DCMA NSEO MANUFACTURING PROCESS SURVEILLANCE (MPS) CHECKLIST #26

FASTENER TEST METHODS (ASTM-F606)

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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:**

* Long externally threaded fasteners, such as fully threaded rod, have had shorter sample pieces tested to certify mechanical properties of the rod when the parent fastener specification, such as MIL-DTL-1222, **requires** full-sized testing.
* Hex nuts have been tested for proof load properties to requirements other than those applicable to the style of nut, such as heavy hex nuts tested to the lower requirements of regular hex nuts.
* Headed externally threaded fasteners have been tested for wedge tensile strength properties with the wedge incorrectly installed in the tensile test equipment.
* Testing facilities must maintain unique traceability of the material throughout the performance of all processing and testing functions.
* Headed fasteners have been wedge tensile tested with the wrong wedge angle when the wedge angle requirement, based upon the product fastener specification, differs from that of the testing standard.
* Tensile testing of short externally threaded fasteners have been errantly waived based upon ASTM-F606 Table 1, when in actuality the governing fastener product specification requires test specimens representing the finished product, of sufficient length to accomplish the required testing, be utilized, thereby negating the waiver.
* An insufficient number of tensile tests have been conducted to satisfy product specification sampling requirements.
* Hardness testing. Machines not verified by an outside source. Machines not checked properly in-house – daily, number of readings, improper test blocks, improper placement of impressions.
* Hardness testing procedure inadequate: Daily checks or checks prior to usage not documented confirming the machine is operating properly. Limited number of test blocks. Improper care of test blocks (readings too close and on both sides).

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

S = Satisfactory U = Unsatisfactory

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| **SURVEILLANCE QUESTIONS** | **S** | **U** | **BASIS OF DETERMINATION** |
| 1. Are the personnel performing the process of the appropriate skill/experience level and/or properly trained/certified to produce conforming product? ***What are the requirements?***
 |  |  |  |
| 1. Are training records available (review sample), and are they accurate and complete (as applicable)? Are any personnel certifications expired and are they still working in the process?
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| 1. Are the tests performed to specific written procedures? Do the procedures meet contract/applicable requirements, are of the appropriate revision, and do they contain specific parameters and correct accept/reject criteria?
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| 1. Do processing documents (router sheets, travelers, etc.) clearly define the processing steps/operations?
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| 1. Is the documentation clear, readable and does it match with the material being processed?
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| 1. Has the test technician/inspection/manufacturing personnel demonstrated their ability to properly perform the operation?
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| 1. Are the environmental controls of the process area in accordance with the requirements of the governing procedure/test standard?
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| 1. Is the equipment/instrumentation/gauging to be utilized in performing the process calibrated with supporting records available?
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| 1. Are the material/product test specimens traceable to the appropriate heat/lot of material throughout processing?
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| 1. Is the testing/inspection being conducted on the proper number and size of test specimens/samples? (e.g. full-size vs. machined specimen if applicable)
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| 1. Are hardness test standards properly utilized (indentations on one side only) and certified?
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| 1. Is hardness testing conducted using the applicable scale as specified by the material specification?
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| 1. When required by specification/contract, is hardness testing conducted on the full-size fastener(s)?
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| 1. Are mechanical properties tests properly conducted and documented?
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| 1. Is the proper size test specimen for material elongation utilized, as specified by the material/test specification?
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| 1. Is the proper method being used for the determination of yield strength (offset vs. extension-under-load)?
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| 1. Is mechanical properties testing conducted on full-size fastener(s), when required by specification/contract? (Generally applies to MIL-DTL-1222 fasteners)
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| 1. Is the configuration of the test fixture (as applicable) in accordance with the test procedure/standard?
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| 1. Is the proper class/type of extensometer being used and is it calibrated (as applicable)?
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| 1. Is the proof stress testing of nuts conducted using the appropriate proof load for the given nut configuration/size/style/type?
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| 1. Are all specification required tests performed? (i.e. Axial tensile, yield strength, elongation, hardness, etc.)
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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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