DCMA NSEO MANUFACTURING PROCESS SURVEILLANCE (MPS) CHECKLIST #03PT

PENETRANT TESTING

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| **SUPPLIER & CAGE:**  |  |
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| **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:**

* Improper Surface Preparation - It is critical that all Penetrant inspections be performed on surfaces that meet technical and procedural requirements. Improper surface conditions can mask defects with excessive background or prohibit the penetrant from entering a defect.
* Acceptance Criteria - Acceptance criteria can vary depending on whether the product will be 100 percent volumetrically inspected using another NDT method. QAR must be cognizant of all NDT inspections to be performed that may affect acceptance criteria.
* Inadequate Process Controls – Supplier must provide the necessary controls to ensure that the penetrant system, materials and equipment provide an acceptable level of performance.
* Inadequate Technique – Poor or improper technique attributes could cause invalid and questionable results due to:
	+ improper final pre-test cleaning orexcessive penetrant removal which could reduce the test sensitivity and could result in blocking or missing the detection of relevant indications
	+ inadequate visible or fluorescent lighting in the inspection area
	+ improper penetrant application
	+ insufficient coverage of the full area of interest
	+ improper application of developer (pooling or splatter) which can mask defects
	+ poor handling of test specimen
	+ incorrect inspection surface temperature
	+ incorrect water wash temperature or pressure
	+ inaccessible areas on parts not adequately masked to preclude loss of cleanliness
* Improper or inadequate evaluation and/or reporting of non-relevant indications.
* Evaluating indications prior to the minimum or after the maximum dwell time may results in the improper interpretation of indications.

**Governing Specifications**:

* NAVSEA 250-1500-1
* MIL-STD-2132
* T9074-AS-GIB-010/271

**Additional Oversight Checklists**

* Addendums to this MPS checklist are available to use for a more in-depth process surveillance. If used, the completed Addendum(s) are to be attached to the PDREP Surveillance Plan with the base checklist.

* 03 MPR-MPS - Addendum 1 – NDT Qualification, Certification and Oversight

**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. Are there any Corrective Actions previously issued for PT that will impact this inspection?
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| 1. Is the PT inspector certified in the method being performed? List inspector certification level and expiration dates for vision and NDT certifications.(NAV03-18/6a-b/7)
 |  |  |  |
| 1. Are procedures available to the personnel performing the task, with clear, correct inspection/acceptance requirement documentation and revisions? Have PT procedures been approved? Record procedures used and approval dates. (NAV03-2/17a-b)
 |  |  |  |
| 1. Does the procedure/technique used meet contract/inspection requirements? Are the PT procedures/techniques being used correctly for the tests being performed?
 |  |  |  |
| 1. Are the product and the materials used to perform the tests controlled and traceable throughout the process?
 |  |  |  |
| 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?***
 |  |  |  |
| 1. Is the area where the work is being performed clean and free of matter that may interfere with the inspection?
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| 1. If the material to be inspected is ferromagnetic, is Liquid Penetrant the correct inspection method or is Magnetic Particle?
 |  |  |  |
| 1. Is the lighting adequate on the test surface, visible or fluorescent, and verified with an appropriate light meter? (NAV03-19) ***Record readings obtained.***
 |  |  |  |
| 1. Are penetrant materials and the item to be inspected within the allowable temperature limits?
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| 1. Have the parts been properly pre-cleaned? ***Record material used and drying time.*** (NAV03-23)
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| 1. Is penetrant coverage sufficient? ***Record material used and dwell time.*** (NAV03-23)
 |  |  |  |
| 1. Visible Dye – is penetrant removal accomplished without over-cleaning? ***Record material used.***
 |  |  |  |
| 1. Fluorescent Dye– is penetrant removal accomplished without over-cleaning? ***Record emulsification time, water temperature and pressure, and gage calibration dates.***
 |  |  |  |
| 1. Is developer applied in a thin, uniform coating without evidence of pooling? ***Record developer used and dwell time.*** (NAV03-23)
 |  |  |  |
| 1. Is the proper technique being used for the part, (welds, base metals, threaded fasteners etc…) visible vesus flourescent, solvent versus water washable? (NAV03-21)
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| 1. Are all penetrant materials being used in the approved procedure and from the same manufacturer? (NAV03-22a)
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| 1. Are penetrant materials traceble to manufacturers certification documents? (NAV03-22b)
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| 1. Is proper post cleaning performed after completion of inspection? (NAV03-24)
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| 1. Are indications evaluated properly and in accordance with the acceptance criteria? (NAV03-20)
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| 1. Are inspection records adequate to meet procedural requirements and include at least the following: (NAV03-25)
* Description and unique ID of item inspected.
* Approved procedure ID.
* Penetrant manufacturer (brand) and type ID.
* Acceptance standard used.
* Date of inspection.
* Signature(s) of inspectors(s).
* Disposition (accept/reject) of the item inspected.
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| 23. Are records maintained to confirm that all required inspection processes were performed? |  |  |  |
| 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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