GENERAL DYNAMICS
Land Systems

QCS-7:
GDLS APQP & PPAP Guide for Suppliers

July 2021
Revision --

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QCS-7: GDLS APQP & PPAP Guide for Suppliers
Revision Matrix

Date of Revision	Revision Level	Major Description of Revision
July2021	**--**	Initial Release

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1. Purpose

The purpose of the Supplier PPAP Guide is to define the GDLS Specific PPAP requirements for suppliers. The following requirements stated herein are derived from AS9145 Requirements for Advanced Product Quality Planning (APQP) and Production Part Approval Process (PPAP).

2. Reference Documents

2.1. GDLS Documents

The following GDLS Documents can be found on GDLS Website (gdls.com) under the Quality section on the Supplier Portal:

Table 1: GDLS Documents	
Document	**Title**
GDLS SCM Supplier Manual	GDLS SCM Supplier Manual
GDLS FAI Guidebook	GDLS FAI Guidebook
FAI Training for Suppliers	FAI Training for Suppliers
First Article Inspection Forms: QCS-16 QCS-16-1 QCS-16-2 QCS-16-3	 Cover Sheet Inspection Data NC Summary Materials & Processes
PQA 3000	Procurement Quality Assurance Handbook

2.2. Other

Table 2: Other Reference Material	
Document	**Title**
SAE J1739	Potential Failure Mode and Effects Analysis in Design (Design FMEA), Potential Failure Mode and Effects Analysis in Manufacturing and Assembly Processes (Process FMEA)
AS9145	Requirements for Advanced Product Quality Planning and Production Part Approval Process
http://www.sae.org/iaqg/	IAQG Supply Chain Management Handbook (SCMH)
AS13004	Process Failure Mode and Effects Analysis (PFMEA) and Control Plans
AS9102	Aerospace First Article Inspection Requirement
ASTM E2782	Standard Guide For Measurement Systems Analysis (MSA)

3. PPAP and APQP Requirements

Suppliers that are selected for APQP and PPAP implementation shall comply with the APQP and PPAP requirements stated in aerospace and defense standard AS9145 and this Guide. Suppliers are required to fully implement the APQP process IAW AS9145 (including the required AS9145 deliverables) to yield the PPAP required output.

3.1. Supplier/Subsupplier Flow down Requirements

Suppliers that are selected for APQP and PPAP implementation shall flow down the requirements stated in aerospace and defense standard AS9145 and this Guide to all levels of its supply chain. A risk based decision process shall be used to assess PPAP applicability of supply chain components & operations. PPAP Approval forms for the supplier's flow down components shall be submitted.

Below are items which may be used to assess/determine risk:

- Design (DFMEA, other)
- Process (PFMEA, PCP, PFD, other)
- Procurement (Single Source, Sole Source, other)

4. Scope - When is PPAP Submission Required?

4.1. Initial Submissions

The Supplier's requirement to implement APQP and PPAP will be identified/listed in the P.O. per a unique quality clause.

PPAP Approval is required before part delivery. GDLS may require some level of PPAP submission when any of the following occur:

1. New part or product
2. New process or technology
3. New supplier
4. New Customer Standard

4.2. Submission Schedule

The supplier shall submit PPAP elements to GDLS for approval IAW a GDLS-approved schedule developed at Phase 1 (Planning) of the APQP/PPAP project. Modifications to the schedule/timeline must be communicated to GDLS.

4.3. Resubmissions

A PPAP resubmission is required when a previously Fully PPAP Approved product or process undergoes a change or for a correction of a discrepancy on a previous submission. A change is defined as:

a) A change in design characteristics affecting fit, form, or function of the part
b) A change in manufacturing source(s), process(es), inspection method(s), locations of manufacture, tooling, or materials that can potentially affect fit, form, or function
c) A change in numerical control program or translation to another media that can potentially affect fit, form, or function

d) A natural or man-made event, which may adversely affect a manufacturing process
e) A lapse in production for twelve (12) months.

When a resubmission is required due to a product or process change, the Supplier shall review all affected Elements. MFP disposition of Element 11 (PPAP Approval) shall be obtained prior to shipping production parts after the implementation of any such changes.

Rejected or Interim Statuses shall require resubmission for final approval. The PPAP disposition shall be recorded on the PPAP Approval form.

5. Requirements for PPAP Elements

Per AS9145, PPAP requirements will be as defined in Sections 4.1-4.11 below with customer specific requirements as applicable.

There are 11 PPAP elements associated to phases 2 through 4 of the APQP process *(see Table 1 below).*

- All elements that apply to the purchase order must be delivered to GDLS.
- Multiple part numbers produced in the same location, with the same methods, materials, machines, and manpower can be grouped into families with a single PPAP submission representing all part numbers in a family. Be sure to list any families with their part numbers in your quote.
- Keep in mind that final PPAP requirements are negotiated up front between the supplier and GDLS before a purchase order is issued.
- Suppliers must ensure Critical Items (CI) or Key Characteristics (KC) identified in Design records, DFMEA, or Process documentation (PFD, PCP, PFMEA) are flowed down through subsequent control documents (ex. DFMEA KCs must be addressed in PFMEA and PCP).
- The supplier shall maintain and make PPAP files including FAI results available for review upon GDLS request.

All PPAP elements shall be IAW AS9145. In addition, the PPAP elements shall be IAW the corresponding standards/format listed in the Required Format column from Table 1.

Table 1: PPAP Required Elements

APQP Phase	PPAP Element	Referenced Documents	Required Format
Product Design & Development	Design Records	GDLS Part Print	Supplier format or GDLS supplied
	Design Risk Analysis	SAE J1739	Supplier format IAW SAE J1739 or GDLS format
Process Design & Development	Process Flow Diagram (PFD)	AS13004	Supplier format or GDLS recommended from Appendix A

Table 1: PPAP Required Elements			
APQP Phase	PPAP Element	Referenced Documents	Required Format
	Process Failure Mode and Effects Analysis (PFMEA)	AS13004	Supplier format IAW AS13004 and/or GDLS recommended from Appendix B
	Process Control Plan (PCP)	AS13004	Supplier format IAW AS13004 and or/or GDLS recommended from Appendix C
	Packaging, Preservation, and Labeling Approvals	GDLS SCM Supplier Manual	Supplier format IAW GDLS SCM Supplier Manual
Product & Process Validation	Measurement System Analysis (MSA)	ASTM E2782	Supplier format
	Initial Process Capability Studies	AS9145	Supplier format
	First Article Inspection (FAI) Report	AS9102 FAI Guide on Supplier Portal	QCS-16, QCS-16-1, QCS-16-2, QCS-16-3
	GDLS specific requirements	GDLS Purchase Order (PO)	As Specified
	PPAP Approval Form	AS9145	Supplier format IAW AS9145 or GDLS recommended from Appendix E

Notes:

- *Email questions to ppap@gdls.com*

5.1. Design Records

Suppliers shall provide the records of the engineering definition/specification, which fully define the product (system, part, component, or assembly), including physical or electronic/digital drawings, electronic/digital models, software, performance specification, Interface Control Document (ICD), or other associated information. This includes records of authorized engineering changes not yet incorporated into the released engineering definition/specification.

5.2. Design Risk Analysis

The design responsible organization shall ensure that a design risk analysis related to performance (i.e., fit, form, and function), durability, service life, reliability, manufacturability, maintainability, and cost is performed and appropriate risk mitigation activities are identified, prioritized, and completed.

Design Failure Mode and Effects Analysis (DFMEA) methodology shall be used as a record of this activity.

5.2.1. DFMEA

A DFMEA is an analytical technique utilized to assure that, to the extent possible, potential failure modes and their associated causes/mechanisms have been considered and addressed. The end item, along with every related system, subassembly and component, should be evaluated.

The DFMEA is only required if the supplier is design responsible for the part. The DFMEA must address all Critical Items (CI).

CIs and KCs as identified on the DFMEA and/or in the TDP.

DFMEA format shall be IAW SAE J1739 or the GDLS Format which is available upon request. The Supplier shall utilize the DFMEA ranking system for Severity, Occurrence, and Detection as established in SAE J1739 or the GDLS Template.

5.2.1.1. DFMEA Severity

How serious the Failure Effect (due to the Failure Mode) is to the customer is quantified and determined by using a ranking system. Severity is an assessment of the seriousness of the effect of the potential failure mode to the next component, subsystem, system or customer if it occurs. Severity applies to the effect only. A reduction in Severity Ranking index can be affected only through a design change.

5.2.1.2. DFMEA Occurrence

Occurrence is the likelihood that a specific cause/mechanism of a failure mode will occur. The likelihood of occurrence ranking number has a meaning rather than a value. Removing or controlling one or more of the causes/mechanisms of the failure mode through a design change is the only way a reduction in occurrence ranking can be affected.

5.2.1.3. DFMEA Detection

Detection is an assessment of the ability of the proposed type (2) current design controls, to detect a potential cause/mechanism(design weakness) or the ability of the proposed type (3) current design controls to detect subsequent failure mode before the component, subsystem or system is released for production. In order to achieve a low ranking, generally the planned design control (e.g. preventative, validation and/or verification activities) has to be improved.

5.3. Process Flow Diagram (PFD)

A Process Flow Diagram that includes and identifies all process steps in sequential order from receiving to shipping/warehouse operations shall be generated. The PFD must include all offline and in process inspections and testing including ongoing routine conformance checks such as annual dimensional layouts. The process steps must match PFMEA and Control Plan steps.

Suppliers may deliver the Process Flow Diagram in supplier format and/or use the template provided by GDLS shown in Appendix A-1.

For additional guidance the supplier may refer to AS13004.

5.4. Process Failure Mode and Effects Analysis (PFMEA)

A PFMEA should be performed for the specified part, piece or equipment or process involved in manufacturing. The PFMEA is a cross functional activity and should not be conducted in isolation.

PFMEA shall be IAW AS13004. Suppliers may deliver the PFMEA in supplier format or use the template provided by GDLS shown in Appendix B-1. The supplier format shall be compliant to the requirements listed in AS13004 at a minimum.

Process steps must match Process Flow Chart, Control Plan and address all characteristics associated with each operation. RPN numbers must be in accordance with AS13004 guidelines with critical processes and inspections identified. Recommended Actions for high RPN totals are required. The PFMEA form uses ranking criteria to help produce the initial Risk Priority Number (RPN)

Severity x Occurrence x Detection = RPN

5.4.1. PFMEA Severity

How serious the Failure Effect (due to the Failure Mode) is to the customer is quantified and determined by using a ranking system. The supplier may utilize the ranking system for PFMEA Severity established in Appendix B-2.

The severity ranking itself cannot be changed without a change to the product design or functionality. When the Severity ranking of a potential failure mode is 9 or 10, the failure mode and effect should be reviewed with the design authority, regardless of the resulting Risk Priority Number (RPN).

5.4.2. PFMEA Occurrence

The likelihood that a particular cause will happen and result in the Failure Mode is quantified and determined by using a ranking system. The supplier may utilize the ranking system for PFMEA Occurrence established in Appendix B-3.

5.4.3. PFMEA Detection

An assessment of the likelihood that the current controls will detect the cause of the Failure Mode or the Failure Mode itself, should it occur, thus preventing the failure effect from reaching your customer. The supplier may utilize the ranking system for PFMEA Detection established in Appendix B-4.

5.5. Process Control Plan (PCP)

The purpose of the control plan is to document control methods imposed on the product and process including: identification of product features and process control settings to be monitored, the

measurement methods to be used, and sampling sizes and frequencies along with associated control limits to assure reduced variation and maintain the current quality level.

The control plan details how product quality is controlled and confirmed at each stage of the manufacturing process, including defining the actions to be taken when the process becomes unstable and/or nonconforming product is detected (i.e., reaction plans), when necessary. The control plan should be sufficiently detailed to clearly define who is responsible for completing the specified quality control tasks/activities at each stage of the process. The control plan is agreed to by the supplier's quality and production departments, and by the customer (when required).

The supplier shall develop, implement, and maintain process control plans in accordance with AS13004. Control plans shall include outputs from PFMEAs. Special or key characteristics whether identified by GDLS or the supplier must be used in the development of the control methods. Process control plans shall always reflect the current process. Process control plans shall be controlled documents and retained for three years from the last vehicle delivery under this contract. Process control plans shall be updated as changes in product or process characteristics, specifications, measurements systems, sampling, control methods, or reaction plans are identified.

Control Plans must match the Flow Chart/FMEA process steps and describe the actions of each phase of the manufacturing process from receiving to shipping/warehouse.

Suppliers may deliver the Control Plans in supplier format or use the template provided by GDLS shown in Appendix C-1. The supplier format shall be compliant to the requirements listed in AS13004.

5.6. Measurement System Analysis (MSA)

MSA is a capability analysis of all measuring tools identified in the Control Plan (in process or offline) used in the decision making process of normal production.

Suppliers shall, at a minimum, perform MSA IAW AS9145. Suppliers are expected to deliver an MSA Plan that shall be used to execute their MSA.

At a minimum, an MSA Study is required to be performed on the measurement methods for KCs (product and process) identified in the control plan (reference ASTM E2782).

Gage Repeatability and Reproducibility (GR&R) is an effective method used to identify variation in the measurements obtained during the manufacturing process. This method provides evidence of uniform measurements by assessing results obtained with the same measurement method.

Suppliers may utilize statistical software (such as Mini-tab and SPC Excel) to perform MSA.

For additional guidance, reference ASTM E2782.

5.7. Initial Process Capability Studies

Initial process capability studies is used to evaluate the capability of the supplier's production process to manufacture the product. Initial process capability studies using industry recognized statistical methods shall be completed for product and process KCs identified within the design record and supporting control plan.

Process capability is determined by calculating two types of indices (Cpk and Ppk). Cpk is used to speculate the capability of a new process and future capability. Ppk is used to evaluate the capability of an existing process by analyzing the supplier's past performance.

The capability study is to be performed on sample quantities established by GDLS. The acceptance criteria for capability studies shall be IAW Table 1 from AS9145. The supplier shall obtain GDLS approval for exceptions due to situations where it is impossible or prohibitively expensive to meet the stability and capability requirements.

An alternative control method (such as 100% gauging) may be utilized in lieu of statistical process controls.

Suppliers may use their own supplier format or utilize statistical software (such as Mini-tab and SPC Excel) to submit the capability data.

5.8. Packaging, Preservation, and Labeling and Approvals

Information pertaining to Packaging and Labeling requirements is found through the General Dynamics Land Systems website. Compliance to this requirement shall be IAW GDLS SCM Supplier Manual.

GDLS may require additional packaging requirements on the PO as the requirements may vary depending on the scope of the project and product being supplied.

This section may also utilize flow down requirements from GDLS customers to ensure compliance to this element.

Noncompliance to these requirements may result in the rejection of the affected item.

5.9. First Article Inspection Report (FAIR)

First Article Inspections (FAIs) are performed when required by the PO and/or Technical Data Package (TDP). FAIs are conducted by the supplier in accordance with PO requirements. Supporting data for the FAIs shall be kept on file by the supplier.

FAI will be performed in accordance with AS9102. The FAI forms QCS-16, QCS-16-1, QCS-16-2, and QCS-16-3 shall be used to document the First Article Inspection Report (FAIR). Figures of the required FAI forms are displayed in Appendix D and copies of the FAI forms, and FAI guide are available at www.gdls.com.

If a first article inspection (FAI) is required as part of your purchase order (QY11) & (QY14) it is the supplier's responsibility to conduct an internal FAI on One (1) of the first five (5) pieces for the (QY11) Clause and Five (5) pieces for the (QY14) Clause. The purpose of the requirement is to assure the Supplier/Delegate has reviewed the product against the Purchase Order and all supporting documentation for all characteristics and found conforming. It is also the supplier's responsibility to verify and document 100% conformance of all Dimensional, Physical, Chemical, Process and Test requirements specified as part of the order.

5.10. GDLS Specific Requirements

This item is used to address GDLS specific requirements during PPAP. These GDLS requirements will be communicated in the GDLS PO.

Note: GDLS specific requirements may be listed as, but are not limited to, Quality Clauses on the purchase order (i.e. Notes, Ordering Data Sheets, etc.).

5.11. PPAP Approval Form

The supplier shall submit the specified contents of the PPAP file to GDLS, as indicated on the PPAP Approval Form. Suppliers may deliver the PPAP Approval form in supplier format or use the PPAP Approval form provided by GDLS shown in Appendix E-1. The supplier format shall be compliant to the PPAP Approval form requirements listed in AS9145.

GDLS will carry out the PPAP approval process. The PPAP submission will be reviewed and dispositioned one of the following ways:

a) Approved – Indicates that all PPAP requirements have been fulfilled. The organization is therefore authorized to ship product.
b) Interim Approval – Indicates that all PPAP requirements have not been fulfilled; however, the organization is authorized to ship product under the conditions/restrictions specified by the customer.
c) Rejected – Indicates that the PPAP requirements have not been fulfilled and the organization is not authorized to ship product.

Authorization to ship product to GDLS against orders requiring APQP/PPAP is granted only after GDLS provides approval or interim approval as defined above. GDLS will return the PPAP approval form with the disposition indicating the parts approval status.

Appendix A – Process Flow Diagram

A-1: Process Flow Diagram Template 1

Export Control Classification																
Other restrictions																
PROCESS FLOW DIAGRAM																
PART NUMBER/S:													PREPARED BY:			
PART / FAMILY DESCRIPTION:													DATE:			
OPERATION	STEP	ADMINISTRATION	PACKAGING INTERACTION	LIFT (mechanical / other)	LOAD / INSTALL	FABRICATION / TRANSFORMATION STEP	MOVE	STORE	INSPECT	REWORK	OTHER (SPECIFY)	OPERATION DESCRIPTION	CLASSIFICATION	PRODUCT KC	PROCESS KC	CONTROL METHODS
		●	■	⇧	⇩	◇	○	△	□	✖						
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A-2: Process Flow Diagram Template 2

Export Control Classification								
Other restrictions								
PROCESS FLOW DIAGRAM								
Process								
		Prototype -	**Pre-Launch -**	**Production -**			**Date (Orig.)**	
Key Contact		**Core Team**					**Date (Rev.)**	
							Customer Approval Date	
PROCESS DESCRIPTION	**OPERATION**	**STEP**	**INPUTS**	**CLASSIFICATION**	**OUTPUTS**	**CONTROLS**	**MISTAKE PROOFING**	**REMARKS**
							Rev -	

Appendix B – PFMEA

B-1: PFMEA Template

Export Control Classification																				
Other restrictions																				
Process Failure Mode and Effects Analysis (PFMEA)																				
Prototype - Pre-Launch- Production -					Key Contact / Phone						Date (Orig.)		Date (Rev.)							
Part Number					Core Team						Customer Approval Date									
									Current Process								Action Results			
Operation	Step	Process Function/ Description	Requirements	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Classification	Potential Cause(s) of Failure	Prevention Controls	Occurrence	Detection Controls	Detection	RPN	Recommended Action	Responsibility & Target Completion Date	Actions Taken Completion Date	Severity	Occurrence	Detection	RPN
Rev -																				

B-2: Severity Criteria

Effect	Severity of Effect on Product (Customer Effect)	Ranking	Effect	Severity of Effect on Process (Manufacturing / Assembly Effect)
Failure to meet safety and/or regulatory requirements	Potential failure mode affects safe operation and/or involves noncompliance with regulations **without** warning	10	Failure to meet safety and/or regulatory requirements	May endanger operator, machine or assembly **without** warning.
	Potential failure mode affects safe operation and/or involves noncompliance with regulations **with** warning	9		May endanger operator, machine or assembly **with** warning.
Loss or degradation of primary function	Loss of primary function (product inoperable, does not affect safe operation)	8	Major disruption	100% of product may have to be scrapped. Line shutdown or stop ship
	Degradation of primary function (product operable, but at a reduced level of performance)	7	Significant disruption	A portion of the production run may have to be scrapped. Deviation from primary process; decreased line speed or added manpower.
Loss or degradation of secondary function	Loss of secondary function (product operable but service life greatly reduced, convenience item(s) inoperable, customer dissatisfied)	6	Moderate disruption	100% of production run may have to be reworked off line and accepted
	Degradation of secondary function (product operable but appearance affected, convenience item(s) operable at a reduced level, customer dissatisfied)	5		A proportion of the production run may have to be reworked off line and accepted
Annoyance	Appearance, fit and finish type items do not conform, defect noticed by most of the customers (>75%)	4	Moderate disruption	100% of production run may have to be re-worked in station before it is processed
	Appearance, fit and finish type items do not conform, defect noticed by most of the customers (50%)	3		A proportion of the production run may have to be reworked in-station before it is processed
	Appearance, fit and finish type items do not conform, defect noticed by discriminating customers (<25%)	2	Minor disruption	Slight inconvenience to process, operation or operator
No effect	No discernable effect	1	No effect	No discernible effect

B-3: Occurrence Criteria

Ranking	Description	Process PPM	Likelihood of Cause (AIAG Reference)	Time-Based Example	Likelihood of Cause	Time-Based Example
					Low volume production	
10	Very High: Persistent Failure (Failure is almost inevitable)	500,000 PPM	1 in 2	≥ 1 per occurrence per shift	100% of production	≥ 1 per occurrence per shift
9	Very High: Persistent Failure (Failure occur almost as often as not)	50,000 PPM	1 in 20	≥1 per occurrence per day	50% of production	≥1 per occurrence per day
8	High: Frequent failures (Repeated failures)	20,000 PPM	1 in 50	≥1 per 2-3 days	20% of production	≥1 per 2-3 days
7	High: Frequent failures (Failures occur often)	10,000 PPM	1 in 100	≥1 per Week	10% of production	≥1 per Week
6	High Moderate: Occasional failures	5,000 PPM	1 in 200	≥1 per 2 weeks	5% of production	1 per month
5	Moderate: Occasional failures (minor proportions)	1,000 PPM	1 in 1,000	≥1 per quarter	0.5% of production	2 per year
4	Moderate Low: Infrequent failures	100 PPM	1 in 10,000	≥1 per half-year	0.1% of production	1 per year
3	Low: Relatively few failures.	10 PPM	1 in 100,000	≥1 per year	0.05% of production	1 per 5 years
2	Low: Failures are few and far between (isolated incidents)	1 PPM	1 in 1,000,000	<1 per year	0.01% of production	1 per 10 years
1	Remote: Failure is eliminated thru Prevention Control	Zero	Zero	Never	Less than 0.01% of production	<1 per 10 years

B-4: Detection Criteria

Ranking	Likelihood of Detection by Process Control - Category	Likelihood of Detection by Process Control - Criteria
10	Absolute Uncertainty	No current process control; Cannot detect or compliance analysis not performed
9	Difficult to Detect	Defect (Failure Mode) and/or Error (Cause) is not easily detected (e.g. Random audits)
8	Defect Detection Post Processing	Defect (Failure Mode) detection post-processing by operator through visual/tactile/auditable means with no boundary samples
7	Defect Detection at Source	Defect (failure Mode) detection in-station by operator through visual/tactile/auditable means or post- processing through use of attribute gauging (go/no-go, manual torque check/clicker wrench, etc.,) with no boundary samples
6	Defect Detection Post Processing	Defect (failure Mode) detection post-processing by operator through use of variable gauging or in-station by operator through use of attribute gauging (go/no-go, manual torque check/clicker wrench, etc.,) with boundary samples
5	Defect Detection at Source	Defect (Failure Mode) or Error (Cause) detection in-station by operator through use of variable gauging or by automated controls that will detect discrepant part and notify operator (light, buzzer, etc.,). Gauging performed on setup and first-piece check(for set-up causes only)
4	Defect Detection Post Processing	Defect (Failure Mode) detection post-processing by automated controls that will detect discrepant part and lock part to prevent further processing
3	Defect Detection at Source	Defect (Failure Mode) detection in-station by automated controls that will detect discrepant part and automatically lock part in station to prevent further processing
2	Error Detection and/or Defect Prevention	Error (Cause) detection in-station by automated controls that will detect error and prevent discrepant part from being made
1	Detection not applicable	Error (Cause) prevention as a result of fixture design, machine design or part design

Appendix C – Control Plan

C-1: Control Plan

Export Control Classification	
Other restrictions	

Control Plan

Prototype - Pre-Launch- Production -	Key Contact / Phone	Date (Orig.)	Date (Rev.)
Part Number	Core Team	Customer Approval Date	
Part Name / Description			

Operation	Step	Process Function / Description	Machine, Device, Jig, Tools For Mfg.	Characteristics			Classification	Methods					Reaction Plan
				#	Product	Process		Requirements	Evaluation / Measurement Technique	Sample		Control Method	
										Size	Freq		
													Rev -

Appendix D – First Article Inspection Report (FAIR)

D-1: QCS-16 FAI Coversheet

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FIRST ARTICLE INSPECTION REPORT
Form QCS-16
COVER SHEET

1. Part Number	7. FAI Report # (Audit Sequence No.)
2. Part Name	8. GDLS Purchase Order / PO Revision
3. Print and/or Model Revision	9. GDLS Quality Clauses
4. Parent Assembly Part Number	10. Supplier Name
5. Serial Number(s)	11. City, State
6. Lot Quantity / Quantity Inspected	12. GDLS Supplier No. / Government Cage C

13. Detail Part: ☐ Assembly FAI: ☐
14. Full FAI: ☐ Partial FAI: ☐
Baseline Part Number (including revision level):
Reason for Partial FAI:

DATA USED FOR EVALUATION

15. Part Number & Print Revisio		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

____ 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 STATU ☐ 28. PASS ☐ 29. FAIL

30. SUPPLIER PRINTED NAME		33. GDLS PRINTED NAME	
31. SUPPLIER APPROVAL SIGNATURE DATE	32. STAMP	34. GDLS APPROVAL SIGNATURE DATE	35. STAMP

E-2: QCS-16-1 FAI Inspection Data Sheet

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FIRST ARTICLE INSPECTION REPORT

FORM QCS-16-1 — **INSPECTION DATA**

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. Supplier Rep. Print and Sign:		**9. Date:**	

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

D-3: QCS-16-2 NC Summary Sheet

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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

D-4: QCS-16-3 Materials & Processes Sheet

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FIRST ARTICLE INSPECTION REPORT

FORM QCS-16-3 — **MATERIALS & PROCESSES**

Page 1 of

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. 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**

Appendix E – PPAP Approval Form

E-1: PPAP Approval Form

PPAP Approval Form

1. Part Number:		6. Additional Changes:	
2. Part Name:			
3. Part Revision Level:			
4. Drawing Number:		7. Customer Purchasing Representative:	
5. Drawing Revision Level:		8. Purchase Order Number:	

SUPPLIER INFORMATION

9. Organization Name:	10. Supplier/Vendor Code:
11. Address (Street, City, State, Country, Postal Code):	Country:

12. Submission

Full Submission		Initial Submission	
Part Submission		Resubmission	Reason:

13a. PPAP ELEMENTS PROVIDED				13b. CUSTOMER PPAP ELEMENT ACCEPTANCE (Customer use only)		
Yes	No	N/A	ELEMENT DESCRIPTION	Yes	No	CUSTOMER COMMENTS
			1. Design Records			
			2. Design Risk Analysis (e.g., DFMEA)			
			3. Process Flow Diagram			
			4. Process FMEA			
			5. Control Plan			
			6. Measurement System Analysis			
			7. Initial Process Studies			
			8. Packaging, Preservation, and Labelling Approvals			
			9. First Article Inspection Report			
			10. Customer Specific PPAP Requirements			

Note: "No" selections in Section 13a require an Action Plan item documented in Section 14 below

14. Action Plan		Element #	Target Date

15. Declaration

I, the supplier, submit this PPAP Approval form as declaration of having met all applicable requirements of the 9145 standard, except as noted above, including having implemented the requirements at the sub-tier level where applicable. I further certify that our production process meets all defined product delivery, engineering and quality requirements. I understand that the approval of this form by the customer does not release me from responsibility or liability for any non-conformances.

Clearly Print Name and Sign	Title	Email Address	Date

16. Customer Use Only			
Approved ___	Interim Approval ___	Rejected ___	
Comments			
Customer Authorization: Clearly Print Name and Sign	Title	Email Address	Date