

GENERAL DYNAMICS

Land Systems

February 2020

**Implementation
First Article Inspection Requirement**

Scope of First Article inspection

The intent of this document is to provide an understanding, and clarification as to what GDLS expects in First Article Inspection (FAI) documentation submittals. The purpose of FAI is to validate that product realization processes are capable of producing parts and assemblies that meet the Technical Data Package (TDP). A well-planned and executed FAI will provide objective evidence, proving the manufacturer's processes can produce compliant product and that they have understood and incorporated associated requirements. FAI will:

- Provide confidence that the product realization processes are capable of producing conforming product.
- Demonstrate that the manufacturers and processors of the product have an understanding of the associated requirements.
- Provide objective evidence of process capability.
- Reduce potential risks associated with production startup and/or process changes.
- Provide assurance of product conformance at the start of production and after changes outlined in this standard.

An FAI is intended to:

- Reduce future escapes, risks, and total costs.
- Help ensure reliability of vehicle operation.
- Improve quality, delivery, and customer satisfaction.
- Reduce costs and production delays associated with product non-conformances.
- Identify product realization processes that are not capable of producing conforming product, and initiate and/or validate corrective actions.

FAI Process

- What is it?

- First Article Inspection (FAI) is a process where the Supplier inspects the 1-5 pieces (depending on the PO's quality clauses) manufactured to the Technical Data Package (TDP) and maintains a record on file.

- How does it work?

1. First Article is Inspected
2. Balloon Drawing created
3. Inspection Results Recorded
4. Material Certification and special process recorded
5. Nonconformances reported
6. Inspection Results filed and maintained in accordance with our record retention requirements
7. FAI Made Available to Customer if Requested

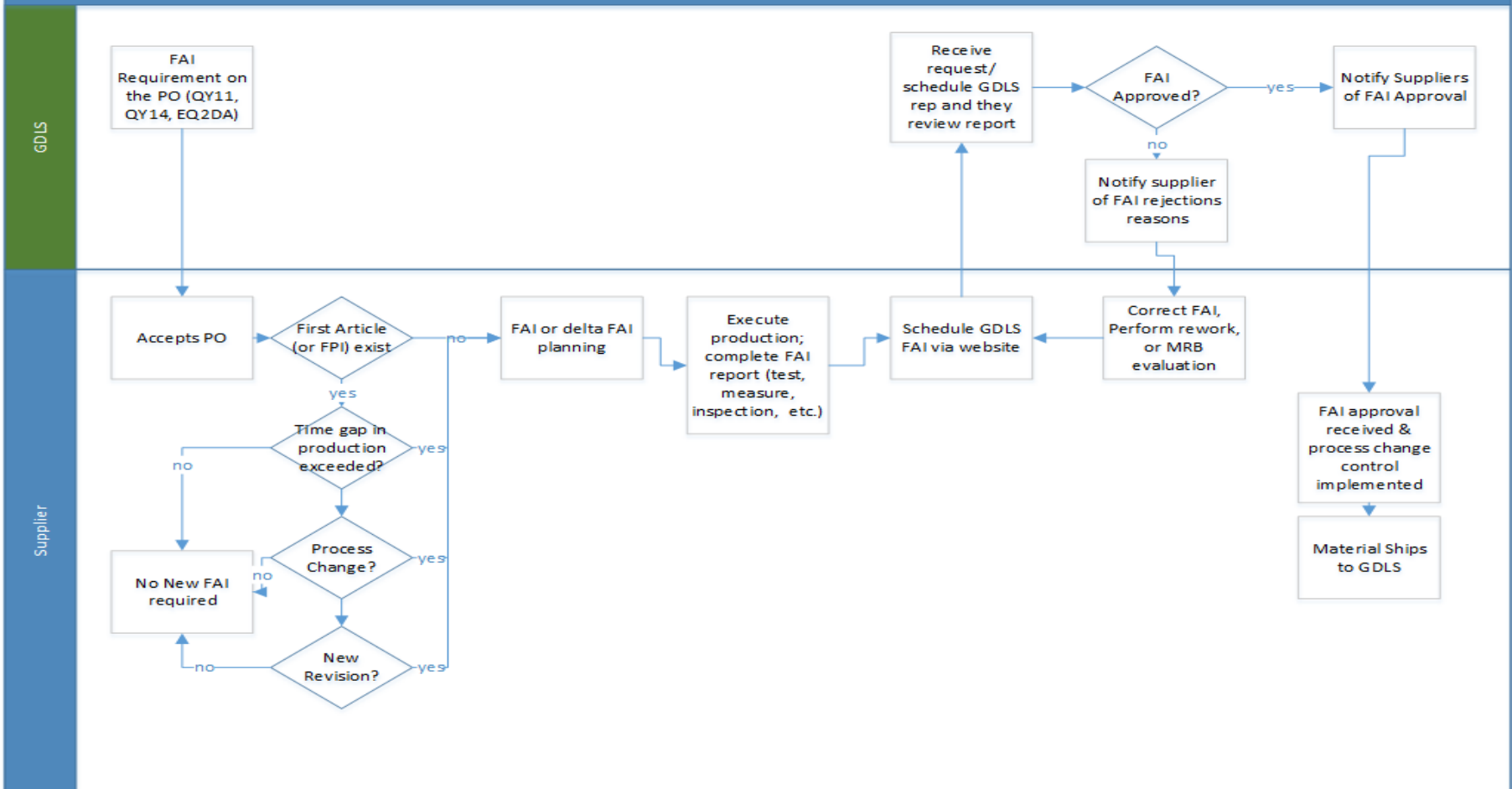
- How this impacts the Supplier?

- ✓ Must conduct a First Article Inspection
- ✓ Must maintain all FAI Records on File

GDLS FAI process for suppliers

References:
 PQA3000
 QCS1-3 forms
 GDLS FAI
 Guide
 Quality Clauses
 Terms &
 Conditions

First Article Process for suppliers – GDLS (reference PQA3000, QCS-1-3 forms, GDLS FAI Guide and Terms and Conditions)



FAI Process

- **First Article Inspection (FAI) Submission for Quality Clauses QY11 & QY14**
 - As part of the initial production run, the documentation & inspection package is prepared for review by the supplier's ID delegate or a quality representative. Once completed, the supplier is required to request FAI via gdls.com. The request for FAI can be found at gdls.com. A FAI verification audit will be arranged within **five (5)** days of the request for QY-11 and EQ2DA and **30 days** for QY-14.
 - FAI's shall be conducted, reviewed, submitted in accordance with the FAI Guide and PQA 3000 instructions located on www.gdls.com and approved prior to the first shipment of product. Where changes require only a delta FAI, the delta FAI will be limited to the impact of the change only.

First Article Inspection (FAI)

- When should a FAI be performed? (reference PQA 3000 and specific quality clause)
 - Full FAI
 - New part
 - New supplier or new location of manufacture
 - No more than 1 (one) year break in production shipments
 - Quality issues if required as determined by GDLS
 - Delta FAI
 - Regional Manager to be consulted to determine if Full or Delta is followed
 - Design change
 - Changes in the method of manufacture
 - Tooling, processes, location, machine, sub-tier supplier changes, etc.
- Nonconformance Handling: The FAI is not complete until all nonconformances affecting the part are closed and corrective action is implemented.

FAI Documentation requirements

- GDLS requires for all FAI's requested to include the following
 - Completed QCS-16, -1, -2, -3
 - Fully ballooned or detail print for all top level item requirements.
Note: top level prints that contain a BOM (bill of materials), must have their sub component items verified with their own first article
 - All submissions to include full certification package for materials, performance test criteria (ex: submergence, leak) plating, welding, heat treat, NDT and other special processes
 - GDLS field service representatives will review package for conformance and completeness

QCS16 Cover Sheet requirements continued

13. Detail Part: <input type="checkbox"/>	14. Full FAI: <input type="checkbox"/>	Partial FAI: <input type="checkbox"/>	
Assembly FAI: <input type="checkbox"/>	Baseline Part Number (including revision level):	Reason for Partial FAI:	
DATA USED FOR EVALUATION			
15. Part Number & Print Revision	16. SCR/CCR	17. QAR / QAP	
		18. Mil Specification(s)	
		19. Other (e.g., Deviation, TRA, Ordering Data)	
SUMMARY Check as appropriate (X) = Documentation Reviewed, Approved and Attached to this Report			
___ 20. Part Identification/Marking	___ 24. Brazing / Soldering Approval Letter Validation		
___ 21. Software Approval Letter Validation	___ 25. Non-Destructive Testing Validation		
___ 22. High Strength Fastener(s)	___ 26. Critical Safety Item Inspection Validation		
___ 23. Weld Process Approval Letter / Date of Approval	Date: _____		
27. REMARKS			
FAI STATUS: <input type="checkbox"/> 28. PASS <input type="checkbox"/> 29. FAIL			
30. SUPPLIER PRINTED NAME		33. GDLS PRINTED NAME	
31. SUPPLIER APPROVAL SIGN/ DATE	32. STAMP	34. GDLS APPROVAL SIGNATURE DATE	35. STAMP

14. (R) Full FAI / Partial FAI: Check, as appropriate.
 For a partial FAI, provide the previously approved FAI part number, including revision level after Baseline Part Number. Include the reason for the current partial FAI (e.g., changes in design, process, subtier supplier change, or manufacturing location change per the GDLS No Change Clause). Full FAI will be required again if a part has not shipped to GDLS for more than one year.
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 GDLS FAI Guide section, 4.6), provide the approved configuration FAI part number, including revision level.

15. (R) Part Number and Print Revision: List all sub-assemblies and detail parts that are used in the manufacturing of the the FAI part number listed in box 1. If this is a detail part without any sub components just list N/A. Additional sheets may be required.

The FAI guide found on www.gdls.com will define each field for each sheet

QCS16-1 Inspection Data Sheet

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Land Systems

FIRST ARTICLE INSPECTION REPORT

FORM QCS-16-1

INSPECTION DATA

1. Part Number (GDLS) 0		2. Part Name 0		3. Print and/or Model Revision Level 0	
4. Parent Assembly Part Number 0		5. Supplier Name 0		6. Serial Number 0	7. FAI Report # 0
8. Supplier Rep. Print and Sign:				9. Date:	

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from header

10. ITEM NO.	11. DWG CHARACTERISTICS WITH TOLERANCE	12. BP ZONE	13. SUPPLIER ACTUAL RESULTS	14. INSPECTION METHOD	15. GAGE / FIXTURE NUMBER	16. ENGINEERING CHANGES / DEVIATIONS IF APPLICABLE	17. ADDITIONAL DATA / COMMENTS

10. (R) Item No.: Unique assigned number for each characteristic within the technical data package. This number will correlate to the balloon print. (e.g., dimensions, print notes, etc)

11. (R) DWG Characteristics With Tolerance: The specified requirement for the technical data package characteristic. (e.g., Nominal dimensions and tolerances, drawing, notes, specification requirements, etc.)

12. (R) BP Zone: Location within the technical data package that the Item No. is located. (e.g., drawing zone, model location, note, QAR/QAP item, etc.).

13. (R) Supplier Actual Results: List the measurement(s) taken for the technical data package characteristics. These measurements shall be recorded in the units specified within the technical data package.

When recording data for multiple features that are the same (e.g., 20x holes size, hole positions, etc.) it is required that each feature be identified and listed separately on the inspection report.

Variable data is to be recorded when the inspection technique used is read as variable data.

When qualified tooling (e.g., radius gauges, thread gauges, pin gauges) is used as a go/no-go gauge record the results as an attribute (e.g., pass/fail).

If a characteristic is found to be nonconforming, then that characteristic shall be recorded on the QCS-16-2 NC Summary. The lot will be quarantined and 100% of the lot will be inspected for conformance.

14. (R) Inspection Method: List the type of equipment that was used to obtain the data.

15. (CR) Gage / Fixture Number: List the number associated with the gauge / fixture that was used to approve the parts to the technical data package. This number should correlate back to a calibration record. Any gage/fixture used to approve products for shipment to GDLS shall be calibrated and found to be within the recalibration date.

16. (CR) Engineering Changes / Deviations if Applicable: List any associated engineering changes (CCR / SCR), Deviations, SQMR's, MRB's, TRA's used to approve the parts during the audit. You must have a copy of the approved document to review with the auditor. Review PO to verify any type of change is documented.

17. (CR) Additional Data / Comments: List any added data and/or comments in this section.

QCS16-2 NC Summary Sheet

GENERAL DYNAMICS Land Systems				FIRST ARTICLE INSPECTION REPORT		
FORM QCS-16-2				NONCONFORMANCE SUMMARY		
1. Part Number (GDLS)		2. Part Name		3. Print and/or Model Revision Level		
0		0		0		
4. Parent Assembly Part Number		5. Supplier Name		6. Serial Number	7. FAI Report #	
0		0		0	0	
8. GDLS Purchase Order / PO Revision		9. FAI Date		10. Reinspect Date		
0						
11. QCS 16-1 ITEM #	12. Drawing Number	13. B/P Zone	14. GDLS Spec. / Drawing Requirement (List)	15. Inspection Actual (List)	16. Requires Corrective Action	17. Disposition of NC

Continue utilizing the FAI guide to help define the fields to be filled in.
No blank lines. If not applicable, input NA

QCS16-3 Material & Process

GENERAL DYNAMICS Land Systems		FIRST ARTICLE INSPECTION REPORT		
FORM QCS-16-3		MATERIALS & PROCESSES		
Page 1 of 1				
1. Part Number (GDLS) 0	2. Part Name 0	3. Print And/Or Model Revision Level 0		
4. Parent Assembly Part Number 0	5. Supplier Name 0	6. Serial Number 0	7. FAI Report # 0	
8. Material Type, Special Process Name, or Part Number	9. Specification Number	10. Manufacturer of Material / Special Process	11. Certificate of Conformance Number	12. Heat # / Lot # / Batch # / Date Code

25	13. Functional Test Procedure / Revision Level		14. Functional Test Acceptance Report Number		
26					
27					
28	15. Comments				
29					
30	0		0		
31	16. SUPPLIER PRINTED NAME		19. GDLS PRINTED NAME		
32					
33					
34	17. SUPPLIER APPROVAL SIGNATURE	DATE	18. STAMP	20. GDLS APPROVAL SIGNATURE	DATE
					21. STAMP

1. (R) **Part Number (GDLS)**: Number of the FAI part as it appears on your GDLS Purchase Order or the detail part number being evaluated that is part of parent assembly part number.
2. (R) **Part Name**: Name of the FAI part.
3. (R) **Print and/or Model Revision**: Latest print revision that is being used during the FAI part inspection. If the part has not been revised, indicate as such (e.g., Rev -, Rev NR).
4. (CR) **Parent Assembly Part Number**: List the upper part assembly number here if the part number in found in cell 1. (R) **Part Number** is part of an assembly.
5. (R) **Supplier Name**: Supplier Company Name that is performing the FAI.
6. (CR) **Serial Number**: Serial number of the FAI part; unique identifier assigned to a detail part, sub-assembly, or assembly by the organization or customer.
7. (R) **FAIR#**: Reference number that identifies the FAI; this will be the GDLS Audit Sequence Number provided to the GDLS Field Service Representative.
8. (R) **Material Type, Special Process Name, Part Number**: List all material types, special process names, detail part numbers. Detail part numbers such as standard catalogue items, and Commercial Off The Shelf (COTS) parts can be listed here with the required information back to the certificate of conformance from the manufacturer of the part. Show the auditor the C of C to verify all requirements have been met for approval.
9. (CR) **Specification Number**: List the specification for the Material or Special Process listed in #8.
10. (R) **Manufacturer of Material / Special Process**: List the company name that manufactured the material or performed the special process. (No Distributors) A C of C will only be accepted from a distributor when the C of C is from an authorized franchise distributor as designated by the manufacturer of the part.
11. (R) **Certificate of Conformance Number**: List the C of C number as found on the items manufacturer C of C. If the C of C doesn't not have an identification number, the supplier will assign a lot specific number for tracking purposes.
12. (R) **Heat # / Lot # / Batch # / Date Code**: Record the heat #, Lot #, Batch # / Date code as needed to identify the material lot.
13. (CR) **Functional Test Procedure / Revision Level**: List any functional test procedure number and the revision of test procedure.
14. (CR) **Functional Test Acceptance Report Number**: List the functional test acceptance report number.
15. (CR) **Comments**: List any additional comments here.
16. (R) **SUPPLIER PRINTED NAME**: Supplier Representative for reviewing and validating the documentation prints name here.
17. (R) **SUPPLIER APPROVAL SIGNATURE & DATE**: Supplier Representative for reviewing and validating the documentation signs name here.
18. (CR) **STAMP**: Supplier's Quality Representative with a GDLS Stamp will stamp here.
19. (R) **GDLS PRINTED NAME**: GDLS Quality Representative for reviewing and validating the documentation prints name here.
20. (R) **GDLS APPROVAL SIGNATURE & DATE**: GDLS Quality Representative for reviewing and validating the documentation signs name here.
21. (R) **STAMP**: GDLS Quality Representative stamps here.

Questions?

- Contact [Regional Manager](#) with additional questions or e-mail sqa@gdls.com