PRODUCT QUALITY REQUIREMENTS FOR SELLERS OF BOEING DESIGNED DETAIL PARTS AND NON-FUNCTIONAL MINOR ASSEMBLIES

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Scope

These requirements pertain to the inspections, tests and process controls necessary to substantiate product conformance to Boeing Military Aircraft and Missiles Systems - St. Louis (hereafter referred to as Boeing A&M - St. Louis) requirements. This document applies to the manufacture of Boeing designed products produced under a Boeing A&M - St. Louis Purchase Order. These are minimum requirements and do not relieve the supplier of the obligation to produce material meeting all requirements of the purchase contract.

Boeing A&M - St. Louis is transitioning to an electronic process for defining engineering requirements. This process is called Model-Based Definition (MBD). MBD is a process which all information required to manufacture a part is contained and communicated through an electronic three-dimensional CAD part file and several related documents, without depending upon traditional fully dimensioned 2D drawings. When referenced herein, engineering definition shall be interpreted as either a traditional 2D drawing or a MBD package. A MBD package contains:

- Nominal geometry modeled in the as is fabricated condition in the CAD model.
- Geometric Dimensioning & Tolerances and other descriptive text and symbology embedded in the CAD model or in the engineering notes.
- A PCD (Part Coordination Document) containing a depiction of the part and data control statements.
- Engineering notes
- Associated fastener collector file (displays the as installed condition), as required.
- Parts List Information (e.g. material requirements) and Notes

When the seller receives or uses Boeing digital data as authority for design and/or inspection, then the Seller should review the requirements of D6-51991, Quality Assurance Standard for Digital Product Definition at Boeing Suppliers, and utilize the document as a guideline for implementation of a Digital Data Control process.

The following specifications form a part of this document to the extent referenced herein. Current revisions are to be used as the acceptance criteria.

<table>
<thead>
<tr>
<th>Specification Number</th>
<th>Title</th>
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<tbody>
<tr>
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<td>Hardness Testing of Parts and Materials</td>
</tr>
<tr>
<td>P.S. 21207</td>
<td>Eddy Current Determination of Electrical Conductivity for Aluminum Alloys</td>
</tr>
<tr>
<td>P.S. 23023</td>
<td>Hardness and Electrical Conductivity Inspection Acceptance Criteria for Metals</td>
</tr>
<tr>
<td>P.S. 23038, 23051</td>
<td>Authority for Material Substitution</td>
</tr>
<tr>
<td>ANSI/ASQC Z1.4</td>
<td>Sampling Procedures and Tables for Inspection by Attributes</td>
</tr>
<tr>
<td>ANSI/ASQC Z1.9</td>
<td>Sampling Procedures and Tables for Inspection by Variables for Percent Defective</td>
</tr>
<tr>
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<td>First Article Inspection</td>
</tr>
<tr>
<td>SAE AS9103</td>
<td>Variation Management of Key Characteristics</td>
</tr>
<tr>
<td>ISO 10012-1-1992</td>
<td>Quality Assurance Requirements for Measuring Equipment</td>
</tr>
</tbody>
</table>

General Requirements

1. Purchasing

   1.1. General

       The supplier shall assure that purchased product meets the requirements of the purchase contract. All purchase contracts between supplier and their sub-tier suppliers, in fulfillment of the Boeing A&M - St. Louis Purchase Order, shall address the following:

       1.1.1 The applicable requirements appearing in the Boeing A&M - St. Louis Purchase Order, engineering drawing, and/or Special Manufacturing Instructions.
1.1.2 The latest revision of all Boeing material and process specifications. The supplier shall furnish copies of needed specifications upon request of their sub-tier suppliers.

1.1.3 The use of Boeing approved sources for processes listed in D1-4426, Approved Process Sources.

1.1.4 Identification of the product model or program the part number represents (e.g. 68A = F15, 74A = F18, 75A = AV8, 12A = AIS, DA = T45, 17P = C17).

1.1.5 Identification of the prime division of The Boeing Company that is the design authority (e.g. A&M St. Louis for FSCM Number 76301 and the T45 program, A&M Long Beach for FSCM Number 88277)

1.1.6 The right of Boeing, Boeing customer and other Boeing designee to have access to the sub-tier facility to witness or otherwise monitor progress in completion of the purchase contract. Full cooperation shall be extended to the above personnel in the event this right of access is invoked.

1.2 Critical Material

The supplier shall ensure special requirements for parts designated as “Fracture Critical” or “Fracture Critical Traceable” or other designations as defined in the applicable control drawings are clearly defined in all subcontracts for critical parts.

1.3 Material Substitutions

See Appendices for individual product types for material substitution requirements.

2. Contract Review

Prior to acceptance of any Boeing A&M - St. Louis Purchase Order, the supplier shall conduct a contract review to determine if the requirements are adequately defined and documented. The supplier shall assure that the all drawings, specifications and other documents referenced in the purchase contract have been provided by Boeing.

3. Use of Approved Process Sources

The supplier shall use only Boeing Approved Sources for processes listed in D1-4426, Approved Process Sources. For the processes listed in D1-4426, the processors must have approval for the specific Process Specification required by the Engineering definition. Information on the approval status of a processor and their process approval can be obtained at http://www.boeing.com or by contacting the Boeing A&M - St. Louis procurement agent. Quality problems arising from the use of Boeing approved sources must be reported to the Boeing contact as listed on the Boeing web site. Any non-conforming hardware resulting from these problems must be processed per Section 7, Control of Nonconforming Material.

NOTE: Material processed by sources not listed in the Boeing Approved Processor List (when applicable per D1-4426, Approved Process Sources) will result in non-conforming material. Such material will be processed in accordance with Boeing A&M - St. Louis non-conforming material procedures. Such material shall not be shipped from the supplier’s facility until a disposition has been received and complied with or until authorized in writing by Boeing Quality Assurance.

4. Inspection and Testing

The supplier shall implement and maintain a documented Inspection System to assure inspection and testing of material, work in process, and completed detail parts and/or assemblies as required by the engineering drawings, specifications and manufacturing plans.

For sampling inspection, refer to the appropriate product related appendix for specific inspection and/or inspection plan requirements.

When processing operations are required (e.g. NDT, thermal treatment, chemical treatment, welding, and bonding) appropriate acceptance and testing procedures shall be an integral part of the supplier’s inspection system.
For Boeing A&M - St. Louis Engineering drawings that specify Key Characteristics refer to Section 12 for inspection requirements.

The supplier may elect to use statistical techniques / tools for determining product quality. The supplier shall perform product inspections and tests as the means of product acceptance, prior to relying on statistical process data in order to validate the supplier’s statistically controlled process(es). If the supplier elects to utilize statistical data in lieu of inspection and test data, the supplier shall establish and maintain documented procedures to implement and control the application of the statistical technique to be used.

4.1. Inspection and Test Status

The supplier shall establish and maintain an objective system for identifying the inspection status of hardware or material. For inspection applications (unless otherwise specified in the A0436 appendices, purchase contract, engineering drawing and/or special manufacturing instructions) the supplier shall have objective evidence that inspection activities have been performed or are being performed on a continuing basis.

4.2. Lot Control

The supplier is required to define control of material by lots. All actions/records (e.g. operations, inspections, and tests) related to all material, including the requirements defined herein shall be documented and traceable to the lot defined by the supplier. Records for each lot shall indicate lot size, start and finish date and supplier’s lot identification code.

4.3. Hardness and Conductivity Testing

Note: For Boeing A&M - St. Louis shop overload contracts not involving machining operations for machined parts or sheet metal operations for sheet metal parts, these requirements do not apply.

Note: Exception to the following hardness testing requirement is granted for small complex geometry parts which, as a result of geometry do not allow for proper testing set-up or are subject to degradation as a result of testing. Engineering definitions that require hardness testing of small, complex geometry parts shall be coordinated with the procurement agent for changes.

4.3.1. Hardness and conductivity testing shall be performed in accordance with P.S. 21203 and/or P.S. 21207 (unless otherwise specified by engineering specifications) as specified in paragraphs 4.3.2 - 4.3.4 below. This requirement must be met, regardless of the source for heat treatment of the material. Unless otherwise specified by the engineering definition, the material shall also meet the acceptance requirements of P.S. 23023. Records shall be maintained by the supplier in accordance with Section 10, Control of Quality Records.

4.3.2. Hardness and conductivity is to be performed after all final operations, such as machining, forming, welding or thermal treatment. Hardness testing through any surface plating or coating is not recommended, and in no case shall hardness test impressions be made through a surface plating or coating which is harder than the base material.

4.3.3. Only personnel qualified in accordance with Boeing A&M - St. Louis Process Specifications 21203 or 21207 (unless otherwise specified by engineering specifications) shall perform hardness and/or conductivity testing.
4.3.4. Testing Requirements

<table>
<thead>
<tr>
<th>Material</th>
<th>Test</th>
<th>Aluminum Conductivity</th>
<th>Hardness</th>
<th>Conductivity</th>
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</thead>
<tbody>
<tr>
<td>Machined Parts</td>
<td>Sample²</td>
<td>100%</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>Structural Sheet Metal parts</td>
<td>Sample²</td>
<td>100%</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>Castings</td>
<td>100%³</td>
<td>None</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>Forging and Pressings</td>
<td>Sample²</td>
<td>100%</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>Composites</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flight Test Hardware</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Non-Functional/Non-Structural</td>
<td>None</td>
<td>None</td>
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<td>None</td>
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<tr>
<td>Sheet Metal Assemblies</td>
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<td></td>
</tr>
<tr>
<td>Aerospace Equipment &amp; Simulator Parts and Assemblies/Non-electrical</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

Notes:
1-Hardness and conductivity testing is not required for titanium material of any product form.
2-Sampling plans should conform to requirements in Section 11 Sampling Techniques
3-If values for a particular material type is not listed in P.S. 23023, hardness testing is not required.

4.4. Mandatory Inspection Criteria

Mandatory Inspection Criteria called out on the engineering definition shall be physically verified on each part and within specified requirements. Measurement processes shall be appropriate to ensure product is within specification requirements. As evidence that this inspection has been completed, a completed sequence shall be in the work instructions. The results in the form of variable data (actual measurements) of these inspections shall be recorded and available to Boeing A&M - St. Louis upon request or as otherwise specified in the purchase contract.

5. First Article Inspection:

5.1. Unless otherwise specified in the Boeing A&M - St. Louis purchase order, engineering definition and/or Special Manufacturing Instructions (SMI), a First Article Inspection (FAI) plan shall be developed and performed prior to initial shipment from the supplier’s facility. First Article Inspection (FAI) shall be performed by the Seller in accordance with the requirements of AS9102. When documenting the FAI, the Seller may use the forms contained within AS9102 or their equivalent, so long as the forms contain all the information required by AS9102.

Suppliers shall have a complete and valid FAI report on file at all times during the production effort for any specific item. Boeing A&M - St. Louis reserves the right to verify all characteristics listed on the FAI report by reviewing the FAI report, observing the supplier’s verification or by an actual Boeing A&M - St. Louis verification at the supplier facility.

5.2. All geometric features of model based definition (MBD) files must be validated. Supplier may use any reasonable means to ensure part meets MBD geometric definition (e.g., CMM, Metronor, VeriCut). Use of inspection devices, which exploit MBD, is encouraged. Supplier must validate acceptability of all dimensions designated as Mandatory Inspection Criteria that are defined on the engineering definition.

5.3. Corrective action shall be taken on all FAI findings. This corrective action shall be initiated prior to shipment of parts to Boeing A&M - St. Louis. Interpretive issues with the Boeing A&M - St. Louis engineering definition, SMI, or other purchase order requirements discovered during performance of the FAI which affect material configuration, shall be resolved prior to proceeding with the remainder of the production lot. The Boeing A&M - St. Louis procurement
6. Control of Inspection, Measurement and Test Equipment and Media of Inspection Tooling

6.1. The supplier shall maintain a calibration system to control Inspection, Measurement and Test Equipment in accordance with ISO 10012-1-1992 unless otherwise specified in the applicable appendix or purchase contract.

6.2 Discrepancies and other tooling problems on Boeing owned tools, and/or any hardware found to be nonconforming as a result of a tooling discrepancy, shall be documented on a Boeing A&M - St. Louis material review document, as defined in the purchase order requirements. The material review document shall be forwarded to the cognizant Boeing A&M - St. Louis procurement agent for disposition.

7. Control of Nonconforming Material

All materials found to be nonconforming to the requirements of the purchase contract shall be identified as such and isolated from production until disposition has been determined. A means of recording such action will be provided and maintained by the supplier to reflect the condition of the materials and action taken to correct the condition.

7.1. Disposition of Nonconforming Material

Nonconforming material that cannot be disposed of as listed in 7.1.1 or 7.1.2 or any Boeing A&M - St. Louis furnished material (or hardware produced from this furnished material), that the supplier wishes to scrap, shall be designated for Material Review Board (MRB) action as described in 7.2 or 7.3 below.

7.1.1. Rework to Specification

Material that can be made to conform fully by completion of work omissions, rework to specifications, etc. may be returned to manufacturing flow for completion or rework.

7.1.2. Scrap

Supplier owned material that is obviously unfit for use or that is not economically repairable may be scrapped by the supplier. Material to be scrapped shall be positively identified to preclude use or delivery.

7.2. Submittal to Boeing A&M - St. Louis Material Review Board (MRB) for Disposition

Non-conforming material shall be submitted to Boeing A&M - St. Louis Material Review Board (MRB) as defined in the purchase contract. Non-conforming material to be submitted to Boeing A&M - St. Louis, MRB shall be isolated to preclude inadvertent or unauthorized delivery or return to production flow. If movement to a Material Review or bonded area is impractical due to size or configuration, the material shall be marked or tagged to assure positive control until all MRB actions are complete.

7.3. Suppliers with Boeing A&M - St. Louis Material Review Authority

Suppliers with Boeing A&M - St. Louis Material Review Authority shall process nonconforming material per MDC Report 96X0005 or other applicable purchase contract requirements.
8. Corrective Action

The supplier shall take prompt action to correct assignable root causes, which have resulted or could result in the manufacture and/or submission of details parts / assemblies that do not conform to all purchase contract requirements.

Nonconformities identified by Boeing A&M - St. Louis on supplier furnished hardware shall be evaluated and corrected on subsequent shipments. Upon request from Boeing A&M - St. Louis, the supplier shall submit a corrective action report on nonconforming material, management and control systems, or processes affecting the product.

9. Handling, Storage, Packaging, Preservation and Delivery

Supplier delivery or presentation of product to Boeing A&M - St. Louis certifies that all requirements of the applicable purchase contract have been verified and determined acceptable. All test results shall be retained by the supplier in accordance with contractual record retention requirements and shall be furnished to Boeing A&M - St. Louis upon request or as specified in purchase contract.

10. Control of Quality Records, Documents and Data

The supplier shall assure that the latest applicable drawings, specifications and procedures are available and used for fabrication, inspection and testing.

10.1. Record Retention

Unless other record retention requirements are specified in the purchase contract, quality records shall be on file and available to Boeing A&M - St. Louis for four years following the end of the calendar year in which the final entry was made or three years after the final payment of the purchase contract, whichever expires first.

NOTE: Certain Boeing A&M - St. Louis parts designated critical material such as “Fracture Critical” or “Fracture Critical Traceable” have extended record retention requirements. Refer to the applicable requirement document for retention of critical material records.

10.2. Records to Retain

As a minimum, the following quality records shall be retained:

a) Reports reflecting receipt of and inspection of supplier material (including Boeing A&M - St. Louis furnished material and tooling) used in fulfillment of the purchase contract. If Boeing A&M - St. Louis has furnished raw material used to produce detail parts or assemblies, the raw material certification from the raw material source or the packing sheet from Boeing A&M - St. Louis is considered a product conformance record to be retained by the supplier. This requirement is applicable whether the material is drop shipped from the raw material source or diverted from another source. It is the supplier’s responsibility to ensure the material furnished meets the requirements of the purchase contract.

b) Production Records—Quality control, reliability, and inspection records shall be retained.

c) Subcontract Records—Records of subcontracts entered into in fulfillment of the Boeing A&M - St. Louis Purchase Order, including subcontractor process certifications shall be retained. The records shall indicate the nature and number of observations, the number and type of deficiencies found, the quantities accepted and/or rejected and the nature of the appropriate corrective action taken.
d) Unless otherwise specified in the purchase contract, radiographs of production approved castings shall be retained.

e) Unless otherwise specified in the purchase contract, both the casting supplier and the machining supplier (sub-tier of casting supplier) shall retain copies of the raw material certification from the raw material source.

11. Sampling Techniques

Sampling inspection is allowed except for Mandatory Inspection Criteria (MICs) and Key Characteristics (KCs) noted on the engineering definition or if otherwise specified in the Boeing A&M - St. Louis Purchase Order, engineering definition and/or Special Manufacturing Instructions (SMI). MICs shall be inspected per Section 4.4. KCs shall be controlled per Section 12, Control of Key Characteristics.

Sampling plans shall be in accordance with ANSI/ASQC Z1.4 for attribute inspections or ANSI/ASQC Z1.9 for variable inspections. Single Sampling plan for Normal Inspection, General Inspection Level II, with no greater risk than an acceptance quality level (AQL) as noted in the table below for specific product types. Use of a sampling plan based on this requirement will constitute an approved sampling plan. Deviations from this requirement shall be submitted to Boeing A&M - St. Louis SQM and is subject to Boeing A&M - St. Louis disapproval.

<table>
<thead>
<tr>
<th>Product Type</th>
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<tr>
<td>Machined Parts</td>
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<tr>
<td>Structural Sheet Metal Details</td>
<td>4.0</td>
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<tr>
<td>Castings, Forging &amp; Pressings</td>
<td>4.0</td>
</tr>
<tr>
<td>Composites</td>
<td>4.0</td>
</tr>
<tr>
<td>Non-Functional/Structural Sheet Metal Assemblies &amp; Flight Hardware</td>
<td>In accordance with Suppliers documented procedures</td>
</tr>
<tr>
<td>Aerospace Equipment and Simulator Parts/Non-Electrical</td>
<td>4.0</td>
</tr>
</tbody>
</table>

12. Control of Key Characteristics

Key Characteristics (KCs) shall be 100% inspected. The results in the form of variable data (actual measurements) of these inspections shall be recorded.

In lieu of this inspection, KCs may be controlled as defined in SAE AS9103, Variation Management of Key Characteristics, as incorporated into Boeing Document D6-82479, Boeing Quality Management System Requirements for Suppliers, Addendum 1, Advanced Quality System – Continuous Improvement, paragraph 4.2, Variation Management of Key Characteristics. Suppliers who elect to control key characteristics per these requirements, prove control and maintain control are not required to sample inspect any other features; except Mandatory Acceptance Criteria or if the purchase contract requires the part be checked to a tool. All First Article Inspection requirements apply.

Data is to be available for review upon request. No data is to be submitted to Boeing A&M - St. Louis unless specifically requested by the procurement agent or otherwise specified in the purchase contract.
Appendix I Requirements for Machined Parts

Scope

These requirements pertain to the inspections, tests and process controls necessary to substantiate product conformance for Boeing A&M - St. Louis, designed machined parts, henceforth referred to as material. The Supplier is to refer to the General Requirements of A0436 in addition to this Appendix, for development of the supplier’s inspection system.

Requirements

1. Purchasing
   1.1 General - No change to General Requirements
   1.2 Critical Material - No change to General Requirements
   1.3 Material Substitutions

      Unless P.S. 23038 or 23051 (unless otherwise specified by engineering specifications) allow automatic substitution of material, any substitution of materials (sizes or specifications) from engineering definition requirements shall have specific written approval from Boeing A&M - St. Louis. When substitution is anticipated, contact the Boeing A&M - St. Louis procurement agent to initiate authority for material substitution (AMS).

      If P.S. 23038 or 23051 (unless otherwise specified by engineering specifications) allows automatic substitution of the material being used by the supplier, the supplier is required to annotate the material information on the supplier’s corresponding shop traveler/work order. AMS submittals to Boeing A&M - St. Louis are not required if automatic substitutions are allowed by the applicable process specification.

2. Contract Review - No change to General Requirements

3. Use of Approved Process Sources - No change to General Requirements

4. Inspection and Testing
   4.1. Inspection and Test Status - No change to General Requirements
   4.2. Lot Control - No change to General Requirements
   4.3. Hardness and Conductivity Testing - No change to General Requirements
   4.4. Mandatory Inspection Criteria—No change to General Requirements
   4.5. Post Processing Inspection

      All dimensional characteristics with .003” or less total tolerance must be inspected after chemical processing has been performed.

   4.6. Surface Finish Inspection

      All reworked surface finish areas on machined parts shall be measured with a profilometer type device, (i.e., comparison gages are not allowed) to determine compliance in accordance with the purchase contract requirements. The balance of originally machined surface areas shall be randomly checked.
5. First Article Inspection--No change to General Requirements

6. Control of Inspection, Measurement and Test Equipment and Media of Inspection --No change to General Requirements

7. Control of Nonconforming Material--No change to General Requirements

8. Corrective Action--No change to General Requirements

9. Handling, Storage, Packaging, Preservation and Delivery--No change to General Requirements

10. Control of Quality Records, Documents and Data --No change to General Requirements

11. Sampling Techniques--No change to General Requirements

12. Control of Key Characteristics--No change to General Requirements
Appendix II Requirements for Sheet Metal Parts

Scope

These requirements pertain to the inspections, tests and process controls necessary to substantiate product conformance for Boeing A&M - St. Louis, designed sheet metal parts, henceforth referred to as material. The Supplier is to refer to the General Requirements of A0436 in addition to this Appendix, for development of the supplier’s inspection system.

Requirements

1. Purchasing
   1.1 General - No change to General Requirements
   1.2 Critical Material - No change to General Requirements
   1.3 Material Substitutions

   Unless P.S. 23038 or 23051 (unless otherwise specified by engineering specifications) allow automatic substitution of material, any substitution of materials (sizes or specifications) from engineering definition requirements shall have specific written approval from Boeing A&M - St. Louis. When substitution is anticipated, contact the Boeing A&M - St. Louis procurement agent to initiate authority for material substitution (AMS).

   If P.S. 23038 or 23051 (unless otherwise specified by engineering specifications) allows automatic substitution of the material being used by the supplier, the supplier is required to annotate the material information on the supplier’s corresponding shop traveler/work order. AMS submittals to Boeing A&M - St. Louis are not required if automatic substitutions are allowed by the applicable process specification.

2. Contract Review - No change to General Requirements

3. Use of Approved Process Sources --No change to General Requirements

4. Inspection and Testing
   4.1 Inspection and Test Status--No change to General Requirements
   4.2 Lot Control--No change to General Requirements
   4.3 Hardness and Conductivity Testing--No change to General Requirements
   4.4 Mandatory Inspection Criteria-- No change to General Requirements
   4.5 Post Processing Inspection

   All dimensional characteristics with .003” or less total tolerance must be inspected after chemical processing has been performed.

5. First Article Inspection--No change to General Requirements

6. Control of Inspection, Measurement and Test Equipment and Media of Inspection Tooling --No change to General Requirements
7. Control of Nonconforming Material--No change to General Requirements

8. Corrective Action--No change to General Requirements

9. Handling, Storage, Packaging, Preservation and Delivery--No change to General Requirements

10. Control of Quality Records, Documents and Data--No change to General Requirements

11. Sampling Techniques--No change to General Requirements

12. Control of Key Characteristics--No change to General Requirement
Appendix III Requirements for Castings, Forging and Pressings

Scope

These requirements pertain to the inspections, tests and process controls necessary to substantiate product conformance for Boeing A&M – St Louis, designed castings, forging and pressings henceforth referred to as material. The Supplier is to refer to the General Requirements of A0436 in addition to this Appendix, for development of the supplier’s inspection system.

Requirements

1. Purchasing

   1.1 General

   The supplier shall verify the following requirements have been met with the first and subsequent shipments of material:

   a) All raw material used in production has been tested for the required chemical and physical properties and conforms to all requirements.
   b) All material has satisfactorily passed any additional tests or inspections specified by the Boeing A&M - St. Louis contract.
   c) For forging and pressings manufactured from continuous operation-type produced raw materials, a statement of compliance to specifications has been received from the mill.

   1.2 Critical Material - No change to General Requirements

   1.3 Material Substitutions

       Material substitutions shall be in accordance with purchase contract.

2. Contract Review - No change to General Requirements

3. Use of Approved Process Sources --No change to General Requirements

4. Inspection and Testing

   4.1. Inspection and Test Status --No change to General Requirements

   4.2. Lot Control--No change to General Requirements

   4.3. Hardness and Conductivity Testing--No change to General Requirements

   4.4. Mandatory Inspection Criteria-- No change to General Requirements

   4.5. Tensile Testing of Forging and Pressings

   When forging are shipped in the normalized or normalized and tempered condition and are to be subsequently heat treated, the sample forging or forged test specimen shall be heat treated to the specified strength level before the tensile specimen is prepared. When a separately forged test specimen is used, the percentage forging reduction given this coupon shall not be greater than the minimum amount of reduction given the forging. The separately forged specimen shall be from the same heat of material as the forging it represents.

5. First Article Inspection--No change to General Requirements
6. Control of Inspection, Measurement and Test Equipment and Media of Inspection Tooling --No change to General Requirements

7. Control of Nonconforming Material

7.1. Impression Stamping of Nonconforming Material

Boeing A&M - St. Louis reserves the right to apply an impression indicating rejection (steel stamp) to any casting, forging or pressing established as unfit for use by Boeing A&M - St. Louis, at supplier’s liability.

7.2. Castings--Grinding of Nonconformances

Boeing A&M - St. Louis reserves the right to attempt to remove nonconformities by grinding or any other method deemed advisable. Nonconformities requiring grinding below minimum dimensional limits will be considered the supplier’s liability.

8. Corrective Action--No change to General Requirements

9. Handling, Storage, Packaging, Preservation and Delivery--No change to General Requirements

10. Control of Quality Records, Documents and Data--No change to General Requirements

11. Sampling Techniques--No change to General Requirements

12. Control of Key Characteristics--No change to General Requirements
Appendix IV Requirements for Composite and Non-Metallic Parts and Assemblies

Scope

These requirements pertain to the inspections, tests and process controls necessary to substantiate product conformance for Boeing A&M – St Louis, designed composite and non-metallic parts and henceforth referred to as material. The Supplier is to refer to the General Requirements of A0436 in addition to this Appendix, for development of the supplier’s inspection system.

Requirements

1. Purchasing
   1.1 General - No change to General Requirements
   1.2 Critical Material - No change to General Requirements
   1.3 Material Substitutions

   Substitutions of materials (sizes or specifications) from engineering definition requirements shall have specific written approval from Boeing A&M - St. Louis. When substitution is anticipated, contact the Boeing A&M - St. Louis procurement agent to initiate authority for material substitution.

2. Contract Review - No change to General Requirements

3. Use of Approved Process Sources -- No change to General Requirements

4. Inspection and Testing
   4.1. Inspection and Test Status--No change to General Requirements
   4.2. Lot Control--No change to General Requirements
   4.3. Hardness and Conductivity Testing--Not applicable
   4.4. Mandatory Inspection Criteria-- No change to General Requirements

5. First Article Inspection--No change to General Requirements

6. Control of Inspection, Measurement and Test Equipment and Media of Inspection Tooling --No change to General Requirements

7. Control of Nonconforming Material--No change to General Requirements

8. Corrective Action--No change to General Requirements

9. Handling, Storage, Packaging, Preservation and --No change to General Requirements

10. Control of Quality Records, Documents and Data--No change to General Requirements

11. Sampling Techniques--No change to General Requirements

12. Control of Key Characteristics--No change to General Requirements
Appendix V Requirements for Non-Functional/Non-Structural Sheet Metal Assemblies

Scope

These requirements pertain to the inspections, tests and process controls necessary to substantiate product conformance for Boeing A&M – St Louis, designed Non-Functional/Non-Structural Sheet Metal Assemblies henceforth referred to as material. The Supplier is to refer to the General Requirements of A0436 in addition to this Appendix, for development of the supplier’s inspection system.

Requirements

1. Purchasing
   1.1 General - No change to General Requirements
   1.2 Critical Material - No change to General Requirements
   1.3 Material Substitutions--Not Applicable

2. Contract Review --No change to General Requirements

3. Use of Approved Process Sources --No change to General Requirements

4. Inspection and Testing--Not Applicable

5. First Article Inspection--Not Applicable

6. Control of Inspection, Measurement and Test Equipment and Media of Inspection Tooling –No change to General Requirements

7. Control of Nonconforming Material--No change to General Requirements

8. Corrective Action--No change to General Requirements

9. Handling, Storage, Packaging, Preservation and Delivery--No change to General Requirements

10. Control of Quality Records, Documents and Data--No change to General Requirements

11. Sampling Techniques--No change to General Requirements

12. Control of Key Characteristics--No change to General Requirements
Appendix VI Requirements for Flight Test Hardware

Scope

These requirements pertain to the inspections, tests and process controls necessary to substantiate product conformance for Boeing A&M – St Louis, designed flight test hardware henceforth referred to as material. The Supplier is to refer to the General Requirements of A0436 in addition to this Appendix, for development of the supplier’s inspection system.

Requirements

1. Purchasing
   1.1 General - No change to General Requirements
   1.2 Critical Material - No change to General Requirements
   1.3 Material Substitutions--Not Applicable

2. Contract Review ---No change to the General Requirements

3. Use of Approved Process Sources
   3.1. Use of only Boeing Approved Sources is not required. Supplier is responsible for selecting capable sources for special processes.
   3.2. Supplier shall use appropriate Military or Industry Specifications (in the absence of a Military Specification) for processing unless otherwise specified in the purchase contract.

4. Inspection and Testing--Not Applicable

5. First Article Inspection--Not applicable

6. Control of Inspection, Measurement and Test Equipment and Media of Inspection Tooling
   6.1. Supplier’s Inspection, Measurement and Test Equipment shall be controlled and calibrated to the appropriate standards.
   6.2. MOI Tooling - Not Applicable

7. Control of Nonconforming Material--The supplier shall not deliver discrepant material to Boeing A&M - St. Louis

8. Corrective Action--No change to General Requirements

9. Handling, Storage, Packaging, Preservation and Delivery--No change to General Requirements

10. Control of Quality Records, Document and Data--No change to General Requirements

11. Sampling Techniques--No change to General Requirements

12. Control of Key Characteristics--No change to General Requirements
Appendix VII Requirements for Aerospace Equipment and Simulator Parts/Non-Electrical

Scope

These requirements pertain to the inspections, tests and process controls necessary to substantiate product conformance for Boeing A&M – St Louis, designed aerospace equipment and simulator parts/non-electrical henceforth referred to as material. The Supplier is to refer to the General Requirements of A0436 in addition to this Appendix, for development of the supplier’s inspection system.

Requirements

1. Purchasing--No change to General Requirements
   1.1  General - No change to General Requirements
   1.2  Critical Material - No change to General Requirements
   1.3  Material Substitutions--Not Applicable
2. Contract Review --Not Applicable
3. Use of Approved Process Sources --No change to General Requirements
4. Inspection and Testing--Not Applicable
5. First Article Inspection--Not Applicable
6. Control of Inspection, Measurement and Test Equipment and Media of Inspection Tooling —No change to General Requirements
7. Control of Nonconforming Material--No change to General Requirements
8. Corrective Action--No change to General Requirements
9. Handling, Storage, Packaging, Preservation and Delivery--No change to General Requirements
10. Control of Quality Records, Documents and Data--No change to General Requirements
11. Sampling Techniques--No change to General Requirements
12. Control of Key Characteristics--No change to General Requirements