

1. APPLICATION.

This specification applies to all F100 engine Fracture Critical Parts (FCP) and Durability Critical Parts (DCP).

2. PURPOSE.

2.1. This document is a supplement to established Qualification Requirements (QR) tailored to a specific part(s) for the purpose of defining the basic documentation required of prospective sources to substantiate proof of capability. It is not all inclusive and prospective sources shall note that satisfaction of all requirements defined by the specific QR applicable to the approval part is required to obtain engineering source approval. The basic documentation submitted by prospective sources shall be tailored to the requirements of the specific QR applicable to the approval part that defines specific criteria for proof of capability. All documentation provided as evidence of compliance with requirements specified herein shall be in English and in the Inch-Pound system.

2.2. QR's applicable to a specific part shall be made available to prospective sources upon request to OC-ALC/BC for parts which are not the subject of open solicitations. Requests concerning the latter shall be addressed to the procuring activity.

2.3. Prospective sources are advised that source approval consideration on most Fracture Critical Parts (FCP) is restricted to actual manufacturers of the approval part due to limitations in existing government expertise. Consequently, prospective sources are advised to verify as to whether or not the part(s) in which they are interested fall in this category prior to seeking source approval. Information in this regard may be obtained through OC-ALC/BC at any time or the procuring activity.

3. DEFINITIONS.

The following definitions shall apply as used in the context of QR's for Fracture Critical Parts and Durability Critical Parts unless otherwise stated in the specific QR.

3.1. **Approval Part/Item** - Part/Item for which source approval is sought.

3.2. **Category 1 Offeror** - A manufacturing/repair source, which in conjunction with their sub-vendors has performed all requisite processes on the approval part for Pratt & Whitney. Offerors in this category must provide documentation relevant to the approval part that satisfies all criteria specified under Proof of Capability in their respective QR's with the exception of those identified in 5.1.1, 5.1.2, and 5.2. In all cases the burden of proof shall reside with the Offeror. Approval by the OEM for a specific repair or item manufacture does not guarantee approval by OC-ALC/LPFR. Sub-vendors are subject to approval by OC-ALC/LPFR.

3.3. **Category 2 Offeror** - Manufacturing/Repair source, which in conjunction with their sub-vendors has performed all requisite processes on a similar part for an OEM. Offerors in this category must provide documentation relevant to a similar part(s) that satisfies all criteria specified under Proof of Capability. In all cases, the burden of proof lies with the Offeror. Approval by the OEM for a specific repair or item manufacture does not guarantee approval by OC-ALC/LPFR. Sub-vendors are subject to approval by OC-ALC/LPFR.

3.4. **Critical Characteristic** - A part feature which, if non-conforming would result in probable loss of aircraft due to direct part failure or by causing other progressive part failures.

3.5. **Durability Critical Part** - A highly stressed part which cannot be completely inspected nondestructively; failure of which will result in a significant maintenance burden.

3.6. **Fabricate** - The manufacturing steps necessary for the making of new parts.

3.7. **Fracture Critical Part** - A highly stressed part which cannot be completely inspected nondestructively; failure of which will result in loss of aircraft due to non-containment or power loss preventing sustained flight, as a direct result of part failure or subsequent progressive failures.

3.8. **Inspection Method Sheets (IMS)** - document used to describe the steps involved in executing an inspection or series of inspections to include tooling, gages, fixtures, dimensions and other parameters necessary to execute the required inspections(s).

3.9. **Major Characteristic** - A part feature which, if non-conforming, could compromise the function of the part, resulting in a significant maintenance burden and/or reduction in weapon system performance.

3.10. **Manufacturing/Repair Process Sheets (MPS/RPS)** - documents used to describe the steps involved in executing an operation or series of operations to include tooling, machinery, dimensions, speeds, feed rates, coolants, cutters, tape

numbers and other operating, process and/or set-up parameters necessary to execute the operation. At a minimum processes in Appendix A shall be fully defined.

3.11. **Material** - A general term referring to material at any stage in the manufacturing/repair process.

3.12. **NIST** - National Institute of Standards and Technology.

3.13. **Offeror** - Source furnishing a source approval package in an attempt to obtain engineering source approval to supply the approval part in its finished state to OC-ALC.

3.14. **Original Equipment Manufacturer (OEM)** - Term typically applied to the source responsible for the original design and development of a product or system. In this case it shall refer to sources primarily responsible for the design and development of aircraft gas turbine engines similar to the Pratt & Whitney F100 engine, for a US DoD activity or a NATO country.

3.15. **Production Quantities** - Quantities that establish a reasonable level of confidence in a prospective source's ability to consistently produce parts whose integrity is equivalent to that exhibited by parts that originally passed substantiation testing. As a minimum it shall be considered representative of several production lots or greater quantities commensurate with those specified in current solicitations or OC-ALC annual buy projections and shall be exclusive of quantities produced in experimental or developmental programs.

3.16. **Purchaser** - The Purchaser as defined in all applicable government specifications as well as all PWA specifications relative to the part described in this document shall refer to the OC-ALC contracting activity issuing the procurement requirement.

3.17. **Raw Material** - Ingot, bar, billet, or sheet stock used directly in the fabrication of the finished part or forgings/castings used in the fabrication of the finished part.

3.18. **Repair** - The processes and inspections necessary to restore parts to serviceable condition.

3.19. **Significant Process** - A process which is capable of producing alterations in the material structure of a part which cannot normally be evaluated without destructive testing and which can compromise the mechanical properties and ultimately the reliability of the part. Examples of processes that are considered to be significant by OC-ALC are listed in Appendix A.

3.20. **Similar part** - A part that satisfies all of the specific criteria for similarity as defined in the QR's for the approval part.

3.21. **Sub-vendor** - A source supplying material, products, and/or services to the Supplier as required in the performance of the contract. This term applies to all facilities other than the Supplier's facility including those of the same company.

3.22. **Technical Order** - A technical manual published by the Air Force containing (in this case) technical information required to develop inspection methods and repair processes for aircraft engine parts.

4. SOURCE SUBSTANTIATION AND QUALIFICATION

4.1. **Offerors must:**

4.1.1. Document processes and sequences to be used.

4.1.2. Controls of significant/major changes.

4.1.3. Statistical process control of significant processes (ensure same sequence and same operations)

4.1.4. First Article Inspection

4.2. **Quality management shall have standard practices and enforcement, which are commensurate with the requirements specified by the Qualification Requirements:**

4.2.1. Part outsourcing

4.2.2. Software quality

4.2.3. Material Review Board (MRB)

4.2.4. Farming-out of processes

4.2.5. Corrective Action and Root Cause Investigation

4.2.6. Drawing conformance

4.2.7. New item and item repair quality audits.

4.2.8. Part Marking.

SOURCE APPROVAL PROCESS SUMMARY

Design
Drawing

T.O.

▼
FC/DC, Life limited
parts and critical
parts key controls

▼
Offeror
substantiation/Qualification
requirements

▼
Significant
process
definition

▼
Supplier and Vendor Substantiation/qualification

▼
Offeror self assessment

▼
Quality System Assessment

▼
Supplier Assessment

▼
External Audit (s)

▼
Source Approval

▼
Product Validation Review

5. DOCUMENTATION REQUIREMENTS.

5.1. Offerors must submit the following data on all parts referenced within their SAR in addition to data required in the QR:

5.1.1. Offerors self-assessment of quality program and areas of improvement.

5.1.2. Quality System description and how it meets this programs requirements

5.1.3. Supplier assessment and qualifications, and include a plan for how suppliers and vendors will maintain the approved quality program and statistical process control

5.1.4. External audits shall be conducted by the OEM and/or OC-ALC/LPFR.

5.1.5. A complete set of legible drawings for all assemblies, details, and sub-components. All dimensions shall be in the English System of Units.

5.1.6. A complete set of all specifications (top page only for Pratt & Whitney developed specifications) for all materials and manufacturing/repair processes identified on the drawings for the similar parts and sub-components thereof.

5.1.7. Substantiation of possession or the top page of all referenced Pratt & Whitney MCL standards.

5.1.8. Approval by the OEM for a specific repair does not guarantee approval by OC-ALC/LPFR. Sub-vendors are subject to approval by OC-ALC/LPFR.

5.2. Offerors shall include the following documentation on the approval part (Category I Offeror) or similar parts (Category II Offeror) to substantiate Proof of Capability:

5.2.1. Copies of purchase orders from purchaser to Offeror and Offeror to sub-vendors that define quantities ordered and all technical conditions or restrictions imposed. Copies of the most recent shipping documents applicable to the purchase order should also be provided. Shipping documents shall be stamped appropriately by the purchaser to indicate full release where on-site acceptance is specified by the purchase order. In addition, if the part was manufactured/repared for Pratt & Whitney, the Pratt & Whitney Requirements Control Card and Quality Assurance Document should be provided. The fact that a sub-vendor is a Pratt & Whitney LCS Supplier shall not relieve the Supplier of the responsibility of conducting following-on quality assurance surveillance to ensure that sub vendors are providing conforming material.

5.2.2. A copy of the Manufacturing/Repair Process Sheets (MPS) and Inspection Method Sheets (IMS) employed in the production of the part(s). Evidence of

purchaser approval of the MPS is required. Summary of manufacturing/repair operations sheets, travelers, or routing sheets are not acceptable in lieu of MPS, except for some sheet metal parts. In the case of the latter routing sheets that define process sequence, forming tooling, non-conventional machining schedules, weld schedules, and braze schedules shall be provided. All schedules and technical control documents referenced in the MPS that specify process operating parameters shall be included. In all cases where an operation is governed by software, i.e., numerically controlled or automated operations a hard copy excerpt identifying manufacturing/repair process operating parameters must be provided. MPS shall remain confidential and may be stamped "proprietary" at the discretion of the Offeror. Failure to provide detailed MPS and IMS shall constitute grounds for disapproval.

5.2.3. Identification of all sub-vendors of significant processes and sub-components employed in the production/repair of the part(s) including the specific operations and/or sub-components provided by each sub-vendor. Sub-vendors are subject to approval by OC-ALC/LPFR.

5.2.3.1. For significant processes subcontracted, the Offeror must provide his method for insuring quality control and conformance to specification at the sub-vendor's plant. This should not only include identification of such procedures in the company Quality Manual but also physical evidence such as audit reports, surveys, and chemical and physical test reports. If receiving inspection cannot verify conformance to specification, then chemical and physical test data along with in-work process control data must accompany each lot.

5.2.3.2. Repairs performed by sub vendors shall be accomplished in accordance with work instructions specified in MPS, Inspection Method Sheets, schedules, and/or technical control plans which define the exact sequence of all production operations and all process variables and parameters of repair operations which may directly affect material structure, grain flow, mechanical properties, surface finish and/or direction or lay of the cutting action. The procedure shall also assure that work instructions have been approved by the Purchaser or the OEM specified by the applicable source certification requirements defined in section 6.4 of these QR's.

5.2.3.3. Certificates of test or conformance provided by sub vendors of significant processes are complete and supported by process data and numerical test results from and OEM-approved laboratory for the requisite testing, are representative of material received, and the material is in conformance with Purchaser requirements. Acceptance of incoming material based exclusively upon certificates of test/conformance shall be prohibited. Also, generic procedures such as "laboratory testing employed as necessary" are unacceptable. Specific test procedures utilized on wrought engine parts are required.

5.2.4. A summary of quality deficiencies experienced in fabrication/repair part during the last two years of production. The summary shall include but not be limited to all Material Review Board (MRB) actions, Quality Deficiency Reports (QDR's), Laboratory Quality Review Orders (LQROs), Supplier Report of Nonconformance (SRONs), Material Deficiency Reports (MDR's) and any other pertinent documentation as well as the coordination of the President or Facility General Manager, and the Quality Assurance Manager. Coordination of the government quality assurance representative shall be included as well if government source inspection was conducted. Actions taken to resolve deficiencies identified including repair, rework or replacement of parts as well as the source primarily responsible for initiating, developing, and implementing corrective actions and the status thereof must also be provided.

5.2.4.1. The quality acceptance standards imposed in routine production acceptance by sub vendors shall be complete and OEM approved and the test methods employed in routing production acceptance are sufficient to verify compliance with these standards.

5.2.5. A detailed description of major similarities and differences between the "similar" part(s) and the approval part.

5.2.6. A specific description of value added by the OEM to the approval part or similar part(s) including but not limited to performance of manufacturing/repair processes or inspections, supply of raw material, forgings, castings, or sub-components, quality assurance surveillance of sub-vendors of significant processes, use of OEM tooling, fixtures, gages, or inspection master hardware, and use of OEM MPS, IMS or other process related data not referenced on part drawings. The Offeror shall demonstrate capability to fulfill "value added" by Pratt & Whitney on the approval part as determined by OC-ALC/LPFR, as the cognizant OC-ALC Fighter Propulsion System Division Engineering Section.

5.2.7. A copy of summary of manufacturing/repair process sheets, travelers, or routing sheets that identify all *significant manufacturing/repair processes to be employed in the fabrication/repair of the approval part* for OC-ALC. This documentation is subject to approval by OC-ALC/LPFR. As such it shall include a provision for coordination on each page.

5.2.8. Identification of all proposed changes to the MPS and IMS submitted by Category I Offerors, as proof of capability. This requirement applies regardless of whether or not they are considered to be significant changes by the Offeror.

5.2.9. The Offeror must provide documentation to prove that their quality assurance system meets or exceeds the requirements as described in the attached document LPF-QAR-001.

5.2.10. If an Offeror has had a Quality or Process audit performed by the DoD or agent for the DoD in the last 3 years, the Offeror shall provide the findings and evaluation/rating.

5.3 TRACEABILITY

5.3.1 Fracture Critical Parts must also provide traceability to critical processes specified in Appendix A, so that quality escapes may be easily narrowed to a population.

6. SAR FORMAT.

6.1. Source Approval Requests (SAR's) should be submitted in a binder to preclude the loss of contractor data in handling. A hard or semi-hard cover notebook form (i.e. a three-ring binder or similar product), with a table a contents and tabs corresponding to the table of contents is preferable. This will significantly reduce the turn-around time for engineering evaluation as well as reduce the likelihood of oversight or loss of valuable data that could have a significant bearing on the outcome of the evaluation.

7. PRODUCT VALIDATION REVIEWS AFTER CONTRACT AWARD.

7.1. Contractor must provide an internal review and report for:

7.1.1. Measure changes from First Article Inspection/Product Verification Audit

7.1.2. Conduct review 6 months after contract award or 25 parts, whichever comes first.

7.1.3. Review

7.1.3.1. Print, planning operations, and part review

7.1.3.2. Measure process capability standards for critical processes and critical features.

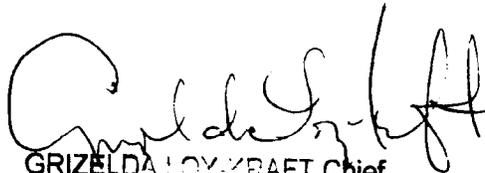
7.1.3.3. MRB procedures

7.1.3.4. Corrective action reports, assessments, and timely action.

7.1.3.5. Visual inspection by Part Number

7.1.3.6. Part Marking

7.2. The Government and/or the OEM will perform these reviews as necessary to ensure compliance.



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APPENDIX A

CRITICAL/SIGNIFICANT PROCESSES

The following examples are typical processes considered significant in that they are capable of producing alterations to material structures, mechanical properties, and ultimately, item reliability, if performed improperly, and cannot normally be evaluated without destructive testing.

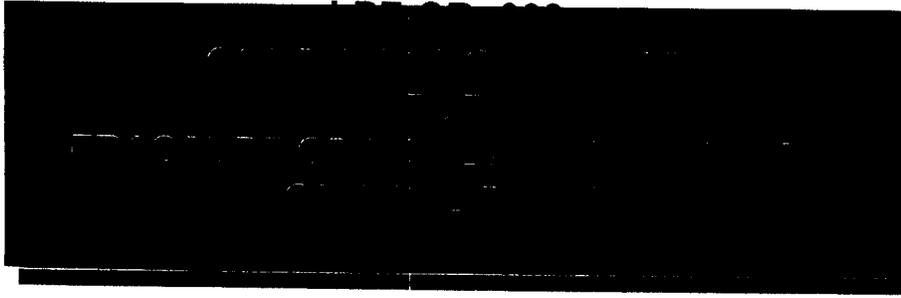
MANUFACTURING ONLY:

1. Casting Processes
2. Forging Processes
3. Other Forming Processes
4. Broaching

MANUFACTURING & REPAIR:

5. Blending/Reworking
6. Heat Treatment and Surface Hardening Processes
7. Grinding
8. Drilling, Reaming, and Boring
9. Milling
10. Finish Turning
11. Electrochemical Machining Processes (Cavity Sinking, Drilling, Grinding, etc.)
12. Chemical Milling
13. Electro-Discharge Machining
14. Electro-Stream Drilling
15. Laser Beam Metal Removal Processes
16. Electron Beam Processes
17. Peening Processes
18. Welding/Fusion
19. Brazing
20. Soldering

- 21. Metal Electroplating Processes
- 22. Coating Processes including, but not limited to, the following:
 - a) Plasma Spray
 - b) Thermal Spray,
 - c) Diffusion Coatings
 - d) Thermal Barrier Coatings
- 23. Surface Finishing Processes including, but not limited to, the following:
 - a) Honing
 - b) Sutton Barrel
- 24. Blasting Processes including, but not limited to, the following:
 - a) Aluminum Oxide
 - b) Silicon Carbide
 - c) Plastic Bead
 - d) Glass Bead
- 25. Dimensional Inspection/Tolerancing
- 26. Non-Destructive Inspections, including, but not limited to the following:
 - a) Fluorescent Penetrant
 - b) Eddy Current
 - c) Ultrasonic
 - d) Laser Holography
 - e) Magnetic Particle Inspection
 - f) Visual Inspection
 - g) Radiography
- 27. Water-jet Stripping
- 28. Assembly Procedures
- 29. Disassembly Procedures



1. APPLICATION.

- 1.1. This document applies to all qualification requirements for F100 engine parts designated as Fracture Critical or Durability Critical or as otherwise noted.
- 1.2. This document shall only apply to Category I Offerors. This restricts the availability of this waiver to those Offerors who have manufactured/repared the actual approval part for its Original Equipment Manufacturer (OEM).
- 1.3. It does NOT provide conditions of waiver for the requirement for pre-award qualification of prospective Offerors. It is limited in scope to the specific elements of the qualification requirements specified herein.
- 1.4. Definitions of terms used in this document are located in LPF-QR-001.

2. CONDITIONS.

- 2.1. The requirement that the Offeror must have fabricated/repared production quantities of the approval part for the OEM within the time period specified by the applicable qualification requirements may be waived in favor of a longer period of time provided that all of the following conditions are satisfied and documented by the Offeror:
 - 2.1.1. There are NO outstanding quality deficiencies of significance.
 - 2.1.2. There were NO significant quality deficiencies in the parts produced/repared. This must be supported by a summary of all quality deficiencies experienced in the last two years of production/repair for the OEM with the coordination of the Offeror's Plant Quality Assurance Manager and either the Plant Vice President or the Plant General Manager.
 - 2.1.3. There was NO significant value added by the OEM as described in LPF-QR-001, Paragraph 5.2.6. The Offeror shall also account for all significant processes that they did not perform on parts delivered to the OEM by identifying the source that performed the processes.
 - 2.1.4. There have been NO significant changes in Manufacturing/Repair Process Sheets since the part was last produced/repared for the OEM. Significant

changes shall include but are not limited to changes in the following: Processes used, process sequence, equipment used, tooling design, processing location, and principal operating parameters. The Offeror shall provide the following documentation as substantiation:

2.1.4.1. A copy of the OEM-approved manufacturing/repair process sheets employed in the production/repair of parts for the OEM

2.1.4.2. A copy of the proposed manufacturing/repair process sheets for use in the production/repair of parts for OC-ALC.

2.1.4.3. A facilities list identifying all equipment in-house at the time the parts were in production/repair for the OEM.

2.1.4.4. A current facilities list identifying all equipment in-house.

2.1.4.5. Identification of special tooling and gaging employed in the fabrication/repair and inspection of the parts for the OEM and evidence that it is still serviceable and in the possession of the Offeror or can be duplicated.

2.1.5. The time period specified by the qualification requirements shall not be waived for similar parts or for approval parts manufactured/repared for sources other than the OEM.

The requirement for a specific quality plan, if required by the applicable qualification requirements, shall not be waived.



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**LPF-QAR- 001
GENERAL QUALITY ASSURANCE
DOCUMENTS
FOR
F100 ENGINE FC/DC BREAKOUT
COMPONENTS**



1. APPLICATION.

These requirements apply to all F100 engine Fracture Critical Parts (FCP) and Durability Critical Parts (DCP).

2. PURPOSE.

2.1. This document establishes the minimum technical requirements the Offeror must satisfy to obtain engineering approval of their quality system for FCP/DCP applications. All documentation provided as evidence of compliance with requirements specified herein must be in English and in the Inch-Pound system. Engineering approval of Offeror's Quality Assurance System shall be valid for three years from the date of the OC-ALC letter notifying the contractor of approval.

3. REQUIREMENTS.

3.1. The Offeror must provide a Quality Assurance Manual that accurately portrays their current quality assurance system.

3.1.1. The Offeror's Quality Assurance System must comply with the requirements as described in this document and NATO AQAP-120, ISO 9002, ANSI 9002, or equivalent. Proof of compliance shall be provided and meet one of the following:

3.1.1.1. Certified to NATO AQAP-120, ISO 9002, or ANSI 9002 by the American National Standards Institute (ANSI) or the International Standards Organization (ISO) in Geneva, Switzerland, or

3.1.1.2. Approved by an Original Equipment Manufacturer (OEM) to an equivalent Quality Assurance System standard.

3.1.1.3. Evidence from DCMC or other appropriate government Quality Assurance Representative that Quality System is compliant to NATO AQAP-120, ISO 9002, ANSI 9002, or equivalent.

3.1.2. Proof of certification/approval must be provided and must be dated within the last three years. The decision to approve or disapprove the Quality Assurance

System shall only be made after a thorough review of the Offeror's Quality Assurance Manual by the cognizant engineering authority, OC-ALC/LPFR.

3.2. The Offeror must provide OEM documentation identifying the specific conditions/restrictions (i.e., specific P/Ns, components, processes, or material this status applies to, production testing required for material release, testing the supplier is authorized to perform, etc.) imposed by the OEM.

3.3. The Offeror must provide proof that their quality assurance plan has placed emphasis upon controlling processes to prevent generation of non-conformances and is supplemented by sufficient inspections or tests to assure effective process control.

3.4. The Offeror must provide procedures/specifications governing the control of significant processes proposed for use in the fabrication/repair of the approval item for assuring that:

3.4.1. Only Purchaser approved sources are used for raw material, significant processes, and major sub-components and adequate consideration is given to a source's capability and performance prior to placing an order.

3.4.2. The quality acceptance standards imposed in routine production acceptance both in-house and by sub-vendors are complete and approved by an OEM and the test methods employed in routine production acceptance are sufficient to verify compliance with these standards.

3.4.3. Fabrication performed in-house and by sub-vendors is accomplished in accordance with work instructions specified in manufacturing/repair process sheets, schedules, and/or technical control plans which define the exact sequence of all production operations and all process variables and all critical parameters of manufacturing/repair operations which may directly affect material structure, mechanical properties, surface finish and/or direction or lay of the cutting action. The procedure shall also assure that work instructions have been approved by the customer.

3.4.4. All inspection of characteristics, which serves as the basis for final acceptance of a characteristic, including in-process inspections, are performed in accordance with work instructions specified in inspection method sheets which define all characteristics specified on the applicable OEM drawings and Quality Assurance Documents (QAD's), the classification of each characteristic, the Acceptable Quality Level (AQL) for each classification of characteristic, sample size, frequency of inspection, the specific inspection methodology to be utilized, and the required instrumentation. The procedure(s) shall also assure that all inspection method sheets have been approved by the customer.

3.4.5. The Offeror must provide evidence that internal and sub-vendor audits have occurred, are adequate to insure quality of the end item and are addressed in the Offeror's Quality Plan. Specific Offeror audit procedures/guidelines which pertain to process and product audits shall, as a minimum substantiate the following:

3.4.5.1. Processes accomplished in-house shall be performed in accordance with work instructions specified in Manufacturing/Repair Process Sheets, Schedules, and/or Technical Control Plans which define the sequence of all production operations and all aspects and parameters of manufacturing/repair operations which may directly affect material structure, grain flow, mechanical properties, surface finish and/or direction or lay of the cutting action. The procedure(s) shall also assure that process sheets have been approved by the Purchaser or the OEM.

3.4.5.2. All inspection of characteristics, which serves as the basis for final acceptance of a characteristic, including in-process inspections, are performed in accordance with work instructions specified in Inspection Method Sheets which define all characteristics specified on the applicable OEM drawings and Quality Assurance Documents (QADs), the classification of each characteristic, the Acceptable Quality Lever (AQL) for each classification of characteristic, sample size, frequency of inspection, the specific inspection methodology to be utilized, and the required instrumentation. The procedure(s) shall also assure that all inspection method sheets have been approved by the Purchaser or OEM.

3.4.5.3. Unauthorized changes to work instructions which might directly affect the material structure, grain flow, mechanical properties, surface finish and/or lay of the cutting action or accuracy or reliability of component inspection must be approved the cognizant Fighter Propulsion System, Engineering Source Approval Section prior to production. The procedure(s) shall include responsibility, methods, and procedures for identifying significant changes in inspection methods or criteria, coordination internal approval of such changes, and assuring changes are not introduced in the production cycle without formal Purchaser approval. The procedure(s) must address processes performed by sub vendors as well as those performed in-house.

3.4.5.4. Strict adherence to the sequence, parameters, and all other significant process variables of manufacturing/repair operations defined on manufacturing/repair process sheets approved by the customer is maintained both in-house and at sub-vendors' facilities. Specific procedures for auditing and/or controlling requisite significant processes must be provided.

3.4.5.5. Dedicated equipment is properly maintained and calibrated IAW ISO 10012-1 and is capable of adequately performing its intended application.

3.4.5.6. General housekeeping and manufacturing/repair practices shall be addressed in the Quality Plan to ensure they do not adversely affect the quality of the end product.

3.4.5.7. In- process monitoring of principal manufacturing/repair and inspection practices, operating parameters, and process parameters which directly affect material structure, grain flow, mechanical properties, surface finish, lay of the material, and/or critical dimensions, and which are indicators of process effectiveness and efficiency. It shall include responsibility, methods and procedures for identifying variables and parameters to be monitored, developing and approving work instructions, identification of trends that signal process problems, and initiation of corrective actions.

3.4.6. Procedures for assuring that certificates of test or conformance provided by sub-vendors of raw material and significant processes are complete and supported by process data and numerical test results from an OEM-approved laboratory for the requisite testing, are representative of material received, and the material is in conformance with Purchaser requirements.

3.4.7. Adequate records are retained for documenting sub-vendor lists, sub-vendor quality ratings, layout inspection reports, all Purchaser and OEM approvals, component traceability, and objective evidence of conformance to product, process, and quality acceptance requirements; and are available to the Purchaser upon request.

3.4.7.1. Provide procedures for assuring the traceability of the repair history for repaired components.

3.4.8. Evidence of a system for controlling non-conforming material to ensure:

3.4.8.1. The classification of all non-conforming characteristics in terms of critical, major, and minor is approved by the Purchaser.

3.4.8.2. Final disposition of all non-conforming critical and major characteristics including rework and repair is approved by the Purchaser prior to implementation.

3.4.8.3. Effective control of non-conforming material at sub-vendor facilities.

3.5. The Offeror must provide a specific Quality Plan as described in the applicable quality system of paragraph 3.1 and IAW OC-ALC/LPFR documentation as requested in the specific Qualification Requirement.

3.5.1. The Offeror's Quality Plan shall address specifically how the Offeror intends to ensure the ongoing quality of the approval part and processes required in the manufacture/repair thereof and how this has been accomplished on similar components. The Quality Plan shall include the organization responsible for determining the requirements, factors typically considered in the determination, testing and surveillance conducted on sub vendors, testing laboratories used and the specific testing typically performed, subcontract quality requirements, and the specific paragraphs of the quality assurance document(s) that govern such aspects.



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LPF-QPR-016
LPFR QUALITY PLAN REQUIREMENTS
FOR
DURABILITY CRITICAL PARTS



1. APPLICATION.

- 1.1. This plan applies to new manufacture of all F100 engine durability critical parts.
- 1.2. This plan may be applied to critical manufacturing and repair processes and/or to complex assemblies as identified in Appendix A. This quality plan requirement shall not supersede the requirements of a specific plan required for a process; e.g. plasma spray.

2. PURPOSE.

- 2.1. This document establishes the minimum documentation required for a quality plan for the purpose of assuring that effective process control is maintained. All documentation provided as evidence of compliance with requirements specified herein shall be in English.

3. REQUIREMENTS.

- 3.1. General. The Offeror shall submit a Quality Plan specifically tailored to F100 engine component applications and as a minimum addresses all requirements specified in this document. The plan shall be identified by document number, issue date, and revision date. The plan shall be signed by the Offeror's Quality Assurance Manager.
 - 3.1.1. The Offeror shall maintain a Quality Assurance System that complies with ISO 9002 or as an alternative shall comply with MIL-I-45208A plus paragraphs 3.1 through 3.5, 5.1, 5.2, 6.1, 6.2 and 6.5 of MIL-Q-9858A.
 - 3.1.2. This requirement shall also apply to all detail parts, either repaired or purchased from a sub-vendor.
- 3.2. Purchasing. Specific purchase order requirements shall be imposed on sub-vendors of critical manufacturing or repair processes and on laboratory testing to control processing and production acceptance testing. The requirements shall address certification and control of the processes, control of materials, certification of operators and inspectors, processing of significant process changes, production acceptance testing to be performed, acceptance/rejection criteria, and testing frequency.
- 3.3. Testing. The supplier shall provide a detailed plan for production acceptance testing of parts, samples, and materials. The plan shall include the specific testing/inspection to be conducted and as a minimum shall include the following:

- 3.3.1. Identification of test specimen type (actual production article, scrapped parts, or separate representative test piece, coupon(s)) and description (configuration and dimensions).
 - 3.3.2. Frequency of testing. The plan shall specify the frequency per specific process. This shall include regular production and for special occurrences.
 - 3.3.3. The specific testing to be conducted on each specimen and the acceptance/rejection criteria.
 - 3.3.4. Identity of the laboratory(ies) to conduct the testing. The Offeror shall substantiate that the laboratory is an OEM-approved laboratory for the specific testing required and has access to all applicable microstructural and mechanical testing standards used for acceptance/rejection.
 - 3.3.5. Procedures for identification of test pieces, retention of test pieces, and retention of test data.
 - 3.3.6. Procedures to ensure that coupons used for the evaluation are a true representation of the parts. Coupons shall be of the same base material alloy and a thickness within the range listed on the part drawing. These procedures shall include sketches describing the locations to be cut-up and sketches describing coupon placement within the production set-up.
- 3.4. Overtesting. Overtesting shall be conducted in addition to the production acceptance testing conducted by the process supplier. A detailed test plan shall be included for specific overtesting/overinspection to be conducted by or under the direction of the Offeror when these processes are subcontracted. In the event these processes are performed in-house the test plan shall define in-process testing and overtesting performed as quality assurance measures. The test plan(s) as a minimum shall include the following:
- 3.4.1. Identification of test specimen type (actual production article, scrapped parts, integral test piece, or separate representative test piece), description (configuration and dimensions), and heat treat condition.
 - 3.4.2. Frequency of overtesting. The plan shall specify the frequency per process. The minimum frequency of overtesting shall be every 6 months.
 - 3.4.3. The specific testing to be conducted on each specimen and the acceptance/rejection criteria.
 - 3.4.4. Identity of the laboratory(ies) to conduct the testing. Identity of the laboratory(ies) to conduct the testing. The Offeror shall substantiate that the laboratory is an OEM-approved laboratory for the specific testing required and has access to all applicable microstructural and mechanical testing standards used for acceptance/ rejection. Laboratories utilized for overtesting shall be autonomous from the source responsible for production acceptance testing and shall also be independent of the laboratory(ies) used for production acceptance testing.

- 3.4.5. Identity and background of personnel responsible for reviewing the results of laboratory testing including metallography.
- 3.4.6. Procedures for identification of test pieces, retention of test pieces, and retention of test data.
- 3.5. Audits. Specific procedures shall be provided for performing on-site audits of sources of critical processes and shall as a minimum identify the following:
 - 3.5.1. The specific procedures, guidelines, and checklists for conducting on-site process audits of sources, to include in-house and sub-vendors, and the frequency at which they will be conducted.
 - 3.5.2. The specific procedures, guidelines, and checklists for conducting on-site product and system audits of sources and the frequency at which they will be performed.
 - 3.5.3. The specific procedures identified shall also be provided with the Quality Plan unless previously provided. In the event that they have been previously provided the Offeror shall so indicate.
 - 3.5.4. The personnel conducting the audits including their specific background and experience relative to the processes and products to be reviewed.
 - 3.5.5. Procedures for promptly notifying OC-ALC of major deficiencies noted during audits.
- 3.6. Certification and Control of Processes. The Offeror shall provide the following procedures:
 - 3.6.1. Process procedures which as a minimum include the method and materials for processing each material group, establishment, qualification, and control of operation sheets and schedules, in-process inspections for assuring process control, calibration of equipment, control of materials.
 - 3.6.2. Specific procedures for training of production operators and inspectors.
 - 3.6.3. Certification procedures for operators and inspectors (including re-certification) and schedules including grouping of material types for certification purposes, identification of test specimens (coupons, representative test pieces, scrapped parts, etc.), configuration of test specimens, number of cycles, maximum number of qualification tests the operator is allowed to fail before becoming ineligible, the specific testing performed, and the acceptance/rejection criteria for each test.
 - 3.6.4. Operator certification procedures shall identify the time between certifications, the organization responsible for the certification, and the agency to which the certifying laboratory is traceable.
 - 3.6.5. Calibration system procedures for testing and production instrumentation is in compliance with ISO 10012-1 (formerly MIL-STD-45662A) and that calibration

standards are traceable to NIST standards.

- 3.7. Processing Non-conforming Material. Procedures shall be provided for processing non-conforming parts including repair procedures and procedures for promptly notifying OC-ALC of non-conformances.
- 3.8. Traceability. Provide specific plan for assuring the traceability of the parts to the production lot. Contractor shall use a serial number system capable of accommodating traceability for 5 years for the entire production quantity. Contractor shall specify the serial number system to be used.
- 3.9. Special instructions via an Engineering Instruction (EI) may apply.
- 3.10. The Offeror shall maintain all applicable records for a period of five (5) years from the date of delivery of products/services.

4. QUALITY PLAN FORMAT.

- 4.1. The Quality Plan must be submitted in a hard or semi-hard cover notebook form (i.e. a three-ring binder or similar product), with a table of contents and tabs corresponding to the table of contents and this QPR. This will greatly decrease the time it takes for an engineer to evaluate the package and will decrease the likelihood of the package being separated and lost.
- 4.2. It is intended that the Quality Plan lead the government through the Supplier's quality assurance system and state in plain language what the Supplier will do to ensure the quality of the coatings. The Quality Plan shall also be limited to single tier reference documents. The reference documents shall be attached and shall include, but not be limited to, Supplier's documents and process specifications and standards. The reference documents shall be numbered and dated. Military specifications and standards and commercial specifications and standards may be excluded from being attached.

5. REPORTING.

- 5.1. The supplier shall provide a copy of the initial production acceptance test report, as required by paragraphs 3.3.3 to OC-ALC/LPKA and LPF in turn. This report shall include the actual test results, with photomicrographs, as provided by the testing laboratory. A summary may be included, but will not be an acceptable substitute for the actual test results.
- 5.2. The supplier shall provide a copy of the overtest report, as required by paragraph 3.4.3 to OC-ALC/LPKA and LPF in turn, for each overtest on the 6 month interval per paragraph 3.4.2. This report shall include the actual test results, with photomicrographs, as provided by the testing laboratory. A summary may be included, but will not be an acceptable substitute for the actual test results.

6. NDT Quality System.

6.1 The specific quality system procedures for each NDT process required in the inspection of welds on the approval item shall be provided. In cases where the required NDT process is performed by a subvendor, procedures shall be provided for assuring that an adequate NDT Quality System is maintained. The procedures shall comply with LPF-QPR-018, and as a minimum shall include:

6.1.1 Process control procedures for each NDT process.

6.1.2 Specific procedures for certifying and training NDT personnel.

6.1.3 Calibration procedures for NDT gage standards including working masters and transfer masters. These procedures shall provide assurance that working masters are properly calibrated with transfer masters that have been properly calibrated with the grand master.

6.1.4 The certification procedures shall identify the time between certifications, the organization responsible for the certification, the agency to which the certification is traceable.



GRIZELDA LOY-KRAFT, Chief
F100 Engineering Source Approval
Fighter Propulsion Division
Propulsion Directorate

FIRST ARTICLE REQUIREMENTS

(AFMCI 64-110, AFMCI 23-102 and FAR Part 9, Sub Part 9.3) (Additional Instructions on Page 3)

1. DATE
21 May 03

2. P/R/MIPR NUMBER	3. PART NUMBER 4027647	4. NSN 2840-00-340-8105NZ
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5. FIRST ARTICLE QUANTITY
THE FIRST ARTICLE IS 3 UNIT(S) OF LOT/ITEM 1
AND WILL BE: PART OF PRODUCTION QUANTITY IN ADDITION TO PRODUCTION QUANTITY

6. ARTICLES <input type="checkbox"/> WILL <input checked="" type="checkbox"/> WILL NOT SERVE AS A MANUFACTURING STANDARD	7. LONG LEAD TIME ITEMS <input checked="" type="checkbox"/> REQUIRED <input type="checkbox"/> NOT REQUIRED <i>(See FAR 52.209-3 or -4, alternate II)</i>
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8. SPECIAL REQUIREMENT/PRODUCTION FACILITIES *(See FAR 52.209-3 or -4 Alternate I)*
 REQUIRED NOT REQUIRED
"The First Article offered must be manufactured at the facilities in which that item is to be produced under the contract, or if the First Article is a component not manufactured by the contractor, such component must be manufactured at the facilities in which the component is to be produced for the contract. A certification to this effect must accompany each First Article which is offered."

9. TEST/INSPECTION REQUIREMENTS

A. CONTRACTOR TESTING GOVERNMENT TESTING
Performance or other characteristics which the First Articles must meet are identified in drawing 4027647 and specifications identified therein.

B. The detailed technical requirements for First Article approval tests are contained in Block 12 of this form and LPE-QAR-003
(Cite Spec and Para number)

C. TEST PLAN REQUIRED
(1) DD Form 1423 ELIN A001
(2) Delivery due 30 calendar days from date of contract.
(3) Number of days for government approval/disapproval 45 days.

D. Contractor's notification to ACO and PCO
(Requesting Activity)
of test time and location due 10 days prior to start of testing.

E. TEST REPORT REQUIRED
(1) DD Form 1423 ELIN A002
(2) Due 120 calendar days from date of contract.
(3) Forwarded to PCO & OC-ALC/TICLA, 3001 Staff Dr. Ste T69 Tinker, OK 73145-3036, Attn FA Montr
(4) Government written notice of approval/disapproval due 60 days after receipt of contractor's report.

F. FIRST ARTICLE DELIVERY:

(1) Due within _____ calendar days from date contract.
(2) Notify _____ calendar days prior to shipment.
(3) Delivered to government at _____
(Set Forth Consignee and Address)
(4) Government written notice of approval/disapproval within _____ days after receipt of first article package.

G. Estimated cost of government testing/inspection evaluation.
\$ \$2,500.00

10. DISPOSITION OF FIRST ARTICLES

Approved First Articles will be forwarded to _____

1 *(insert quantity)*. first articles will be expended in testing. Residual components of disapproved first articles will be returned to the contractor/ will be retained by _____ pending disposition instructions from the contractor.

First articles will be installed on aircraft/equipment to determine proper fit/function. Approved article will remain on the aircraft/equipment and will not be forwarded to USAF Supply, but will be considered part of the contract quantity.

Disapproved first articles will be returned to the contractor/ will be retained by _____ pending disposition instructions from the contractor

On purchase requests designated as direct shipments the following disposition will apply. (NOTE: Always applicable on Foreign Military Sales (FMS)).
a. Approved first articles will be returned to the contractor for shipment with production item.
b. Disposition of disapproved first articles will remain the same as marked above.

Other Disposition: See Block 12 of this Form

11. CONDITION(S) FOR WAIVER OF FIRST ARTICLE APPROVAL

- a. Offerors who have previously furnished production quantities of the same or similar article to the prime contractor for delivery to the X Government, X DoD, X Air Force.
- b. Offerors currently in production of the same or similar article for a _____ Government, _____ DoD, _____ Air Force contract and who have received First Article approval under the existing contract.
- c. Offerors who have previously furnished production quantities of the same or similar articles for a X Government, X DoD, X Air Force provided articles thus furnished have exhibited satisfactory performance in service, in the opinion of the Air Force.
- d. Provided not more than 36 months have elapsed since completion of the contract.
- e. First Article testing will not be waived.
- f. See Remarks in block 12 below.

NOTE TO BUYER: UNDER CONDITIONS A AND C ABOVE, THE COGNIZANT ENGINEERING ACTIVITY WILL DECIDE WHETHER OR NOT THE ITEM HAS EXHIBITED SATISFACTORY PERFORMANCE IN SERVICE AND PREPARE AND RETAIN SUPPORTING DOCUMENTATION TO FULLY JUSTIFY THIS DECISION. THE BUYER MUST SOLICIT DUAL PRICES (*That is, both with and without requirement for first article approval*) AND MUST FURNISH THE COGNIZANT ENGINEERING ACTIVITY WITH THE FOLLOWING INFORMATION ON THE PREVIOUSLY SUPPLIED ARTICLE:

A. PROCURING OFFICE B. CONTRACT NUMBER C. DATE OF CONTRACT D. SPECIFICATION NUMBER AND REVISION

12. REMARKS

- 9.B. First article test requirements shall be per LPF-QAR-003 and the following:
 - a. All three first articles shall be inspected in accordance with the requirements of paragraphs 3.1, 3.2, 3.3, 3.4, and 3.5 of LPF-QAR-003.
 - b. After completion of inspections per 9.B.a above, one article shall be destructively tested/evaluated in accordance with the requirements of paragraph 3.6 of LPF-QAR-003.

10. Disposition of First Articles:

- a. Approved first articles will be retained at the contractor's facility for reconditioning (if necessary) with final acceptance the same as for production items. If a first article is expended in testing, approval of first article will constitute acceptance.
- b. Disapproved first articles shall be retained at the contractor's facility, unless specified otherwise by the PCO.

11. The cognizant government engineering authority shall be the final authority for determining if a contractor meets the conditions of waiver identified in 11.a, or 11.c.

First article testing is waived if the offeror is the prime contractor (OEM), Pratt & Whitney.

This is a critical part used in the F100 series turbine engine. Poor quality parts will have an adverse effect on mission capability and system safety. For this reason, First Article Testing is required to insure first time manufacturers or manufacturers that have not produced the item within three years manufacture parts in accordance with the drawing and specification requirements.

13. COGNIZANT ENG ORGANIZATION RESPONSIBLE FOR CONDUCTING

AND/OR APPROVING TEST (Name, Organization, Phone)
 Hank Schank, OC-ALC/LPFRB, DSN 884-8790

Hank Schank 21 MAY 97

14. PR INITIATOR (Name, Organization, Phone)

CONTRACT DATA REQUIREMENTS LIST

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 440 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

A. CONTRACT LINE ITEM NO.	B. EXHIBIT	C. CATEGORY: TDP TM OTHER		
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D. SYSTEM/ITEM P/N 4027647	E. CONTRACT/PR NO.	F. CONTRACTOR
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1. DATA ITEM NO. A001	2. TITLE OF DATA ITEM FIRST ARTICLE TEST REPORT	3. SUBTITLE NSN: 2840-01-340-8105NZ Noun: Augmentor Nozzle Support Asy
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4. AUTHORITY (Data Acquisition Document No.) DI-NDTI-80809	5. CONTRACT REFERENCE	6. REQUIRING OFFICE OC-ALC/LPFR
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7. DD 250 REQ YES	9. DIST STATEMENT REQUIRED	10. FREQUENCY ONCE	12. DATE OF FIRST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION		
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8. APP CODE	11. AS OF DATE SEE BLOCK 16	13. DATE OF SUBSEQUENT	a. ADDRESSEE		b. COPIES	
			Draft	Final		

16. REMARKS Contractor must provide a plan to ensure that all drawing requirements are met on each first article. The plan should include the equipment and facilities utilized to verify all drawing requirements. As a minimum, the following information is required. a. A list of all drawing dimensions, tolerances, and the equipment utilized to verify each dimension. An actual drawing should be submitted to correlate with the dimension list. b. A plan to verify that all non-destructive inspections are met. c. A plan to verify that all visual inspections requirements are met. d. A plan to verify material properties to include mechanical properties, metallurgical, and chemical compositions. e. A plan to ensure that manufacturing processes are performed by OEM (PWA) certified vendors. f. A plan to ensure that the forging/casting source is OEM certified, if applicable. Guidelines for first article test plans are contained within LPF-QAR-003 as an attachment. A government representative must coordinate on the First Article Test Plan. The First Article Test Plan shall be received 30 calendar days from the date of contract.	OC-ALC/ENRS			
	3001 STAFF DR			
	STE T69			
	OK 73145-3036			
	ATIN: FA			
	MONITOR			

G. PREPARED BY Hank Schank/LPFRB	H. DATE 21 MAY 03	I. APPROVED BY	J. DATE
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17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

