OUTLINE OF IQCS-440 F-16 CO-PRODUCER FIRST ARTICLE INSPECTION REQUIREMENTS

SCOPE:
This document defines the tasks associated with First Article Inspection (FAI) of F-16 products manufactured by International Suppliers/Co-producers.

PURPOSE

In an effort to abate risks associated with Co-Production of major components with producers unfamiliar with F-16, and first world manufacturing technology, the **First Article Inspection** process was developed.

This process verifies, prior to continued production, that the Seller's drawings, planning, technical instructions, processing systems and controls, tooling, inspection/test equipment, and level of personnel proficiency will produce a product in compliance with applicable purchase order, Drawing. I&R or Drill-To-Match control tooling (MSGA, MSTP, TOGA, etc.), and/or specification requirements as well as the Seller's own product definitions

The categories of items requiring FAI include, but are not limited to, the following:

- Detail parts that are designated by Engineering drawing as fatigue and/or fracture critical (F/FC)
- Registered components when designated by the Buyer in the specification or drawing
- Interchangeable/Replaceable (I/R) parts listed in an appropriate program I/R listing document
- Major components and assemblies to be delivered as purchase order end items
- Shop replaceable units (SRU) and line replaceable units (LRU) that comprise avionics and/or mechanical equipment
- Detail parts deemed by LMTAS Engineering/Quality Assurance to be "significant " in accordance with the supplier's/co-producer's skill/technology level
- Machined dimensions produced by numerical control process

Mandatory First Article Inspection, partial or complete as appropriate, shall be required when any of the following conditions exist and shall be initiated by the Seller without additional direction from LMTAS:

- First production of any new product ordered.
- Class I changes to a previously purchased item.
- Implementation of any Class II change or series of changes which affect manufacturing, inspection, test, or processing of characteristics whose failure to meet specification and/or drawing requirements could have a negative impact on top assembly functional characteristics or reliability
- Tooling changes which includes the use of new tools as well as reworked existing tools. **The term "tools utilized in this context refers to tools which control features, attributes, contours, etc**.

Additional First Article Inspection, partial or complete, shall be required by LMTAS when specified by direction in the form of a letter, FAX, or Formal corrective action request document as may otherwise be provided or in the contract. Because the FAI is a methodology or framework to ensure compliance with contract requirements, it is recommended that the FAI be performed in these cases without LMTAS direction

Such conditions include:

- Changes to facilities. This condition includes significant changes in equipment used for manufacturing, inspection, test, processing, machine set-ups, or tools. This condition also includes relocation of the work from one facility to another and relocation of existing equipment within the same facility or new facility.
- Changes to procedures. This condition includes Significant changes to manufacturing planning, processing procedures, and test/inspection methods
- Significant increases in rejections. This condition includes field failures, LMTAS receiving or production line rejections, or Seller in-house rejections.
- Significant changes in product or process requirements that result from product prototype or proofing prior to formal release on LMTAS designs manufactured to build-to packages.

INSPECTION REQUIREMENTS

The Seller's FAI shall verify the following as may be applicable:

1. **Accuracy and adequacy of planning.** This action may be considered to be met, by dimensional verification of any detail part which is strictly a build-to-print item. It remains a requirement for any sub-assembly or assembly and for any detail part for which techniques or manufacturing sequences not shown on the drawing are required for ensuring conformance.
2. **Use of correct material/parts.** Verification methods may include chemical analysis, certification, or approved material identification markings as applied by the manufacturer per required specifications.
3. **Dimensional conformance to approved drawings.** This verification includes conformance to the LMTAS specification control drawing or other LMTAS drawing, as well as applicable supplier's drawings.
4. **I/R, drill to match hole locations.** For all controlled interchangeable, controlled replaceable, and drill-to-match (ref. 16Z001 paragraph 2.3) characteristics (i.e., hole locations, EOP trim contour, etc.) shall be checked only to Master Tooling via Manufacturing and/or check gages coordinated to this master tooling
5. **Compliance with applicable finish requirements**. Methods may include use of certifications from outside sources or evidence on travelers, shop orders, etc., of previous verification.
6. **Compliance with non-destructive test requirements.** Methods may include use of certification from outside sources or evidence on travelers, shop orders, etc., of previous verification.
7. **Form, fit, and function.** This verification includes compatibility with the next level of assembly where applicable.
8. **Compliance with identification and marking requirements**.
9. **Compliance with design specification.** This verification includes completion of **safety of flight** and/or **qualification testing**.
10. **Compliance with applicable process specifications.** Including use of in-house or supplier approved process sources.
11. **Configuration compliance of the item.**

12. **Compatibility of Seller drawings to LMTAS drawing requirements**.
13. **Compliance with other purchase order requirements**, as applicable, including OPOS, POIS, FAB SPECS, HPAS, etc.
14. **Conformance to functional test requirements and/or acceptance test procedures.**
15. **Adequacy of check gauges/fixtures** and capability of tooling to product acceptable/conforming parts.
16. **Verification of compliance with LMTAS furnished tool requirements**. The verifications must be accomplished on each tool or set of tools. Supplier shall document compliance with the following:
    - LMTAS control tools inspected for damage and completeness by Seller and by IQAR or LMTAS Tooling Specialist and/or Tool Inspector after the arrival of the tools at Seller's facilities.
    - Seller tooling coordination to LMTAS control tools verified by PQAR, LMTAS Tooling Specialist and/or LMTAS Tool Inspector and documented on Manufacturing Equipment Record (Form 1585D-1-86).
        - Seller procedure covering periodic inspection (PI) was reviewed by PQAR or LMTAS Tooling Specialist and/or LMTAS Tool Inspector.

NOTE; If a separate in-country physical re-verification, coordination, and buy-off of control tools is performed by LMTAS personnel prior to the release for fabrication of production tooling, note such information by adding the following statement in the "Remarks " section of the First Article Inspection Report (FAIR) Summary sheet **- "Physical re-verification, coordination, and buy-off accomplished by LMTAS personnel."**

FIRST ARTICLE INSPECTION METHODS

The choice of methods for performing the FAI is the responsibility of the Seller. The Seller may perform incremental FAIs on detail parts as they are manufactured and continue to gather the FAI Reports as the sub-assemblies and assembly are finished. Seller has the option, alternatively, to choose to perform a tear-down FAI on a finished assembly.

LMTAS/AMMC(and/or domestic Licensor, if applicable) and the cognizant Lockheed Martin Resident Office (LMRO)Production, Engineering, Tooling, and Procurement Quality Specialists will witness and/or participate in the FAI to the extent considered necessary by LMTAS. Government representative(s) will participate as they consider necessary.

On selected items, based on complexity and/or criticality, a team ofspecialists from LMTAS may assist the LMRO and Government Representatives by either witnessing or participating in the FAI.

When FAI is witnessed or verified by a LMRO IQAR, the Seller shall obtain the IQAR's signature and stamp on the FAIR Summary indicating acceptance of the FAI.

DOCUMENTATION REQUIREMENTS

Seller shall document the results of the FAI on the forms provided as noted below:

FORM NUMBER	TITLE	NOTE
FWP 1586-3-93 (Fig.1)	Summary Sheet	1
FWP 1586A-3-93(Fig.2)	Discrepancy	2
FWP 1586B-3-93(Fig.3)	Dimensional Inspections	2
FWP 1586C-3-93(Fig.4)	Other Data	2
FWP 1586D-3-93(Fig.5)	Manufacturing Equipment Record	2,3

NOTE 1: The FAIR summary sheet is the covers sheet for the FAIR and shall be used only for the deliverable end item part number.

NOTE 2: Each of the four data sheets is required for each detail, sub-assembly, and assembly.

NOTE 3: Required only for foreign co-producers and any contract where LMTAS tools are specified or LMTAS retains design authority.

Summary Sheet (Form FWP 1586-3-93)

This contains General identification data and summary information of the Complete FAI. All involved key/lead inspectors and an authorized Seller management representative shall sign in the blocks provided.

Discrepancy Sheet (Form FWP 1586-3-93

Seller shall document all discrepant conditions and sign this form. Seller shall take corrective action and record the cause, corrective action, and effectivity and obtain PQAR approval signatures.

Dimensional Inspections (Form FWP 1586B-3-93)

All the dimensional attributes with tolerance range, the drawing zone of the attribute, the method of inspection used for that attributes (micrometer, height gage, tool number, etc.), and the actual measurement obtained are noted on this form.

Other Data (Form FWP 1586C-3-93)

All specifications, process standards, functional tests, and acceptance test procedures used, as applicable, including revision level. Seller representative responsible for reporting this data shall sign, date, and stamp the form in the spaces provided.

Manufacturing Equipment Record (Form FWP1586D-3-93)

All major equipment and tools used in the fabrication/manufacture of the item.

Note:

- Copies of all test records, certifications, and other substantiating quality data shall be attached to the forms for the applicable detail/sub-assembly or assembly and shall become an integral part of the FAIR. The final FAI report shall include all FAI data sheets for all required details and sub-assemblies comprised in the component.
- For items with purchase orders which specify the point of inspection as "Destination ", the FAI report shall accompany the first article unit and is required with the first shipment.

DISCREPANCIES

Nonconformance will preclude acceptance of the affected equipment by the PQAR until properly dispositioned. Discrepancies shall be processed in accordance with the lowest authorized level of control:

- Seller's Material Review Board (MRB) in accordance with the LMTAS letter of delegation, when granted.
- LMTAS' MRB in accordance with QCS-189.
- Seller's submission of a Request for Waiver in accordance with the P.O.

The FAI is not fully complete until all necessary subsequent partial FAIs on details or assemblies are complete without nonconformance being identified.

RECORDS RETENTION

The FAI report, or a copy, shall be retained on file by the Seller for the period of time stated for record retention in the Quality Requirement Section of the Purchase Order and made available upon request and/or provided to LMTAS as required by the purchase order.

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FIRST ARTICLE INSPECTION REPORT SUMMARY SHEET

		DATE *Start* *Comp*	PAGE OF
		PURCHASE ORDER NO.	RECEIVING REPORT NO.
SUPPLIER NAME	NUMBER	LOCKHEED PART NO./DASH NO.	SUPPLIER PART NO.
PART NAME		DWG REV.	SERIAL NO.

DETAIL ATTRIBUTES	ACCEPT NA	YES	NO
PLANNING/WORK INSTRUCTIONS			
MATERIAL VERIFICATION			
TEMPER AND HARDNESS			
DIMENSIONAL INSPECTION			
FINISH REQUIREMENTS			
INTERCHANGEABILITY/REPLACEABILITY			
NONDESTRUCTIVE TESTS			
FLT TEST (NEXT ASSY)			
IDENTIFICATION			
PROCESSING/FPS REQUIREMENTS			
PURCHASE ORDER REQUIREMENTS, SPECIAL			
TOOLING			
CONFIGURATION			
APPROVED PROCESSING SOURCE(S)			
QUAL/CERTIFIED PERSONNEL/FACILITIES			
SOFTWARE VERIFICATION			

ASSEMBLY ATTRIBUTES	ACCEPT NA	YES	NO
PLANNING/WORK INSTRUCTIONS			
DETAIL PARTS VERIFICATION			
FASTENERS AND MISC. HARDWARE			
DIMENSIONAL INSPECTION			
INTERCHANGEABILITY/REPLACEABILITY			
FUNCTIONAL TEST			
IDENTIFICATION			
SPECIFICATION COMPLIANCE			
PROCESSING/FPS REQUIREMENTS			
PURCHASE ORDER REQUIREMENTS, SPECIAL			
TOOLING			
CONFIGURATION			
FINISH REQUIREMENTS			
NONDESTRUCTIVE TESTS			
QUAL CERT/SAFETY OF FLIGHT			
APPROVED PROCESSING SOURCES			
QUAL/CERTIFIED PERSONNEL/FACILITIES			
PCV ACCOMPLISHED			
SOFTWARE VERIFICATION			

REMARKS: Use back of this sheet. Be specific - Make sketch if necessary.

Inspection (Signature) Inspection (Signature) Inspection (Signature)

Inspection (Signature) Inspection (Signature) Approved By (Signature)

FOR LOCKHEED INTERNATIONAL USE (Signature and Date)

ISA REP	ACC	NOT ACC	ENGINEERING REP.	ACC	NOT ACC	PRODUCTION REP	ACC	NOT ACC

FOR LOCKHEED FORT WORTH USE (Signature and Date)

SSA REP	ACC	NOT ACC	ENGINEERING REP	ACC	NOT ACC	TOOLING REP	ACC	NOT ACC
PRODUCTION REP	ACC	NOT ACC	CONFIG. MGT. REP.	ACC	NOT ACC	SOFTWARE REP	ACC	NOT ACC

FOR GOVERNMENT USE (Signature and Date)

GOV. REP.	ACC	NOT ACC

FWP 1586-3-93

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FIRST ARTICLE INSPECTION REPORT
DISCREPANCY SHEET

SUPPLIER NAME	NUMBER	DATE

PART NAME	LOCKHEED PART NO. / DASH NO.

DISCREPANCY	REJ. DOCUMENT NO.

FAI APPROVAL DEFERRED PENDING CORRECTION OF PRECEDING DISCREPANCY

SUPPLIER QUALITY REP	LOCKHEED QUALITY REP	OTHER

CORRECTIVE ACTION/COMMITMENT:
EFFECTIVITY:

CORRECTIVE ACTION APPROVAL

SUPPLIER QUALITY REP	LOCKHEED QUALITY REP	OTHER

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FIRST ARTICLE INSPECTION REPORT
DIMENSIONAL INSPECTIONS

☐ ASSEMBLY

☐ DETAIL

PAGE_____ OF_____

PART NO./DASH NO. DWG. REV. SUPPLIER NAME NUMBER DATE

INSPECTION METHOD	ATTRIBUTE & TOL RG	B/P ZONE	ACTUAL	INSPECTION METHOD	ATTRIBUTE & TOL RG	B/P ZONE	ACTUAL

☐ ASSEMBLY

☐ DETAIL

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PAGE_____OF_____

DATE_____

FIRST ARTICLE INSPECTION REPORT
OTHER DATA

LOCKHEED PART NO./DASH NO. | SUPPLIER PART NO. | DWG. REV.

SUPPLIER NAME | NUMBER

SPECIFICATION COMPLIANCE	ACCEPT NA	ACCEPT YES	ACCEPT NO
CHG			
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NO.	FUNCTIONAL TEST	ACCEPT YES	ACCEPT NO

TEST PROCEDURE

CHG

COMMENTS: _____

INSP_____DATE_____

STAMP

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FIRST ARTICLE INSPECTION REPORT
MANUFACTURING EQUIPMENT RECORD

☐ ASSEMBLY
☐ DETAIL

PAGE_____OF_____

PART NO./DASH NO. SUPPLIER NAME DATE

TYPE	MANUFACTURER	YEAR MAKE AND MODEL NUMBER	USED FOR