Approvals	Signatures
Brendan J. Chambers Quality Manager	*(signature on file)*
Tom Browning Materials Manager	*(signature on file)*
Ed Wallace Engineering Manager	*(signature on file)*
Travis Gift Management Representative	*(signature on file)*
John Powers Director, Manufacturing	*(signature on file)*
David Udovich Director, Quality	*(signature on file)*
Jeff Petras President	*(signature on file)*

1. Overview

1.1. Purpose

1.1.1. The Technifab Requirements and Expectations for Suppliers Document (TRES Document), defines, illustrates and explains quality and procurement requirements for tier 1, sub-tier suppliers and processors on product purchased for fly-away applications.

1.2. Scope

1.2.1. The TRES Document is invoked by direct reference on the purchase order.

1.2.2. No deviation from these requirements is permitted unless specifically authorized in writing by Technifab Quality Assurance (QA) Management for quality or engineering specific clauses or by Technifab Materials Manager for procurement specific clauses.

1.2.3. This TRES Document revision as noted in the footnote below replaces all previous versions.

1.2.4. Suppliers and processors shall flow down all applicable TRES Document requirements to all sub-tier suppliers and/or processors.

1.3. Requirements Conflicts

1.3.1. In the case where requirements of this manual are in conflict with the requirements of engineering drawing/models, specifications or contracts with Original Equipment Manufacturers (OEM), the latter requirements shall take precedence.

1.3.2. In the case where requirements of this manual are further emphasized and/or tightened by specific call out on TFI's purchase order, the purchase order requirements shall take precedence.

1.3.3. Suppliers shall not guess or interpret drawing/model/part marking etc. if conflict or confusion exists. Contact the assigned TFI QA representative or TFI Procurement representative to initiate the process of clarification.

1.3.4. To resolve conflicts or for interpretation, the supplier or processor may submit an Engineering Change Proposal Request (ADM-03) to the Technifab buyer. The ADM-03 shall be properly completed including the reason or the justification for the ADM-03. The ADM-03 shall be returned to the originator to complete if required information is missing.

1.3.4.1. ADM-03 Change Form can be downloaded from Technifab's website: http://technifabinc.com/.

1.3.5. Requested changes shall not be implemented until official engineering release has been received from Technifab.

2. Table of Contents

3. Revisions Change Log

Revision Level	Revision Date	TRES Reference	Comments / Changes
ORG	09/27/2013	ALL	Details of this revision are listed on "TFI Supplier Quality Alert 130927-01 (Initial Release of TRES)"

4. Definitions

4.1. **5 Why:** The 5 why's process refers to the practice of asking up to five times why a failure occurred in order to get to the root cause/causes of a problem (the actual number of why's is not as important as arriving at the root cause).
4.2. **ADM-03:** TFI's Engineering Change Proposal Request
4.3. **ADM-04:** TFI's Corrective Action Form
4.4. **ADM-06:** TFI's Nonconforming Record
4.5. **Approved Supplier Status:** see "Supplier Status"
4.6. **APQP:** Advanced Product Quality Planning. Qualitative methodology used to move a product or process from concept to full deployment with emphasis toward meeting customer needs.
4.7. **AS9003** - Aerospace Standard for Inspection and Test Quality System
4.8. **ATP:** Acceptance Test Procedure
4.9. **BAA:** Bilateral Airworthiness Agreements are executive agreements concluded prior to 1996 through an exchange of diplomatic notes between the U.S. Department of State and its foreign counterpart based on FAA technical recommendations.
4.10. **Berry Amendment:** The DFARS clause 225.222-7014, Preference for Domestic Specialty Metals requires that any specialty metals incorporated into articles to be delivered to the DoD shall be melted in the United States, its possessions or Puerto Rico or in certain qualifying countries. (Note: all steels used for TFI components are considered "specialty metals")
4.11. **Cause-Effect/Fishbone/Ishikawa diagrams:** This approach is used in identifying and organizing the possible causes of a problem. The brainstorming focuses on machine, environment, human, measurement, and method.
4.12. **CA:** Corrective Action
4.13. **CoA:** Certificate of Analysis. A document that reports and certifies the test results of a product.
4.14. **CoC:** Certificate of Conformance: A document that certifies the supplied product meets required specifications.
4.15. **Conflict mineral:**
(A) columbite-tantalite (coltan), cassiterite, gold, wolframite, or their derivatives; or
(B) any other mineral or its derivatives determined by the United States Secretary of State to be financing conflict in the Democratic Republic of the Congo or an adjoining country.
4.16. **Counterfeit parts:** product that is or contains items misrepresented as having been designed and/or produced under an approved system or other acceptable method. The term also includes approved work that has reached a design life limit or has been damaged beyond possible repair but is altered and misrepresented as acceptable.
4.17. **Critical Parts:** Any part identified with a key characteristic as defined by TFI, air worthiness or flight safety, with a history of nonconformances and/or escapes or identified as critical by the customer.
4.18. **D1-4426:** Boeing Approved Process Sources
4.19. **Disclosure:** A notification by a supplier or processor of a discrepancy on product which has already shipped to TFI or TFI's customer.
4.20. **DSQAR:** Designated Supplier Quality Assurance Representative
4.21. **DoD:** Department of Defense
4.22. **EAR:** Export Administration Regulations. Generally, commercial exports from the United States are covered by the EAR and are administered by the Bureau of Industry and Security (BIS) at the U.S. Department of Commerce.
4.23. **ECN:** Engineering Change Notice.
4.24. **Escape:** Nonconforming product presented to a TFI Quality Representative or delivered to either a TFI facility or a TFI customer.
4.25. **FAA:** Federal Aviation Administration
4.26. **FAI:** First Article Inspection
4.27. **FAIR:** First Article Inspection Report
4.28. **FAR:** Failure Analysis Report
4.29. **Final acceptance mark/marking:** A signature and date as a minimum or a stamp and date for those suppliers with a Stamp Control Process document as part of the supplier's/processor's QMS.
4.30. **Final acceptance stamp:** A rubber ink stamp that is used to identify the appropriate personnel that can authorize final acceptance and shipment.
4.31. **Flight Safety Parts:** Any part, assembly or installation whose failure, malfunction or absence would cause loss of or serious damage to the aircraft and/or serious injury or death to the occupants.
4.32. **FMEA:** Failure Mode Effect Analysis. D/P (Design or Process) FMEA is a risk assessment tool that examines potential product or process failures, evaluates risk priorities, and helps determine counteractive actions to avoid the identified problems.

4.33. **Flowdown:** the process of ensuring that all levels of sub-tier suppliers receive ALL detailed information to properly plan, manufacture, process, and ship product. This includes engineering drawings, specifications and quality requirements.
4.34. **FOD:** Foreign Object Debris or Foreign Object Damage.
4.35. **FTP:** File Transfer Protocol: The standard protocol used to transfer files across the Internet, or a similar network, between computer systems.
4.36. **Dropbox:** A secure Internet based FTP site used by TFI.
4.37. **Inventory Replenishment:** TFI process used to reorder regularly stocked products. This is a pull process and replenishment orders are a result of the material being consumed.
4.38. **ITAR:** International Traffic in Arms Regulations
4.39. **Key characteristics:** per SAE AS9103 (ref. section. 3.1 of the standard).
4.40. **Manufacturing Planning Sheet (MPS):** Steps and instructions for product realization.
4.41. **May:** a clause that contains the verb "may" is strongly recommended.
4.42. **Model:** A three dimensional electronic representation of a part or assembly.
4.43. **Nadcap:** (formerly National Aerospace and Defense Contractors Accreditation Program) an international standards setting organization for the aerospace and other industries regarding special processes.
4.44. **NDT requiring Level 3 approval:** Nondestructive testing as defined on TFI's purchase order (typically, magnetic particle, x-ray, or ultrasonic inspection techniques used to inspect parts).
4.45. **Nonconformance record (NCR):** A process used to document nonconforming product for review and disposition by Technifab. For TFI, the ADM-06 form is used.
4.46. **OEM:** Original Equipment Manufacturer
4.47. **Phytosanitary:** Guidelines for regulating wood packaging material in international trade (ISPM15) to prevent the spread and introduction of pests of plants and plant products
4.48. **PMRB:** Preliminary Material Review Board.
4.49. **Prime:** Airframe Customer (i.e. Boeing, Lockheed, and Airbus)
4.50. **Probational Supplier Status:** see "Supplier Status"
4.51. **Process Control Plans:** Living document that outlines how inputs/outputs of the process steps are controlled in order for the end product to meet customer expectations.
4.52. **Processor:** An organization that provides processing or services for TFI products. (typically airworthy products for aircraft installation). See the "Special Processing" definition.
4.53. **Proprietary products:** products designed by the supplier.
4.54. **QM-02:** Technifab's Requirements and Expectations for Suppliers (TRES)
4.55. **QMS:** Quality Management System
4.56. **Recipe Cards:** Form or document used to identify materials or components to make a product/assembly.
4.57. **RPN:** Risk Priority Number. A formulated value used in various quality analyses such as an assessment of supplier performance, to quantify risk, to manage the Continuous Improvement process, or to provide insight into the relative value or significance of a particular fault or failure.
4.58. **SHALL:** a clause that contains the verb "shall" is a mandatory requirement (will result in a major audit finding if not in place)
4.59. **Source Inspection Checklist (VM-03):** This is an audit designed to stop discrepant material from shipping to TFI or its customers by means of detailed product verification checklist.
4.60. **Special Processes/Processing:** mechanical, chemical or testing operations performed on a part (e.g. grinding, anodizing or NDT)
4.61. **SPC:** Statistical Process Control.
4.62. **SQR:** Supplier Quality Representative
4.63. **Standard Component Hardware:** A part or material that conforms to an established industry or national authority published specification, having all characteristics identified by text description, National/Military Standard Drawing, or catalog item.
4.64. **Sub-tier:** An organization that provides product or performs processing or services subcontracted by the TFI purchase order holder (Tier 1).
4.65. **Supplier:** An organization that provides product which will be part of or support TFI's products or performs processing or services for TFI products. (typically airworthy products for aircraft installation).
4.66. **Supplier/Processor Status and Risk:** TFI uses the following supplier/processor risk and status levels:
4.66.1. **Risk Level Low:**
- The supplier/processor QMS is certified to AS9100 (AS9102 or ISO9001 for distributors) requirements.

- Full Approval is granted and the organization is added to TFI's Approved Supplier List after on-site qualification assessment.
- Performance shall be monitored per Technifab Supplier Management Process (QM-02).

4.66.2. **Risk Level Moderate:**

- The supplier/processor QMS is not fully compliant, but the QMS is capable of supporting Technifab, Inc. product realization requirements.
- Probational approval shall be granted after on-site qualification assessment and the organization shall be identified on TFI's Approved Supplier List as Probational Status.
- Performance shall be monitored for transition to Full Approval by TFI's Supplier Watch List process.

4.66.3. **Risk Level Moderate:**

- The supplier/processor QMS is not fully compliant, but the QMS is capable of supporting Technifab, Inc. requirements with minor corrective actions and/or major corrective actions not adversely affecting product realization.
- After on-site qualification assessment, a risk mitigation continuous improvement plan shall be provided by the organization to Technifab for review and approval.
- Probational Approval shall be granted after on-site qualification assessment and the organization will shall be identified on TFI's Approved Supplier List as Probational Status.
- Performance shall be monitored for transition to Full Approval by TFI's Supplier Watch List process.

4.66.4. **Risk Level High:**

- The supplier/processor is not fully compliant, has a QMS potentially capable of supporting Technifab, Inc. requirements, but has deficiencies that could adversely affect product realization.
- After on-site qualification assessment, finding(s)/corrective action(s) shall be issued and a risk mitigation continuous improvement plan shall be provided to Technifab for review and approval.
- Probational approval shall be granted after follow-up on-site qualification assessment. This will include verification of effectiveness of implemented corrective action(s) and the successful implementation of appropriate risk mitigation action(s). The organization shall be identified on TFI's Approved Supplier List as Probational Status.
- Performance shall be monitored for transition to Full Approval by TFI's Supplier Watch List process.

4.66.5. **Risk Level High:**

- The supplier is not compliant and not judged to be capable of achieving compliance.
- Approval not granted

4.66.6. **HOLD Status:** a supplier/processor status where payment to the supplier/processor MAY be withheld until the condition causing the hold status is resolved.

4.66.7. **PROBATIONAL Status:** a supplier/processor status where TFI shall monitor the supplier/processor performance more closely using a combination of remote and on-site risk mitigation techniques.

4.67. **TFI:** Technifab, Inc.
4.68. **TMS:** Technifab Material Specification
4.69. **TPS:** TFI Processing Specification
4.70. **Tier 1:** TFI purchase order holders
4.71. **TRES:** Technifab's Requirements and Expectations for Suppliers
4.72. **Verify/Verification:** the authentication of compliance to specification based on facts, analysis, test results, statements, citations, etc.
4.73. **Validate/Validation:** the actual performance of intended use or actual measurement of the final product.
4.74. **VM-02:** TFI's Supplier Questionnaire Form
4.75. **VM-03:** TFI's Source Inspection Checklist
4.76. **VM-04:** TFI's Supplier Certification and Process Record

5. General Requirements

5.1. General Requirements for Suppliers

5.1.1. Suppliers shall maintain a Quality Management System (QMS) that complies with applicable requirements of SAE AS9100 (current revision) or its European equivalent (ISO EN9100).

5.1.2. Suppliers that provide special process services (i.e. anodizing), shall maintain a Quality Management System that complies with the applicable requirements of ISO 9001 (current revision).

5.1.3. TFI's expectation is that all approved suppliers shall have a Quality Management System that is registered to SAE AS9100 (current revision) or is actively pursuing certification:

5.1.3.1. An accredited registrar shall be used (verified through IAQG OASIS).
5.1.3.2. Suppliers that provide end item products for Lockheed Martin programs shall maintain AS9120 registration (current revision)
5.1.3.3. The supplier shall provide a copy of their QMS manual/document in English upon request.

5.1.4. Exceptions to AS9100 registration may be granted and subject to TFI Source Inspection and watchlist control as follows:
5.1.4.1. Criticality of product
5.1.4.2. Critical business needs
5.1.4.3. Type of products provided
5.1.4.4. Size of manufacturing facilities/number of employees
5.1.4.5. Proprietary Supplier
5.1.4.6. Customer Mandated Source (e.g. D1-4426)
5.1.4.7. Other (for example, tooling, ground support equipment, or small non-complex components)

5.2. General Requirements for Processors

5.2.1. All TFI approved processors' quality systems shall be compliant to the current revision of AS9003 (as a minimum) or AS9100/AS9110 (preferred).
5.2.2. All TFI approved processors shall complete and maintain accreditation of special processes to Nadcap.
5.2.3. Nadcap accreditation exceptions shall be based on a TFI Quality management review. Suppliers and processors shall submit a request for waiver to this requirement in writing to TFI QA management.

5.3. TFI Audit Surveillance of Suppliers and Processors

5.3.1. Surveillance shall be based on periodic timeframe and/or risk analysis/performance indicators. (See Definitions section for Supplier and Processor Risk Levels)

5.4. Quality Record Retention:

5.4.1. Suppliers and processors and their sub-tiers shall define their responsibilities to retain active and inactive records in a record management procedure.
5.4.2. The procedure shall include the archiving, security and retrieval policies associated with internal/external record management.
5.4.3. Methods shall be in place to prevent tampering or loss of records.
5.4.4. A digital archive of data is preferred.
5.4.5. In the absence of other contract specific criteria, quality records are to be maintained for no less than 10 years past the end of the contract.
5.4.6. TFI Quality Assurance is to be notified in writing at least 2 months prior to planned destruction of records pertaining to product supplied to TFI.
5.4.7. At the end of the product life cycle and with the agreement of the appropriate authorizing personnel within TFI the records may be destroyed.
5.4.8. Shredding has been determined as the preferred method of destruction of approved records.
5.4.9. Evidence of the disposal of the records shall be kept no less than 10 years from the date of disposal.
5.4.10. Records that are potentially the subject of or relevant to, pending litigation or litigation which is reasonably anticipated shall not be disposed until approval is obtained from TFI and from the document owner (if the owner is different from the supplier or processor).
5.4.11. In case of termination or operation (takeover, transfer of ownership and joint venture), suppliers and processors shall define and implement the new responsibilities of record archiving, including the possible transfer to the owner as applicable.
5.4.12. In case of bankruptcy, the supplier/processor shall ensure that archived records are maintained accessible for its customers and the Regulatory authorities, including their possible transfer to them.

5.5. Right of Access:

5.5.1. The supplier and processor shall provide access for TFI personnel, government and civil aviation authorities, and customers to their facilities, personnel and records when requested as required for quality and management systems reviews, product/process validation evaluations or investigations.
5.5.2. The supplier and processor shall flow down this requirement to all their sub-tier suppliers/processors

5.6. ITAR and EAR compliance:

5.6.1. Suppliers, Processors and their sub-tiers shall ensure compliance to ITAR and EAR requirements when handling TFI parts and documentation so designated by TFI.

5.7. Transfer of Information:

5.7.1. Any and all proprietary information and ITAR information shall be transferred between TFI and outside sources via secure FTP (e.g. TFI Dropbox or Boeing Message Courier) or by way of CD through any reliable delivery service (e.g. DHL, USPS, UPS or FEDEX). On site transfers may be done by way of direct transfer via USB flash drive.

5.7.2. The transfer methods listed above shall apply for the following technical and/or proprietary information/documents:

- 5.7.2.1. TFI supplied specifications
- 5.7.2.2. Technifab data such as Models, Drawings, TFI Change Request (ADM-03), and parts lists
- 5.7.2.3. First Article Inspection Reports for both 2D drawing & Model Based Definition (3-D Modeling)
- 5.7.2.4. Alteration or repair of TFI or TFI customer tooling/gages/fixtures
- 5.7.2.5. TFI Failure Analysis Report (FAR)
- 5.7.2.6. Supplier Corrective Action Requests (SCARs)
- 5.7.2.7. Change Request (ADM-03)
- 5.7.2.8. Corrective Action Form (ADM-04)
- 5.7.2.9. Nonconforming Record (ADM-06)
- 5.7.2.10. Manufacturing Plans (PCP)
- 5.7.2.11. Technique Sheets
- 5.7.2.12. Disclosures
- 5.7.2.13. Service and Warranty Information
- 5.7.2.14. D/P FMEA

5.8. Contract Review

5.8.1. Suppliers/Processors shall have documented evidence of feasibility review of the contract which shall include at a minimum:

- 5.8.1.1. Review that all technical information has been received and understood (for example, TRES Document, engineering drawings, and process specifications).
- 5.8.1.2. Quality Management System (QMS) assessment
- 5.8.1.3. Resource assessment
- 5.8.1.4. Capability assessment
- 5.8.1.5. Capacity analysis

5.9. Material Substitutions

5.9.1. Material substitutions are not allowed unless authorized by engineering drawing/model material specification.

5.9.2. Suppliers may request a material substitution by completing an Engineering Change Request (ADM-03) form and submitting the completed form to the applicable buyer:

- 5.9.2.1. The ADM-03 shall be properly completed including the reason or the justification for the ADM-03. The ADM-03 shall be returned to the originator to complete if required information is missing.
- 5.9.2.2. The results of a TFI review of the request shall be forwarded to the supplier.
- 5.9.2.3. ADM-03 Change Form can be downloaded from Technifab's website: http://technifabinc.com/.

5.9.3. Counterfeit parts:

- 5.9.3.1. Suppliers shall ensure that counterfeit parts are not delivered to TFI and/or TFI customers.
- 5.9.3.2. Suppliers shall ensure that suspect unapproved parts are not delivered to TFI and /or TFI customers.

5.10. Standard Components

5.6.1. Suppliers of standard hardware shall maintain traceability to actual manufacturer and manufacturing lot.

5.6.2. Supplier shall ensure the standard hardware delivered to TFI conforms to the latest specification or configuration requirements.

5.11. Offload or Work Transfer

5.11.1. Overview:

- 5.11.1.1. Tier 1 Suppliers shall ensure the capability of all offload sub-tiers and the quality of all product.
- 5.11.1.2. If a processor is used, that special processor is:
  - 5.11.1.2.1. Listed on TFI's approved processor list.
  - 5.11.1.2.2. Listed on the end customer's (for example, Boeing, Lockheed, Gulfstream) website as an approved processor.
  - 5.11.1.2.3. Is approved for the process specification being performed.

5.11.2. Supplier/Processor Flow down of information:
5.11.2.1. When a supplier to TFI uses a sub-tier, the following information shall be included on the supplier's purchase order to that sub-tier (ref. "TFI Supplier Source Inspection PCP" checklist located on TFI's Dropbox).

5.12. TFI Supplier Quality Assurance "Quality Alerts"

5.12.1. When specified; suppliers and/or processors shall be in compliance to "Quality Alerts" requirements. Compliance is required immediately or as per the effectivity date listed in the alert. Suppliers and/or processors shall:
5.12.1.1. Review the requirements listed in the alert
5.12.1.2. Determine contractual impact (if any) of the alert
5.12.1.3. Notify the applicable TFI buyer of the impact (if any)
5.12.1.4. Take necessary actions to ensure compliance to requirements of the alert
5.12.1.5. If requested to do so, respond in a timely fashion as outlined in the alert

5.13. Applicable Engineering Data

5.13.1. Material or parts shall be manufactured/processed to the latest material or process specification revisions in effect at the time of commencement of the manufacture/processing.
5.13.1.1. Use of an obsolete TFI source authority is not acceptable unless authorized by TFI Engineering. Written authorization is required prior to any performance of the older version requirements.
5.13.1.2. Should a TFI customer controlled specification have a formally released revision later than noted on the index, written authorization from TFI is required prior to any performance of the newer version requirements.
5.13.2. Specifications and revision level applicable to product being manufactured to meet TFI and TFI Customer requirements is available from TFI. Contact TFI for the latest revision of Source Authority via supplierquality@technifabinc.com.
5.13.3. When the contractual authority for TFI product is defined by Model Based Definition, the supplier shall submit prior to manufacturing a Configuration Management Process for approval by TFI.

5.14. Configuration Management

5.14.1. Suppliers/Processors shall ensure they are working to current information (POs) and/or revision (drawing).
5.14.2. Suppliers/Processors shall respond to/or act on changes ONLY from an official TFI supplier representative (TFI Buyer or TFI Quality Assurance) on an official TFI correspondence:
5.14.2.1. Examples of changes: ship date changes, quantities changes, revision level of parts/prints, dispositions
5.14.2.2. Examples of official correspondence: updated PO or ADM-06 disposition
5.14.3. Supplier/Processor shall contact an official TFI supplier representative for direction/information received from any other TFI employee.
5.14.4. Revision and Change Control:
5.14.4.1. Supplier shall have a defined process to review and incorporate drawing revisions/changes.
5.14.4.2. The supplier and processors shall roll up the revision levels and document these changes in the revision table whenever any type of change is made.

5.15. Supplier Performance Parameters

5.15.1. Cooperation and timely response to order placement
5.15.2. Sense of urgency with quotation response
5.15.3. Quick response when less than lead time execution is required due to TFI customer driven critical demand
5.15.4. Effective technical support
5.15.5. Resolution and corrective action on quality issues
5.15.6. Resolution and corrective action on delivery issues
5.15.7. Demonstration of continuous improvement with quality and delivery performance
5.15.8. Effective inventory replenishment support
5.15.9. Effective cost control and value engineering to improve competitiveness

6. General Procurement Requirements

6.1. Payment Terms

6.1.1. TFI typically pays per terms
6.1.2. If cash discounts are offered TFI shall take advantage

6.2. Delivery

6.2.1. 100% On-time delivery is expected to Purchase Order (PO) due date

6.2.2. Delivery performance is based on zero days late and no greater than 5 business days early
6.2.3. Corrective actions shall be issued for chronic delivery issues.
6.2.4. Failure to maintain acceptable performance may result in formal quality and delivery improvement plan, supplier suspension or termination of business.

6.3. Pricing and Quotation

6.3.1. A quote is to be written in a formal document and submitted to Technifab buyer for approval prior to any work being performed.
6.3.1.1. Contact TFI buyer via supplierquality@technifabinc.com
6.3.2. Pricing is based on negotiated purchase orders, contracts and/or blanket orders which shall not be changed without mutual agreement.
6.3.3. All prices shall be protected. Unless otherwise agreed to, a 90 day notification is required in writing before any increase goes into effect.
6.3.4. Test samples shall be quoted based on agreed to quantity pricing

6.4. Non-Disclosure Agreements

6.4.1. A formal, written agreement may be required to control disclosure of information when TFI and a supplier work together to develop, modify or alter new or existing product, material or process.
6.4.2. TFI shall be considered a confidential account and TFI identity shall not be discussed outside contractual agreements.
6.4.3. Information provided to TFI by a supplier regarding terms of sale and price shall be considered confidential and shall not be disclosed to other suppliers.
6.4.4. Products that are made to TFI specifications are to be considered proprietary to TFI. No offering or supply is to be made to other parties.

6.5. Freight

6.5.1. Where premium freight is required by the supplier to comply with scheduled delivery dates, the supplier shall document the causes of the premium freight and drive corrective action to eliminate future recurrence.
6.5.1.1. If a TFI order honors the supplier's lead time, the supplier pays if premium freight is used.
6.5.1.2. If TFI orders inside the supplier's lead time, supplier shall notify TFI for premium freight approval.
6.5.2. Unauthorized over/under and rejected shipments are subject to return at the supplier's expense. TFI reserves the right to adjust the supplier's invoices with appropriate due dates and values in the event of an over shipment or missed required/scheduled date.
6.5.2.1. Acceptable quantities over PO: standard hardware plus or minus 10% of the order quantity.
6.5.3. Freight terms for inbound shipments shall be specified by TFI.

6.6. Ethical Conduct

6.6.1. All purchasing transactions shall be performed in a fair, ethical and honest manner.

6.7. Inventory Replenishment Agreement

6.7.1. Strategic Suppliers that have entered into Inventory Replenishment Agreements shall refer to terms, policies and procedures agreed upon in the Inventory Replenishment Agreement.

6.8. Inventory Replenishment Expectations

6.8.1. Suppliers shall have the agreed upon items, at the right quality level, delivered in the exact quantity readily available on the supplier's floor to support TFI's replenishment system.
6.8.2. Technifab shall communicate the quantity in each replenishment bin.
6.8.2.1. Suppliers shall consider a replenishment method or min/max reorder point inventory position to support Technifab's replenishment system.
6.8.2.2. Suppliers shall set a product batch size that is larger than one of Technifab's replenishment bin size.
6.8.3. The supplier shall immediately notify the appropriate purchasing or material representative of any inability to meet the ship schedule.
6.8.4. The supplier shall proactively communicate when there are potential issues in meeting demand requirements, including specific potential issues in the supplier's own supply chain.
6.8.5. Suppliers are expected to report monthly on the parts and quantities in MRB to assess inventory impact.

7. Raw Materials

7.1. Raw Material Scope

7.1.1. This section applies to those suppliers who supply raw materials directly to TFI and TFI's suppliers.

7.2. Testing

7.2.1. Suppliers shall have a method to test each batch/heat/lot of material.
7.2.2. Test results shall be listed on all Certificates of Conformance/Certificates of Analysis

7.2.3. Suppliers shall conduct annual raw material verifications.

7.3. Approval of raw material suppliers

7.3.1. TFI shall base approval of the raw material suppliers (listed in the scope) on the following:

7.3.1.1. ISO 9001 certification and QMS audit results

7.3.1.2. Initial mail survey (VM-02)

7.3.1.3. On-site audits (if required)

7.3.2. Raw Material Traceability:

7.3.2.1. All raw material shall be identified with the heat or lot number, purchase order number, or color code as appropriate;

7.4. Material traceability

7.4.1. Material traceability (heat or lot) shall be transferred to the unused raw material prior to storage.

7.5. Foreign Material Requirements:

7.5.1. Special requirements apply to material produced in company(s) located in a country other than the United States or Canada and the country does not have a Bilateral Airworthiness agreement (BAA) for the product being supplied. Suppliers intending to purchase raw material stock, forgings, castings and standard hardware from sources outside North America shall notify their assigned TFI Buyer and obtain concurrence from TFI Engineering prior to commencing the procurement activity.

7.5.2. All suppliers providing parts for U.S. Military programs shall conform to the Berry Amendment requirement which requires any specialty metals incorporated into articles to be delivered to the Department of Defense (DOD) shall be melted in the United States, its possessions, or Puerto Rico, or in certain quality countries (note: all steels used for TFI components are considered “specialty metal”).

7.5.3. All suppliers providing parts to TFI shall comply with Conflict Minerals as defined in 2010 United States legislation, Dodd-Frank Wall Street Reform and Consumer Protection Act, Section 1502(e)(4).

8. Identification

8.1. Part Marking and Serialization

8.1.1. Part marking and serialization shall be identified in the supplier’s process control plan/manufacturing documentation for all parts.

8.1.2. If applicable, TFI shall flow down the TFI customer’s (for examples, Boeing, Lockheed, Gulfstream) part number as required by the engineering drawing and specification requirements.

8.1.2.1. TFI Quality Assurance shall be contacted during the contract review planning process or prior to final application if there are any questions as to the specific identification requirements, content, method or orientation.

8.1.3. All product identification (including permanent etching) shall be clearly legible.

8.1.4. Non serialized parts shall be identified with date of manufacture (DOM i.e. MM/YY), batch or lot number.

8.1.5. Country of origin shall be identified on all imported parts/components (products, bags or tags) in accordance with U.S. Customs regulation19 CFR Part 134.11 (e.g. “Made in China,” “Product of Japan,” “Assembled in Italy”).

8.1.6. Parts requiring serialization shall be identified with unique serial numbers.

8.1.7. Serial numbers shall remain unique and consecutive for each engineering drawing / model part number regardless of revision.

8.1.8. The TFI manufacturer’s identification code is 4AWS0 (Avon, OH)

8.1.9. Supplier Manufacturing codes shall not be used unless specifically called out on the engineering drawing part marking specification requirement.

8.1.10. When serial number traceability is required by design requirements, applicable serial numbers shall be identified on all supplier and supplier’s sub-tier quality records (i.e. travelers and process certifications).

8.1.11. Application of drawing / model revision letters on product is only allowed when required by purchase order, engineering drawing / model or specification.

9. Process Control

9.1. Manufacturing Plans and Techniques

9.1.1. Manufacturing plans (MPS) shall be generated for all individual components and assemblies when the supplier is manufacturing to an engineering drawing / model and does not have design authority.

9.1.2. The planning shall include the minimum engineering data references (specification, flag note, etc.) necessary to control and produce the parts (developmental aids including a manufacturing planning template are available from TFI upon request):

9.1.2.1. This shall include all of the machining, processing, test and inspection operations necessary to complete the part to the purchasing order and engineering requirements.
9.1.2.2. This also includes applicable satellite plans and techniques from sub tier suppliers and processors.
9.1.3. Manufacturing plans (MPS) requiring TFI approval shall be submitted prior to start of manufacturing;
9.1.3.1. The submittal shall identify at a minimum:
9.1.3.1.1. Part Number
9.1.3.1.2. Supplier Name
9.1.3.1.3. Program
9.1.3.1.4. Special Process Techniques with processor and revision level
9.1.3.2. See clause 5.7. for TFI's authorized methods to transfer information
9.1.3.3. Planning submitted to any destination other than the authorized methods noted shall not be reviewed.
9.1.4. Any manufacturing performed prior to planning approval shall be performed at the supplier's risk.

9.2. Planning Format and Retention

9.2.1. The manufacturing planning shall be retained on file at the supplier's manufacturing facility, and shall be available upon request by TFI and/or its customers.
9.2.2. The planning text shall be in English and include the following details as a minimum:
9.2.2.1. Name of applicable manufacturer with facility address.
9.2.2.2. Full part number including dash number. When purchase orders refer to part numbers other than the design engineering part number, the planning shall clearly reference both part numbers.
9.2.2.3. Engineering drawing / model revision level.
9.2.2.4. Planning revision table including revision dates and descriptions of changes and traceability to the individual making the change. All planning changes shall be documented, including editorial changes to correct typographical errors or minor editorial changes.
9.2.2.5. Raw material identification, raw material specification, raw material treatment.
9.2.2.6. All operations shall be noted in their proper manufacturing sequence, including all inspection and test points.
9.2.2.7. Optional sequences or operations shall be defined in the planning.
9.2.2.8. Part identification including method, location, orientation and text. All identification shall be applied prior to final inspection.
9.2.2.9. Operations that are required to be performed per a particular specification shall list that specification as part of the operation description in the planning.
9.2.2.10. Special process operations shall list the name and location of the processor, applicable specifications and specific parameters (i.e.: type, class, as applicable).
9.2.2.11. Special processes & sources for special processing shall be controlled & approved. (Ref section 16)
9.2.2.12. All thermal processing shall be listed as a separate operation (i.e., embrittlement relief, stress relief, etc.). Required times, conditional delay requirements and temperatures shall be noted.
9.2.2.13. All NDT techniques for nondestructive testing as defined on TFI's purchase order (typically, magnetic particle, x-ray, or ultrasonic inspection techniques used to inspect parts) shall be approved by a recognized NDT Level 3 authority.

9.3. Planning Review Frequency

9.3.1. All manufacturing plans and techniques shall be reviewed by the supplier after any process change and at least every three years to ensure compliance to current engineering and specification requirements.

9.4. Special Processes Requiring TFI Review

9.4.1. When any of the following special processes are used in planning that is required to be submitted to TFI for review, techniques shall be submitted as a portion of the manufacturing planning submittal:
9.4.1.1. Chrome grind
9.4.1.2. Heat treat
9.4.1.3. Shot peen
9.4.1.4. Welding
9.4.1.5. Plating
9.4.1.6. Coatings
9.4.1.7. Non Destructive Testing
9.4.2. Special Process techniques shall be submitted for review and approval in accordance with specification and / or Program requirements regardless of whether or not the base material meets the requirements.

9.4.3. Planning shall only be submitted to TFI from the tier 1 holder of the TFI purchase order. Techniques from sub-tiers shall not be submitted directly to TFI.
9.4.4. Manufacturing plans submitted for TFI review and approval shall be complete and officially 'released' by the supplier (roll up the revision level and document these changes in the revision table).
9.4.5. TFI shall e-mail the supplier the results of the manufacturing plan review which shall have either the approval status or reason(s) for not being approved.
9.4.6. The supplier shall retain evidence of planning approval status.
9.4.7. Planning shall be revised as applicable and revisions documented until planning is approved by TFI.
9.4.8. Once planning is approved by TFI it shall be considered frozen. Any changes to approved planning shall be resubmitted for review and approval. All changes to planning, including editorial changes, shall be documented in a revision table.

9.5. Records of Manufacturing

9.5.1. The supplier and supplier's sub-contracted sources shall maintain manufacturing records that provide traceability to all manufacturing and inspection operations. These records shall clearly indicate material status and acceptability and shall include the following information as a minimum:
9.5.1.1. Part number, revision, and material traceability.
9.5.1.2. List of all serial numbers (if serialized) or quantity of parts (if non-serialized).
9.5.1.3. Clear description of operations to be performed in the proper sequences to produce the completed product to include in process, receiving, and final inspections.
9.5.1.4. Record the number of parts accepted or rejected at each completed operation. Rejected serial numbers, if serialization is a requirement, and rejection documents/reports shall be noted adjacent to the applicable operation.
9.5.1.5. Record date of acceptance or rejection activity at each operation with operator's stamp or initials.
9.5.1.6. Clearly reflect the identification requirements, applicable specification, location, orientation, content and method.
9.5.1.7. When manufacturing lot quantities are reduced or "split", this activity shall be recorded at applicable operations on both the original and on the new document (e.g. Shop Traveler). If serialization is required, the serial numbers remaining on the original and the serial numbers being transferred to the new traveler shall be clearly noted. The supplier's quality department shall approve split orders.
9.5.1.8. For operations performed by an outside source, record information traceable to source used, process purchase order, or certification number. Note: validation of any special process planning to ensure compliance to the specification parameters shall be accomplished prior to the actual process being performed. Objective evidence of the plan approval shall be retained and available upon request.
9.5.1.9. Evidence of any authorized rework activities.
9.5.1.10. Evidence of completion of PMRB disposition actions showing both TFI and TFI customer approval. Evidence shall be submitted by way of supplierquality@technifabinc.com.

10. Inspection and Testing

10.1. Product Inspection Status and Certification

10.1.1. Quality verification for all product and/or service purchased by TFI shall be performed at a TFI facility except when:
10.1.1.1. The TFI purchase order specifically states that TFI inspection shall be conducted at the supplier's facility by an assigned TFI Source Representative or an authorized TFI agent
10.1.1.2. The TFI purchase order specifically states TFI inspection shall be conducted at a TFI authorized third party site
10.1.1.3. The product is an Industry/Customer/catalog standard
10.1.1.4. A written waiver is authorized by TFI QA Management
10.1.2. The TFI Source Inspection Checklist (VM-03), section 1, shall be used where invoked by TFI's Supplier Management Process on the supplier by way of TFI's Purchase Order.
10.1.3. All products received by TFI shall have supplier's final acceptance marking or on the product or on the tag/package if product does not have an adequate feature/area/space for final acceptance marking.
10.1.4. All products presented for source inspection shall be accompanied by:
10.1.4.1. TFI purchase order
10.1.4.2. Supplier's packing slip
10.1.4.3. Certification of Conformance

10.1.4.4. Supplier Certification and Process Record (VM-04 or equivalent) form which details the material and special processes used for all details and sub-detail components of the ready-made part / assembly.
10.1.4.5. All material and process certifications.
10.1.4.6. When invoked on TFI's Purchase Order, TFI Source Inspection Checklist (VM-03), all sections 1 – 2 – 3, as applicable.
10.1.4.7. If applicable any TFI dispositioned NCR's (ADM-06), all sheets, with clear evidence as to completion of all repair steps, supplier final acceptance marking and date adjacent to each element of the disposition and additional information if requested in the body of the MRB disposition.
10.1.4.8. Objective evidence FAI has been completed (if appropriate).
10.1.4.9. Supplier's inspection records that reflect product review and acceptance.
10.1.4.10. Documentation shall be in English.

10.1.5. Documentation required with shipment:
10.1.5.1. Packing slip
10.1.5.2. VM-04 Supplier Certification and Process record or equivalent
10.1.5.3. Certification of Conformance / Certification of Analysis
10.1.5.4. Serial numbers to be included, if applicable
10.1.5.5. If applicable any NCR's (ADM-06) with all required buy offs – supplier final acceptance marking and date adjacent to each element of the disposition.
10.1.5.6. Proprietary suppliers require only a packing slip and Certificate of Conformance.

10.2. First Article Inspection

10.2.1. Requirements (Reference TRES Appendix A for FAI triggers):
10.2.1.1. First Article Inspection shall be performed per AS9102 Aerospace FAI Requirements. If an FAI cannot be performed on the first piece, then the FAI shall be performed on a representative part(s) from the first production lot. The record of this inspection is to include all characteristics and requirements specified by the engineering drawing / model(s) or other design media, including notes and specifications.
10.2.1.2. For any conflict or dispute as to the requirement to run "one part / first piece" to prove out the manufacturing and final processes, the supplier shall receive a written waiver signed by the TFI Quality Manager and the TFI Materials Manager (or their respective designees) prior to first piece run. If applicable, the TFI Engineering Manager's signature may be required if special process issues are involved.
10.2.1.3. "Delta" FAI shall be performed for any differences between the current configuration and prior approved configurations. When a partial, delta FAI is performed, only the affected changes shall be addressed making reference to the original FAI approval on file.
10.2.1.4. The next manufactured part shall be used for any FAI nonconformance resolution.
10.2.1.5. FAIR shall meet the latest revision requirements of SAE AS9102 and TFI requirements.
10.2.1.6. When invoked on TFI's Purchase Order, tier 1 suppliers shall provide a completed TFI Source Inspection Checklist (VM-03) as part of the FAI package for review and approval by TFI.
10.2.1.7. Parts that are manufactured using methods different from those intended for the normal production process shall not be considered as part of the "first production run" and therefore an FAI shall not apply. At a minimum, complete inspection of dimensions, physical properties and cosmetics shall be recorded as a baseline prior to test.
10.2.1.8. FAI and FAI Reports shall be made available for TFI Quality prior to shipment of product unless a written waiver authorization for change in location of verification or change to subsequent shipment is received from TFI Quality Assurance. TFI Supplier Representative shall place final acceptance marking, date and sign AS9102 form 1, final acceptance marking and date AS9102 form 3 first sheet as evidence of acceptance.
10.2.1.9. A copy of the approved FAI, bubbled engineering drawing and attachments, verification of product identification (photocopy or picture of the FAI markings), supplier Certificate of Conformance, VM-04 Supplier Certification and Process Record (or equivalent) for all details and top level assembly, and all material and process certifications shall be provided with the shipment.

10.2.2. Product certifications required with delivered FAI product:
10.2.2.1. Supplier's packing slip
10.2.2.2. Certification of Conformance / Certification of Analysis

10.2.2.3. AS9102A forms 1, 2 and 3.
10.2.2.4. Uniquely identified (bubbled) engineering drawing to include all attachments.
10.2.2.5. VM-04 Supplier Certification and Process Record form which details the material and special processes used for all details and assemblies.
10.2.2.6. All material and process certifications.
10.2.2.7. If applicable any TFI dispositioned NCR's (ADM-06), all sheets, with clear evidence as to completion of all repair steps, supplier final acceptance marking and date adjacent to each element of the disposition and additional information if requested in the body of the MRB disposition.
10.2.2.8. Where required, two copies of configuration sheets shall be provided with all assemblies of two or more components that list all details provided in the assembly, serial numbers if applicable, manufacturing date of cure dated materials, standard hardware and/or any grease or lubricants used.
10.2.2.9. Where required, copies of all required test records (ATP's) shall be provided with assemblies.
10.2.2.10. A Certification of Conformance shall accompany each shipment. The certification shall provide as a minimum: supplier name, part number (part number ordered if not the same as the supplier's internal part number), purchase order number, quantity of parts, engineering revision, serial numbers (if applicable), and title and signature of authorized supplier representative.
10.2.2.11. Certifications from a supplier sub tier shall provide traceability to the manufacturer and manufacturing lot.

10.2.3. First Article Inspection Using Model Based Definition (3-D Modeling):
10.2.3.1. It is the responsibility of the supplier to adhere to all AS9102 (current revision) requirements.
10.2.3.2. The Model Based Definition shall be the governing authority in the supplier's manufacturing, inspection, and all subsequent operations.
10.2.3.3. 3D modeling software (e.g. Catia, Solidworks, etc.) shall be the authority for three dimensional representations. Verify current version of the 3D modeling software with TFI via e-mail: supplierquality@technifabinc.com.
10.2.3.4. Any compatible software that works with Enova shall be the used to view engineering data for FAI submittal.
10.2.3.5. The supplier shall flow down all required information to their sub tier from the authority. If the flow down information is not generated by the 3D model, a point by point overlay based on the model definition authority shall be submitted to TFI design engineer approval prior to processing (see clause 5.7. for TFI's authorized methods to transfer information).
10.2.3.6. In the case of CMM verification of attributes of the part from the Model Based Definition, the CMM software shall be capable of properly interpreting the 3D model without translation errors.

10.3. Material Certification Requirements

10.3.1. Laboratory certifications shall reflect actual values, including mill data.
10.3.2. The supplier is responsible for approval of material received.
10.3.3. All TFI consigned material drop-shipped to a manufacturing supplier shall be accompanied by a packing slip and Certificate of Conformance.
10.3.4. Material that is shipped directly from a TFI site shall include Certificate of Conformance, Certification of Analysis and TFI shipping ticket having a quality acceptance marking.

10.4. Process Certification Requirement

10.4.1. When invoked on TFI's Purchase Order, the tier 1 supplier shall verify from the certification received from processors the information in section three of TFI's VM-03 Source Inspection Checklist (this form may be obtained from TFI's Dropbox or via e-mail: supplierquality@technifabinc.com.

10.5. Request for Source Inspection

10.5.1. TFI source inspection does not relieve the supplier of any responsibility and/or liability for full compliance with all contract requirements.
10.5.2. Any rejections / findings by TFI QA at the supplier's facility shall be counted against the supplier's performance. These rejects shall be considered the same as rejected parts shipped to any TFI site.
10.5.3. Suppliers are responsible to initiate requests for TFI source inspection support:
10.5.3.1. The supplier shall request TFI product verification only when the product is complete, accepted through their quality systems, and ready for source inspection
10.5.3.2. The supplier shall contact their assigned TFI Buyer.
10.5.4. TFI Source Inspector or authorized TFI agent shall perform the required product verification.

10.5.5. The supplier shall provide inspection support as judged reasonable for the TFI Source Inspector or authorized TFI agent to perform an adequate product verification/inspection.
10.5.6. Suppliers shall maintain a record of all products presented for source verification by part number, quantity, date and TFI representative used. This record shall be made available upon request.

10.6. Drop Shipments

10.6.1. When authorized by PO, suppliers can ship directly to TFI customers:
10.6.2. The shipper shall be provided by the TFI buyer that identifies drop shipment instructions / requirements.
10.6.3. The PO number shall be referenced.
10.6.4. If serialized, the serial numbers being shipped shall be recorded on the shipper and submitted to TFI Quality for final clearance (supplierquality@technifabinc.com).
10.6.5. TFI's buyer shall provide the acceptance marking and dated shipper back to the supplier upon successful completion of serial number clearance.
10.6.6. The supplier shall provide a completed shipper, packing slip and Certification of Compliance to TFI Source Inspector.

10.7. Product Verification

10.7.1. Lots shall be inspected for dimensional and specification conformance by the supplier's final inspection personnel in accordance with the supplier's quality system and TRES Document requirements.
10.7.1.1. The supplier's final inspector shall conduct verification including:
10.7.1.1.1. A visual review for correct, legible part identification – all parts.
10.7.1.1.2. A review of the TFI purchase order to ensure products presented are in compliance to the part number, revision and any special requirements.
10.7.1.1.3. Verification that a first article has been completed to the latest revision and is available and on file (including any delta FAIs as applicable).
10.7.1.1.4. Review the supplier's manufacturing traveler / router to ensure material traceability, all quantities / serial numbers are accounted for, all operations have been completed as evidence of operator / inspectors stamp (initials), outside process name, purchase order number, & date.
10.7.1.1.5. Review the supplier's inspection records to ensure 100% product verification has been accomplished through their quality system.
10.7.1.1.6. Review of all process certifications for compliance to the engineering drawing / model and latest specification requirements. This review includes the accurate recording of the process, specification number, revisions, source, certification number and date performed on the VM-04 Supplier Certification & Process Record or equivalent. Distributors (if used) may be referenced as additional information.
10.7.1.1.7. Verification that only Customer and TFI approved material and processors were used.
10.7.1.1.8. Random selection and physical verification of close tolerance, fit/form/functional characteristics, attach points and finish requirements.
10.7.1.1.9. Certified calibrated functional gages are available and used to verify conformance for products that have threads or splines.
10.7.1.1.10. When testing is required, audit of acceptance testing of product and review all test results to ensure compliance to engineering drawing / model and specification requirements. The supplier inspector shall then affix his / her acceptance mark on the test documentation.
10.7.1.1.11. Verification that assembly procedures and work instructions are in compliance to the engineering drawing / model and specification requirements.
10.7.1.1.12. Verification that actual test and measurement values are recorded (i.e. torque values, flow rates, Rockwell hardness, and conductivity)
10.7.1.1.13. Identified key characteristics have been captured and recorded and if required by specification, SPC control of the characteristic.
10.7.1.2. The supplier inspector shall place an acceptance mark and date each certification and the supplier's final inspection form as evidence of review and acceptance.
10.7.2. The supplier's inspector shall note acceptance of each shipment by acceptance marking and dating the "Certification of Compliance" and the supplier's packing list/shipper.
10.7.3. Suppliers shall maintain an electronic record of all product inspected by part number, quantity, date, P.O number, and supplier inspector used. This record shall be made available upon request.
10.7.4. Use of the supplier inspector stamps by any other person than the assigned individual is not allowed.

10.7.5. Each shipment shall contain a documentation package meeting the requirements of the applicable purchase order and TRES.
10.7.6. The purchase order shall dictate delivery schedule, quantities, and shipping instructions.

10.8. Control of Monitoring and Measuring Equipment

10.8.1. Minimum Expectation for Measuring Devices:
10.8.1.1. The measuring device shall be appropriate to the feature being measured, including the proper unit of measure (i.e., International System of Units [metric system] or Imperial [English]).
10.8.1.2. Shall ensure adequate sensitivity of measurement instrumentation is used to achieve the 10 to 1 rule (instrument accuracy should divide the tolerance into 10 parts or more).
10.8.1.3. Measuring devices shall be calibrated to assure its accuracy as per ISO 10012-1:1992 – Quality Assurance Requirements for Measuring Equipment.

10.9. Special Inspection Requirements / Techniques

10.9.1. Suppliers shall verify threaded product using the thread inspection method defined as System 22 in ANSI/AMSE B1.3-1992 with the following modifications (unless more stringent requirements are specified by contract or drawing):
10.9.1.1. Visual Inspection per ANSI/ASME B1.3, paragraph 6(c).
10.9.1.2. Maximum Material functional acceptance to a GO thread gage per ANSI/ASME B1.3, Column A1, Row 1.1, of Table 1 or Table 2 as applicable. Use a thread plug gage per ANSI/ASME B1.2 section 4.1 for internal threads. Use a thread ring gage per section 5.1 for external threads. Suppliers shall procure and maintain calibrated gages for functional product verification before and after any plating. After plate gages shall be used for final product acceptance.
10.9.1.3. Internal thread no-go gage insertion shall not exceed two and a half turns unless otherwise specified.
10.9.1.4. Major diameter size measurement per ANSI/ASME B1.3, Column J2, of Table 1, external threads only.
10.9.1.5. Pitch diameter size measurement per ANSI/ASME B1.3, Column C2, of Table 1 or Table 2 as applicable.
10.9.1.6. Root radius size measurement per ANSI/ASME B1.3, Column L, of Table 1, external threads only
10.9.1.7. In the event of a thread attribute gage dispute between facilities (i.e. suppliers and TFI site gages that accept and reject the same parts); the NIST calibration certification provided by the supplier from an ISO 17025 accredited lab shall be the refereeing source. If the dispute still cannot be resolved, the supplier or TFI may choose a third party as a refereeing source which is an ISO 17025 accredited facility or higher on the NIST hierarchy.
10.9.2. Suppliers using sampling plans for acceptance of product shall submit plans to TFI Quality Assurance for approval prior to use. Submittal should indicate approvals by other customers to facilitate review process. The supplierquality@technifabinc.com email address may be used for this submittal.

11. TFI Supplied Tooling, Gages and Fixtures

11.1. Tooling Qualification

11.1.1. Production Tooling is considered approved and accepted provided the product meets all source data requirements.
11.1.2. TFI owned tooling shall be qualified for use and approved by TFI prior to release to supplier for production. Approval is based on review of product samples.

11.2. Tooling Accountability:

11.2.1. Supplier shall maintain an Accountable Property List to monitor activity and location of all TFI, TFI customer and/or government owned tooling/gages/fixtures in their custody.
11.2.2. For TFI owned tooling, the tooling shall be permanently and indelibly marked PROPERTY OF TFI.
11.2.3. This list shall include both the tooling/gages/fixtures supplied by a TFI facility and the tooling / gages / fixtures fabricated by the supplier to manufacture contracted components but owned by TFI or TFI customer(s).
11.2.4. It is the supplier's responsibility to monitor tooling conditions during use to maintain an acceptance level of quality and maximum useful life of the tooling.
11.2.5. The supplier is responsible for the replacement or replacement costs of any tooling/gages/fixtures that are lost, damaged beyond repair, or not returned.
11.2.6. All furnished tooling/gages/fixtures in the custody of a supplier are subject to periodic TFI inventory audits and/or calibration.

11.2.7. TFI shall have the right to inspect, reject and/or remove tooling as deemed necessary.
11.2.8. Supplier shall return all TFI or TFI customer loaned gages on or before calibration due dates.

11.3. Tool Handling, Storage, Preservation and Shipping

11.3.1. Written agreement is required between TFI and the supplier to ensure that TFI owned tooling is used only on and for TFI product.
11.3.2. Supplier is responsible for the preservation of tooling/gages/fixtures which are not in use.
11.3.3. A supplier shall submit a written request and receive a formal TFI approval before any alteration or repair is performed on TFI or TFI customer tooling/gages/fixtures.
11.3.4. Supplier is responsible for the repair of all loaned tooling/gages/fixtures damaged after receipt by the supplier,
11.3.5. A supplier receiving TFI or TFI customer owned tooling/gages/fixtures shall return these after purchase order requirements are completed unless written authorization is received from the TFI buyer.

12. Handling, Storage, Preservation, Shipping

12.1. Foreign Object Debris (FOD)

12.1.1. Suppliers shall have an implemented program and a written procedure which addresses elimination of Foreign Object Debris / Damage (FOD), reference NAS 412.
12.1.2. Minimum requirements shall include:
12.1.2.1. Review of design and manufacturing process
12.1.2.2. Performance measurement
12.1.2.3. Training
12.1.2.4. Material handling and part preservation
12.1.2.5. Housekeeping
12.1.2.6. Tool and hardware accountability
12.1.2.7. Work is accomplished in a manner to prevent FOD
12.1.2.8. Supplier shall perform periodic self-assessments
12.1.2.9. Physical entry control into FOD controlled areas
12.1.2.10. Flowdown requirement to sub-tiers
12.1.3. TFI has the right to perform FOD audits

12.2. Packaging Specifications

12.2.1. All products and materials supplied to TFI shall be packaged and/or labeled in accordance to TFI specifications, industry standards and government regulations.
12.2.2. The packaging of product shipped to TFI shall ensure minimum protection from transit damage:
12.2.2.1. Reference ASTM-D3951-10 for “Standard Practice for Commercial Packaging”
12.2.2.2. Reference MIL-STD-2073-1E for “Standard Practice for Military Packaging”
12.2.2.3. International standards for Phytosanitary (ISPM15)

13. Nonconforming Product

13.1. Scope, Definition and Notification

13.1.1. Nonconforming product is defined as material that cannot be reworked into a conforming condition prior to any controlled process.
13.1.2. Suppliers shall not make their own MRB disposition on nonconforming material.
13.1.3. Suppliers shall not perform unauthorized rework on nonconforming product.
13.1.3.1. When a nonconformance has been detected at the supplier location and rework may bring the parts back within specification, the supplier shall submit an ADM-06 to TFI.
13.1.3.2. When a supplier elects to scrap a significant portion (>20%) of a TFI order using supplier owned raw material or parts, the supplier shall inform the TFI buyer.
13.1.3.3. When a supplier elects to scrap TFI supplied material or parts made from TFI supplied raw material or parts, the Supplier shall notify TFI Quality Assurance and the appropriate TFI buyer.
13.1.4. Suppliers shall not ship nonconforming material without receipt and completion of TFI’s NCR form (ADM-06) per TFI disposition or unless authorized in writing by TFI’s Quality Manager.

13.2. Identification of Nonconforming Product at Supplier’s Facility

13.2.1. The supplier shall notify the appropriate TFI buyer and TFI Quality Manager within 24 hours of first awareness that a discrepancy has been discovered.
13.2.2. Supplier shall contain the potential nonconformance to mitigate risk of shipment to TFI.

13.2.3. The supplier shall document the discrepancy on a TFI Non-conformance record (ADM-06 Nonconformance Report) form:
13.2.3.1. Shall contain a clear description of actual or suspect nonconformance.
13.2.3.2. Shall reference a drawing / model or specification requirement.
13.2.3.3. Shall include quantity, serial numbers, and shipment dates.
13.2.3.4. Shall provide plan for RCCA with Estimated Completion Dates and the plan shall be evidenced.
13.2.4. The supplier shall submit ALL NCR's (ADM-06) for review and disposition by TFI Material Review Board: NCR submission via e-mail supplierquality@technifabinc.com
13.2.5. Once disposition is obtained from TFI each element of the disposition shall be acceptance marked off and dated as evidence of completion.
13.2.6. If any special processes are used to bring the part within spec, the supplier shall list the processor used, the certificate number, and date.

13.3. Disclosures

13.3.1. Discovery of nonconforming material shipped to TFI or TFI customers shall be communicated to TFI within 24 hours.
13.3.2. Root Cause and Corrective Action follow on communication shall be utilized to define details or extent of nonconformance(s).
13.3.3. Disclosures shall be submitted to TFI QA and the applicable TFI buyer on the AS9131 template.
13.3.4. TFI QA shall issue a formal corrective action to the supplier/processor.
13.3.5. The supplier/processor shall provide written acknowledgement as to the receipt of the CA, confirmation of containment, and CA team members identified within 24 hours of the disclosure.
13.3.6. In the case of sole or proprietary suppliers, an impact statement correlated with the supplier engineering organization shall be submitted to TFI. The impact statement shall contain a proposed disposition for TFI inventory and instructions regarding the parts/assemblies installed on operating aircraft.
13.3.7. Delta FAI shall be identified in the CAPA and completed on next production run for the issues identified in the disclosure.

13.4. "SCRAP" Disposition

13.4.1. The supplier shall provide a copy of the TFI dispositioned inspection NCR (AMD-06).
13.4.2. The NCR (AMD-06) shall be signed and dated by a TFI QA representative as evidence that the product was physically rendered worthless for its intended use.

13.5. Supplier Paid MRB Administrative Costs Program

13.5.1. Suppliers are responsible for administrative costs incurred by TFI and associated with the Material Review and disposition of supplier manufactured nonconforming product.
13.5.2. TFI shall inform the supplier prior to taking any action for these costs.
13.5.3. Any costs associated with TFI rework of discrepant material may be charged to the supplier.
13.5.4. Chargebacks
13.5.4.1. Chargeback due to Quality issues shall be based on actual time to rework, MRB administration and applied overhead.
13.5.4.2. Chronic performance issues may result in chargeback penalties.
13.5.4.3. The supplier shall be responsible for any chargebacks from TFI customers attributable to the supplier.
13.5.5. Any requests for "CHANGE OF CHARGE" shall be submitted to the appropriate TFI Buyer.

13.6. Customer Returns

13.6.1. All items returned to the supplier by TFI or TFI's customer shall be documented.
13.6.1.1. A Returned Goods Authorization (RGA) process and RGA number shall be used.
13.6.1.1.1. The supplier shall supply TFI with contact information regarding RGA as necessary.
13.6.1.1.2. The suppliers shall provide TFI with an RGA number within two working days of notification.
13.6.1.2. Escapes shall be documented on a NCR (ADM-06).
13.6.1.3. A corrective action shall be issued to the supplier and expectations shall be the same as for the disclosure process. (ref. section 13.3)

14. Service and Warranty

14.1. Definition

14.1.1. Service and Warranty components are defined as items returned by TFI or by TFI customers to the supplier for evaluation, repair, and/or replacement.

14.2. Control of Material at the Supplier

14.2.1. Service and warranty repair components shall not be mixed with new production components during manufacturing or storage.
14.2.2. They shall not be assembled into new production without the written authorization of TFI.
14.2.3. The inspection results and analysis, showing the date of original manufacture and date returned items were received, shall be submitted to TFI for review and approval.
14.2.4. Failure Analysis Reports (FAR) shall be completed within 30 days upon receipt when requested by TFI.
14.2.5. FAR reports shall be submitted to the following email address: supplierquality@technifabinc.com
14.2.6. Repairs shall not begin without a repair purchase order and TFI authorization.

15. Corrective Action Process

15.1. Response Content and Time Requirements

15.1.1. For "5-why" Corrective Actions (CA) issued by TFI, the supplier/processor shall provide written acknowledgement within 24 hours of issuance as to the receipt of the CA, confirmation of containment and CA team members identified.
15.1.2. The supplier shall contain and identify all suspect products including but not limited to:
15.1.2.1. Inventory
15.1.2.2. Work in process
15.1.2.3. Product at supplier or third party lab(s)
15.1.2.4. Product off loaded to sub-tiers
15.1.2.5. Completed product pending final release
15.1.2.6. Product in transit/shipped
15.1.3. Root Cause, Corrective Action, and Preventive Plans shall be received within the time noted on the request.
15.1.3.1. Customer Escapes/Disclosures – 5 business days
15.1.3.2. Product escapes to TFI, includes product rejected by TFI QA on site at the supplier – 10 business days.
15.1.3.3. Findings as results of QMS audits – 30 business days

15.2. Worksheet Details

15.2.1. All requests shall be submitted on TFI form ADM-04
15.2.2. Form shall be submitted to TFI via e-mail supplierquality@technifabinc.com
15.2.3. Contact TFI for latest revision of ADM-04

15.3. Corrective Action Responsiveness

15.3.1. Delinquent responses, repeat response rejection due to improperly addressing the issue to identify true direct and root case and or continued failure to provide corrective action responses in a timely manner may result in changing the supplier's status to "HOLD" and may ultimately result in removal as an approved supplier.

16. Special Processes

16.1. Scope

16.1.1. Special Process sources shall be approved for use on TFI product.
16.1.2. TFI shall approve special processors prior to commencing any manufacturing.

16.2. Approval of Special Processors

16.2.1. A Supplier may request approval of a new processor:
16.2.2. The request shall be made in writing to the appropriate TFI buyer. The supplierquality@technifabinc.com email address may be used for this request.
16.2.3. Approval is based on one or more of the following:
16.2.3.1. Nadcap accreditation
16.2.3.2. Existing customer approval (i.e. Boeing, Lockheed, and Airbus)
16.2.3.3. TFI on-site audit of the Processor's quality system and/or special process.
16.2.4. Processors that perform special processes that are Nadcap commodities are required to have Nadcap accreditation. Any exceptions to this requirement shall be based on TFI Quality management review once the processor submits a request for waiver in writing. The supplierquality@technifabinc.com email address may be used for this request.
16.2.5. Approvals are granted for each individual processor / process / specification combination, and are site location specific. Physical relocation of processing requires TFI re-approval of the re-located processing prior to any use of that re-located processing on TFI product.

16.2.6. Special process sources approved by TFI for a TFI, Military or Industrial specification that has been superseded by another TFI, Military or Industrial specification shall be considered approved for the superseding specification.

16.3. Supplier's Use of Approved Processors

16.3.1. Only TFI approved sources shall be used to perform special processes on aircraft production parts manufactured for TFI.

16.3.2. When TFI customer controlled processes are required, (i.e. Boeing "BAC's", DPS, "PS's", and Lockheed "5PTP's"), selected process sources shall be listed in both the TFI's Approved Processor List listing as approved for quality system and in the applicable customer's listing (i.e. Boeing D1-4426, and Lockheed QCS-001) for the controlled process.

16.3.3. The supplier shall maintain and use an approved processor list, and are responsible for ensuring that approved sources meet the requirements of the applicable specifications.

16.3.4. Suppliers are responsible for ensuring that processing meets the requirements of the applicable specifications defined in the engineering and contractual requirements.

16.3.5. The supplier's purchase order shall flow down to the processor all applicable information required to perform work correctly to engineering and contractual requirements. The purchase order shall clearly specify the full scope of processing to be performed, MRB actions required, applicable specification number(s), revisions and addendums or modifications, part numbers, quantity, serial numbers (if applicable), applicable program and prime customer and identify TFI as the supplier's direct customer.

16.4. Approved Processor's Requirements

16.4.1. Work shall be planned, approved and executed in accordance with Section 9 of this document as applicable to the scope of work being performed.

16.4.2. A packing slip, Certificate of Compliance, and inspection records shall be included with all shipments.

16.4.3. For serialized parts, heat treat sources shall record actual hardness values for each serial number.

16.4.4. Objective evidence of compliance to specifications and drawings shall be made available upon request.

16.4.5. Ensure a performance metric that shall measure internal rework for each approved process and shall be made available upon request.

17. Specific TFI Customer Requirements

17.1. All customers

17.1.1. Any TFI customer specific requirements shall be flowed down on TFI's purchase order.

17.2. Boeing Commercial Product

17.2.1. When invoked on the TFI purchase order, the supplier shall include the following statement on all CoC/CoA and Packing Slips: "Q31 SELLER HEREBY ACKNOWLEDGES THAT THE PARTS AND / OR MATERIALS BEING SHIPPED UNDER THIS ORDER ARE INTENDED FOR USE UNDER BOEING'S FEDERAL AVIATION ADMINISTRATION (FAA) ISSUED PRODUCTION CERTIFICATE 700."

18. References

18.1.1. ANSI/EIA 649 - Configuration Management Standard

18.1.2. ISO 9001 - Quality management systems – Requirements

18.1.3. ISO 10007 – Quality Management Systems – Guidelines for Configuration Management

18.1.4. ISO 10012 - Measurement management systems -- Requirements for measurement processes and measuring equipment

18.1.5. SAE AS9003 - Aerospace Standard for Inspection and Test Quality System

18.1.6. SAE AS9100 - Quality Systems – Aerospace – Model for Quality Assurance in Design, Development, Production, Installation and Servicing

18.1.7. SAE AS9102 - Aerospace, First Article Inspection Requirement

18.1.8. SAE AS9103 - Variation Management of Key Characteristic

18.1.9. SAE AS9120 - Quality Management Certification for Stockist Distributor

18.1.10. SAE AS9131 - Quality Systems Non-Conformance Documentation

Appendix A – FAI Triggers

#	FULL FAI	Delta FAI	Trigger
1	X		New Supplier
2		X	New Processor
3	X		Off-load to supplier
4		X	Off-load to processor
5	X		Work transfer to supplier
6		X	Work transfer to processor
7		X	Change Board action
8	X		2 year rule (lapse in production on make or buy parts)
9		X	Process change impacting fit, form or function
10		X	P/N roll (fit, form, function, design change)
11		X	Standard work change
12		X	Process Control Plan / Manufacturing Plan change
13		X	Recipe card change
14	X		New product
15	X	X	New Process
16		X	WI change impacting manufacturing process
17		X	Assembly sequence change
18		X	Approved testing plan (ATP) change
19		X	Configuration change (MAS90)
20		X	Tooling/fixture/machine/cell change
21		X	Change in inspection method
22		X	Change in Manufacturing programming
23	X	X	Natural or man-made event which adversely affects the manufacturing process
24		X	Standard part within assembly change
25		X	Qualified(Certified) Operator change
26	X		Change of supplier location
27	X	X	Change of location of machining/processing within supplier premises
28		X	Change of tool even if the same type
29	X	X	After receiving a disclosure letter
30		X	After RCCA resulting from NCR
31		X	After CI event referring to part or process improvements
32		X	Machine PM calibration completion
33	X	X	Customer Request