

First Article Inspection (FAI) Report Guide

Supplier Guide SG-0181

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FAI Review Guide – Form 1

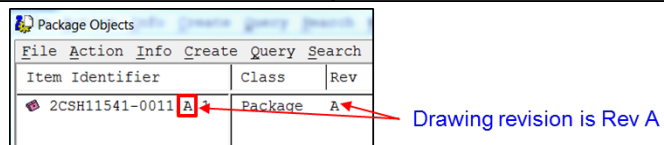
FORM 1 - PART NUMBER ACCOUNTABILITY

Input Sheet Numbers
Sheet ___ of ___

Blue Text denotes required field by AS9102 or NGAS SQAR.
Green Text denotes a conditionally required field
Red Text denotes F-35

1. Part Number: Part Number with dash number P/N is what's listed on PO	2. Part Name: Part Name (F-35 in PDM)	3. Serial Number: Input part SN if serialized part. Input N/A if not a serialized part.	4. FAIR Number: Supplier generated number. Should NOT be N/A.
5. Part Revision Level: N/A for F-35	6. Drawing Number: Drawing number with dash number (F-35 in PDM) All other programs use dwg number	7. Drawing Revision Level: BTP revision PDM (F-35). See note 1 All other programs use Parts List for dwg revision	8. Additional Changes: List changes over and above PO. (i.e. any Dispo 36 RCI's, Change notes or Condition of Supply that impact the FAI. Can be N/A)
9. Manufacturing Process Reference: Note Mfg work order with rev, router #, batch, lot, mfg date to ensure tracability of mfg process	10. Organization Name: Supplier Name performing the FAI See note 3	11. Supplier Code: Vendor number. Should start with 9XXXXXXX See Note 3	12. P.O. Number: PO number. Should be NGAS PO number
13. Detail Part: _____ Assembly FAI: _____ Check one of the types	14. Full FAI: _____ Partial FAI: _____ See note 2 Baseline Part Number (including revision level): _____ Reason for Partial FAI: Complete if partial FAI. Partial FAI may be due to non-conformance identified on the full FAI. Can be N/A if partial FAI is not selected in 14.		

1. Example of the drawing revision



2. For a partial FAI, provide the previous part number, including revision level to which this partial FAI is performed and the reason for the current FAI (e.g., changes in design, process, or manufacturing location). For partial FAIs based on similar parts (reference AS9102, 4.6), provide the approved configuration FAI part number, including revision level.

Baseline Part Number: For a partial FAI, provide the previous FAI part number or approved configuration (including revision level) to which this partial FAI is performed. State the reason for the current FAI (e.g., changes in design, process, or manufacturing location). For a partial FAI based on similar parts (reference AS9102, 4.6), provide the approved configuration FAI part number, including revision level.

3. Documenting Sub-Tier Supplier FAI

- Option 1 – NGAS 1st tier to initiate a new Form 1 – 3 with NGAS information and reference 2nd tier FAI
- Option 2 – If 1st tier is presenting to NGAS 2nd tier, we need the NGAS information annotated in Blocks 10 – 12 and submittal should meet all SQAR requirements

FAI Review Guide – Form 1

Acceptable Inputs for N/A Fields (Boxes 15, 16, 17, 18)

N/A in all boxes

a) If above part number is a detail part only, go to field 19. b) If above part number is an assembly, go to the "INDEX" section below.			
INDEX of part numbers or sub-assembly numbers required to make the assembly noted above.			
15. Part Number:	16. Part Name:	17. Part Serial Number:	18. FAIR Number:
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
19. Signature: Mark FAI Complete if all characteristics were conforming. Otherwise check as FAI not Complete <input type="checkbox"/> FAI Complete <input type="checkbox"/> FAI Not Complete		20. Date: Enter FAI Date	
21. Reviewed By: Printed name and signature supplier personnel that reviewed the FAI		22. Date: Enter Date reviewed	
23. Customer Approval: Customer date and stamp if applicable; N/A if not applicable		24. Date: Enter Date reviewed	

N/A and arrow down

a) If above part number is a detail part only, go to field 19. b) If above part number is an assembly, go to the "INDEX" section below.			
INDEX of part numbers or sub-assembly numbers required to make the assembly noted above.			
15. Part Number:	16. Part Name:	17. Part Serial Number:	18. FAIR Number:
N/A	N/A	N/A	N/A
↓	↓	↓	↓
19. Signature: Mark FAI Complete if all characteristics were conforming. Otherwise check as FAI not Complete <input type="checkbox"/> FAI Complete <input type="checkbox"/> FAI Not Complete		20. Date: Enter FAI Date	
21. Reviewed By: Printed name and signature supplier personnel that reviewed the FAI		22. Date: Enter Date reviewed	
23. Customer Approval: Customer date and stamp if applicable; N/A if not applicable		24. Date: Enter Date reviewed	

N/A and diagonal line across

a) If above part number is a detail part only, go to field 19. b) If above part number is an assembly, go to the "INDEX" section below.			
INDEX of part numbers or sub-assembly numbers required to make the assembly noted above.			
15. Part Number:	16. Part Name:	17. Part Serial Number:	18. FAIR Number:
N/A	N/A	N/A	N/A
\			
19. Signature: Mark FAI Complete if all characteristics were conforming. Otherwise check as FAI not Complete <input type="checkbox"/> FAI Complete <input type="checkbox"/> FAI Not Complete		20. Date: Enter FAI Date	
21. Reviewed By: Printed name and signature supplier personnel that reviewed the FAI		22. Date: Enter Date reviewed	
23. Customer Approval: Customer Signature and stamp if applicable. Digital Signature is acceptable; N/A if not applicable		24. Date: Enter Date reviewed	

FAI Review Guide – Form 2

FORM 2 - PRODUCT ACCOUNTABILITY - MATERIALS, SPECIAL PROCESSES, AND FUNCTIONAL TESTING

Input Sheet Numbers
Sheet ____ of ____

1. Part Number: Part Number with dash number	2. Part Name: Part Name (F-35 in PDM)		3. Serial Number: Input part SN if serialized part. Input N/A if not a serialized part.		4. FAIR Number: Supplier generated number Should NOT be N/A.
5. Material or Process Name: Material Call out See Note 3	6. Specification Number: (F-35 LMT – XXX)	7. Code: May be N/A. See note 7	8. Supplier: Material supplier name and address	9. Customer Approval Verification: (F-35 Always yes) See Note 5	10. Certificate of Conformance Number: Input C of C number for material
Special Processes used See Note 4	(F-35 LMA – XXXXX) See Note 8	May be N/A but should not be left blank	Special processor name and address if outsourced. May be N/A if performed in house but not left blank	(F-35 Always yes) See Note 6	Input C of C number if special process was outsourced. Otherwise N/A

3. List all materials used – paint, primer, sealants, raw metallic material, etc. Include standard hardware if modified.
4. Input any special processes used. Note that touch up is considered a special process as well.
5. All F-35 materials must be on the Lockheed Martin approved materials list – EMAP
6. All F-35 special process suppliers must be on the NGAS ASPL or LM QCS-001 approved special process listings
7. Code: Any required code from the customer for material or process listing, as applicable.
8. Per AS9102 for Special process specifications ensure including class if applicable, and permitted substitutions

Blue Text denotes required field by AS9102 or NGAS SQAR.
 Green Text denotes a conditionally required field
 Red Text denotes F-35

FAI Review Guide – Form 2

Form 2 – Product Accountability (continued)

11. Functional Test Procedure Number:	12. Acceptance Report Number:		
Input Test Procedure number and rev or release date for functional equipment. See note 9 Input N/A for hardware.	Input Acceptance Test Report number used for test with revision or release date. Input N/A if not applicable.		
13. Comments Input N/A if no comments			
14. Signature Printed name and signature of person who completed the form – must be filled in.		15. Date Date signed– must be filled in.	

- For Seller-designed items requiring Qualification Testing, the FAI shall remain open until Qualification Testing is completed; Form 1 Block 19 to reflect FAI “Not Complete”.

Blue Text denotes required field. Per NGAS SQAR all fields on form 2 are required to be completed.

FAI Review Guide – Form 3

FORM 3 - CHARACTERISTIC ACCOUNTABILITY

1. Part Number <i>Part Number</i>				2. Part Name <i>Part Name</i>			3. Serial Number Input part SN if serialized part. Can be N/A	4. FAIR Number Supplier generated number. Can be N/A.
Characteristic Accountability				Inspection / Test Results				
5. Char. No.	6. Reference Location	7. Characteristic Designator	8. Requirement	9. Results	10. Designed / Qualified Tooling	11. Nonconformance Number	14. Additional Data / Comments	
5	6	7	8					

- 5. Char No – Unique assigned number for each characteristic. Can be drawing note number or number assigned to a bubble drawing requirement.
- 6. Reference location – location of unique characteristic for example, “notes list”, “page x”, “CATIA Model”.
- 7. Character Designator – If applicable, record characteristic type [e.g., critical items (see AS9100 clause 3.3), key characteristics (see AS9100 clause 3.4), flight safety, defined by customer].
- 8. Requirement: Specified requirement for the design characteristic (e.g., drawing or DPD dimensional characteristic with associated nominal dimension and tolerances, drawing notes, specification requirements).

NOTE: The organization shall record the requirements in the units specified on the drawing, DPD, or specification, unless otherwise approved by the customer.

NOTE: Per AS9102 FAQ – The company’s FAI procedure should detail how they are accounting for each design characteristic.

Blue Text denotes required field by AS9102 or NGAS SQAR.
Green Text denotes a conditionally required field

FAI Review Guide – Form 3

Characteristic Accountability				Inspection / Test Results			
5. Char. No.	6. Reference Location	7. Characteristic Designator	8. Requirement	9. Results	10. Designed / Qualified Tooling	11. Nonconformance Number	14. Additional Data / Comments
				9			

9. Results: List actual measurement(s) or maximum and minimum characteristic value for a characteristic that has a tolerance range for the design characteristics from both the design specifications and process specifications as required per SQAR

NOTE: The organization shall record the results in the units specified on the drawing, DPD, or specification, unless otherwise approved by the customer.

NOTE: Per AS9102 FAQ: You may use any technique that provides traceability from the engineering to the FAI report.

- For multiple characteristics,
 - Option 1: List each characteristic as individual values.
 - Option 2: For characteristics with the same dimension list once with the min/max of measured value. The quantity needs to be listed. (i.e. 0.120 – 0.125 dia. (3X)).
- If a characteristic is found to be nonconforming, then that characteristic shall be listed separately with the measured value noted.
- When qualified tooling (e.g., radius gauges) is used as a go/no-go gauge record the results as an attribute (e.g., pass / fail).
- When automated inspection tooling produces measurement results, those results may be referenced Form 3, identified as pass/fail, and attached only when:
 - The characteristic numbers are clearly linked in the attached report. The results in the attached reports are clearly traceable to the characteristic numbers.
 - The results are directly comparable to the design characteristic.

FAI Review Guide – Form 3

Characteristic Accountability				Inspection / Test Results			
5. Char. No.	6. Reference Location	7. Characteristic Designator	8. Requirement	9. Results	10. Designed / Qualified Tooling	11. Nonconformance Number	14. Additional Data / Comments
				9 Continued			

NOTE: Coordinate Measurement Machine (CMM) data alone would not be acceptable for a positional tolerance; the results shall show the actual positional value.

- If a design requirement requires verification testing, record the actual results on the form. If a laboratory report or certificate of test is included in the FAIR, the results may be recorded as an attribute (e.g., pass / fail) and the test reference number recorded on the forms. The laboratory report or certificate of test shall show specific values for requirements and actual results.
- For characteristics with visual verification requirements that are rated against standard photographs, list the photo number of the closest comparison. A statement of conformance is acceptable; record the reference number on the forms.
- For processes that require verification per design characteristics, include a statement of conformance (e.g., certification of conformance, verification indicator - accept).
- For characteristics verified by attribute inspection include statement of conformance (e.g., accept).

SQAR Note: SELLER SHALL INCLUDE, ON FORM 3, VERIFICATION OF ALL MEASURABLE FEATURES/CHARACTERISTIC REQUIREMENTS OUTLINED IN ALL SPECIFICATIONS (E.G. FINISH THICKNESS, AUTOCLAVE CURE CYCLE REQUIREMENTS, NDT RESULTS – CONDUCTIVITY, SEALANT FILLETS, FASTENER TORQUE, FASTENER FLUSHNESS AND ELECTRICAL BOND, ETC.).

Blue Text denotes required field. Per NGAS SQAR all fields on form 2 are required to be completed.

FAI Review Guide – Form 3

Characteristic Accountability				Inspection / Test Results			
5. Char. No.	6. Reference Location	7. Characteristic Designator	8. Requirement	9. Results	10. Designed / Qualified Tooling	11. Nonconformance Number	14. Additional Data / Comments
					10	11	14

10. Designed / Qualified Tooling

- When design tooling or specially designed tooling, including NC programming (input NC Tape number and revision) as a media of inspection, is used for attribute acceptance of the characteristic, record the tool identification number. When qualified tooling is used for attribute acceptance, record the gauge value or range (e.g., minimum/maximum value), as applicable. This includes mylars or go / no-gages.
- If characteristic is visual Inspection (i.e. part marking) they mark as “Visual” in box 10.

Note: From AS9102 FAQ

B2. Question:

- After an initial FAI is complete, is a supplier required to complete partial FAI's when inspection frequency and methods are changed?

B2. Response:

- FAI (Complete/Partial) would be required for the changed inspection when the tool listed on Form 3 field 10 is changed.

11. Non-Conformance Number - If the characteristic is found to be nonconforming, record a nonconformance document reference number. Use N/A if there wasn't a non-conformances identified.

14. Additional Data / Comments – Input N/A if no additional data or comments are to be entered.

Blue Text denotes required field by AS9102 or NGAS SQAR.

FAI Frequently Asked Questions (FAQ)

For listing of all AS9102 FAQ's go to the following link: <http://www.sae.org/iaqg/organization/9102.htm>

I4. Question

The current revision of 9102 does address Digital Product Designs. How is an organization expected to complete FAI if there is no traditional 2D drawing?

I4. Response:

When design requirements are in a DPD format and traditional 2D drawing information is not available for all applicable design requirements, DPD design characteristics required for product realization should be extracted, verified, and included in the First Article Inspection Report. To complete the FAI the organization should:

- Establish a process to extract the applicable DPD design characteristics.
- Extract the DPD design characteristics required for product realization. The characteristics required to actually manufacture the product must also be inspected, all dimensional characteristics or feature definitions.
- Ensure the production, inspection, and operations requiring verification have been completed as planned to achieve DPD design characteristics.

FAI Frequently Asked Questions (FAQ)

B3. Question:

If Manufacturing is moved from one location/facility to another, is a new FAI required?

B3. Response:

9102 - 4.6.f.1 states: A change in manufacturing source(s), process(es), inspection method(s), location of manufacture, tooling or materials, that can potentially affect fit, form or function. The key wording is "potentially affect fit, form or function". If you have good rationale supporting a position that the change doesn't "potentially affect fit, form or function" ([and you can convince your customer](#)) an updated FAI is not required. The move distance isn't a factor. Record the reason for Partial FAI on field No.14 of Form 1.

FAI Frequently Asked Questions (FAQ)

A3. Question:

What is the difference between field 5 and field 7 on form 1?

A3. Answer:

Field 6 of Form 1 is the Drawing Number; this field should have the drawings (including parts list), that contain design characteristics needed for product realization. There may be more than one drawing listed in this field.

Field 7 of Form 1 is the Drawing Revision Level, this would be the revision level of the drawing or DPD set that is listed in field 6. When there is more than one entry in field 6 then the entries in this field need to correspond to the entries in field 6.

Field 5 of Form 1 is the Part Revision Level, this is the revision level that is identified on the part. Not all organizations use a part revision level for tracking configuration.

FAI Frequently Asked Questions (FAQ)

A8. Question:

Can parts lists, reports and other records be noted on the forms and attached rather than copying all the data onto the forms?

A8. Response:

Yes, you may reference the attachments on the forms and attach parts lists, reports etc. You may also attach drawings to form 3 and note the drawing on the form as long as the characteristics and results are clearly identified on the drawing. Any efficient, time saving method is acceptable but you must maintain clear traceability and the data on the attachments must be verified.

When automated inspection tooling produces measurement results, those results may be referenced on form 3, identified as pass/fail, and attached when:

- The characteristic numbers on form 3 are clearly linked in the attached report
- The results in the attached reports are clearly traceable to the characteristic numbers on form 3.
- The results are directly comparable to the Design Characteristic. E.g., coordinate data alone would not be acceptable for a positional tolerance; the results should show the actual positional value.

FAI Frequently Asked Questions (FAQ)

A10. Question:

Can an electronic signature be used in field 19 of form 1?

A10. Response:

An electronic signature is acceptable as long as it is acceptable within your Quality management system. The Quality management system must define electronic signature usage and control.

FAI Frequently Asked Questions (FAQ)

E1. Question:

Does 9102 allow inspection to Purchase Order requirements? These are Condition of Supply (COS) requirements. A part with condition of supply requirements is notes on the PO by a part number that has a second dash number. e.g., 2CSH11111-0001-01. [The second -01 dash number indicates that there are condition of supply requirements on the part that need to be accounted for on the FAIR.](#)

E1. Response:

Yes. The 9102 definition of drawing requirements indicates that the requirement may be invoked by purchasing document. 9102 definitions: "DRAWING REQUIREMENTS: "Requirements of the drawing and associated parts lists, specification, or purchasing document to which the product is to be produced from, including any notes, specifications, and lower-level drawings invoked.." [Use Form 1, field 8 to list the Additional Changes.](#) The Additional Changes in the Purchase Order including added and deleted characteristics are to be reported in Form 3. (e.g. omit fasteners, excess material)

FAI Frequently Asked Questions (FAQ)

F3. Question:

What does "First Production Run" mean?

F3. Response:

The first production run is the first group of one or more parts that are the result of a planned process designed to be used for future production of these same parts. The first production delivery parts require an FAI. Development and prototype parts that are not intended for production use are not considered as part of the first production run.

FAI Frequently Asked Questions (FAQ)

F4. Question:

How is a partial FAI documented?

F4. Response:

When performing a partial FAI, use form 1 and only the additional forms required to document the change. Also, reference the original FAI on form 1, field 14. The original forms must never be altered. You may use attachments to any form if more space is needed. [Ensure any unused fields contain N/A as required by NGAS SQAR requirements for FAIR's.](#)

FAI Frequently Asked Questions (FAQ)

F5. Question:

Can an FAI be completed when a non-conformance exists?

F5. Response:

The non-conformance must be corrected and the correction verified and documented on new forms at the next production run before considering the FAI "completed".

The FAI with design characteristic nonconformance(s) is Not Complete. An FAI with noted nonconforming design characteristics should have field 19 signed and noted as "Not Complete"

- When processing a FAIR with documented non-conformances:
- Record the nonconforming design characteristic(s) on form 3.
- Record the nonconformance document reference number on form 3 field 11.

Check the box "FAI Not Complete" on form 1 field 19. Note: this standard does not control disposition of the nonconformance.

The Organization implements corrective actions and performs a partial FAI for all affected characteristics on the next production run after implementation of the corrective action. If the partial FAI does not clear all non-conformances, the FAI is still Not Complete and the requirement to complete the FAI is still in effect. Note: a full FAI may be done in lieu of a partial FAI. [A Request for Change/Information \(RCI\) to NGAS may be a form of corrective action for producibility issues.](#)

FAI Frequently Asked Questions (FAQ)

F8. Question:

Is N/A required to be entered on fields that do not contain information?

F8. Answer:

Yes, The NGAS SQAR states that all unused fields must have N/A input in the field.

FAI Review

Summary

- It is the [responsibility of the Supplier](#) to ensure product meets released engineering design, PO, and applicable requirements
- FAI Report Validation/Verification – *a Product compliance Audit*
- Perform careful part analysis to ensure all part features are accounted, identified, inspected, and recorded
- CMM inspection results and LDD actuals must be properly identified and recorded on FAI report
- All remaining features and characteristics (model annotations, drawing notes, measurable specification requirements, etc.) must also be recorded
- NGAS Supplier Quality will maintain a SPHR Record for all FAI activity; Upfront Planning Review, In-process and Final

NORTHROP
GRUMMAN

The logo symbol consists of a thick horizontal line on the right side of the word "NORTHROP", which then turns 90 degrees downward to form a vertical line on the right side of the word "GRUMMAN".