Effective Date: 11/14/2019

Q253: Supplier Manufacturing Readiness Review (SMRR) + Process Control Review (PCR)

Application:

You have received this Quality Clause as a result of the risk ranking of the product you are quoting or under contract for. The requirements of this Quality Clause must be planned for and complied with unless this is waived by either P.O. direction or other written approval provided by AR quality and the responsible buyer for this hardware. **If you have not had a break in production or a performance issue in the previous two years, contact your Aerojet Rocketdyne buyer to request a written waiver of this quality note prior to quoting or production.**

NOTE: Based on performance – the SMRR or PCR may not be required.

Definitions:

Supplier Manufacturing Readiness Review (SMRR): Determines the readiness of the manufacturer to proceed with manufacturing of the product.

Process Control Review: To demonstrate that the manufacturing/assembly process has the potential to produce product that consistently meets all requirements during the production run**.**

Process Control shall include the following: Process Flow Diagram, Process Failure Modes and Effects Analysis (PFMEA), and Control Plan.

Requirement:

Seller shall prepare and submit documentation required to perform a SMRR and a PCR for Buyer's approval. The review shall be conducted prior to the beginning of any significant fabrication or assembly activity.

The **SMRR** should represent a complete and comprehensive presentation of the entire planned production and/or assembly activity. The information prepared for the SMRR should represent the following (as applicable): Product description, business review, Quality and Engineering Notes review, released production drawings, design risk assessment, manufacturing readiness (planning, technique sheets, tooling, etc.), process capability validation, technical review, production verification testing, material certification, parts marking methods, packaging, preservation and labeling approvals, special process approvals, and nondestructive test, inspection, nonconforming product process, and documentation requirements.

The **Process Control Review** should demonstrate that the process has been analyzed for risk during the completion of the Process Flow Diagram, PFMEA, and that any applicable risk has been mitigated and/or Control Plans developed: Seller shall submit the following Process Control information in preparation for the SMRR for Buyer's approval:

- **Process Flow Diagram**: Submit process flow diagram(s) that includes all operations in sequential order from purchase order receipt through storage and shipment of the finished item. The process flow diagram(s) are to include any alternate processes and movement of product to any external operations.

- **Process Failure Modes & Effect Analysis (PFMEA)**: Seller to perform a risk analysis of the manufacturing/assembly process(s) and identify mitigation plans for high risks using the PFMEA methodology (SAE J1739).
- **Control Plan**: Once the need for a Control Plan has been identified, either through identification of relevant special characteristics on the item drawing, or through completing the PFMEA, a Control Plan is developed. The supplier is responsible for developing a Control Plan(s) at the system, subsystem, component, and/or material level to assure process outputs will conform to pre- determined requirements. The control plan will be reviewed to ensure it:
  - Has a process for reviewing and updating the control plan when changes occur Includes and indicates all special characteristics (product and process Key Characteristics and Critical Safety Item) defined by the drawing and PFMEA.
  - Lists the characteristics to be monitored, during the manufacturing process, along with any required control methods.
  - Assure a reaction plan is in place for when the process becomes unstable or a failure occurs.

This SMRR and Process Control plan documentation will be submitted to the Aerojet Rocketdyne Buyer and a review will be scheduled at an appropriate location.

Forms QMA-F-7.08.06.024 and QMA-F-7.08.06.025 will be used by Aerojet Rocketdyne (as applicable) to conduct and document the SMRR and Process Control.

Approval by Buyer is required prior to production of the goods. Buyer's approval of manufacturing plans shall not relieve Seller of Seller's requirement to comply with the terms of this contract.

The following changes will require an update to the previously approved SMRR and Process Control Review unless otherwise directed in writing by AR.

1. A change in the design characteristics affecting fit, form, or function of the part.
2. 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.
1. A change in numerical control program or translation to another media that can potentially affect fit, form, or function.
2. A natural or man-made event, which may adversely affect the manufacturing process.
3. A lapse in production for two years. This lapse is from the completion of last production operation to the actual restart of production.

All changes to the approved plan shall be submitted to Buyer for review and/or approval prior to implementation, unless otherwise defined by Buyer engineering requirements.

All changes to the approved SMRR plan shall be submitted to Buyer for review and/or approval prior to implementation, unless otherwise defined by Buyer engineering requirements.