DCMA NSEO MANUFACTURING PROCESS SURVEILLANCE (MPS) CHECKLIST #32

VARNISH IMPREGNATION AND WINDING

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

**Program Type:**

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| --- | --- | --- | --- | --- | --- |
|  | 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:**

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

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| Surveillance Performed By:  |  |
|  |  |
| Date(s) of Surveillance: |  |
| Contract Number(s): |  |
|  |  |
| Part Number(s)/Serial number(s)/NSN: |  |
|  |  |
| Part Nomenclature(s): |  |
|  |  |
| Supplier Personnel Contacted and Titles: |  |
|  |  |
| Drawing Number & Revision: |  |

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**Process Concerns and Guidance:**

* Incorrect or incorrectly assembled parts will allow product not to perform to specification and lead to premature failure.
* Visual and finish inspections can be subjective, therefore objective acceptance criteria is important and should be used when performing these inspections.
* Foreign material trapped in crevices can cause accelerated local corrosion, and may be released later in life, potentially causing problems.
* Detrimental materials (halogens, sulfur, phosphorus, mercury, and other low melting point metals) can cause embrittlement, pitting, corrosion, cracking, or other product detriment.
* Operational/Functional testing failures of mechanical and/or electrical products due to improper testing sequences, times, pressures, etc. not being adhered to as per contract requirements.
* Subcontractors not performing required tests on product delivered to Prime Contractor
* Subcontractor mechanical and/or chemical certifications incorrect or missing
* Foreign material and tools have been left in hardware.
* Transformer windings (coils) not to drawing
* Materials not to drawing/procedures (epoxies, resins, insulating resins)
* Coils not fully submerged
* Final dip coat not applied or applied incorrectly
* If trickle impregnation, is continuous stream applied at a controlled rate?
* Verify the type of impregnation. Heat-curing, two part poly resins or epoxy resins. Is the resin dissolved properly?
* Is the method of orientation of the item being impregnated correct? (Vertical, horizontal, etc.)
* Is the temperature (curing process) of the impregnation process correct?
* Verify the resistance testing is per the requirements.

**QARs should use the “BASIS OF DETERMINATION” column to document the objective quality evidence and/or clarify the rationale used to support their decision. (e.g. direct observation, documents verified etc.)**

S = Satisfactory U = Unsatisfactory

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| **SURVEILLANCE QUESTIONS** | **S** | **U** | **BASIS OF DETERMINATION** |
| 1. Is the material/product controlled and traceable throughout the process being audited?
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| 1. Are procedures and drawings, with correct revision, available to the personnel performing the task with clear acceptance criteria?
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| 1. Is the documentation clear, readable and does it match with the material being processed?
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| 1. Do training records exist and are they current with proper certifications, if required?
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| 1. Is the area where the work is being performed clean and free from dirt and debris?
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| 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?*
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| 1. Is all non-conforming material segregated, controlled, traceable and procedures exist for disposition of the non-conforming material?
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| 1. Does Supplier perform the process per a written standard, i.e., MIL standard or NAVSEA?
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| 1. Are applicable cleaning processes, flushing media, solvents, water, air, monitored and controlled so as not to introduce contamination to the product? Are wiping and cleaning cloths for parts checked for grease, oil, etc?
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| 1. Are process operations being performed per the procedure? (proper number of windings, coils fully submerged, final dip coat applied correctly)
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| 1. Is coating material per the drawing? (resins, epoxies etc.)
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| 1. Verify that the coils have the required materials applied properly in order to achieve the required mechanical strength and prevent wires from rubbing against each other due to vibration. This is particularly important where the coils enter the stator or rotor. This will eventually wear the insulating coating causing a short circuit.
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| 1. Is testing performed to the procedure? Is it approved, if required?
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| Other observations |  |  |  |
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| **Overall MPS Results:** | **SATISFACTORY** |  | **UNSATISFACTORY** |  |

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

**FOLLOW-UP ACTION REQUIRED?**

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

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