

QINETIQ

North America

QUALITY ASSURANCE FORM

Number: QAF.01.742.002	Rev: 7	DCN No.: 0000384	Author: Brian O'Connell	Date: 10/13/2017
Title: Supplier Quality Clauses				Page: 1 of 21

Revision History Table

Revision	DCN No.	Date	Change Author	Change Summary
0	0000086	03/02/2012	T. Venuto	
1	0000138	8/15/2012	P. Sterndale	<ul style="list-style-type: none"> A. Added Grandfather clause – See Note page 1 B. Added Clauses D8, D9, J8, J9, M8 and Z1 C. Moved P1 and P2 D. Modified J5, J6, J7, K3, M1 (to require AS9102 accordance), M2, M7 E. Changed G2 to require written approval of any changes to material or specification. F. Added to M3 the requirement for written approval of sub-tier suppliers for components and processes.
2	0000263	10/30/2013	C. Cambio	Rewrote M1 to clarify
3	0000277	2/20/2014	J. Texiera	Added or revised the following clauses – B4, C1, D7, H4 thru H10, J5, J7, K9, K10, M9
4	0000292	5/23/2014	T. Venuto	<ul style="list-style-type: none"> A. Remove Note 1 B. Move Prohibited Materials from a Special Clause to a General Clause C. Added Dodd Frank Conflict Materials as a Prohibited Material D. Revised B4-Sub Tier Supplier Requirement to clarify flow down to sub-tier suppliers
5	0000373	9/29/2016	J. Wilt	<ul style="list-style-type: none"> Remove all references to TSG Add a minimum shelf life remaining for any of material of 80% is required to clause D5
6	0000378	11/30/2016	Damon Kenison	Change Clause D8-EOL to require suppliers to send component EOL notifications to VendorsandPartners@QinetiQ-NA.com.
7	0000384	10/13/2017	Brian O'Connell	<ul style="list-style-type: none"> A. Updated Clause B1 to require all suppliers have a QMS B. Added Clause B5 for Employee awareness C. Updated General Formatting

In case of any conflict with this document and any other requirements, the order of precedence is as follows:

1. QNA Purchase Order
2. Drawings, Specifications, and or Electronic Files
3. This document

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General Quality Clauses

The following clauses are incorporated into all QinetiQ North America (hereafter QNA) Purchase Orders: This also applies to all Purchase Orders issued under QNA legacy names, i.e. Foster Miller, LAST Armor, Automatika, PSI, etc

A1. Supplier Qualification

All suppliers shall be qualified according to the QNA's supplier qualification process defined in our AS9100 Quality Management System. Suppliers may be asked to complete a Supplier Quality Survey Questionnaire and/or successfully pass an on-site survey. The Supplier shall allow QNA personnel access to perform an on-site survey for qualification with the understanding that sensitive and proprietary information is reserved by the Supplier.

A2. Customer / Government Access

The supplier shall provide, if required, access to any of the subcontractor's facilities where any of the work is being performed. This access shall be granted to the U.S. Government, Foreign Government, Commercial Customer, or QNA Quality Assurance Representative (QAR) as appropriate for the specific contract. The QAR shall be afforded unrestricted opportunity to evaluate and verify subcontractor's compliance to this Purchase Order (PO). The subcontractor shall make available for reasonable use by the QAR the equipment necessary for validation purposes. Subcontractor personnel shall be made available for operation of such equipment as required.

A3. ITAR Registration

Unless otherwise specified, custom product, parts and components, and the related technical data and information or services related to QNA's military programs are controlled for export purposes pursuant to the International Traffic in Arms Regulations ("ITAR"). It is a violation of the ITAR to export or re-export these products, any of their parts or components, or technical data related to them without first receiving authorization to do so from the U.S. Department of State.

B1. Quality Management System

Supplier compliance and/or certification to AS9100, ISO9001, or equivalent are preferred, at a minimum a supplier is required to have an internal Quality Management System that they operate to. If the supplier does not have a formal Quality Management system in place they must be approved for use by QNA's Quality Assurance Group to verify that they have all necessary processes in place.

B2. Quality System Performance

Evidence of unacceptable Quality Procedures may result in suspension of contract deliveries pending demonstration of appropriate corrective actions.

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B3. Record Retention

The Supplier shall maintain records that provide objective evidence of compliance to the PO requirements. The records shall be maintained for a period of at least three years from completion of purchase order. The Supplier may send records to QNA to be maintained.

Note: Clause K1 takes precedence over this requirement if it is defined on the purchase order.

B4. Sub-Tier Supplier Requirements

Seller shall establish in its sub-tier supplier purchase order (s) requirements necessary to assure that quality clauses are flowed to sub-tier suppliers and that each item delivered has been controlled, manufactured, tested and inspected in compliance with the requirements of the Order by and between Seller and Buyer. A copy (with redacted pricing) of each sub-tier purchase order (s) shall be available for review by Buyer upon its request.

B5. Employee Awareness

QinetiQ-NA requires its suppliers to promote a culture of employee awareness of their contribution to product and service quality, their contribution to product safety, and the importance of ethical behavior.

C1. Non-conforming Material/Modified Items

All parts and material delivered against this Order shall conform to the requirements of the Order. Seller shall not apply the following nonconforming material dispositions without Buyer approval;

- Repair or,
- Use-As-Is or,
- Or any other Disposition that alters the released configuration baseline

Seller Nonconformance Reports, or other design modification requests, are to be submitted to the Buyer for processing. Buyer approved nonconformances reports shall be included within Seller submitted contract deliverables.

C2. Non-Conforming Material

The Supplier shall report any nonconformance that may affect already delivered product.

- Notification shall include a clear description of the discrepancy, identification of suspect parts (mfg. dates, serial numbers, qty, etc.), and dates delivered.
- A containment plan and interim corrective action shall be provided to assure no further defective product will be received at QNA.

C3. Customer Furnished Material

- If this PO includes the use of material provided by QNA as Customer Furnished Material (CFM), then the following Quality Clause is applicable.
 1. All CFM must be handled with care and appropriately stored.
 2. Whenever CFM is determined to be non-conforming, follow your company's normal procedure for handling non-conforming material. In addition, promptly notify QNA that the material is nonconforming. Send a copy of your non-conformance/defect report via e-mail to the Buyer or Materials Department

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contact, QNA's Supplier Quality Engineer and to the QA Department. These e-mail addresses are available from QNA's Buyer.

3. The notification report must include:

- Part number of the CFM that was furnished by QNA.
- If your firm has altered the material so that it is now a new part number, use the original part number of the item that was received as CFM from QNA for your report to QNA.
- Include unique serial number(s), if applicable
- Quantity of the material that is non-conforming or suspected of being non-conforming
- Brief explanation of why the material is non-conforming
 - Be as specific as possible in the description of the problem. "Doesn't work" or "Bad" is inadequate. "Camera does not zoom", for example, provides more useful information.
- Was this caused by your firm?
- While the CFM was in your care:
 - Was the item dropped?
 - Wired incorrectly and powered up?
 - Did someone on your staff scratch or otherwise damage the item?

4. Returning the non-conforming material:

- After receipt of the notification report, the individual who placed the order with you will provide you with details about where to ship the material. You may be directed to ship the material to the manufacturer or to QNA.
- Only return the CFM that was furnished by QNA.
- If your firm has added cables or other attachments to the CFM, please remove the attachments if possible and only return the CFM. Do not send the CFM with additional appendages to QNA.
- In situations where you have applied a coating which can not be removed without creating additional damage, then return the material with the coating in place.
- All items must be packaged in such a manner as to prevent damage during shipment. Even if the item is presumed to be unsalvageable, it is important to package the material appropriately to prevent additional damage from occurring. Additional damage could make it difficult or impossible to determine a root cause for the initial problem.
- Enclose the Packing Slip and a copy of the Non-conformance/defect report in the box.
- Return the material via the usual shipping method for delivery to QNA unless otherwise directed by the Buyer or Materials Department.
- When the material has shipped, send an e-mail to the Buyer or to the Materials Department contact with a copy of the Packing Slip and the Nonconformance Report advising of the date that the material shipped and the method of shipment.

D1. Packaging

The supplier shall:

- Package all items in such a manner as to prevent damage during shipment and subsequent storage at QNA.
- Assure that shipping containers intended to be carried by an individual must not exceed 35 pounds total.

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- Work with the appropriate QNA site to establish packaging configuration.

D2. Lot Date Codes

Shall not exceed three years from date of receipt at QNA. Lot Date Codes for individual piece parts used as part of an assembly for QNA shall not exceed three years from date of assembly.

D3. Electrostatic Discharge (ESD)

Appropriate handling and packaging is required for electrostatic sensitive material. The supplier shall:

- Have an ESD program in accordance with MIL-STD-1686, MIL-HDBK-263, ANSI/ESD-20-20, or QNA approved equivalent that provides protection of ESD sensitive devices during all phases of manufacture, test, storage and shipment.
- Package ESD sensitive items in packaging materials specifically designed for use with ESD sensitive materials.
- Label each package as "ESD SENSITIVE".

D4. Hazardous Materials

For any hazardous material, a safety data sheet (SDS) will be required to be delivered with product.

D5. Adhesives, Paints, Compounds, Raw Materials, Liquids, Thermal Insulating Fabrics

For adhesives, paint, compounds, raw materials, liquids, thermal insulating fabrics, date of manufacture, shelf life, expiration date, Safety Data Sheets (SDS) and Certificate of Conformance are required to be delivered with product.

Items having a limited shelf life must have 80% shelf life remaining prior to shipment to QNA.

D6. Foreign Object Control

(e.g. items not intended to be part of the product such as solder splashes, wire stripping shavings, screwdriver, paperclip, etc.): The Supplier shall have sufficient Foreign Object controls within their facilities/operations to prevent Foreign Objects from entering into the product.

D7. IPC Certification

- Printed circuit/wiring boards, assemblies, and cables shall be built using J-STD and IPC **certified** personnel.
- Unless otherwise stated on the drawing or purchase order:
 - Soldering shall be performed by personnel certified to J-STD-001 Printed wiring boards shall be certified to IPC-6011 or IPC-6012, IPC A-600 as applicable, class 2 – Acceptability of Printed Boards
 - Printed Wiring Assemblies shall be certified to IPC-A-610, class 2 – Acceptability of Electronic Assemblies
 - Cable Assemblies shall be certified to IPC/WHMA-A-620, class 2 – Requirements and Acceptance for Cable and Wire Harness Assemblies

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D8. End of Life (EOL)

The supplier shall have a formal system for the identification of and mitigation of risk associated with components attaining their End Of Life (EOL) / Obsolescence stage. Supplier must notify QNA of a component reaching EOL as early as possible by forwarding email notification to VendorsandPartners@QinetiQ-NA.com.

D9. Counterfeit Part Mitigation

The supplier shall have a formal program for the prevention of Counterfeit Parts/Part Substitution being used in QNA product. Report Possible or Confirmed issues to QNA as soon as identified.

D10: Prohibited Materials (as applicable to material/product on the specific Purchase Order)

The following materials are prohibited:

- D10 B: Dodd-Frank Wall Street Reform and Consumer Protection Act- Section 1502 Conflict Minerals: Provided product shall not contain conflict minerals (tin, tantalum, gold, tungsten) from the Democratic Republic of Congo and adjoining countries which include; Angola, Burundi, Central African Republic, The republic of the Congo, Rwanda, South Sudan, Tanzania, Uganda, and Zambia.

E1. Receiving Inspection

Material shipped against this Purchase Order is subject to Receiving Inspection.

F1. Workmanship

Unless otherwise specified, material shipped against this Purchase Order shall be free of pits, cracks, dents, scratches, burrs, sharp edges, foreign matter, or any other evidence of poor workmanship that shall render the unit unsuitable for its intended use. Additional requirements are defined in terms and conditions.

G1. Purchase Order Changes

Once the PO is accepted, any supplier initiated change requests shall be initiated via e-mail to the buyer. QNA initiated changes should be communicated to the Supplier via a purchase order revision.

G2. Product and Manufacturing Change Control

- No change in specification or materials is allowed to item(s) on this order without written approval from QNA.
- No change in manufacturing process that may affect fit, form and function is allowed to item(s) on this order without written approval from QNA

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Special Quality Clauses

These apply when referenced and incorporated into the PO or PO line item as indicated by the clause number(s) located on the face of the Purchase Order. In case of conflict between Special and General Clauses, Special Clauses take precedence.

H1. QNA Source Inspection / Shipment Pre-Approval

Is required prior to shipment from your plant. This may be an on-site source inspection or may involve a review of all supporting quality documentation prior to shipment.

- QNA shall be notified a minimum of one week in advance of the time the materials are ready for review.
- Supplier shall submit all supporting documentation, per the drawing and Purchase Order requirements. Documentation shall be electronically submitted to the Buyer or Source Inspector. Documentation shall be submitted immediately after source inspection notification.

H2. QNA Pre-Encapsulation Inspection

Is required on this PO prior to shipment from your plant.

- QNA shall be notified a minimum of one week in advance of the time materials are ready for review. Supplier shall submit all supporting documentation per the drawing and Purchase Order requirements. Documentation shall be electronically submitted to the Buyer or Source Inspector. Documentation shall be submitted immediately after source inspection notification

H3. Government Source Inspection

Is required prior to shipment from your plant. Upon receipt of this PO, promptly notify the Government representative who normally services your plant. Where a representative is not currently defined, contact your QNA Buyer for assistance.

H4. QNA - Authorization To Build (ATB)

Seller is required to obtain "Authorization to Build" from the Buyer before starting production. Seller is authorized to procure material however production shall not start until authorized by the Buyer in writing. Seller shall submit defined pre-production deliverables to the Buyer for build authorization consideration. Buyer will review documents and if acceptable provide production authorization.

H5. QNA - Authorization to Ship (ATS)

Seller shall not ship any material to the Buyer until authorized by the Buyer through an "Authorization to Ship". Authorization to Ship by the Buyer will be granted upon successful Buyer review of any hardware or contract deliverables.

H6. Critical Safety Items/Critical Application Items

All attributes/characteristics identified on the design documents as a critical or major characteristic require 100% inspection, by Seller with actual inspection results of each characteristic recorded, documented, and provided to the Buyer.



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H7. Critical Safety Items - Process and Operation Sheets

The Seller shall submit Process and Operation Sheets to Buyer for approval prior to the start of manufacturing. The Process and Operations Sheets shall identify a detailed step-by-step account of the procedures necessary in the proper sequence to manufacture the Critical Safety Item. The Process and Operation Sheets must indicate operation number, description, tolerance (specification), location, and subtler Suppliers, etc., necessary to control manufacturing operations. After Buyer's approval of the process and operations sheets, the Seller shall complete the Process and Operations Sheets and have them be signed /stamped off by an in-process operator and/or inspector and delivered with the shipment of the item(s). Process and Operation Sheets may also include the Inspection Method Sheets noted in Clause H8.

H8. Critical Safety Items - Inspection Method Sheets

The Seller shall submit Inspection Method Sheets to the Buyer for approval by Buyer prior to start of manufacturing. The Inspection Method Sheets shall identify the Critical Safety Item (CSI) characteristics to be inspected, special instructions, item, drawing zone, acceptability limits, inspection tooling/method, and frequency. The completed Inspection Method Sheets shall have the actual inspection results recorded with inspector's stamp/signature and date. Inspection Method Sheets may be included as an integral part of the Process and Operation Sheets noted in Clause H7.

H9. Critical Safety Items - Material Identification Code (MIC) Mark

The Order is for the procurement of articles with CAI/CSI characteristics that require MIC Marking. The Seller will submit all CSI documentation associated with the identified CSI feature to the Buyer for review and acceptance. The Buyer will review the applicable data package and upon acceptance issue the MIC Mark (s). The MIC Mark (s) will be in the form of QA-xx-xxxxx. The MIC Mark (s) shall be located near, and in the method of part marking indicated on the applicable drawing (except when ink stamp and stencil are specified which for the purposes of traceability are not considered permanent. In these cases the MIC Mark shall be metal stamp, laser etch, vibro-etch, or chemical etch unless the use of such marking methods will cause damage to the functionality of the part). Deviation from any of these methods shall require prior Buyer approval. Application of the MIC Marking will be verified by the designated Government representative. NOTE: The MIC Marking (s) applied to the individual's parts must also be identified on all associated documentation.

H10. Critical Safety Items - Inspection for CAIs Including CSIs

All CAIs and CSIs shall undergo Critical/Major characteristics inspection, and as noted on design documents, non-destructive inspections to verify CAI or CSI items are within specifications. Actual inspection result for all Critical or Major characteristic's will be recorded by serialized part number, and shall be included in each document package. The Seller shall perform quality conformance and lot sampling inspections for all associated features and characteristics that are present in the drawings and specifications. The inspection results (actual readings and/or measurements) will be recorded on the Seller's CSI Inspection and Material Certification reports: Features/attributes/requirements classified as Critical and Major on the drawing(s) or within the technical specification will be inspected 100%. Unless otherwise specified, attributes for plating, hardness, and NDT shall be inspected 100%. Class 3 threads, dimensions, and geometric feature controls with a tolerance range of 0.010 in. or less will be inspected using an AQL of 1.0 and the General Inspection Level II as defined by ANSI/ASQ Z1.4. All minor characteristics shall be inspected using an AQL of 4.0 and the General Inspection Level II as defined by ANSI/ASQ Z1.4.

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J1. Certification of Conformance

Supplier shall

- Furnish certification that product shipped complies with all requirements of the PO, drawings, and specifications.
- Include the following: QNA purchase order number, order part number and revision level, and quantity shipped.
- Serialized articles shall be identified by serial number
- Lot controlled articles shall be identified by lot number.
- The words "Certification of Conformance" or "C of C" shall be clearly visible on the certificate.
- For post verification activity, the C of C shall be signed as verification of conformance.

J2. Certification of Calibration

For instruments, gauges and measuring standards, electronic or mechanical, a Certificate of Conformance to ANSI/ASQ Z540.1 or ISO 10012 is required.

J3. Certification of Chemical/Physical Test

Supplier shall

- Furnish results of chemical/physical tests conducted on materials submitted.
- Test reports shall identify applicable material specification, test results, and material lot control number.

J4. Certified Manufacturing Date

Materials furnished on this PO are age-sensitive. Supplier shall

- Furnish certification identifying the material cure date/date of manufacture
- Note any special storage and handling requirements, if applicable on package or container
- Age-sensitive material shall have 80% of the shelf life remaining upon receipt at QNA.

J5. Special Process Certifications

Special processes include, but are not limited to plating, coating, passivation, and heat treating. With each shipment of line items that requires special processing has been performed, the Seller shall include certification stating that the process performed complied with an identified industry specification. Heat treat certifications shall be accompanied by time/temperature charts and a summary description of the heat treat time and temperature data indicating the furnace and heat treat lot number. The Certification shall state the name of the processor, date of processing, and the printed or typed name and signature of the responsible representative of the processor. A legible Special Process Certification verifying conformance to the drawing requirements shall be submitted with each Order line item shipment for review and approval by the Buyer. At a minimum, the Special Process Certification shall include the Order number, the part description, the Part/Drawing Number with Revision Letter, The Name and Location of the special processor, and the special process being performed (must match drawing note including the specification, class, type and color where applicable). Must make reference to the applicable QNA TSG part number.

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J6. IPC Certification (PCB, PWA, cable assemblies)

Unless otherwise stated on the drawing or purchase order: Printed wiring boards shall be certified to IPC-6011 or IPC-6012, IPC A-600 as applicable, class 3. Printed Wiring Assemblies shall be certified to IPC-A- 610, class 3. Cable and Harness Assemblies shall be certified to IPC/WMHA-A- 620, class 3

J7. Material Test Reports/Certification – Chemical and Physical Properties

The Seller shall provide to Buyer Material Test Reports (MTRs) along with a certification by the mill or testing facility that performed the tests certifying compliance to specified standards. The MTRs shall provide both chemical and physical properties that include lot/heat/melt number and actual inspection and test values. Any subsequent heat treatment processes shall require test reports and certifications from the testing facility which shall include physical properties for the as-delivered condition. All Material Test Reports shall include the typed name, signature, authority or title and shall be dated. All documentation provided by the Seller shall be legible, and at a resolution capable of being reproduced (by dry process) and scanned for electronic storage. Complete material traceability shall be maintained throughout the manufacturing processes with appropriate records maintained. Traceability records shall be available for review by Buyer, when requested. Buyer part number shall be recorded on MTR's

Material Certification is not required for QNA CFM (Customer Furnished Material).

J8. Certification of Fiber Cables

Unless otherwise stated on the drawing or purchase order: Fiber Cables shall be certified to Telcordia GR326 specification.

J9. Painted Surface(s) Requirements

This product requires a painted surface finish. A painted coupon sample must be approved by QNA prior to painting the end-item product. QNA will review this painted coupon sample, and if it meets requirements, authorize the supplier to paint the product. End-item product is not to be painted without QNA's approval of the sample coupon.

K1. Record Retention

The supplier shall maintain records in accordance with the applicable Quality System Standard. The records shall be maintained for a period of not less than 7 years from completion of purchase order.

K2. Test Reports

Articles on this PO may require electrical, mechanical, environmental, functional, or other tests in accordance with Supplier, QNA and/or Government specifications. Supplier shall furnish test reports containing at a minimum:

- a. QNA Purchase Order Number
- b. Item name, drawing number and revision
- c. Test specification description, number and revision as applicable
- d. Number of units tested
- e. Serial numbers of units tested as applicable
- f. Test requirement including the criteria for pass/fail
- g. Quantitative test results shall be used whenever possible.

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K3. Acceptance Test Procedures Approval

Where the supplier has developed the test protocol, this protocol shall be submitted to QNA for review and approval. In situations where the protocol is classified as supplier IP, QNA reserves the right to review the document at the supplier's facility. QNA approval of the test protocol shall occur, preferably before testing, but must occur prior to shipment.

K4. Ballistic Test Reports

Supplier shall

- Provide Quality Assurance Ballistic Test Reports for each lot of armor tile used in the production of armor panels for each shipment.

K5. Textiles

Supplier shall

- Identify defects in textiles and other yard-goods by use of a flagging system.
- In addition, a map of defects for each roll shipped shall provide information on the nature and location of defects.
- An estimate of the square footage of defects in each roll shall be provided and an adjustment to the invoiced quantity made to reflect unusable material.

K6. First Production Lot Qualification - Ballistic Testing Required

- Lot sampling and testing shall be in general philosophical accordance with QNA Quality Assurance Procedure Q-0013 for physical properties and Q-0003, 0016 0024 or 0058, as appropriate to the end item for ballistics.
- Unless otherwise stated on the purchase documents, the tile vendor will provide the qualification sample parts and QNA will provide target preparation, transshipment to the test range, test services and will supply (or cause to be supplied) the test results back to the tile vendor on a timely basis (maximum 7 days for land vehicle tile or 14 days for aircraft panels).

K7. Production Lot Qualification - Ballistic Validation Testing Required.

- Lot sampling will consist of 1%, or 12 tiles, whichever is smaller. Whole tiles must meet the performance requirements of QNA Quality Assurance Procedure Q-0003

K8. Production Lot Qualification - Ballistic Validation Testing Required.

- Lot sampling will consist of 1%, or 12 tiles, whichever is smaller. Whole tiles must meet a minimum V50 of 3000 ft/sec when tested per LANL Ceramic Armor Specification.

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K.9 Welding Requirements for Procedures, Repairs, and Material Records

a) Weld Procedures

Weld procedures and personnel performing the welding shall be qualified in accordance with the requirements of the specification identified on the engineering drawing and/or Statement of Work, as applicable. Seller shall provide, for review and approval by Buyer, copies of all weld procedures, weld procedure qualification records, and welder performance qualification records to be used in performance of the Order as part of the quote. Where the above needs to be developed, the Seller shall inform the Buyer in writing.

b) Weld Repairs

Weld repair procedures for the removal or repair of material defects or weld metal defects shall be reviewed and approved by Buyer prior to making such repairs. Weld repair procedures shall be written as detailed instructions and as a minimum shall include:

- Method of removal of weld or base metal.
- Method used to ensure defect removal (MT or PT).
- Method for the re-welding, using qualified welders with an approved WPS (if different from the original).
- Extent, location and depth of the excavation shall be documented on an inspection report.

The re-welded area shall be re-examined and documented by the methods used for the examination of the original weld.

c) Weld Material Records

Weld filler materials shall be certified to the applicable specification and contain the manufactures certification or CoC with results of the chemical and mechanical tests identifiable to the specification or drawing and to the lot of material supplied.

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K10. Nondestructive Examination (NDE) Requirements (all sections applicable)

Seller shall provide, for review and approval by Buyer, copies of NDE procedures and qualification records to be used in performance of the Order as part of the quote. Where the above needs to be developed, the Seller shall inform the Buyer in writing.

a) Procedures

All nondestructive examinations, Leak Testing (LT), Magnetic Particle (MT), (Liquid Penetrant (PT), Radiographic (RT), Ultrasonic (UT), and Visual Inspection of Welds (VT) shall be performed in accordance with detailed written procedures that meet the requirements of the applicable specifications called out on the Buyer's released drawings:

- 1) An NDE procedure and for each NDE method utilized (including a blank report form)
- 2) A Part Specific Inspection Method/Technique Sheets for LT, MT, PT, RT, and UT shall be submitted to Buyer for review and approval for each part to be inspected. Technique Sheets are not required for Visual Weld Inspection. Revisions to Technique Sheets are not required unless a revision to the drawing or ECN changes the NDT requirements. All documents shall be submitted for review and approval by Buyer thirty (30) business days prior to use.

b) Personnel Qualifications

All nondestructive examination processes shall be performed and interpreted by personnel qualified/certified in accordance with a Written Practice developed by the Seller to the requirements of SNT-TC-1A or equivalent. The recommended practices of SNT-TC-1A are mandatory as modified by specifications. The Seller shall provide for review and approval by Buyer:

- 1) The Seller's Written Practice
- 2) The NDE personnel certification and qualification records

c) Nondestructive Examination Reports

With each shipment of a line item(s), that a nondestructive examination was been performed, and at the completion of the examination if being witnessed by the Buyer and/or the DCMA, the Seller shall submit nondestructive examination reports, which shall include:

- 1) Company name/identifier.
- 2) The part/drawing numbers, revision (including Engineering Change Numbers, if applicable), and part description.
- 3) Item serial numbers, lot number, heat number, etc., or other appropriate identification.
- 4) NDE Procedure number and revision number or letter.
- 5) The approved Part Specific Inspection Method/Technique number.
- 6) The method used.
- 7) Equipment and materials used.
- 8) Acceptance Criteria.
- 9) Date of Examination.
- 10) The test results.
- 11) Weld Map and/or Data Sheet (if used).
- 12) The typed/printed name, signature and NDE certification level of persons performing and authenticating the test on each page.
- 13) The typed /printed name, signature and NDE certification level of persons interpreting the test results.
- 14) Indication of acceptance by Buyer and DCMA representatives, if applicable
- 15) All pages shall be paginated.

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d) Visual Inspection of Welds

All welds shall be visually inspected per drawing/specification requirements.

e) Low Halogen Penetrant Materials

Additional requirements; when liquid penetrant materials having low halogen content are required, the test report shall include the material manufacturer's lot/batch number used and a certification of chemical analysis showing the actual halogen content for the applicable lot/batch.

L2. Electronic Components Packaging

All electronic components parts shall be packaged such that they are kept from damage

L3. Lot Date Code Identification

Electrical and electronic components that have manufacturer lot date code identification shall be packaged to provide segregation of manufacturers and lot date code by quantity to assure traceability can be maintained.

M1. First Article Inspection (FAI)

The Seller shall:

- Perform a FAI in accordance with AS9102 Aerospace First Article Inspection Requirements.. Alternative approaches to AS9102 shall be approved by QNA in writing prior to the FAI being performed by the supplier. Alternative approaches must contain all of the data required by AS9102
 - QNA TSG reserves the right to witness the FAI at the supplier's facility
- Perform a delta FAI on Revisions to a QNA drawing.
- If the FAI is on an assembly, include all parts in the assembly that are not Unmodified COTS items.
- Be aware that QNA TSG recognizes that these FAI's may occur on pre-production parts. QNA may require a delta-FAI post implementation of production tooling and equipment.
- An FAI is not required for CFM (Customer Furnished Material) or Unmodified COTS items

Note: Once an FAI is completed, any re-order of the part at the same configuration level by the same supplier and per the same process does not require performing another FAI.

M2. First Piece Inspection

When this clause is cited on a Purchase Order, the supplier shall provide first piece dimensional and test inspection data. The first piece shall be from the initial lot, batch, or run. 100% of the dimensions shall be measured as part of the first piece inspection. First piece inspection data shall be sent to QNA at least once for each purchase order. Subsequent purchase orders shall require another first piece inspection datasheet. Any revision changes to a drawing that affect any dimensions shall necessitate additional first piece inspection data for an open purchase order.

This requirement applies to the top level drawing characteristics. Any additional requirements will be flowed to the supplier from QNA.

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M3. Critical / Key Dimensions, Characteristics or Requirements

The supplier shall:

- Note that Critical / Key dimension, characteristic, requirement and/or components shall either be identified on the drawing or as part of the purchase order notes.
- Provide Critical / Key dimension, characteristic and/or requirement inspection/test results with each shipment.
 - Data shall be supplied on 100% of the identified dimension, characteristic and/or requirement
- Obtain written QNA approval for the source of Critical/Key Processes/Component(s) prior to the first delivery if supplied by a sub-tier supplier.

M4. Inspection and Test Plan

The supplier shall

- Submit an inspection and test plan to QNA. The plan should include the following:
 - Flow chart or Control Plan that identifies, as a minimum, the manufacturing process steps, inspection performed at each operation, and the reaction plan should a non-conformance be identified

M5. Random Sampling of Production Armor

May be performed by QNA or its customer for the purpose of verifying ballistic performance capability.

- Failure of the armor to demonstrate the required will be cause for rejection of the related production lot(s).

M6. Ballistic Lot Testing of Ceramic Tiles for Ballistic Qualification

Will be paid for by QNA.

- Retesting re-fired samples for previously failed lots will be the financial responsibility of the supplier.

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M7. Inspection & Test Data Submission

End-item products ordered through this PO shall be inspected to the statistically valid C=0 Sampling Plan below (see Table 1). The Index Value (Associated AQL) is 0.65. Alternative sampling plans may be used provided that they provide equal or greater protection. Regardless of the plan, one or more defects discovered during inspection shall invoke procedures for control of nonconforming material.

Where testing is a requirement per drawing or Purchase Order requirements, the sample size shall be 100%.

C=0 SAMPLING PLANS INDEX VALUES (ASSOCIATED AQLS)

LOT SIZE	SAMPLE SIZE															
	.010	.015	.025	.040	.065	.10	.15	.25	.40	.65	1.0	1.5	2.5	4.0	6.5	10.0
2 to 8	*	*	*	*	*	*	*	*	*	*	*	*	5	3	2	2
9 to 15	*	*	*	*	*	*	*	*	*	*	13	8	5	3	2	2
16 to 25	*	*	*	*	*	*	*	*	*	20	13	8	5	3	3	2
26 to 50	*	*	*	*	*	*	*	*	32	20	13	8	5	5	5	3
51 to 90	*	*	*	*	*	*	80	50	32	20	13	8	7	6	5	4
91 to 150	*	*	*	*	*	125	80	50	32	20	13	12	11	7	6	5
151 to 280	*	*	*	*	200	125	80	50	32	20	20	19	13	10	7	6
281 to 500	*	*	*	315	200	125	80	50	48	47	29	21	16	11	9	7
501 to 1200	*	800	500	315	200	125	80	75	73	47	34	27	19	15	11	8
1201 to 3200	1250	800	500	315	200	125	120	116	73	53	42	35	23	18	13	9
3201 to 10,000	1250	800	500	315	200	192	189	116	86	68	50	38	29	22	15	9
10,001 to 35,000	1250	800	500	315	300	294	189	135	108	77	60	46	35	29	15	9
35,001 to 150,000	1250	800	500	490	476	294	218	170	123	96	74	56	40	29	15	9
150,001 to 500,000	1250	800	750	715	476	345	270	200	156	119	90	64	40	29	15	9
500,001 and over	1250	1200	1112	715	556	435	303	244	189	143	102	64	40	29	15	9

*Indicates entire lot must be inspected
NOTE: The Acceptance Number in all cases is ZERO.

Table 1

M8. PPAP and APQP

- Product associated with this order require conformance to the AIAG Production Part Approval Process (PPAP) and/or AIAG Advanced Product Quality Planning (APQP). The purpose of this process is to establish confidence in a supplier and their production processes, by demonstrating that all QNA engineering design record and specification requirements are properly understood by the supplier and that the process has the potential to produce moderate to high volume product consistently meeting requirements.
- When this code is invoked QNA will assign a resource to tailor PPAP and/or APQP requirements for the product.

Where testing is a requirement per drawing or Purchase Order requirements, the sample size shall be 100%.



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M9. Quality Assurance Data Package Requirements

Seller shall prepare a Quality Acceptance Data Package (QADP) for this order and shall submit to Buyer for review and approval prior to shipping the product. Data packages shall be collated and contain a table of contents. One copy of data package to be presented electronically. One hard copy of data package to be shipped with the product. All documents within the QADP are to be marked with the applicable part number.

N1. Quality Program Plan

When this clause is cited on the purchase order, the supplier shall submit a Quality Program Plan in accordance with requirements defined in purchase order and/or specification.

P1. Lot Control and Traceability

The supplier shall

- Assure traceability to the manufacturing process via date code, lot codes or unique job number.

P2. Panel Serialization

The supplier shall Mark or serialize the Armor panels in such a manner as to provide traceability to armor tile ballistic test reports

R1. Baseline Control

When this clause is cited on the purchase order, a QNA approved supplier manufacturing configuration baseline is required. This baseline will be presented to QNA for approval. A previously approved baseline will satisfy this requirement. QNA may allow shipment of product prior to formal approval of baseline package providing supplier is working with QNA to establish one. The baseline package requested of the supplier shall be as follows:

- a. A single drawing under the supplier's engineering change control system listing supplier's assembly drawing(s), component piece part drawings, material drawings, critical processing specifications and critical manufacturing operations. Each document listed will include the document name, part number/specification number, and revision level and revision date. This baseline drawing shall have its own name, number, revision level, and revision date for future change control. This drawing can either be in the form of a manufacturing flow chart (preferred) or a simple listing.
- b. Acceptance (in writing) by QNA of the above specified documentation shall be considered as freezing the design and forming a configuration baseline of the part being purchased. The supplier's approved baseline identification, revision level and revision date will subsequently be reflected on the purchase order, and carried forward on future purchase orders by the QNA Purchasing Department.
- c. All changes to the QNA-approved baseline require QNA approval; changes must be submitted on the QNA Baseline change request form with a copy of the affected drawings. The request must be sent to the QNA Purchasing Department for disposition. A copy of the approved request will be sent to the supplier, followed by an appropriate baseline revision level upgrade on the purchase order.

R2. Product Realization Planning

The supplier shall have a knowledge transfer system (work instructions) to transition QNA engineering and Purchase Order requirements into the supplier's production level planning.

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- This system shall take into account all QNA engineering requirements including those that are specified in secondary or lower level documentation.
- This system, in addition to providing supplier Manufacturing Associates with instructions, shall provide for the substantiation that all instructions were executed. Results of inspection and testing shall be recorded.
- The supplier's knowledge transfer system, including detailed instructions pertaining to parts/assemblies, shall be made available to QNA upon request.

Z1. No Special Quality Clauses apply