

**Q260: First Article Inspection with Compliance Matrix (CM) and Product Line Validation (PLV)**

The application of this Quality Clause is a result of the Aerojet Rocketdyne risk ranking of the product you are quoting or are under contract for. It requires a new complete First Article for this Purchase Order (PO). The requirements of this Quality Clause must be planned for and complied with unless contractually waived by PO direction.

**Overview:**

This enhanced First Article requirement adds a Compliance Matrix (CM) component to the standard AS9102 FAI forms. The CM addition provides detailed specific traceability to all design and purchase order requirements in the seller's build documentation. It supplements the requirements of AS9102 and requires the use of an AR required form to perform the FAI.

The Product Line Validation (PLV) is a review of the actual seller processes performed by AR and seller representative to ensure the following:

- 1) Instructions are followed as written
- 2) All the necessary detail to consistently complete an acceptable part is included (eliminate reliance on tribal knowledge)
- 3) Manufacturing, inspection and test personnel are properly trained
- 4) Special tooling required is available and properly calibrated
- 5) Special processes and supporting procedures are in place and under control
- 6) Planned inspections and equipment are appropriate based on the requirements and tolerances
- 7) Necessary test procedures and equipment are available and capable of meeting the Technical Data Package (TDP) requirements.

**Details:****Compliance Matrix (CM)**

The seller is expected to complete the First Article Inspection in full compliance to AS9102 and other AR Quality clauses with additional detail noted in the clause utilizing the Aerojet Rocketdyne provided FAI template: [QMA-F-5.04.03.00.0006](#).

- 1) The template when used properly per the accompanying instructions ensures that the FAI includes the following detail and all the required approvals: An extracted list of all drawing, specification and purchase order (quality) requirements
- 2) Materials/part numbers required to make the evaluated part number
- 3) Detailed specific traceability to the documents that make and verify the extracted features including the methods used to verify compliance to the requirement.
- 4) Specific tooling required to create or validate the features
- 5) Training required to create or validate the features

FAI details shall include all design characteristics. When multiple quality requirements are included in (or embedded within) a single note or specification, then the note or specification shall be expanded to multiple entries to cover each of the verifiable quality requirements.

The seller shall submit the completed FAI plan (minus results) via email to the AR buyer for review and approval prior to completing the FAI.

AR shall review the FAI Plan to ensure that it captures all requirements and works with the supplier to resolve any concerns. Upon verification of capturing all requirements, AR will approve the plan and authorize the supplier to populate the FAI with results.

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Once approved, the seller is authorized to use the FAI plan for capturing actual results, review compliance and sign/or stamp all applicable items to complete the FAI report.

Upon completion, the seller shall submit the completed FAI report via email to the AR buyer for final review/approval.

AR reviews the FAI report to ensure that it complies with all requirements and works with the supplier to resolve any concerns.

**FAI & CM Closure**

Once AR approves the FAI report, the “No change” requirement (via Quality Clause AR1) applies.

**Product Line Validation (PLV)**

The PLV shall typically be done concurrent with the First Article Inspection (FAI) or the Supplier Manufacturing Readiness Review (SMRR) process but may be requested at any time by AR.

Based on the available information (from the FAI, SMRR or other process) AR and the seller shall select and agree on a list of processes for detailed review at the seller’s site to complete the Product Line Validation. This is intended to be a review of the actual process used on an actual AR part. Process selection will occur prior to visit to allow scheduling. A typical sample agenda for the PLV meeting is included in the Appendix.

Process witness targets include key processes, processes where results were at or near the edge of the tolerance, critical inspection points, and processes where tribal knowledge capture is key to success and any processes (or similar processes) which have caused issues on past/similar hardware.

The combined seller and AR team shall take a tour of the shop and product line areas to witness/validate the agreed upon processes. The review shall encompass all 7 features listed in the PLV Overview.

To facilitate the PLV, the seller shall provide a copy of all travelers, work instructions, inspection plans, etc. and the available information from FAI, SMRR or other related processes.

The PLV will include a page by page review of the seller’s documentation related to performance of the selected process as well as a live witness of selected processes being performed on an actual AR part.

The seller shall provide appropriate subject matter experts (SMEs) to coordinate and provide escort for the demonstration. Seller's SME shall be capable and responsible for answering technical questions for AR representatives who will witness the process demonstrations and documentation review.

The seller shall coordinate with AR to plan and schedule the PLV so as to meet all contractual delivery dates.

The AR and seller teams review the results of the process witnessing and work instruction reviews. Notes/actions taken during any activities are discussed with the teams and formalized in the action log.

**PLV Closure**

Action items related to PLV shall be created and tracked to closure.

Once AR approves the PLV, the “No change” requirement (via Quality Clause AR1) applies.

This document is an integral part of the contract (purchase order) in which referenced.  
**Applicable Revision:** The revision in effect at the time the purchase order is placed.

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(Cont'd)**

**Appendix: Typical PLV Agenda**

- 1) Introductions and AR kickoff
- 2) Agenda is reviewed by the team and safety, contact and working protocols agreed to
- 3) Supplier provides a site/company overview
- 4) Supplier provides an overview of the process and all instructions.
- 5) Team reviews the list of agreed upon processes which were selected for witness for awareness and incorporation into the activities
  - Witness steps to be done throughout the remainder of the review should include AR and supplier witnessing the process to validate the operator is: following the instructions, the instructions are sufficient for the process, best practices have been incorporated into the process, and any training and inspection is sufficient.
- 6) Tour of the shop and product line areas
- 7) AR and supplier review and open items from the Compliance Matrix (nonconforming dimensions, insufficient training, dimensions which were at or near the extreme of the tolerance, significant characteristics/processes)
- 8) AR and Supplier witness selected operations
- 9) Supplier to provide a copy of all travelers, work instructions, inspection plans, etc. and the completed compliance matrix (anything required to produce and ensure a compliant product; should be what was used for the compliance matrix)
- 10) AR team reviews the above information and makes a list of questions, needed clarifications, areas where best practices are not incorporated, insufficient definition of work to be performed, etc.
  - This process, while performed predominately by AR, should be supported by the appropriate counterparts on the supplier's staff. The review process should include continuous questions, answers and general discussion between AR and the supplier.
- 11) The AR and supplier teams come together to review the results of the process witnessing and work instruction reviews; Notes/actions taken during any activities are discussed with the teams and formalized in the action log
- 12) Event closure: Action items agreed to and supplier approved for production, conditionally approved (pending action item closure, or disapproved/requiring further review)
- 13) "No change" (via AR1) is applied to Compliance Matrix and associated documentation/processes