

2025 FAI COMPLIANCE MATRIX Industry Guide



LOCKHEED MARTIN 

PURPOSE

- ✓ Introduce Lockheed Martin suppliers to the Compliance Matrix concept
- ✓ Equip them to successfully use this Quality tool

MOTIVATION FOR CHANGE WITHIN THE INDUSTRY

Lockheed Martin Aeronautics has experienced significant cost and schedule impact to programs due to issues directly resulting from the lack of accountability for embedded specification requirements in the First Article Inspection (FAI) process across numerous suppliers. Other aircraft manufacturers have similarly suffered from these kinds of escapes.

As a result, the traditional industry approach to accepting entire process specifications on an FAI report without individually verifying design characteristics embedded within them can no longer be accepted.

In practice, documenting all design characteristics, particularly those embedded within associated specifications, can be difficult and time consuming.

Lockheed Martin recognizes that the most productive way to effect a positive change in this area is to make an investment to help our supply chain by providing tools to lessen the burden associated with generating the objective evidence of compliance.

Hence, we have created Lockheed Martin-approved FAI Compliance Matrices for F-35, F-16, C-130 and F-22 products.

Note: It is not currently Lockheed Martin's intention to generate compliance matrices for any industry standards or other specifications that fall outside of Lockheed Martin design authority. Though we will not provide these, they clearly fall within the definition and intent of AS9102B (including all prior revisions) and Lockheed Martin Quality Clause Q2A Rev 16. We encourage all suppliers to pursue a similar approach in the interest of reducing the risk of future nonconformance escapes.

THE COMPLIANCE MATRIX TOOL

- Lockheed Martin Quality Clause Q2A Rev 16 requires the identification and verification of all embedded design characteristics within Lockheed Martin process specifications using a compliance matrix or individual line items on Form 3
- Premise: Lockheed Martin provides clear guidance on exactly which specification requirements we expect to be verified in an FAI report, while the supplier determines applicability for each part number under contract
- An FAI Compliance Matrix is simply an Excel spreadsheet that has extracted what Lockheed Martin considers to be embedded FAI design characteristics
- It is to be used as an extension (attachment) to the FAIR Form 3

COMPLIANCE MATRIX ATTACHED TO AS9102 FORM 3

FAI Compliance Matrix

Generic Process Spec Document Number, Rev JK - Hole Drilling Process Specification	Unique Characteristic Number (Balloon number)	IM/MBP Variation Approval Document	Intentionally left blank	Scope of Work Applicability: Supplier, Sub-tier, Special Processor or Buyer?	PO-level Part Design Characteristic (DC)?	DC Embedded in sub-level Part/material?	AS9102 FAIR Form 3 Field 8 Value - REQUIREMENT	AS9102 FAIR Form 3 Field 9 Value - RESULTS	Compliance Method (Indicate Formalized Process, Procedure or Training Control #)	Notes
3.3 Hole Preparation										
3.3.1 Hole Perpendicularity	3.3.1						All parts shall be securely fastened together prior to hole preparation. Hole shall be within two degrees to the surface.	Comply	Acme Standard Planning Operation #OBI-J3 step D1	
3.3.2 Countersink Requirements										
3.3.2.1 CounterSink Run Out	3.3.2.1						On a ramped part or contoured angle, the countersink shall run out to the outer mold line unless otherwise instructed per Engineering Drawing.	Does not comply	Acme Standard Planning Operation #W4N-J3 step CSP-0	See Form 3 balloon #5.0 for nonconformance document #
3.3.2.2 Alignment and Included Angle	3.3.2.2						Countersink tooling shall be used to assure alignment and concentricity of countersink centerline with the hole centerline. Tools shall be well kept as specified so that angle and alignment are obtained to meet flushness requirements of 3.3.6 and the gap seating requirements of the applicable fastener installation spec.	Comply	none	AFCS (Adjustment Free Countersink) tool is the preferred tool manufacture countersinks EM P xxx.00yt.
3.3.3 Hand Reaming	3.3.3						N/A	N/A		
3.3.4 Clamping Stack ups	3.3.4						The area where the hole will be drilled shall be clamped up such that there is contact between all the layers or there is no gap when shim is inserted.	Comply	Acme Training Course #98J32	
3.3.5 Final Hole Size	3.3.5						Hole diameter to conform to Engineering Drawing.	0.251	Acme Standard Planning Operation #A50hk4-J3 step D1	See balloon #10.0 for Eng Drawing callout verification
3.3.6 Flushness	3.3.6						Countersink depth shall be adjusted to meet applicable fastener flushness requirements. The fastener shall meet flushness criteria from the ED or as outlined in the specification. After fabricating countersink, the flushness shall be measured.	0.1504	Acme Standard Planning Operation #A50hk4-J3 step D1	See Form 3 balloon #10.7 for nonconformance document #

Note result referencing an attachment

AS9102 Form 3

1. Part Number:			2. Part Name:		
Characteristic Accountab			Inspe		
5. Char. No.:	6. Reference Location:	7. Characteristic Designator:	8. Requirement:	9. Results:	10. De Qu To
36A	Zone 1D3	Fracture Critical	Drill holes per ProcSpec XY	See attached Compliance Matrix	

COMPLIANCE MATRIX EXAMPLE

Field 8 Requirement
(Required)

Field 9 Result
(Required)

Compliance Method
(Recommended)

What's this for?
See next slide

Spec Nomenclature

Generic Process Spec Document Number, Rev JK - Hole Drilling Process Specification

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AS9102 FAIR Form 3 Field 8 Value - REQUIREMENT	AS9102 FAIR Form 3 Field 9 Value - RESULTS	Compliance Method (Indicate Formalized Process, Procedure or Training Control #)	Notes
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Section Headers	Unique Characteristic Number (Balloon number)	LM M&P Variation Approval Document	Intentionally left blank	Scope of Work Applicability: Supplier, Sub-tier, Special Processor or Buyer?	PO-level Part Design Characteristic (DC)?	DC Embedded in Sub-level Part/material?	Field 8 Requirement (Required)	Field 9 Result (Required)	Compliance Method (Recommended)	Notes
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3.3.3 Hand Reaming							N/A	N/A		
3.3.4 Clamping Stack ups							The area where the hole will be drilled shall be clamped up such that there is contact between all the layers or there is no gap when shim is inserted.	Comply	Acme Training Course #98J32	
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Different aspects of Design Characteristics
(Content to be determined by each Supplier)
(OPTIONAL)

Section Headers

COMPLIANCE MATRIX AS A RISK INDICATOR

If supplier chooses to fill out this field, it can be used by Quality as a risk indicator for continued compliance

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Low Risk

High Risk

THE COMPLIANCE MATRIX TOOL

We are providing these tools both as an enabler for our Supplier Quality Engineers (SQEs) to properly oversight the process and as a benefit to our suppliers.

If a supplier has its own process that adequately generates this objective evidence, they can use that and work with the SQE to validate that the requirements and intent of Q2A Rev 16 have been satisfied.

If not, then the Lockheed Martin-provided compliance matrices can be used to enable the supplier's own effectiveness and efficiency.

The compliance matrices do not supersede or replace AS9102 FAI forms but are to be used in conjunction with those forms to fully document the verification of **all** design characteristics within the engineering definition.

LOCKHEED MARTIN STEPS FORWARD

Lockheed Martin SQEs have been directed to increase their focus on oversight of contractually mandated FAI Planning in order to ensure the proper identification of all design characteristics while also verifying the successful documentation of those characteristics via FAIR Form 3 and compliance matrices.

SUPPLIER EXPECTATIONS

- Review technical data package with your assigned SQE during the FAI planning stage to determine all embedded design characteristics invoked within required specifications
- Determine if the specification has an available compliance matrix for use
- Review the design requirements listed in the compliance matrix versus the applicable requirements for that part within the technical data package
- Verify those specification requirements have been incorporated into appropriate manufacturing documentation
- Utilize the compliance matrix to document the actual design characteristic results during FAI validation or include line items for each embedded design characteristic on Form 3

COMPLIANCE MATRIX BENEFITS

- ❑ Initial investment of time spent executing the compliance matrix will be recouped when the Supplier can re-use the compliance matrix on similar parts

- ❑ Use of the compliance matrix can:
 - Prevent future escapes
 - Reduce nonconformances
 - Prevent need for corrective action
 - Enable a more robust FAI
 - Save time populating Form 3

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