



Section 6 : QUALITY ASSURANCE CLAUSES / CQAR

MCDONNELL DOUGLAS

AQS Common Process Manual

Corporate Quality Requirement 16

COR 16 First Article Inspection Requirements for McDonnell Douglas Corporation Suppliers

Date: 9 January 1996, Revision A

Supersedes: CQAR 16, 6 October 1994, Original Issue

Policy

1. When required by Purchase Order/Contract, First Article Inspection (FAI) shall be performed by the Seller at the Seller's facility and shall be validated, as required, by McDonnell Douglas Corporation (Buyer) Quality Supplier Surveillance Representative (OSSR) at the Seller's facility prior to shipment.
2. FAI shall normally be completed prior to shipment from the Seller's facility. For parts/components which require Interchangeability and Replaceability (I&R) demonstration at the next assembly (see Supplement 1), First Article is not complete until the I&R requirement has been met.
3. FAI accomplishment does not assure continued production of acceptable items. Buyer follow up activity is required to support continued production of acceptable items.
4. The FAI requirement once flowed to a supplier will continue to be flowed even after initial compliance. Events that require partial or complete reaccomplishment of the FAI during the production life of the part or component include but are not limited to:
 - a. Whenever there is a change in the design affecting form, fit, or function of the part.
 - b. A change in manufacturing location, tooling (including relocation), materials or processes.
 - c. A change of Supplier or if an additional Supplier is added.
 - d. When required as part of corrective action for a part number with repetitive rejection history.
 - e. When extended breaks in production occur, the FAI requirement will be evaluated by the responsible Buyer component.
 - f. When numerical control tapes are either translated to another type machine and/or tool prove is required.
5. Normally, FAI is not required for one of a kind or limited run procurements (where increased inspection levels may be imposed). Additionally, FAI is not required for parts having all characteristics identified by industry standards such as National/Military Standard Drawings, British Standard Parts, Buyer Standard Parts and commercial off-the-shelf standard parts.

Purpose

- 1.This regulation establishes a standard requirement for FAI of Supplier manufactured products.
- 2.When specified by drawing or by terms of the contract, this regulation also establishes a standard requirement for I&R via Supplement No. 1.

Definition(s)

- 1 .First Article Inspection (FAI): A complete, documented physical and functional inspection process which verifies that prescribed production methods have produced an acceptable item as specified by Engineering drawings, Planning, Purchase Order (PO) and/or Engineering specifications.
- 2.First Article Inspection Report (FAIR): The form used to document the results of the FAI.
- 3.First Article Validation: Activity performed by Buyer to verify the accuracy and completeness of the Supplier's FAI.

Applies To

- 1 .When referenced in the contract, this document is applicable to all work performed under terms of the contract, whether or not Government and/or Buyer source inspection is also specified. Nothing herein shall be construed as a waiver of any other provision of the contract of which it forms a part.
 - a.Supplemental Requirements: The Supplements included with this document do not apply unless they are specifically referenced in the contract. When referenced in the contract, supplements hereto will be satisfied in addition to all other requirements of the contract including this document.
 - b.Effectivity: Unless otherwise specified, the applicable issue of this document will be the issue in effect on the date of Seller's acceptance of the contract.
 - c.Inquiries: Inquiries concerning this document or requirements herein shall be directed in writing to the Buyer buyer at the appropriate Buyer Component Company. When an Buyer Quality representative is in residence at the Seller's facility, such inquiries may be directed to that person.

Seller's Responsibility

- 1.The Seller is responsible for complying with all provisions of the contract and for furnishing supplies or services which meet all requirements of the contract whether such supplies and services are manufactured, processed, or provided by the Seller or procured by him for application to contract.
- 2.The Seller is responsible to assure that first article inspections are performed in accordance with this COR for all parts/components manufactured by the seller or the seller's sub-tier suppliers.

Note:Parts having all characteristics identified by industry standards such as National/Military Standard Drawings, British Standard Parts, Buyer Standard Parts and commercial off-the-shelf standard parts do not require First Article Inspection.

- 3.Assistance to Buyer Personnel: The Seller shall provide all reasonable assistance, facilities and equipment to assure the safety and provide for the performance of tasks assigned to itinerant and resident Buyer personnel at the Seller's facility. When conditions warrant, the Seller's personnel shall be made available to Buyer personnel for operation of equipment. Upon request of Buyer personnel, otherwise specified herein, or in other parts of the contract, the Seller shall furnish copies of any documentation, records, etc. required by the contract.

4. Assistance by Seller's Supplier Sources: Conditions may require Buyer participation in Quality Assurance activities related to this contract at the Seller's Supplier Sources. All such Buyer activity shall be coordinated through the Seller's Quality Organization. When it is determined that such Buyer activity is required, the Seller shall require his Supplier Source(s) to provide the access and assistance outlined in Paragraph 3 above.

5. Assistance to Government Personnel: Government Representatives (e.g., Department of Defense, National Aeronautics and Space Administration or Federal Aviation Administration, etc. as applicable) shall have access to all areas of the Seller's premises or of Seller's Supplier Sources in which work on this contract is being performed. Seller and Seller's Supplier Sources shall provide the same assistance, facilities and equipment to Government Representatives as required for Buyer personnel by Paragraph 3 above.

Requirements

1. First Article Inspection/First Article Inspection Report: First Article Inspection (FAI) First Article Inspection Report (FAIR) must be performed and documented prior to initial shipment from supplier's facility. Interpretive issues with the Buyer Engineering Specification and/or planning or other Purchase Order (PO) requirements affecting material description discovered in performance of the FAI/FAIR shall be resolved prior to proceeding with the remainder of the production lot. Request for clarification on interpretive issues should be submitted to Buyer. Suppliers shall have a complete and valid FAVFAIR on file at all times during the production effort for any specific item.

2. When Source Surveillance is a Contract Requirement: Buyer has the option to verify all characteristics listed on the FAVFAIR report, including any functional testing performed, by observing its performance or actual inspection by Buyer at the supplier's facility. The supplier shall notify Buyer prior to commencement of any assembly or testing, in order that Buyer can select detail parts/components which require Buyer validation of Supplier FAIR.

3. FAI/FAIR Format and Content: This Report must contain the following information at a minimum, with notation of applicable revision/edition utilized. Use Buyer Form 1016 (See Appendix A) or equivalent.

a. Date of FAI,

b. Supplier name and manufacturing location and supplier code,

c. Part number and nomenclature,

d. Serial/Heat/Lot number, if applicable,

e. Purchase Order/Contract number,

f. All blueprint dimensions and tolerances,

g. Blueprint zone,

h. Actual dimensions and indication of acceptance or rejection to criteria,

i. Where characteristic being measured is not quantifiable, result shall be recorded as accept/reject,

j. Compliance with all blueprint notes with quantifiable notes listed individually,.

k. Nonconformance Document numbers issued during FAI,

1. Listing of any non-standard tooling (e.g., Check Fixture) used as a media of inspection including tool numbers,

m. List of processes verified, including certification and vendor name for all COR 5 processes,

n. Verification that all engineering is approved and released by Buyer, including Acceptance Test Procedures (ATPs), Qualification Test Reports and applicable software data,

o. Supplier's FAI inspector's signature, stamp, and date,

p. Supplier's shop order number/job number,

q. Listing of any special manufacturing instructions, and

r. Indication of overall FAI status (Part Acceptable/Follow-up Required).

4. FAI/FAIR Layout Addendum Report: The FAI/FAIR layout report must be updated by an addendum when:

a. Blueprint dimensions and/or planning requirements are changed,

b. Discrepant dimensions have been corrected,

c. Follow up actions have been taken, or

d. Manufacturing methods are significantly changed

5. FAI Performed on Previous Purchase Order: If FAI was performed on a previous Purchase Order (PO), then evidence of an acceptable FAI on a previous PO will be provided by the Seller.

6. Deliverable: The Supplier is required to forward one copy of the completed FAIR with the first shipment when First Article validation is to be performed on receipt, or if otherwise required by an individual component of Buyer. Additionally, any required FAI addendum reports shall accompany those associated initial shipments.

7. Buyer Responsibility: Verification of FAI will be indicated by a Buyer stamp on the FAIR adjacent to verified design characteristic, i.e. Block 20 of Buyer Form 1016 or equivalent.

Appendix(es)

Appendix A. Instructions First Article Inspection Report Buyer 1016

Supplement 1. Interchangeability and Replaceability

/s/

K. W. Tohill

Advanced Quality System

Process Action Team (PAT)

Date:9 January 1996

Supersedes:6 October 1994

Appendix A

Instructions First Article Inspection Report

Buyer 1016

1. Part Name - Nomenclature of the article listed in block (2).
2. Part Number - Part number when delivered to engineering drawing requirements.
3. CHG/EDJISS. - Change letter or Edition and Issue of the part number, as applicable.
4. Serial Number - Part serial number.
5. Supplier Name - Name of the Supplier that appears on the purchase document.
6. Manufacturing Location/Supplier Code - Location where part was physically manufactured and the supplier code referenced on the purchase document.
7. Shop Order Number - Supplier shop order number and current revision.
8. Purchase Document Number - Purchase document number imposing FAI requirements.
9. Change Number - Latest purchase document change in place at the time of FAI.
10. Comments - Enter any general comments related to the First Article Inspection that are not documented in block (19).
11. Nonconformance Document(s) - Nonconformance documents issued against the part number, or parts contained therein, during the manufacturing and First Article Inspection process.
12. Results - Document as follows:

Part acceptable:

Check YES when the article inspected conforms to ALL design characteristics.

Check NO when the article does not conform to ALL design characteristics.

Follow-Up Required

Check YES when other actions related to FAI completion remain outstanding (planning paper release, tool prove-out, Engineering Order Release, etc.).

Note: When "Follow-up" is checked, list the reasons for follow-up in block (19).

Check NO when part acceptable block is marked YES and all outstanding actions related to FAI

completion have been accomplished.

13.Line Item - Sequential numerical listing of FAI/Design characteristics being reported, starting with the number (1). Circle the line item number when block (18) is outside block (17) tolerance or when block (18) indicates reject.

14.Zone/Sheet - Drawing zone and sheet number where design characteristic(s) are located.

15.FAI/Design Characteristics - All design characteristics which include, but may not be limited to, dimensions, drawing notes, Test Procedures, and special manufacturing instruction.

16.Tolerance - Design characteristic tolerance parameters.

17.Actual - Actual results from inspection of specified design characteristics. *Accept or Reject* is acceptable only when non-numerical actuals are obtained.

18.Remarks - Remarks which are related to design characteristics as applicable. Remarks shall include, but not be limited to, name of COR 5 processing organization, certification numbers, date verification was made that processing organization held COR 5 process approval, supplier data transmittal reference accepting data items, etc.

19.Verification - Apply stamp when verification(s) are made to supplier recorded actuals and for verification that each CQR 5 process house noted in block (1 9) when follow-up is completed.

Supplier Acceptance:

Printed Name - Printed name of Supplier personnel completing the form.

Stamp - Stamp impression of Supplier personnel completing the form.

Date - Date Supplier personnel completed the form.

Page 1 of_- Enter total number of pages contained in FAI Report.

Supplement 1

Interchangeability and Replaceability

Date:9 January 1996

Supersedes:Original issue dated 6 October 1994

General

The Seller is responsible for the Interchangeability and Replaceability (I&R) requirements specified herein for items designated as "interchangeable" or "replaceable," when specified by drawing or as specified by terms of the contract.

Definition(s)

1. **Interchangeable:** Components are considered interchangeable when they are interchangeable structurally, physically (for mating) and functionally (for serving exactly the same purpose without affecting functional values). Interchangeable components shall be capable of being readily installed or removed without modification of the component or mating structure. Installation or removal of an interchangeable component shall require only the installation or removal of attaching means (bolts, nuts, screws, pins, etc.). No fabrication operations (such as cutting, filing, drilling, reaming) or hammering, bending, prying or forcing shall be required for installation or removal.

2. **Replaceable:** Components are considered replaceable when they meet all requirements of interchangeability except that the installation of such components may require work or operations in addition to installation of the attaching means. Such operations may include drilling, reaming, filing, trimming or other operations necessary for installation of the component into the mating assembly. Such operations do not include shearing, bending, forming, or other basic operations which cannot be readily performed with ordinary hand tools.

3.1 & R **First Article:** A first article component is the first component exhibiting the required interchangeable/replaceable characteristics and has all controlled characteristics completed to the appropriate tool or jig, e.g., trimmed net, fully drilled, etc.

4.1 & R **First Article Demonstration:** A first article demonstration of interchangeability consists of the successful installation and subsequent removal of one first article component on two major assemblies, or the successful installation and subsequent removal of two first article components on one major assembly. In-plant

demonstrations are not required for replaceable components; the normal assembly of one replaceable component into one major assembly shall be considered sufficient proof of replaceability.

5.1 & R **Cycle Demonstration:** Cycle demonstrations are repetitive checks at prescribed intervals consisting of the same requirements as for a first article demonstration performed for items produced subsequent to a successful first article demonstration.

Applies To

This Supplement is applicable rely when it is specifically referenced in the Contract.

Requirement(s)

1. The Seller shall perform a first article demonstration at the specified effectivity. Demonstration not accomplished at the required effectivity will not be held in abeyance without the approval of the quality organization of the responsible Buyer Component Company unless: acceptable tooling is not available, the component to be demonstrated is a "shortage item," and/or mating structure required for checking gap, mismatch and spline is not installed because of "shortages." When a first article demonstration is held in abeyance because of the aforementioned reasons, the appropriate reason must be documented on interchangeability records, approved by Seller Qua* Assurance and submitted to Buyer personnel upon request. First article demonstrations not accomplished for reasons other than the aforementioned will be brought to the immediate attention of the Quality organization of the responsible Buyer Component Company.

a. Units to be cycle demonstrated will be randomly selected by Seller Quality Assurance within the frequency for cycle demonstration established by the contract. Failure of a cycle demonstration to meet interchangeability requirements shall cause all units not checked after the previous successful cycle demonstration to be cycle demonstrated.

b. Records of all first article and cycle demonstration, whether successful or unsuccessful, shall be furnished to the Quality organization of the responsible Buyer Component Company.

c.I & R first article demonstrations will be witnessed and approved by the Buyer Quality Assurance representative and the Customer if both reside at the Seller's facility or by arrangement with the Quality organization of the responsible Buyer Component Company.

/s/

K. W. Tohill

Advanced Quality System

Process Action Team (PAT)