SUPPLEMENTAL QUALITY REQUIREMENTS

For

PRINTED WIRING BOARD SUPPLIERS

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# SUPPLEMENTAL QUALITY PROGRAM REQUIREMENTS

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<tr>
<th>REVISION</th>
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<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>Initial release</td>
<td>7/21/10</td>
<td>For use on all programs</td>
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<tr>
<td>A</td>
<td>8/23/10</td>
<td>Update for Packaging Requirements</td>
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<tr>
<td>B</td>
<td>9/30/10</td>
<td>Update for clarification of PCA &amp; FAAT Requirements</td>
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1.0 SCOPE
The purpose of this document is to specify ATK unique quality program requirements that are in addition to item-specific quality requirements defined in the purchase order, drawings, specifications and ATK’s Classification of Characteristics. In the event of a conflict between these documents, contact the ATK Buyer for resolution as agreed between user and supplier (AABUS).

The supplier’s liability and responsibility for performance to the TDP and performance to the purchase order/subcontract is in no way abrogated by ATK or Government review and/or approval of or concurrence with any plan, program or document.

2.0 QUALITY MANAGEMENT SYSTEM REQUIREMENTS

Your Quality System must comply with the requirements of ISO9001:2008 or an industry equivalent quality system model that is appropriate for the product being supplied that is acceptable to ATK. Soldering and solder workmanship must meet the requirements of ANSI/J-STD-003, Category 3 and IPC-600, Class 3. The general/generic requirements of IPC-6011 applies to this document as supplemental quality requirements and will be used with the specific performance specifications referenced on the drawing as part of the procurement documentation package.

3.0 REQUIRED DOCUMENTATION

<table>
<thead>
<tr>
<th>Document</th>
<th>When Required</th>
<th>Reference</th>
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<tbody>
<tr>
<td>Corrective Action Requests</td>
<td>As stated in ATK request for C/A</td>
<td>15.0</td>
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<tr>
<td>First Article (FAAT) Plan and Report</td>
<td>Notify ATK 15 days prior to scheduled FAAT. FAAT report within 10 days of completing FAAT.</td>
<td>6.2</td>
</tr>
<tr>
<td>PCA Plan and Report</td>
<td>Notify ATK 15 days prior to scheduled PCA. PCA report within 10 days of completing PCA.</td>
<td>6.1</td>
</tr>
<tr>
<td>Certified Material Test Reports, Material Certifications</td>
<td>With every lot, FAAT and PCA</td>
<td>11.0</td>
</tr>
<tr>
<td>Repair/Rework Procedures</td>
<td>As necessary for ATK approval</td>
<td>14.1.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14.1.2</td>
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</table>

3.2 Documentation Extension Requirements

Extensions of prior approvals of documents listed in 3.1 may be granted provided no changes have been made since the last ATK approval and the content meets the requirements of the new contract. Requests to extend approvals must be submitted to ATK in accordance with the time frames listed above.
4.0 AUDITS

ATK and the Government reserve the right to audit or examine the adequacy of your quality/inspection program. If audited, your quality system will be evaluated to the requirements of ISO9001:2008 or the ATK approved quality system model appropriate for the product being supplied. In addition to your QMS the audit may include procedures, company quality manual, this document, supplier requirements related to product quality, and applicable military/commercial specifications and standards. As well as:

- Acceptance Inspection Equipment (AIE)
- Calibration
- Special Processes
- Work Instructions
- Process Controls (including SPC)

In the event significant discrepancies are found, a discrepancy report will be issued. You are required to provide your corrective action plans to ATK and to implement appropriate corrective action.

In the event audit discrepancies are found and documented by a Government QAR in the form of a Corrective Action Request (CAR), you must forward a copy of the CAR to the ATK Buyer immediately upon receipt.

5.0 INSPECTION PLAN

The supplier must perform, as a minimum, the examinations and tests in accordance with specifications, prints and all applicable provisions of the TDP. An inspection plan documenting the inspections and tests that will be performed on the product at various levels of manufacturing and assembly must be available for ATK review. A compilation of your actual inspection / test procedures and forms for recording the inspection / test data is the preferred content of the inspection plan. The inspection plan must include the following information:

- Part number and revision
- Characteristic description
- Characteristic classification number, if a numbering system is in use
- Reference to a sample plan or chart (or a sample size, accept number and reject number)
- Acceptance Inspection Equipment to be used
- Data recording instructions
- The manner in which lot formation will be determined for product submissions
- Your approach for assuring that characteristics conform to the requirements that are outside your Standard Operating Procedures (SOPs) must be approved by ATK.

The chronological listing of the following information is required to be available to ascertain the completeness of the inspection plan:

- Detailed flow diagram of the material flow through the various manufacturing/processing/inspection operations. The flow chart must show inspection and test points.
- Identification of in-process and operator inspection points.
- Identification of SPC and other process control points.
Revisions to the inspection plan must be documented and maintained.

6.0 QUALIFICATION ASSESSMENT

6.1 Requirements for Physical Configuration Audit (PCA)

ATK may require that you perform a physical configuration audit (PCA) in accordance with IPC-6011 section 3.6. (AABUS). If it is a requirement of this order, it will be reflected in the “ATK Inspection Procedure” document attached to the purchase order. Inspection of these samples will be performed for 100% of all drawing dimensions, characteristics, and associated TDP requirements, including drawings, specifications and Quality Assurance Provisions (QAPs). Actual variable data must be recorded. You must notify ATK 15 days prior to the planned PCA Qualification Assessment date. ATK may witness the PCA Qualification Assessment. You must submit all PCA Assessment data to ATK and describe any required corrective actions. ATK must approve the PCA Assessment results prior to production. The supplier must submit all data to ATK for approval within 10 days of completing the PCA Qualification Assessment.

6.2 Requirements for First Article Acceptance Testing (FAAT)

ATK may require that you perform a first article acceptance test (FAAT) at the beginning of low rate initial production (LRIP) on a sample reflected in the “ATK Inspection Procedure” document attached to the purchase order. If it is a requirement of this order, it will be in accordance with IPC-6011 section 3.6. (AABUS) using approved Acceptance Inspection Equipment (AIE) and Acceptance Test Equipment (ATE). ATK does not evaluate all characteristics during FAAT. The sample size and characteristics to be inspected and/or tested will be in accordance with applicable Quality Assurance Provisions (QAPs) or will be as identified by ATK. At the discretion of the Government, however, these samples may be inspected/tested for 100% of all drawing dimensions, characteristics, and associated TDP requirements, including drawings, specifications and Quality Assurance Provisions (QAPs). Actual variable data must be recorded to the extent practical. You must notify ATK 15 days prior to the planned FAAT date. ATK may witness FAAT. You must submit all FAAT data to ATK and describe any required corrective actions. ATK must approve the FAAT results prior to production.

6.2.1 Other Conditions Necessitating First Articles

At FAAT may be required when a lapse in production exceeds 90 days or a change in homogeneity occurs (ref. Para. 10.0). In the case of changes not agreed to by ATK, the supplier shall be responsible for the costs associated with the additional FAAT.

6.2.2 Requirements for Performing FAATs When Responsibility Delegated by ATK

When ATK has delegated responsibility to the supplier for conducting a FAAT, all the requirements of section 5.0 apply to the supplier as well as to your sub-tier suppliers.

6.2.3 Additional FAATs Required Because of Disapproval

If the FAAT is disapproved, the supplier, upon ATK notification, shall submit additional FAAT samples for inspection and/or test. The supplier with ATK approval shall make any necessary changes, modifications or repairs to the lot to remove part/process defects. All costs related to additional hardware and/or inspections are to be borne by the supplier.
7.0 PRODUCTION PROCESS DOCUMENTATION and CHANGE CONTROL

7.1 Requirements

The supplier shall generate and use written work instructions for all processes affecting product quality. Work instructions shall include all the applicable items listed below that are deemed significant to the type of operation under consideration:

- Operation number
- Operation description
- Part number and revision
- Process drawing (when applicable)
- Detailed work instructions
- Process flow chart (including SPC points)

ATK/Government access to process work instructions at supplier facilities must be provided.

A history file must be maintained for all work instructions including a description of changes and a record of when they were implemented.

7.2 Change Control

ATK considers PWB process work instructions as Class 3 processes. Class 3 is (defined as a process that) where the process is repeatable and/or the product features are easily verifiable. Class 3 changes are changes that are not likely to reduce the usability, product performance, or safety for personnel, facility or the environment. For this reason, you must notify ATK prior to implementing changes (except administrative changes) to Class 3 processes or the build location. A detailed description of each Class 3 change shall be included in a work instruction history file maintained by the supplier. This classification may be reviewed and/or reclassified during a contract if safety, major product performance or producibility concerns are identified. The supplier will be included in any reclassification discussions and decisions.

The approval level for Class 3 changes is: Supplier may change without approval, but must formally notify ATK within fifteen (15) days.

The supplier shall flow down the appropriate process change control provisions to your sub-tier suppliers.

8.0 STATISTICAL PROCESS CONTROL

SPC should be used to optimize key processes and reduce overall cost. Recommended SPC techniques are defined in the American National Standards Institute (ANSI) documents ANSI Z1.1, Z1.2, and Z1.3 and the American Society for Quality documents B.1, B.2, and B.3.

9.0 SPECIAL PROCESSES, SPECIAL TESTS AND METAL FINISHING

If accomplished outside your facility, special processes, special tests and metal finishing must be performed by a supplier acceptable to ATK.
10.0 MATERIAL CONTROL

All supplies shall be homogeneous as defined below. Violation of this requirement may require a First Article.

Homogeneous supplies are defined as material produced:

A) To the same design as defined by ATK and supplier documentation.

B) From the same material as defined by the applicable material specification. After material has been submitted to ATK the supplier may not change to alternate materials without prior written approval from ATK.

C) By the same manufacturing process as defined by the supplier's process documentation. Changes in the process documentation or order of operations may violate the Class 3 requirement (reference paragraph 7.2). Changes in manufacturing location violate this requirement, and unless waived by ATK, production discontinuities of over 90 days violate this requirement.

D) Using material, products, special processes (such as metal finishing, heat treat, etc.) from the same suppliers. Changes in suppliers violate this requirement. ATK must be notified if you intend to change suppliers. ATK reserves the right to disapprove your supplier selection.

Bi-directional traceability of material must be documented and maintained throughout the production process to the extent required herein and by the TDP.

11.0 CERTIFIED MATERIAL TEST REPORTS (CMTRs)

Certified Material Test Reports are required for all materials with chemical and/or physical requirements specified on the individual drawings or in the ASTM/material specifications referenced on the drawings. CMTR's may also be required by ATK for key materials affecting safety or performance. CMTR's shall be submitted to ATK. Copies of CMTR's shall be included with every FAAT or PCA.

Inspection procedures need to be established to verify conformance of the CMTR to the specification requirements. The results contained on the certified material test report shall be adequate to determine compliance with all applicable material specification requirements.

Availability of the certified material test reports is in addition to other subcontract requirements and does not reduce or prejudice the rights of ATK or the Government to inspect supplies under other provisions of this contract.

Unless otherwise directed by ATK, certified material test reports must contain the following:

A. Name and address of supplier (of the material).

B. Purchase order number (issued to the supplier) or lot identification.

C. Identification of material by specification/QAP, revision, and dates, together with type, grade, size, etc.

D. Quantity of material.
E. Actual test results identified by reference to the applicable requirements. Blanket statements are not acceptable.

F. Quantity tested, sample size, and specimen type as applicable.

G. Dated correspondence with a signature and/or title of the authorized representative of the supplier that is attesting to the accuracy of test report content.

12.0 ACCEPTANCE INSPECTION EQUIPMENT

The supplier shall be responsible for the design, fabrication or procurement, maintenance and calibration of all acceptance inspection equipment and gaging. The product shall be measured in the units in which it is dimensioned. Metric gaging for listed metric dimensions is mandatory - no conversion is permitted.

Automated Acceptance Inspection Equipment (AAIE) shall use fail-safe designs in which the decision making logic and the material handling devices normally operate in a reject mode until an accept mode signal is received.

13.0 SOURCE INSPECTION/SOURCE SURVEILLANCE

13.1 ATK Source Inspection

ATK maintains the right to perform source inspection and/or source surveillance to evaluate the product or service being procured by this purchase order. The purchase order will specify whether source inspection or source surveillance is required. ATK may choose to waive source inspection but any such waiver will not jeopardize future opportunities for source inspection.

Before submitting product to ATK, it shall have been accepted under the terms of your inspection plan. Your inspection and test records shall, as a minimum, indicate the nature of the observation made and the number and type of deficiencies found. Data included in inspection and test records shall be complete and accurate, used for trend analysis and used to assess corrective action effectiveness. Your calibration of measuring and testing equipment shall, as a minimum, adhere to the requirements of ANSI/NCSL Z540-1 or an industry equivalent acceptable to ATK.

ATK reserves the right to make final acceptance of the product or service.

13.2 Government Source Inspection/Source Surveillance

If Government inspection is required prior to shipment from your plant, it will be reflected on the ATK purchase order.

If Government inspection prior to shipment or release of product is not required but the Government reserves the right to inspect at their convenience, it will be reflected on the ATK purchase order.
In the event that product discrepancies are found and documented by a Government QAR in the form of a Corrective Action Request (CAR), you must forward a copy of the CAR to the ATK Subcontractor Administrator immediately upon receipt.

13.3 Availability of Supplier Facilities and Equipment

For either ATK inspection or Government inspection the supplier must provide the facilities and assistance necessary for access to the product and for measurement, test and inspection of the product in accordance with inspection procedures. All gages, AIE and AAIE must be made available for these inspections if requested.

14.0 NONCONFORMING MATERIAL CONTROL

ATK will maintain material review board (MRB) authority for all characteristics for this contract. Potential material review actions such as repair, rework (unless previously approved by ATK), and use-as-is must be submitted to ATK for MRB action and approval. The supplier's MRB only has the authority to scrap, sort, perform reprocessing, and perform rework in accordance with a rework procedure approved by ATK.

14.1 Definitions/Requirements

14.1.1 Repair

Additional operations performed on a nonconforming article or material to place it in a usable, but still nonconforming condition. A written repair procedure is required. Requests for approval of rework procedures must include a description of the cause of non-conformance and a description of actions to prevent recurrence. Approval of the repair procedure must be obtained from ATK prior to its use, and the product may not be accepted until such approval is obtained by ATK.

The repair procedure shall contain a provision for re-inspection which will take cognizance of the TDP requirements and also shall provide for inspection of any variance which may be introduced as a consequence of the restoration method.

Note: Many prime contracts do not allow repair. Those contracts that allow repair do so only under a Government approved Deviation. ATK reserves the right to refuse acceptance of any parts requiring deviation.

14.1.2 Rework

The processing of nonconforming material through a process that is different than that which is applied to virgin material to return it to a fully conforming condition.

If the nonconforming material is re-run as-is through the original, standard documented process, it is considered to be reprocessed, not reworked. Refer to paragraph 14.1.3.

Additional written work instructions are required for rework. Rework procedures must be approved by ATK prior to implementation. Requests for approval of rework procedures must include a description of the cause of non-conformance and a description of actions to prevent recurrence. The rework procedure shall contain a provision for re-inspection of the non-conformance to provide assurance that the non-conformities have been removed. In addition, the re-inspection shall provide for inspection for variation in any feature which may be introduced as a consequence of the restoration method.
Note: Most prime contracts require Government approval of rework and re-inspection procedures. Adequate time must be provided for ATK and Government review and approval. Standard rework procedures may be submitted for approval in advance if the need to use them during the contract is anticipated.

14.1.3 Reprocessing

Material which is found to be nonconforming and is run as-is through the original, standard, documented process to return it to a fully conforming condition. Reprocessed material must be re-inspected with the approved inspection procedure to verify the non-conformity has been eliminated. You are not required to notify or obtain ATK approval for the re-processing of nonconforming material.

14.1.4 Scrap

Your MRB only has the authority to scrap material that is owned by you and is not ATK or Government furnished material.

14.1.5 Use As Is

Material which has one or more characteristics that do not meet the drawing, specification or QAP requirements, but evidence can be produced to support a basis that the material is still acceptable for use. Such material shall not be used unless written approval from ATK is provided.

Note: Most prime contracts do not allow Use-As-Is. Those contracts that allow Use-As-Is do so only under a Government approved Deviation. ATK reserves the right to refuse acceptance of any parts requiring a deviation.

15.0 Corrective Action Request (CAR)

The supplier shall respond to any ATK CAR within ten (10) working days. Submit the written response to the ATK Materials buyer identified in the CAR.

16.0 RECORDS RETENTION

Quality records shall be retained for six years after final payment against the subcontract/purchase order.

17.0 SHIPPING INSTRUCTIONS

17.1 PACKAGING AND SHIPPING INSTRUCTIONS

17.1.1 Container Weight

Human-carried individual containers must have a gross weight of 25 lbs. or less and reusable palletized containers should be used whenever possible to minimize disposal costs. If existing packaging does not meet these requirements, you must provide justification to the ATK Buyer and obtain approval prior to delivery.
Human-carried packages exceeding 25lbs. must be clearly labeled with the actual container weight and must have handhold cutouts to provide for proper ergonomic lifting as identified by U.S. Department of Labor, Occupational Safety and Health Administration.

17.1.2 Labeling

You must follow the “Standards Practice for Commercial Packaging,” ASTM designation number D 3951-98, as a minimum, and apply the highest quality industry standards for packaging to ensure there is no degradation of material quality during shipping. In addition, each unit package and shipping container must be labeled with the following information:

- Name/description of item
- Item number and revision
- Supplier lot number and lot quantity
- Quantity per container and number of containers
- Supplier name
- Purchase order number

17.2 Data Sent with Shipment

Unless specifically directed otherwise a copy of inspection results and, if applicable, the ATP report must be included with each shipment.