

PURCHASE ORDER ATTACHMENT TQA-32B (00)
(June 1993)

FIRST ARTICLE INSPECTION/TEST REQUIREMENTS

SCOPE:

This establishes First Article Inspection/Test (FAI/T) requirements for Raytheon suppliers.

PURPOSE:

The purpose of an FAI/T is to verify that planning, work instructions, material processing systems and controls, tools and fixtures, inspection/test equipment and level of personnel capability will produce an item in compliance to applicable purchase order, work statement and specification requirements.

1.0 General:

- 1.1 FAI/T will be performed on the first production items fabricated. The FAI/T shall consist of a completed assembly and all detail levels manufactured by the supplier. All parameters and notes must be inspected and documented. The item inspected must be readily identifiable.

NOTE: PROCURED ITEMS SUCH AS QPL ITEMS, STANDARD BOLTS, NUTS, WASHERS, ETC., ARE NOT CONSIDERED ITEMS MANUFACTURED BY THE SUPPLIER. SUPPLIER CERTIFICATION OF CONFORMANCE ON FILE IS ACCEPTABLE.

- 1.2 Subject to Raytheon Quality review and approval, the supplier may request that certain supplier manufactured items, i.e. proprietary items, not be subjected to FAI/T.
- 1.3 FAI/Ts will be documented on FAI/TR forms attached. Supplier may use alternate form for Dimensional Inspection Check Sheet, provided equivalent information is documented.
- 1.4 When directed by P.O., a Quality Assurance Representative may witness and/or participate in the supplier FAI/T. The supplier shall advise the buyer seven (7) working days in advance of the scheduled FAI/T.

The supplier will perform the FAI/T and submit the First Article Inspection/Test Report (FAI/TR) with the identified FAI/T item to Raytheon QA Representative.

2.0 Requirements:

- 2.1 In addition to inspection/test of all parameters in the technical data package, the following are to be considered an integral part of the FAI/T. One item of the first production lot from the initial Purchase Order (P.O.) will be inspected to determine compliance, as applicable, of:
- a. Accuracy and adequacy of planning.

- b. Correct material and/or items were used during fabrication and/or assembly.

NOTE: UNLESS OTHERWISE SPECIFIED BY P.O., ENGINEERING DRAWING OR SPECIFICATION, VERIFICATION OF MATERIAL BY THE SUPPLIER MUST BE IN THE FORM OF PHYSICAL AND CHEMICAL ANALYSIS. PROPERLY AUTHORIZED CERTIFICATION FROM THE MANUFACTURER/DISTRIBUTOR IS ACCEPTABLE.

- c. Casting and forging FAI/T samples shall be a completely processed item including heat treatment, straightening and nondestructive testing.
- d. When required by specification, grain flow of forgings must be verified from a sample cut from the forging and/or analysis of grain flow photographs furnished by the supplier.
- e. Configuration is identified and controlled by P.O./Supplier Instruction Sheet (SIS).
- f. Approved suppliers/processors were used and are identified.
- g. Adequacy of check gages/fixtures.
- h. Capability of tooling to produce items.
- i. Configuration compliance of the item.

CONFIGURATION OF THE ITEM/COMPONENT, AS BUILT, COMPLIES TO ALL REQUIREMENTS OF THE DRAWING/ SPECIFICATION, THE APPROVED SUPPLIER DRAWING/ SPECIFICATION AND THE P.O. AND WORK STATEMENT.

- j. All additional P.O. requirements are fulfilled.

- 2.2 Note discrepancies in "Remarks" section of FAI/TR. Indicate cause of discrepancies (i.e., human error, tooling, planning, engineering, etc.).

A DELTA FAI/T WILL BE REQUIRED FOR ANY DISCREPANCY LISTED THAT CAUSES REJECTION OF THE FAI/T.

- 2.3 Discovery of any condition that precludes conformance to applicable requirements shall result in immediate supplier corrective action. Continued production shall be at the supplier's risk. Nonconformance shall preclude acceptance and/or delivery without formal authorization.

FORMAL AUTHORIZATION FROM RAYTHEON IS REQUIRED TO RELEASE ITEMS TO PRODUCTION PRIOR TO COMPLETION OF AN ACCEPTABLE FAI/T.

- 2.4 **RAYTHEON UNAPPROVED SDRL LINE ITEMS THAT DO NOT DIRECTLY AFFECT PRODUCT INTEGRITY WILL NOT PREVENT SHIPMENT OF FIRST ARTICLE.**

THE OPEN SDRL ITEMS WILL BE LISTED AS DISCREPANCIES ON FAI/TR AND PROCESSED AS A REJECTION. A DELTA FAI WILL BE REQUIRED AFTER FORMAL APPROVAL OF ALL OPEN SDRL LINE ITEMS.

- 2.5 The supplier is required to notify Raytheon of any change of significance that may require another FAI/T to be conducted on the first production item manufactured after such change. The following definitions will be used in evaluating the type and significance of the change:

Change of Facility/Processing Equipment

A change in or to tools, test equipment, measuring, or aligning fixtures, processing tanks, or equipment, machinery, machine set-ups, other plant manufacturing equipment, etc., used to manufacture, process, assemble, inspect and/or test the item.

Change to Procedures

A change in or to the methods, procedures, planning and/or sequencing used in or applicable to the manufacturing, processing, assembly, inspection and/or test of an item.

Change in Location

A change in location of the site where some or all of the work on items is being performed. It may be as little as moving an assembly fixture. It may or may not involve a change in facilities, procedures, personnel and/or processing sources.

Change in Source of Processing

Such changes may be from an outside processing source to within the supplier's facility, from within the supplier's facility to an outside processing source, or from one outside processing source to another.

Interruption of Production

A complete FAI/T will be required prior to shipment of hardware if one year or more has elapsed since the last production item was produced.

- 2.6 The supplier will completely document the FAI/T as follows:

- Cover Sheet - all identification data and a summary of the completed FAI/T shall be included.

All Detail and Assembly Attributes shall be completed. Signatures of both the inspector(s) completing the FAI/T and supplier management are required.

- 2.7 When the FAI/T is witnessed by an Raytheon QA Representative at the supplier's facility, the Supplier Quality Assurance will perform FAI/T per the requirements of this document.

The SPAE will indicate concurrence of FAI/T by signing, stamping and dating the Cover Sheet.

- 2.8 The Inspection Dimensional Check Sheet is used for recording all the dimensions of the item as specified by the applicable engineering drawing. Recording of data must be in a permanent manner. White-out is not acceptable.

THE SUPPLIER MAY UTILIZE THEIR DIMENSIONAL CHECK SHEETS PROVIDED SUCH DIMENSIONAL CHECK SHEETS INCLUDE THE NECESSARY INFORMATION REQUIRED.

The Drawing Notes Check Sheet is used for recording compliance with all the pertinent notes of the applicable engineering drawing, such as heat treatment, nondestructive testing, and all other special requirements of the drawing.

- 2.9 The completed FAI/TR, along with sustaining data, must accompany the first production lot when delivered to Raytheon, when the FAI/T is not witnessed by an Raytheon QA representative.

A copy of the completed FAI/TR, along with sustaining data, will be kept on file by the supplier for a minimum of five years after termination or completion of the contract.

- 2.8 When attributes are changed or added, the supplier will complete a Delta FAI/T for the first production item of the new configuration and process it in accordance with the requirements of this procedure.

3.0 Legibility of Documentation:

- 3.1 The supplier is responsible for assuring all FAI/T data, including material and process certification, is legible and is of the quality for reproducing. Inspection stamps must be applied to each dimensional record of acceptance in the acceptance block. If the stamps are smeared and/or not legible, the supplier inspector must record his or her stamp number in permanent ink, initial, and date in the "Remarks" column adjacent to the illegible stamp. The following methods are not considered objective evidence of acceptance and will be rejected and corrective action requested:

Stamps:

- **"Stamping the first and last inspection data input per page and drawing a connecting line to indicate acceptance for all inspections accomplished."**
- **"Check marks in lieu of inspection stamps are not acceptable."**

4.0 First Article Testing:

- 4.1 If an ATP/LAT (Acceptance Test Procedure/Lot Acceptance Test) is imposed, all testing shall be verified to Raytheon-approved procedures. Testing, as a minimum, shall consist of box level unless otherwise specified by Raytheon. When automated test equipment is used, a copy of the automated printout must be attached to the FAI/TR.