

FIRST ARTICLE REQUIREMENTS

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

1. DATE 2 May 01

2. P/R/MIPR NUMBER 3. PART NUMBER 4016942 4. NSN 2840-01-071-1639

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 WILL WILL NOT SERVE AS A MANUFACTURING STANDARD 7. LONG LEAD TIME ITEMS REQUIRED NOT REQUIRED

8. SPECIAL REQUIREMENT/PRODUCTION FACILITIES REQUIRED NOT REQUIRED "The First Article offered must be manufactured at the facilities in which that item is to be produced under the contract..."

9. TEST/INSPECTION REQUIREMENTS A. CONTRACTOR TESTING GOVERNMENT TESTING B. The detailed technical requirements for First Article approval tests are contained in block 12 of this form and LPF-QAR-003 C. TEST PLAN REQUIRED D. Contractor's notification to ACO and PCO E. TEST REPORT REQUIRED

F. FIRST ARTICLE DELIVERY: (1) Due within calendar days from date contract. (2) Notify calendar days prior to shipment. (3) Delivered to government at (4) Government written notice of approval/disapproval within days after receipt of first article package. G. Estimated cost of government testing/inspection evaluation. \$ 3,500.00

10. DISPOSITION OF FIRST ARTICLES Approved First Articles will be forwarded to 1 first articles will be expended intesting. Residual components of disapproved first articles will be returned to the contractor/ will be retained by pending disposition instructions from the contractor. Other Disposition: See block 12 of this form

Vertical handwritten text on the right margin: "Detailed Technical Requirements 11-27-01"

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  Government,  DoD,  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  Government,  DoD,  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

- 9B: 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 9Ba above, one article shall be destructively testec/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 11a or 11c.

The first article testing is waived if the offeror is 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)  
 Rochelle DeCrescenzo, OC\_ALC/LPFRA, (405)-734-8783

14. PR INITIATOR (Name, Organization, Phone)

*Rochelle DeCrescenzo*





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1. This document provides guidelines for the preparation of first article test plans/test reports for F100 engine parts where referenced within the first article data of a contract.
2. FIRST ARTICLE QUANTITY. The quantity of first articles shall be per the contract. The quantity of articles allowed for destructive testing, in accordance with the contract, shall be tested per the first article procedure in its entirety, to include the destructive testing. The remaining articles shall only be tested per the nondestructive portions of the procedure.
3. TESTING REQUIREMENTS.
  - 3.1. Testing shall consist of, but shall not be limited to, the verification of the following.
    - 3.1.1. Dimensional conformance including finish requirements.
    - 3.1.2. Conformance to non-destructive inspection requirements (FPI, Ultra-sonic, Eddy Current, X-ray, visual)
    - 3.1.3. Conformance of material properties to include mechanical, metallurgical and chemical.
    - 3.1.4. Conformance to other required processes, specifications, and standards listed on the drawing including sub-tier specifications and standards, special requirements as described in the engineering instructions (EI), quality plans, etc.
  - 3.2. First articles shall be serialized. Serial Numbers are to be identified prior to commencement of testing unless otherwise specified.
  - 3.3. Dimensional Inspection.
    - 3.3.1. All dimensions, as listed on the assembly drawing and detail drawings, to include drawing notes, shall be measured where possible on all first articles 100% (no sampling allowed).
    - 3.3.2. A tabular format shall be used with drawing dimension, tolerance, measurement, and instrument/gage/tooling/serial number used.
    - 3.3.3. All tooling and gaging used for inspection and acceptance/rejection of first articles shall have calibrations from a laboratory traceable to NIST and in accordance with ISO 10012-1 (formerly MIL-STD-45662), listed in a (tooling & gaging table) table, table shall include nomenclature, serial number, calibration frequency, next calibration date, range, least increment, and accuracy. Listing shall also include alignment tools and constraint fixtures.
    - 3.3.4. Inspection results shall be presented in a table showing the feature measured, dimension and tolerance, actual reading and gage serial number used.
  - 3.4. Nondestructive Inspections (NDI), including Fluorescent Penetrant Inspections (FPI), Ultrasonic Testing (UT), Eddy Current (EC), Radiographic Testing (x-ray), and visual inspections, shall meet the following:

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- 3.4.1. All first articles shall receive 100% of the inspections identified on the QAD. Sampling shall not be allowed.
- 3.4.2. NDI shall be per the applicable specification(s).
- 3.4.3. Sources used shall be Pratt&Whitney approved per the OC-ALC/LPFR letter granting source approval to the contractor.
- 3.4.4. NDI results shall be presented in a table showing the feature inspected, acceptance/rejection criteria used, results and gage/master serial number used. In cases where photographic standards within a VIS specification are applied to an NDI, the inspection report shall include a copy.
- 3.4.5. Inspection Masters/Transfer Masters shall have current calibrations. A copy of the calibration(s) shall be included into the report.
- 3.4.6. Level III or Level II inspectors, as applicable, shall be required. A copy of the inspector's certification(s) shall be included into the report.
- 3.5. Visual Inspections shall include:
- 3.5.1. Specific visual inspections per a Pratt&Whitney Visual Inspection Standard (VIS) document shall be called out of the applicable VIS and cited as specific inspections.
- 3.5.2. Visual inspection results shall be presented in a table showing the feature inspected, acceptance/rejection criteria used, results, and gage/master serial number used (as applicable).
- 3.5.3. In cases where photographic standards within the VIS are used, the inspection report shall include a copy.
- 3.6. Material properties testing shall include mechanical properties, metallurgical properties, and chemical composition tests, as applicable, per the material specifications and the following:
- 3.6.1. Composition, heat treat condition, and other characteristics/properties, as listed in the technical requirements section, acceptance section, and/or quality sections of the specification(s) so as to verify that the materials and processes are sound, clean, and free of imperfections detrimental to the performance of the part or assemblies.
- 3.6.2. In some cases a material suppliers certification will not be sufficient and the Contractor shall have redundant testing performed.
- 3.6.3. Metallurgical microanalysis, as applicable, for raw materials, weldments, brazements, and coatings shall be conducted. Results shall include the complete laboratory report including photomicrographs.
- 3.6.4. Mechanical testing, as applicable, per manufacturing specifications and the drawing(s).

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3.6.5. In cases where the applicable specifications require test reports, these shall accompany the First Article Test Report (FATR).

4. SUBMITTAL.

4.1. The First Article Test Plan (FATP) shall be delivered to the Contracting Officer in accordance with the schedule as listed in the contract, or Form DD1423. The FATP shall provide a detailed description of specific testing instructions to be used. Generalized instructions will not be acceptable.

4.2. The First Article Test Report (FATR) shall be delivered to the Contracting Officer in accordance with the schedule as listed in the contract, or Form DD1423. All laboratory test results, including those resultant from testing conducted at the contractor's facility and including sub-vendor testing, shall be provided with the FATR in their complete form as provided by the testing laboratory(ies).

5. DISPOSITION OF PARTS.

5.1. When required by the contract, the remnants from destructive testing shall be delivered with the First Article Test Report.

5.2. When required by the contract and following the completion of non-destructive testing, one article shall be delivered to the Contracting Officer and packaged in accordance with contract requirements. Marking on the package shall be **UNSERVICEABLE - Condition Code "R"**. Deliver this part with the First Article Test Report. The other(s) shall be handled in accordance with the contract.

6. GENERAL REQUIREMENTS.

6.1. All First Articles and all Production Articles shall be fabricated from material whose metallurgical state is in compliance with the drawing requirements, as well as all sub-tier specifications and standards referenced therein.

6.2. All First Articles and all Production Articles shall be new manufactured under this contract. No items manufactured under previous contracts shall be delivered without approval.

6.3. The subcontractors previously identified by the contractor as sources to be employed, to include laboratory testing, shall be the only sources used. If the contractor wishes to employ a subcontractor other than previously identified, they shall substantiate that the new source is OEM approved for the specific testing required. A change in the address of a source shall be construed as a change of source. Employment of alternate sources shall only be authorized by OC-ALC/LPFR.

6.4. Engineering Instructions shall take precedence over all other technical instructions.

----- **END OF DOCUMENT** -----

QUALIFICATION REQUIREMENTS  
FOR MANUFACTURE OF F100 ENGINE PARTS

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I. HARDWARE DESCRIPTION

- A. Nomenclature:  
**SUPPORT-TURBINE EXHAUST CASE**
- B. Function:  
**TURBINE EXHAUST CASE SUPPORT: SUPPORTS INNER DIAMETER**
- C. Material Composition:  
**AMS5599 NICKEL ALLOY**

II. REFERENCE DOCUMENTS

- A. LPF-QAR-004: "General Quality Assurance Requirements For F100 Engine Components."

III. JUSTIFICATION FOR QUALIFICATION REQUIREMENTS

Ref.: FAR Subpart 9.2, AFMCFAR Subpart 5309.2

The following paragraphs provide the justification for qualification requirements for this part.

A. Criticality of Part:

This part is used on the aircraft primary propulsion system, Pratt & Whitney F100 engine model series. Failure of this part can result in secondary damage to the engine and subsequent mission abort.

B. Complexity of Part:

This part is not complex to manufacture, however, it is used in a critical location and must therefore require strict process control and quality standards.

C. Government Risk:

The following paragraphs document the reasons why the risk to the government of buying this part from an unqualified source is compound.

1. The probability of an unqualified source producing an unsatisfactory part is .
2. The probability of an unqualified source failing to produce within schedule is .
3. Untimely delivery critically impacts end item overhaul/repair schedules. Failure to deliver on schedule may result in additional high cost emergency procurements.

D. There are no costs incurred by an offeror for qualification testing and testing evaluation under the requirements of paragraphs VI.A or VI.B. However, the offeror's development of a Source

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Approval Request (SAR) package to be submitted for Government evaluation may cost as much as \$2500. In addition, the cost incurred by offerors for Government evaluation of their SAR submitted under the requirements of paragraphs VI.A or VI.B may be as much as \$1,200. This cost may be borne by the Government if it is in the best interest of the Government to qualify alternate sources.

IV. JUSTIFICATION FOR QUALIFICATION PRIOR TO CONTRACT AWARD

Ref.: AFMCFAR Subpart 5309.2

The following paragraphs provide the rationale for requiring a demonstration of the qualification requirements prior to contract award.

- A. The risk of default by the contractor must be minimized as the shortest combined administrative and production lead-time is over months.
- B. The technical risk must also be minimized due to the criticality of the part (Reference the section "Criticality of Part" in paragraph III.A).
- C. The manufacturing and processing techniques are critical to performance and reliability (Reference the section "Criticality of Part" in paragraph III.A).
- D. The risk to the government in determining a potential vendor's capability without an actual demonstration of that capability must be minimized. The expertise that is required to manufacture this part is not commonly available or easily obtained and therefore must be demonstrated. (Reference the section "Complexity of Part" in paragraph III.B).

V. DATA AND DOCUMENTATION REQUIREMENTS

The following paragraphs document the data that must be submitted with a request for source approval. All documentation submitted shall be the latest revision published. Documentation shall be bound (preferably a three ring binder) with a table of contents and corresponding sections tabbed.

- A. The potential Offeror must substantiate that they possess latest revision of the following data by providing a copy in the source approval package, or must provide DCAS or other government representative written verification that the potential vendor has the latest revision of the following data:
  - 1. Drawing Number: (Including all sub-assembly or detail drawings specified on this drawing number)
  - 2. No QAD for top level drawings. As applicable, include the QAD for each sub-assembly or detail part listed on the above drawing.
  - 3. All applicable specifications called out on the drawing, and/or assembly and detail drawings, and on the QAD (as applicable). These include:

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- a) Process Specifications
  - b) Inspection Processes
  - c) Material Specifications
- B. The potential Offeror's Quality Assurance System must meet or exceed the requirements described in the attached document LPF-QAR-004.
- C. The vendor shall supply a list of all manufacturing and inspection processes that will be performed, both in-house or by sub-vendors. The vendor shall substantiate that sources to be employed for any significant process, including themselves, with the exception of conventional metal removal processes, are currently approved by Pratt & Whitney for the specific process required or another OEM for an equivalent process. The vendor must supply the name and address of each certified vendor to be used. In all cases where process approval is relative to an OEM process specification other than Pratt & Whitney, the vendor shall provide the complete specification and demonstrate the equivalence of the specifications.

VI. SUBSTANTIATION OF MANUFACTURING CAPABILITY

The following paragraphs document the methods to be used to substantiate a vendor's capability to manufacture this item.

- A. A vendor who has manufactured the item for the prime contractor or for other US DoD users of the same item within the last five years may be approved as a source for the part provided that the vendor was responsible for all material procurement, inspection, and finishing of the end item, i.e., the prime manufacturer did not add any value to the end item. The vendor must submit evidence of the scope of work for the part indicating that they had primary responsibility for all operations necessary for the completion of the part for delivery to the customer. This evidence shall include MANUFACTURING PROCESS SHEETS.
- B. Other vendors will be considered for approval on the basis of their ability to manufacture a similar item for the prime contractor, US DoD, or a NATO country. The following conditions must be met for approval by similarity:
1. Submit evidence of the successful manufacture and sale of the similar item, to include purchase orders and shipping documents reflecting production quantities within the last five years. This evidence must document that the vendor had primary responsibility for all operations necessary to produce the similar item, and that the similar item was accepted by the customer. Also include a summary of quality deficiencies experienced within the last two years of production of the similar item(s) with coordination from the Q. A. manager. The vendor shall provide SPECIFIC similarities and differences between the subject part and the similar part.
  2. The vendor shall substantiate that the similar component(s) submitted will satisfy the following criteria:

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- a) Fabricated of the same alloy or an alloy from the same alloy family, e.g. Alpha Titanium's, Inconels, Austenitic Stainless Steels.
  - b) Illustrates the ability of the vendor, in conjunction with their sub-vendors, to perform all significant processes to be employed and maintain requisite tolerances and surface finish requirements.
  - c) The data must also show that the manufacturing and inspection/test processes for the similar part demonstrate the full range of difficulty required for the subject part. Included in this data shall be complete MANUFACTURING PROCESS SHEETS for the similar item.
3. A first article requirement may be included in any contract resulting from approval based upon similarity. The estimated cost of first article testing is \$0.00. These tests may include material properties analysis, dimensional analysis, and possibly rig test. At least first articles would be required with first article requiring destructive testing.

#### VII. RESPONSIBLE ENGINEERING ORGANIZATION

The responsible organization for establishing these qualification requirements is the F100 Engine Engineering Branch, within the Fighter Propulsion Division of the Oklahoma City Air Logistics Center, Tinker Air Force Base, Oklahoma.