DCMA NSEO MANUFACTURING PROCESS REVIEW (MPR) CHECKLIST #25

SOLDERING AND ELECTROSTATIC DISCHARGE

|  |  |
| --- | --- |
| **SUPPLIER & CAGE:** |  |
|  |  |
| **LOCATION:** |  |
|  |  |
| **PROCESS REVIEWED:** |  |

**Program Type:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Level I/SUSBAFE (LI/SS) |  | Navy Propulsion Program (NPP) |  | Deep Submergence Systems/Scope of Certification Program (DSS-SOC) |
|  | Nuclear Plant Material (NPM) |  | Naval Nuclear Propulsion Program (NNPP) |  | Aircraft Launch & Recovery Equipment (ALRE) |
|  | Fly By Wire Ships Control Systems (FBWSCS) |  | Ships Critical Safety Items (SCSIs) |  | Other: |

**Contractual Requirement(s) for this Process:**

|  |
| --- |
|  |

**Supplier Procedure Number(s), Title(s) & Revision Level(s)/Date(s):**

|  |
| --- |
|  |

|  |  |
| --- | --- |
| **Process Reviewed By:** |  |
|  |  |
| **Date(s) of Review:** |  |
|  |  |

**Process Concerns and Guidance:**

**Class 1 — General Electronic Products:** Includes products suitable for applications where the major requirement is function of the completed assembly.

**Class 2 — Dedicated Service Electronic Products:** Includes products where continued performance and extended life is required, and for which uninterrupted service is desired but not critical. Typically the end-use environment would not cause failures.

**Class 3 — High Performance Electronic Products:** Includes products where continued high performance or performance-on-demand is critical, equipment downtime cannot be tolerated, end-use environment may be uncommonly harsh, and the equipment must function when required, such as life support or other critical systems.

* Material Control is the foundation for the Level I program, ensure this is being followed.
* Proper classifications of assemblies for evaluation not properly classified (Class 1, 2, 3) or being inspected to the correct class.
* Programmable Read-Only Memory components (PROM) were burned incorrectly. The software/part/drawing numbers were correct, but the software used was the wrong version. All three must be verified separately.
* Harness assemblies were of an incorrect configuration.
* Insulation pinched between a lug and terminal seating surface caused a high resistance connection.
* Environmental testing not complied with or proper posttest inspection unsat
* Are securing mechanisms being applied/installed properly?
* Are all marking requirements, including nameplates, as required?
* Is configuration management under control?

**A**. **MANPOWER:**

1. Are the inspection and manufacturing personnel trained in the use of procedures? Is the solderer qualified for the observed soldering procedure? Is the solderer familiar with details of the procedure? Is the procedure readily available to the solderer and inspector? ***What is the procedure number?*** (NAV25-A5/A19D/E/F/G)

|  |
| --- |
|  |

1. Are personnel performing soldering knowledgeable, trained and qualified with the procedure, use of tools and use of instruments? Is this recorded and part of employee’s file, if required? ***Are training records available (review sample) and are they accurate and complete?*** (NAV25-A5B)

|  |
| --- |
|  |

1. What type of training/certification is required? Is anyone’s certification expired and are they still working in the process? ***What are the requirements (some soldering specifications have specific operator qualification requirements)?***

|  |
| --- |
|  |

1. Are the credentials of the training/certification official in accordance with specification requirements? ***What are the requirements?***  Is there a system in place for remedial training when errors occur?

|  |
| --- |
|  |

1. Is inspection data reviewed and accepted by qualified personnel? Is solderer identification recorded? (name, badge number, clock number, etc.) (NAV25-A14)

|  |
| --- |
|  |

**B. MATERIALS**:

1. For Level I material, is the product controlled and traceable throughout the process? Do solder rolls and raw materials have traceable markings on containers? What types of solders are used? Is traceability maintained for material which has been soldered? (NAV25-A13/21)

|  |
| --- |
|  |

1. Is material within shelf-life? *(****There are shelf lives for various materials. Check the manufacturer’s certification or appropriate data for this information.****)*

|  |
| --- |
|  |

1. Are certifications for raw materials used in the soldering process reviewed for acceptance and maintained on file for review? Do the raw materials comply with contract/specification and/or supplier-imposed technical requirements, including the prohibition of reclaimed material as may be required (lead)? ***What were the materials reviewed?*** (NAV25-A16)

|  |
| --- |
|  |

1. Does the supplier have a procedure for the counterfeit detection and avoidance system? Are electrical materials controlled for counterfeit mitigation? (***Check the manufacturer’s certification or appropriate data for this information.****)*

|  |
| --- |
|  |

**C. MACHINERY:**

1. Is **manufacturing equipment** (tooling, fixtures, jigs, temperature controllers, ammeters, voltmeters, etc.) adequate to produce/assess conforming supplies in compliance with contractual specifications and drawing(s)? *What Items were sampled and were they part of the supplier’s calibration program and within the calibration/check cycle?*

|  |
| --- |
|  |

1. Are soldering tools the proper wattage/temperature to perform the required operations? (NAV22-A22)

|  |
| --- |
|  |

1. Is the supplier’s ESD program compliant to contractual requirements? Are ionizers being deployed to reduce static electricity in the supplier’s ESD program?

|  |
| --- |
|  |

1. Is **inspection and testing equipment** of the required adequacy, accuracy, precision, and range to assure supplies produced comply with specifications and drawings? *What Items were sampled and were they part of the supplier’s calibration program and within the calibration/check cycle?* (NAV25-A15)

|  |
| --- |
|  |

1. What types of tools, mechanical strippers, chemical strippers, thermal strippers, holding devices, bending tools, clinching tools are required in the use of the procedures? Are any of them required to be non-conductive? Specify sample of tools. (NAV25-A9)

|  |
| --- |
|  |

1. Does equipment (to include fixtures, jigs, and software [ATE]), requiring qualification or certification approval, have contractual approval for use? For software, was the correct software in use? What program(s) and revision level(s)/date(s) was in use?

|  |
| --- |
|  |

1. Is Government owned equipment adequately protected / maintained in accordance with a documented process?

|  |
| --- |
|  |

**D**. **METHODS**:

1. Does the supplier have an approved procedure, if required? Has the procedure been approved by the Navy/customer? ***If applicable, list the procedure and Reference Approval Number****.* (NAV25-A7A/B)

|  |
| --- |
|  |

1. Are work instructions, test procedures, travelers, etc. being used adequate, clear, concise, and up to date (latest revision). ***What documents (identifying number & rev) were reviewed?***

|  |
| --- |
|  |

1. Does a written, detailed procedure exist, and is it utilized for the soldering process? Identify procedure number and revision. Is it readily available? (NAV25-A2A/A3)

|  |
| --- |
|  |

1. Are procedures/work instructions adequate for control of Materials? Equipment? (NAV25-A8/A8A/B)

|  |
| --- |
|  |

1. Does a written detailed procedure exist for assembly of components prior to soldering? Identify procedure number and revision. Is it readily available? (NAV25-A2B)

|  |
| --- |
|  |

1. Are inspection procedures utilized for soldering? Identify procedure number and revision. (NAV25-A4)

|  |
| --- |
|  |

1. Are soldering procedures written based on contract-invoked requirements or generic and company based standards? (NAV25-A6)

|  |
| --- |
|  |

1. Are there adequate methods of segregating accepted and rejected materials in use? (NAV25-A20)

|  |
| --- |
|  |

1. Do procedures include a system for identification of inspection status on parts and documentation? (e.g. inspection stamp) (NAV25-A10)

|  |
| --- |
|  |

1. Identify the standard(s) the supplier uses for performing soldering.(MIL-STD-454, IPC-A-610, other, etc.) (NAV25-A1)

|  |
| --- |
|  |

1. What inspection documents exist and are they maintained to confirm the inspection process was performed? (NAV25-A12)

|  |
| --- |
|  |

1. Are inspection documents properly completed and maintained? Review and record number of samples: (NAV25-A12A/B/A17)

|  |
| --- |
|  |

1. Are shop travelers and work records traced to the operator/inspection personnel? (NAV25-A18)

|  |
| --- |
|  |

**E.** **ENVIRONMENT**:

1. Are work areas clean from debris and separate from other areas for soldering operations? (NAV25-A23)

|  |
| --- |
|  |

1. Are exhaust equipment utilized in soldering areas to provide fresh air for personnel? Are adequate fire protection and eye-wash stations available for use? (NAV25-A24)

|  |
| --- |
|  |

1. Do controls exist for handling and disposing of solder waste? (NAV25-A25)

|  |
| --- |
|  |

**F. PRODUCT EXAMINATION:**

***The QAR must perform a product examination in order to verify the output of the process being reviewed and document the results below.***

|  |  |
| --- | --- |
| Date(s) Conducted: |  |
|  |  |
| Product Examination Performed By: |  |
|  |  |
| Contract Number(s): |  |
|  |  |
| Part Number(s)/Serial number(s): |  |
|  |  |
| Part Nomenclature(s): |  |
|  |  |
| Supplier Personnel Contacted and Titles: |  |
| (NAV22-A19) |  |
| Drawing Number & Revision: |  |
|  |  |
| Lot Size and Sample Size: |  |

|  |  |
| --- | --- |
| **Identify All of the following below**: What process is being observed? What is being soldered? What basic material(s) are being soldered (PC board, wire, assembly, etc.) Identify soldering material (solder type, flux, class, etc.) (NAV25-A19/A/B/C) Any additional characteristics examined: | # Observations |
|  |  |

1. Identify the inspection methods (W, I, T, V) used to verify conformance with procedures and standards: (NAV25-A11)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **W** |  |  | **I** |  |  | **T** |  |  | **V** |  |

**PE Comments/Concerns**

|  |
| --- |
|  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Overall MPR Results:** | **SATISFACTORY** |  | **UNSATISFACTORY** |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Corrective Action Generated?** | **No** |  |  | **Yes** |  |  | **CAR#** |  |

FOLLOW-UP ACTION REQUIRED?

|  |
| --- |
|  |

**SUMMARY/NOTES/COMMENTS/CONCERNS**:

|  |
| --- |
|  |