General Dynamics-OTS approval of such First Article.

- Items rejected by GD-OTS and subsequently resubmitted to the Buyer shall be clearly and properly identified as resubmitted. The Seller's shipping documents shall state that the items are replacements or reworked items and shall also reference, by number, the Buyer's rejection document.

- The Seller shall not subcontract work, or processing (including that required by drawing or specification), or procure materials to be supplied to the Buyer (other than raw materials or catalog items), or release technical information included with the Request for Quotation or Purchase Order, to other subcontractors or sub-tier suppliers without specific written approval of the GD-OTS Buyer. (GD-OTS may have Customer requirements to control special process sources.)

- Notification of Facility or Process change: Seller and/or Seller's Contractors shall not relocate any production, manufacturing or processing facilities, including production lines and equipment, during performance of this purchase order without prior notification and approval by General Dynamics-OTS. The Seller shall not change, modify, or revise any process that has been approved by General Dynamics-OTS without prior notification. The buyer shall be notified for survey / approval of the new facility or process prior to fabrication of deliverable product from that facility or process. Approval may include an on-site transition evaluation by General Dynamics-OTS personnel.

I Corrective Action Request (CAR)

When an issue involving the quality or functionality of a part or process occurs, General Dynamics-OTS may request corrective action from the Seller. The response to the request must be timely and include the information as indicated in the General Dynamics-OTS document DC-018 Corrective Action Request Response Guidelines. General Dynamics-OTS may, at their discretion, withhold payment for any subject lots under the Corrective Action until a satisfactory response is received. When corrective action is required for Government source inspected items, Seller shall coordinate such action with the Government Quality Assurance Representative (QAR) assigned to his/her facility.

J Contract Change Approval

The Seller is advised that only the GD-OTS Purchasing representative is authorized to invoke contract changes, such as engineering changes. No other GD-OTS representative, whether in the act of technical supervision , administration, or any other functional group is authorized to make any commitment to the Seller, to perform or terminate any work, or to incur obligation. Project Engineers, Technical Supervisors, Quality Engineers, and any other groups within GD-OTS (or as an agent thereof), are not authorized to make or otherwise direct changes that in any way affect the contractual relationship of the Seller and Buyer.

K Lot Acceptance

General Dynamics – OTS reserves the right to approve or disapprove sampling plans and / or process controls used for product acceptance by the supplier. If clause 3A is imposed then MIL-STD-1916 is mandatory at the supplier's facility. If clause 3B or 3C is imposed then the applicable revision of Supplementary Quality Assurance Provisions is mandatory at the supplier's facility. Other specific sampling plans required by contract may be listed in the body of the purchase order.

General Dynamics-OTS reserves the right to use C=0 "Sampling Procedures and Tables for Inspection by Attributes," SQAP 402-005 "Supplementary Quality Assurance Provisions", or MIL-STD-1916,"DOD Preferred Methods for Acceptance of Product", inspection plans for acceptance of product. Final acceptance will be determined at General Dynamics-OTS facility unless otherwise designated or prior arrangements have been made.

Neither surveillance inspection and/or tests performed by the Buyer, or their representative, at either the Seller's or Buyer's facility, or the Seller's compliance with all applicable Quality Assurance Requirements shall relieve the Seller of the responsibility to furnish items that fully conform to the provisions of the Purchase Order in its entirety. Likewise, inspection and acceptance of product, by either the Seller or the Buyer, in

accordance with MIL-STD-1916 does not relieve the Seller's responsibility to furnish all Purchase Order required quantities as fully conforming items in accordance with the Purchase Order requirements.

L Right of Access

The Buyer and/or the Government shall have the right of access to the Seller's facilities for the purpose of inspection or verification of materials, processes, procedures, tooling, and equipment during performance of the contract or Purchase Order.

M The Seller shall package all items for shipment or transport to GD-OTS, or other destinations as may be designated by the Buyer, in accordance with good commercial practices or as otherwise specified, assuring that the items are sufficiently protected so as to preclude damage such as abrasion, scratching, and denting due to contact between the items themselves and/or external damage in the course of normal commercial transport.

N Shipments

In the case where product shipment destination (drop shipment) is other than General Dynamics-OTS, Seller must provide documentation with shipment and to General Dynamics-OTS as follows: Shipper, Certification of Conformance, Ammunition Data Card (if required, see QAPR clause 10), and Source Inspection Request, (if required, see QAPR 14), and any other documentation specified by imposed QAPR clauses.

O QAPR Roll Over Request/Carry Over Approval

The supplier may request a roll over or carry over approval for prior QAPR(s) clauses which have been approved on current or past purchase orders. An approval may be granted if there are no changes in product design, procedures, processes and production has not ceased for more than 90 days. The QAPR clauses will still be applicable to this purchase order but the supplier will not be required to resubmit the already approved data items.

QAPR 1 Quality System

Approved Quality System: The Seller shall maintain the Quality Management System approved by GD-OTS upon which the Seller's current Approved Supplier status is based. The Seller's Quality Management System shall be subject to review and/or audit for continued approval by the GD-OTS Buyer or other designated representative. No waiver or deviation from the Quality Management System requirements shall be permitted without written approval from the GD-OTS Buyer.

Quality System Certified to ISO-9001: The Seller shall maintain a Quality Management System that is certified to ISO-9001 (latest revision). The Seller must provide adequate evidence that the Quality Management System has been successfully audited by a third party registrar. A copy of the third party certificate shall be forwarded to the GD-OTS Buyer. In the event that the Seller's Quality Management System loses certification, the Seller must notify the Buyer within 24 hours. The Seller must submit within an agreed timeframe, a written plan for recertification with an approved third party registrar.

Quality System Compliant to ISO-9001: The Seller shall maintain a Quality Management System that is compliant to ISO-9001 (latest revision). The Seller's Quality Management System shall be subject to review and/or audit for compliance by the GD-OTS Buyer or other designated representative.

NOTICE: Marion Operations recognizes our supplier base as "interested parties" in accordance with ISO9001:2015 paragraph 4.2 of the standard and are relevant to the Quality Management System (QMS). Marion Operations would like to share our policy for review and consideration, and invite any questions or the opportunity to discuss our policy.

QAPR 2 Inspection System

Inspection System: The Seller shall maintain an inspection system that complies, as a minimum requirement, with ISO-9001 (latest revision). The Seller's system shall be subject to review and/or audit for compliance by the Buyer or other designated representative.

*All calibration systems must comply with ANSI/NCSL Z540-1 or equivalent.

Upon request by the Buyer, the Seller shall provide a certified calibration report identifying NIST traceable standards used and showing actual values measured where appropriate, for tools, devices, and equipment used to determine the acceptance of items under the Purchase Order.

QAPR 3 Inspection and Test Plans

Seller shall prepare, maintain and submit written plans and instructions for inspections and tests, including First Article Acceptance (FAT), to be performed for this purchase order. These instructions must include item part number, revision, method of inspection (visual, gage, test equipment, etc.), serial numbers, operational sequence with inspection characteristic identification, accept/reject criteria, sample plan and any special inspection procedures. The plans shall be submitted to General Dynamics for approval. After approval, any change must be re-submitted and approved.

The Seller shall use only accredited laboratories with a scope of accreditation allowing the performance of such testing / inspection. Prior to the performance of any testing (or inspection) to be performed by an outside laboratory the Seller shall submit to the Buyer the name of the laboratory, the laboratory's certificate of accreditation, and the laboratory's scope of accreditation for approval. Accredited Certification Bodies recognized by GD-OTS are, but may not be limited to, A2LA (American Association of Laboratory Accreditation) and NADCAP (National Aerospace and Defense Contractors Accreditation Program). Use of a laboratory not accredited by either A2LA or NADCAP shall require approval of the Buyer prior to use.

3A. Inspection & Test Plans shall conform to MIL-STD-1916 for product acceptance.

3B. Inspection & Test Plans shall conform to SQAP 402-005 for product acceptance.

3C. Standards used for acceptance of NDT Inspections by the supplier or any sub-supplier or third party are subject to approval by GD-OTS.

QAPR 4 Inspection Equipment List and Gage Designs

4A. The seller shall prepare, maintain and submit an Inspection Equipment List (IEL), (also referred to as Acceptance Inspection Equipment or AIE) which itemizes the inspection equipment required to perform the inspections and tests, including FAT, for this purchase order. Standard measuring instruments must be traceable to the National Institute of Standards and Technology. Special measuring instruments and equipment must have designs submitted for approval IAW DI-SESS-81004 and/or DI-RELI-80322 as appropriate. Seller's designs shall be supported by detail drawings that depict all information necessary to fabricate, calibrate and operate the equipment. Designs may be developed on a format normally employed in the seller's equipment design procedure, provided such format reflects conformance to referenced Data Item Description. Designs may be subject to submission for Government review and approval.

The Seller shall maintain the acceptance inspection equipment within a controlled calibration system that requires established intervals for calibration against certified standards traceable to the National Institute of Standards and Technology (NIST). The accuracy of acceptance equipment shall be of a ratio of at least 10 to 1 greater than the

tolerance of the characteristic or feature to be measured unless written approval is obtained from the Buyer. After initial Buyer approval, the Seller shall utilize the approved equipment as approved and shall make no changes in methodology without the prior written approval of the Buyer.

4B. Measurement System Evaluation (MSE), program conducted in accordance with Data Item Description (DID) DI-QCIC-81960.

QAPR 5 Statistical Process Control (SPC)

Statistical Process Control: The Seller is required to validate the quality of their product, whether produced at the Seller's facility or at a subcontracted facility, using Statistical Process Control (SPC) techniques as defined within or ANSI/ASQC B1, B2, & B3... Application of SPC techniques shall be considered for characteristics identified as Key, Critical, Major, and Special in the technical data package. The Seller shall provide written justification for all such characteristics where SPC is determined to be inappropriate.

A plan for the implementation of SPC shall be submitted by the Seller for review and approval by the Buyer prior to the initiation of production. Where First Article is contractually required, the SPC plan shall be submitted to and approved by the Buyer prior to First Article inspection by the Buyer.

The SPC plan shall detail the process capability studies to be performed, the SPC methods to be applied and a time-phased schedule for total implementation. The SPC plan shall also identify the operations where SPC will be implemented: the sample size and frequency of measurements: the criteria to be used for modifying the sample size and frequency: the Quality Assurance procedures to be used to validate the accuracy, adequacy, and interpretation of the data: the training program and qualification of personnel in SPC techniques: criteria to be used for determining an out of control condition: identification of the responsibility for performing measurements and corrective actions: and the corrective action procedures to be used and actions to be taken upon statistical signal or detection of an out of tolerance item.

Statistical evidence of item quality in the form of control charts shall be prepared and maintained for each characteristic identified in the plan. The recording of data and plotting of charts shall be updated at each sampling interval. The charts shall identify all corrective actions to be taken upon statistical indication that an item is moving toward an out of control condition. All charts shall be considered quality records to be retained by the Seller in accordance with requirements as stated in the Purchase Order, and shall be made available for review upon the request of the Buyer.

When SPC has been implemented and the processes have demonstrated a state of statistical control and the item(s) conform to final acceptance specifications, the Seller may request that sampling in accordance with the specification be reduced for acceptance purposes on those controlled characteristics. Upon approval by the Buyer, acceptance shall then be based upon the

reduced sampling, the control charts, and the SPC plan approved by the Buyer; at the discretion of the Buyer, should the process warrant; the authorization for reduced inspection may be withdrawn.

QAPR 6 First Article Inspection and Test

Compliance to drawing and specification requirements shall be determined by inspections and tests of first article samples. The inspection and test shall be documented on a first article report that must include actual measurement recordings, except where go/no-go gaging is used, such as specific attribute gages, thread gages and standard radius gages. First Article samples shall be tagged or otherwise identified to tool number, tool serial number, and when applicable, cavity number. First Article quantities and requirements are detailed in the applicable specification for the product. For products not covered by specifications, first article quantities shall be as directed by GD-OTS, including for castings and molded parts. First Article shall be as designated in A or B below.

A new, or updated First Article shall be required if any of the following events occur:

- Change to Facility or Processing Equipment
- Change to Processes
- Change in Location
- Change in Source of supply
- Change in Design
- Interruption of Production greater than 90 days
- Replacement of Special Tooling (i.e. Injection molds)

A. General Dynamics-OTS Quality Assurance or a designated representative may witness and/or participate in the First Article Inspection and Test at Seller's facility. The supplier MUST notify GD-OTS a minimum of 15 days prior to the FAT.

First Article Inspection Plan Required: The Seller shall prepare a First Article Inspection (FAI) plan for the items to be delivered under the Purchase Order. A reproducible copy of the plan shall be submitted to the GD-OTS Buyer and shall include as a minimum:

a. Identification of Item(s)

b. First Article Schedule (dates, location, etc.)

c. Inspection/Test to be performed (if not specified by GD-OTS)

d. Accreditation documents for independent 3rd party laboratories (as required).

e. Characteristics/Features to be inspected or tested (if not specified by GD-OTS)

f. Method of Inspection (visual, test equipment, gage, etc.)

g. Measuring or Test Equipment to be used

h. Material and Process C of C

The Seller shall take into account that all inspection is to be performed on the item(s) that have been produced using materials, tooling, processes, facilities/equipment, and procedures identical to what will be used during regular, normal, production.

If the seller fails to deliver/present any First Article or First Article Data Package by the date shown on the Purchase Order, or if the GD-OTS Buyer disapproves any First Article or First Article Data Package due to non-conformance to requirements, the seller shall be deemed to have failed to make delivery within the meaning of the Purchase Order requirements.

If the First Article or the First Article Data Package is disapproved for nonconformance to requirements, the Seller shall, upon the Buyer's request, repeat any or all First Article inspections or tests. Prior to such additional inspections or tests, the Seller shall make any necessary changes, modifications, or repairs to the First Article, or select/manufacture another First Article for such inspections or tests. All costs related to any additional inspections or tests following disapproval shall be borne by the Seller. The GD-OTS Buyer, at his/her discretion, may elect to have the Seller bear the costs of any additional travel, labor, delivery schedule extensions, and material expenses resulting from the disapproval of the First Article or First Article Data Package. After conducting the additional inspections or tests, the Seller shall notify the Buyer as to the expected date for resubmission of the First Article and First Article Data Package. The Seller shall have the First Article and the First Article Data Package ready for presentation by the agreed extended date. No change of delivery dates is to be assumed based on a change in the completion date of the first article.

B. Test will be performed at General Dynamics-OTS. GD-OTS will provide the supplier with the appropriate quantity of samples to submit for First Article inspection/testing. The seller will submit these samples to General Dynamics-OTS.

THE SUPPLIER MAY REQUEST Waiver of the First Article requirement if supplier is producing this item for General Dynamics-OTS or another customer and have not been out of production for more than ninety (90) days. General Dynamics-OTS may waive first Article requirement if it is not a specific contract requirement and there was not a lot rejection in the previous purchase order delivery quantity. All waivers must be approved in writing by GD-OTS Quality Engineering and the Buyer. Also all waivers must be obtained prior to start of manufacture.

QAPR 7 Special Process Approval

Control of Special Processes and Certification: The Seller shall not perform, or subcontract to perform any "Special Processes" without written approval from the Buyer.

Special Processes are defined as: A method controlled by a contractually required specification where: When a product undergoes a physical, chemical or metallurgical transformation or inspection, conformance to the specification cannot be readily verified by normal inspection methods.

- Or –

The quality of the product depends on use of specific equipment operated in a specific manner, under controlled conditions, by trained personnel with instructions, procedures and standards.

Special Processes that require certification are: heat treating, plating, anodizing, chemical conversion coating (chemical film), passivation, abrasive blasting, oxide coating, painting, nitriding, case hardening, casting, forging, welding, brazing, soldering and others as may be specified. Seller must maintain records evidencing approval and control of subcontractors and special processes.

Inspection may also be included as a Special Process if the Seller does not have the in-house capability, or resources, to perform inspections as specified on the Purchase Order. If the Seller is required to use subcontracted inspection, the use of any subcontracted inspection must be approved by the Buyer with enough advanced notice so as to not delay the delivery schedule shown on the Purchase Order.

***The following clauses (8 through 18 when imposed in the purchase order) are applicable to each shipment against this purchase order.** All required documentation for each shipment of deliverable purchased product must be provided either prior to or concurrent with the shipment's receipt at General Dynamics-OTS' facility unless specifically authorized otherwise by General Dynamic-OTS.

QAPR 8 Certificate of Conformance (C of C)

Seller shall furnish with each shipment a Certificate of Conformance (C of C) which the minimum information as follows: origin of manufacture; date of manufacture; lot number or batch number; purchase order number; GD-OTS part number and if different the manufacturer's part number; quantity shipped; and certify compliance to all specifications/requirements.

- Materials used are those that have been specified by the Buyer, and that the items delivered were produced from, and traceable to, materials for which the Seller has on file reports of chemical and physical analysis and any other required evidence to substantiate the conformance of such items to applicable specifications.

- Processes used in the fabrication of items delivered were in compliance with applicable specifications forming a part of the Purchase Order. The items delivered comply with all requirements of the Purchase Order including all imposed drawings and specifications. In case of "drop shipment", a copy of the above certificate shall be submitted to the Buyer at the time of shipment.

The C of C must include reference to any applicable waivers, deviations, rejection documents with approved disposition that apply to the items on the C of C. Reworked or screened parts, resubmitted after previous rejection by GDOTS, and must also be identified.

When a primary supplier submits their secondary (sub-tier) supplier certifications of conformance to General Dynamics – OTS it shall contain the company names of the secondary (sub-tier) supplier; origin of manufacture; date of manufacture; part number(s); quantity; test data as required by PO or product specification; a statement of conformance to all specifications and requirements.

If the product is commercially available and the quantity shipped to General Dynamics-OTS is a portion of a larger manufacturing lot/batch and the C of C is written to include the entire lot/batch quantity, the quantity received by General Dynamics-OTS may be denoted and initialed on the C of C by the Quality representative.

NOTE: Any and all required certification and data requirements (as specified in the applicable QAPR's) noted in this Purchase Order are considered to be part of the deliverables for the particular line item they are in regard to. If receipt of required certifications and data requirements is delayed, or is incorrect, we cannot proceed with our Receiving Inspection. This in turn will result in the Payment Terms of the Purchase Order moving to the right by the same number of days the certifications / data were delayed until all required, or correct, documentation has been received.

QAPR 9 Test Reports

Seller shall furnish designated test report(s) with each shipment. If a nondestructive test is a100% requirement and performed as a part of the inspection plan, the results may be a part of the inspection records. The separate test report(s) shall indicate evidence of compliance with applicable drawing or specification (with revision) requirement(s). The test report must include a signature and title of Seller's responsible agent.

A. The certification or report shall list, depending upon the data available, actual values or a range of values determined through chemical analysis or physical testing (as required by specification) with which the properties of material used to complete the Purchase Order fall. The certification or report shall include GD-OTS Purchase Order number and list heat, melt, or lot numbers traceable to the material provided and shall be signed by a representative of the Seller or the organization or laboratory performing the testing.

B. If the testing is not performed by the Seller, the name and address of the company, agency, or organization doing the actual testing shall be included on the certification, along with all identification provided by the testing organization (Lab Accreditation, Scope, etc.). Copies of the test / inspection report shall be provided to the Buyer, test / inspection reports shall include the specification (Drawing with Revision for items receiving dimensional inspection) that was applied, the individual requirements, actual measured results, and a Pass/Fail conclusion. The report must be signed by the testing / inspection facility.

For paragraphs A & B: If the Purchase Order is for other than raw material and the Seller is procuring multiple items of material for processing to satisfy the Purchase Order, this type of test report shall be provided for each item of material unless otherwise specified on the Purchase Order.

C. Functional test (operative inspections such as mechanical, electronic, hydraulic, destructive, etc.).

D. Pressure or leak test.

E. Nondestructive test (such as magnetic particle, ultrasonic, dye penetrant, eddy current, etc.)

F. Environmental test (exposure methods, such as salt spray, shock, dust, vibration, humidity, etc.)

G. Radiographic film and report. If the required NDT is for radiography, an adequate method of identifying and cross-referencing each x-ray film exposure shall be provided in report form. When parts are serialized, the serial numbers must appear on the report (and film if for x-ray) with the control number. NDT records shall be submitted with each shipment to the Buyer and shall include x-ray film when required by the Purchase Order.

H. Inspection records (characteristics inspected, sample size, inspection verification level, accept/reject numbers, etc.).

An explanation of the disposition of any items/characteristics showing nonconformance/rejection on the reports shall be included with the report. Data is to be provided in units of measure (U.S. Customary or Metric) used on the drawing, unless otherwise noted on the P.O.

QAPR 10 Ammunition Data Card (ADC)

The Seller shall supply to the Buyer and with each shipment of ammunition/explosive load lots (live or inert), an Ammunition Data Card (DD Form 1650 or equivalent). Each ammunition/explosive load lot within a shipment requires a separate Ammunition Data Card. All Ammunition Data Cards shall comply with the requirements of MIL-STD-1168 (current revision).

QAPR 11 Traceability

Seller shall maintain a system to assure traceability of material used and records of objective evidence of acceptance to purchase order requirements. Traceability shall be maintained from receipt of raw material through finished product. Traceability is defined as that requirement that permits historical access from fabricated component identification or documentation to records identifying the unique raw material, special process, lot, material heat batch, melt, etc. from which the component was fabricated.

Records shall be maintained on file subject for examination by General-Dynamics – OTS (GD-OTS) for a period of ten years from completion of the purchase agreement as a minimum. GD-OTS reserves the right to specify longer retention periods for specific records pertaining to purchase orders as identified. GD-OTS may request a copy or review the supplier's records retention policy as it pertains to records of product produced under GD-OTS purchase orders.

Seller shall identify parts and/or material or where impractical due to size or shape, the lot or batch number shall be stamped on the identifying tag or smallest unit package

Lot numbering and applicable documents with the traceability requirements specified on the P.O. will be identified as follows:

A. Seller's manufacturing lot number, heat number, or batch number.
B. Seller shall maintain traceability and other identification on General Dynamics-OTS furnished or Government furnished material.
C. Non-repeating serial numbers
D. Ammunition Lot Number in accordance with MIL-STD-1168, "Ammunition Lot Numbering and Ammunition Data Card"
E. Bar Coding for verification required (use MIL-STD-129 latest version for guidance)

Any change of the lot interfix number requires prior approval from GD-OTS

QAPR 12 Shelf Life Materials

Material subject to age degradation shall have each container or package marked with manufacturing date or code, (lot number) expiration date (may be a part of the acceptance tag information), special storage or handling conditions, If applicable, part/item number (unless it is a commercially named product without a specific item number designation), applicable specification number, type, size/quantity, etc. The identification, as a minimum, must be on the certification. Upon receipt by General Dynamics-OTS, the remaining useful life must be at least 80% of the total life limit (date of manufacture).

Special handling requirements shall be recorded on any certifications and shipping documents covering the material as delivered to the Buyer.

A. Age of Explosives - Explosive components provided under this purchase order shall not exceed six (6) months of age without recertification with the exception of bulk energetic material, which will be demonstrated by lot acceptance test data. Non-explosive ingredients, which do not degrade, are excluded.
B. Upon date of receipt, the propellant manufacturing lot number date shall be less than 180 calendar days versus the Purchase Order scheduled delivery date.

QAPR 13 Test Samples

Seller shall furnish test samples as required by the purchase order. The samples must be identified as test samples with the applicable part number. The test samples shall be processed simultaneously with each lot or batch of product. Seller's documentation must include part number, process, processor and lot/batch number.

QAPR 14 Source Inspection

The items supplied by the Seller under the Purchase Order are subject to Source Inspection by GD-OTS. The Seller shall notify the Buyer or other designated representative at least 7 business days prior to the expected Source Inspection. The Seller may not ship any items without the Buyer's expressed authorization through an approved form signed by the appropriate Quality representative. The Seller must have available, at the time of presentation a complete Source Inspection package.

A typical Source Inspection package includes:

- Source Inspection Request Form (provided by GD-OTS)
- Ballooned drawing
- Inspection data
- Certificate of Conformance from the Seller
- Certificates of Conformance for subcontracted items

- Material Certifications
- Copy of the Purchase Order
- Ammo Data Card – if applicable
- Test Source information (AALA or NADCAP Certificate and Scope of Accreditation) - if applicable
- List of Serial Numbers for items presented (may appear on C of C or if not enough room, on a separate sheet that has traceability to the C of C) – if applicable
- Any approved deviations and/or waivers if applicable
- Other documents as required by GD-OTS Quality

The Seller shall provide the designated GD-OTS Quality representative with reasonable facilities and equipment and free access to all areas and records essential to the proper conduct of source inspection of the procured items. At the discretion, or with the approval, of the appropriate Quality representatives, the on-site source inspection may be waived. However, the Seller shall still be responsible for fulfilling the requirements specified on the Purchase Order or other attending documents (drawings, specifications, etc.). The performance of a source inspection, whether on-site or not, does not relieve the Seller of any responsibility for the determination of conformance of the items to the contracted requirements.

QAPR 15 Certified Supplier

Seller is a General Dynamics-OTS Certified Supplier. As such, Seller is authorized to ship item on this purchase order using the issued General Dynamics-OTS Supplier acceptance stamp.

Shipping documents for each shipment shall bear this stamp, applied by the Seller's Quality Assurance representative.

QAPR 16 Lot Acceptance Test (LAT) Samples

Seller shall furnish Lot Acceptance Test (LAT) samples as required by the purchase order. The samples must be identified as LAT samples with the applicable part number & lot number. The LAT samples shall be processed simultaneously with each lot or batch of product and selected at random throughout the entire production of the subject lot or batch. Seller's documentation must include part number, process, processor and lot/batch number.

QAPR 17 General Dynamics-OTS Furnished Material

Seller shall verify acceptability of General Dynamics-OTS furnished material upon receipt of such material. If the product is found discrepant, Seller shall notify General Dynamics-OTS Buyer by the most expedient method of communication.

QAPR 18 Rounding

Unless otherwise specified, the Seller shall, during the course of inspection of items under the Purchase Order, utilize the standard practice of ASTM E29 (latest revision) with respect to rounding of digits (reference section 6). The accuracy of acceptance is a ratio of 10:1 greater than the tolerance of the feature being inspected. It shall be this last digit that is employed to determine the rounding of the other significant digits. In the case of MAX callout for a feature, rounding shall not be utilized and the absolute method shall be employed (reference section 5).

QAPR 19 Additional Quality Requirements

The imposition of this QAPR is to alert the Seller that there are additional Quality Requirements in the form of separate attachments to the Purchase Order. If such attachment(s) is (are) not included with the Purchase Order, contact the Buyer.

QAPR 20 Physical Configuration Audit (PCA)

The imposition of this QAPR is to alert the Seller that there are additional Quality Requirements in the form of separate attachments to the Purchase Order. If such attachment(s) is (are) not included with the Purchase Order, contact the Buyer.

QAPR 21 Process Control Documentation (PCD)

The Seller shall provide a detail listing of all documents used in the fabrication of purchased item(s). As a minimum, the list will include document number, title date, and revision level. The PCD shall be submitted for review and approval prior to production. General Dynamics-OTS has 30 days for approval. Any change requires prior approval before implementation.

QAPR 22 Corrosion Prevention Control (CPC)

The Seller shall provide a CPC Plan detailing a discipline used in the manufacturing of components to ensure adequate protection from the environment has been established. This plan shall detail as a minimum: Adequacy of the manufacturing process, material receipt and certification, in-process storage, control of materials, sub-assemblies, compatibility of cleaners and protective finish/coatings, application of surface preparation cleaners, protective finish/coatings, and appropriate packaging and storage. The CPC Plan shall be submitted for review and approval prior to the acquisition of materials used in production. General Dynamics-OTS has 30 days for approval.

QAPR 23 Critical Defects Control (CDC) Plan

The Seller shall provide a CDC Plan that identifies a method of inspection and control of critical characteristics that analysis, judgment, and experience have determined could be produced in the manufacturing process. The plan shall be constructed IAW DI-SAFT-80970. The CDC Plan shall be submitted for review and approval prior to the acquisition of materials used in production. General Dynamics-OTS has 30 days for approval.

QAPR 24 Foreign Object Debris (FOD) Elimination Program

The supplier shall maintain a documented FOD elimination program in accordance with National Aerospace Standard NAS412. Procedures shall be submitted to the buyer and approved by General Dynamics – OTS.

QAPR 25 Electrostatic Discharge (ESD) Control Program

An ESD control program shall be documented and maintained in accordance with MIL-STD-1686 or ANSI/ESD S20.20 as applicable to electrical and electronic parts, assemblies, and equipment subject to damage by ESD.

QAPR 26 Soldered Assemblies

The seller's facilities, tools, processes, and documentation pertaining to soldering shall comply with the requirements of J-STD-001 (Requirements for Soldered Electrical and Electronic Assemblies) and IPC-A610 (Acceptability for Electronic Assemblies).

QAPR 27 Flow Charts/Process Maps

Seller shall prepare, maintain and submit process flow charts or graphical representation of all operations utilized in the production of deliverable product to include any subcontractor. The flowchart or process maps shall include from start to finish as a minimum all inputs, pathways, circuits, decision points, and actions. Specialized processes shall include descriptions detailing the specialty.

Flowchart and or process maps shall be submitted for review and approval prior to shipping deliverable product. No flowchart or process map may be altered from the original approved submission, without the written permission of GD-OTS and may be subject to GD-OTS' customer concurrence.

Processes deemed proprietary or competition sensitive may be included via a mutually agreed upon (with GD-OTS) non-descript method.

QAPR 28 Failure Modes Effects Analysis (FMEA)

Seller shall prepare, maintain and submit failure mode effects analysis (FMEA) of all operations utilized in the production of deliverable product to include any subcontractor. The FMEA will be utilized to determine possible causes of failures and to develop preventive action. As a minimum it will contain identified possible failure modes, will rank and prioritize possible causes, and will identify possible preventive action. The FMEA shall be submitted for review and approval prior to shipping deliverable product.

QAPR 29 Supplier Container and Packaging Identification

Seller shall prepare, document, and submit graphical representation of the planned identification that will be utilized in the production of deliverable product. Supplier container or packaging identification plans may require final customer concurrence for approval. The supplier container or packaging identification plan shall be submitted for review and approval prior to first article or deliveries of deliverable product unless otherwise directed by GD-OTS.

Supplier container shall be packed in final shipping containers such that only one lot/batch or items is in each container, and it's containers shall be marked with the lot number of their contents.

Lot numbers shall be legible, in a conspicuous location on the container, and large enough to be readable from a distance of ten (10) feet in normal room lighting. Seller's name shall also be prominently displayed on the container. The seller shall also comply with any additional marking requirements dictated on the purchase order.

QAPR 30 Tool Control

Seller shall prepare, implement, document, and maintain a tool control plan that shall be utilized in the production of deliverable product to include any subcontractor. The tool control plan will be utilized to prevent failures and to develop consistency. As a minimum it will contain the feature and the frequency for checking the feature, and the responsible agent for tracking and monitoring within the process. The Tool Control Plan shall be submitted for review and approval prior to shipping deliverable product.

QAPR 31 Visual Standard

Seller shall prepare, maintain and submit for approval any visual standard or graphical representation of a product to be considered. Any visual standard must be mutually agreed upon and may require customer concurrence for approval. The visual standard shall be submitted for review and approval prior to application of use on deliverable product.

QAPR 32 Critical Characteristics Control (CCC) Plan

The seller shall provide a CCC plan and all supporting documentation in accordance with FAR 52.246-4553 (dated June/2009) for any critical characteristics identified in the appropriate specification or otherwise identified as critical to GD-OTS processes.

QAPR 33 Counterfeit Parts Mitigation (National Defense Authorization Act for FY 2012, Section 818)

Original Equipment Manufacturers (OEM) of electronic component parts and assemblies made from electronic components shall provide a Certificate of Compliance which, in addition to Item 8, states that they are the Original Manufacturer of all electronic components submitted including

any electronic components within completed assemblies and that they comply with National Defense Authorization Act for FY 2012, Section 818.

Non-Franchised sources (not OEM) providers of electronic components and assemblies will provide, in addition to Item 8, all inspection and testing and direct traceability information back to the Original Equipment Manufacturer for all electronic components including any electronic components within completed assemblies and that they comply with National Defense Authorization Act for FY 2012, Section 818.

Testing Requirements

A. External Visual Inspection (100% of components):
Microscopic external visual examination shall be performed 1x to 40x (minimum) on 100% of components in accordance with IDEA-STD-1 01 0, Acceptability of Electronic Components Distributed in the Open Market. Visual inspection shall include examining for evidence of re-surfacing and/or re-marking of the components. External visual shall also include examination for evidence of prior use: socket pulls, re-tinning, lead reforming etc. General Dynamics does not allow used components.

B. Remarking/re-surfacing inspection.

Note: Supplier is responsible for ensuring that re-marked (counterfeit) components are not delivered to General Dynamics. Passing the following tests does not indemnify supplier from liability.

a. Resistance to Solvents Inspection for Evidence of Remarking or Resurfacing (two parts per LDC): Two samples from each lot date code shall be tested for evidence of remarking or resurfacing. Industry standard "resistance to solvents" test methods (see MIL-STD-202, Method 215, or JESD22-B1 07C) or other General Dynamics approved method shall be performed to reveal any forged markings, coatings applied to disguise sanding marks, and other indications that the original device marking has been removed or covered.

b. Heated Solvent (HS) Test: Using a preheated solution of Dynasolve 750 (or equivalent) at 105 degrees Celsius, completely immerse the part in the solution for 45 minutes. Once the part is removed from the solution, use a cotton swab to wipe the coating off.

c. The removed coating will show on the cotton swab as black in color. Also look for scratch marks on the surface of the removed coating. Either condition is indicative of a suspect counterfeit part.

d. Additional remarking/re-surfacing tests: Supplier may perform additional tests/inspections for device re-surfacing and/or re-marking, if technique has been

approved by or is required by General Dynamics PO. Techniques such as acoustic microscopy, SEM, etc. may be used if approved by General Dynamics.

C. X-Ray Inspection (100% of components unless otherwise specified on purchase order): X-ray inspection shall be performed to verify that the internal package or die construction is consistent with a known authentic part. Inspection shall compare die size, general shape, lead frame construction, wire bond gauge and routing. All devices within a lot date code shall be identically constructed.

D. Internal Die Examination (one part per LDC): An internal package visual examination shall be performed on a sample of one component from each manufacturer lot date code. The die markings and internal features of the package shall be examined to validate they are authentic.

E. Solderability Testing (two parts per LDC, non-gold leaded only): Non-gold leaded devices with a LDC older than 1 year are required to be solderability tested. A sample of two components from each lot date code shall be tested for solderability unless otherwise specified on the purchase order. Test methods similar to MIL-STD-883 or appropriate Military or JEDEC methods may be used. Dip & look examination is acceptable - aging is not required.

F. Hermeticity (100% of hermetic components): Hermetic devices shall be 100% fine and gross leak tested. Test methods similar to MIL-STD-883 or appropriate Military or JEDEC methods may be used. Hermeticity testing shall be performed after solderability testing.

G. Electrical Testing (100% of components): Parts shall be 100% electrically screened to the original manufacturer's data sheet requirements or as specified in the procurement document to ensure full functionality. The PDA for the electrical screening tests is 1.0%. If the PDA is exceeded, the parts that passed testing shall not be delivered without prior approval of General Dynamics. PDA applies only to testing performed at 25°C.

H. Additional Tests, Examinations (when specified by the purchase order): Additional tests, examinations may include a formal DPA, burn-in, XRF testing or other special tests.

I. Inspection and Testing Criteria: Unless otherwise specified on the purchase order Level II testing and inspection shall be performed (default requirement), refer to Table I. The vendor shall deliver documented results of all required inspection and tests performed.

Table I – Inspection and Testing Requirements summary and Criteria Levels

			Level I	Level II (Default)	Level III	Level IV
External visual inspection	4.1	100%	X	X	X	X
Resistance to solvents / HS	4.2	Two per LDC	X	X	X	X
X-ray inspection	4.3	100%	X	X	X	X
Internal Die examination	4.4	One per LDC	X	X	X	X
Solderability	4.5	Two per LDC	X	X	X	X
Hermeticity	4.6	100%	X	X	X	X
Electrical testing	4.7	100%		X		X
Additional tests, examinations	4.8	Per P.O.			X	X

QAPR 34 Coating Requirements

Seller shall prepare, maintain and submit written plans, instructions, and samples as required for a method when a product undergoes a physical, chemical or metallurgical transformation by use of any cleaning activity, chemical conversion, special process, or coatings as listed on applicable drawings and specification for the component, or as directed by GD-OTS.

All plans and instructions shall be in a format that meets DI-NDTI-80603A or latest revision. Plan or instruction submission is due 30 days after purchase order (PO) approval date. Any revisions are requested to be completed within 15 days of notice.

Samples required for submission to the customer shall be submitted to GD-OTS unless directed otherwise. Samples shall be submitted at the same time as plans and instructions, unless directed otherwise.

All cleaning activity, chemical conversion, special processes, or coatings shall conform as a minimum to the requirements of TT-C-490F AMD. 3, MIL-DTL-16232G. Other applicable requirements are as follows: ASTM D2510, ASTM D3359, ASTM B117, SAE-AMS-STD-595, and MIL-DTL-53072 and QA-002 Quality Assurance Procurement Requirements (QAPR) 19

Additional Quality Requirements.

All document submissions are to be made electronically to the responsible agent listed on the purchase order.

QAPR 35 Conflict Materials

In addition to all other warranties provided under this Purchase Order, Seller warrants that the Goods delivered hereunder are free from Gold, Tungsten (Wolframite), Tantalum (Columbit-Tantalite) or Tin (Cassiterite), hereafter referred to as "Conflict Minerals", that have originated in the Democratic Republic of Congo, Central African Republic, Angola, Burundi, Rwanda, South Sudan, Tanzania, Uganda or Zambia, hereafter referred to as "DRC". For purposes of this Clause, Conflict Minerals purchased from scrap or recycled sources are not considered to have originated from the DRC. Seller is required to review all materials and components which are necessary for the functionality or production of the Goods being sold under this Purchase Order and disclose annually whether any of the Conflict Minerals are present, and if so, those that originated in the DRC, and to provide a chain of custody if the Conflict Minerals do originate from the DRC. The Seller shall determine the country of origin (where the materials were originally mined and processed) or whether the minerals originated from scrap of recycled sources. Seller must provide the following prior to shipment of the items upon request of Buyer:

(1) Country of Origin Inquiry (17 CFR 250 and 249B) documentation certifying that items are free from Conflict Minerals that have originated in the DRC.

(2) Traceability information on raw material sub-tier suppliers.

(3) To the extent an audit has been performed, results from any independent private sector audit; certifying that such an audit was obtained, including the audit report as part of the Country of Origin Inquiry and identifying the auditor.

Any goods for which the above requirements are not met shall be considered defective under this Purchase Order and may be rejected by Buyer or returned. Seller shall be liable to Buyer for any damages, costs, penalties, judgments, or fines against Buyer to the extent caused by Seller's failure to meet all requirements of this Clause and, at Buyer's election, Seller may also be required to deliver suitable replacement Goods at Seller's cost.

Seller shall include the substance of this clause in all of its sub-tier contracts with its suppliers providing components in support of this Purchase Order.
In addition to any other remedies Buyer may have under this Purchase Order or at law, if the Services are found not to be performed as warranted within a period of one (1) year after the conclusion of the performance of the Services by Seller, Seller shall, at Buyer's option, either refund to Buyer the amount paid for the Services, or perform the Services again in a proper manner to the extent necessary to provide Buyer with the result originally contemplated by Buyer.