DCMA NSEO MANUFACTURING PROCESS REVIEW (MPR) CHECKLIST #02

HYDROSTATIC, PRESSURE, AND GAS LEAK TESTING

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

**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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| **Process Reviewed By:** |  |
|  |  |
| **Date(s) of Review:** |  |
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**Process Concerns and Guidance:**

* Parts not properly cleaned; items may contain foreign material causing immediate or latent failure.
* Supplier’s procedures and work instructions not reflecting the correct drawing, specifications or other documents that are being used to perform the test.
* Suppliers not having the necessary gages and measuring devices to permit reliable inspections to meet the procedural acceptance criteria.
* Verify the calibration of pressure gages and/or pressure chart recorders, thermo-recorders or thermometers, if one is required, and gas leak detectors and/or sensors.
* Are all marking requirements, including nameplates, as required?
* Prior to testing, ensure satisfactory completion and acceptance of all non-destructive testing including any special tests such as heat treat and hardness testing.
* Ensure welding is completed, all temporary attachments are removed, and the internal areas of tank are cleaned.
* If machining is necessary after various manufacturing processes (i.e. welding, casting), the final pressure test shall be performed after these processes have been satisfactorily performed.
* Ensure correct material bolts, nuts, and manifold connections that will connect to the item being tested and gauge connections that are being used are correct, are adequate for the testing to be performed, and that periodic maintenance is being properly accomplished on the testing equipment.
* Ensure that all the necessary preparations, installation of temporary piping, vent/drain valves, pumps, and pressure/temperature gauges are completed.
* Ensure that the pressure gauges used are designed for use with the medium (Water, Air, Nitrogen, Helium) that is being used and that they are capable of accurately measuring the range of pressure being used in the pressure testing.
* Build up hydrostatic test pressure gradually and check for tank settlement due to weight of water, or check for valve leakage – porosity of valve shell or seal/o-ring leakage at the appropriate pressure boundary areas.

1. **MANPOWER:**
2. Are the personnel performing the testing and quality assurance functions of the appropriate skill/experience level and/or properly trained/certified to produce conforming product? ***What are the requirements? (Some specifications have specific operator qualification requirements.)***

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1. Are the test employees familiar with the requirements of the test procedure? (NAV02-A4B)

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1. Verify operator proficiency in measuring/test performance? Are training records available, if applicable?

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1. Are the credentials of the training/certification official in accordance with any applicable specification requirements? ***What are the requirements?***

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1. Are any personnel certifications expired and are the personnel still working in the process? Is there a system in place for remedial training when errors occur?

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**B. MATERIALS**:

1. For Level I material, is the product controlled and traceable throughout the process?

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1. Are approved cleaning and flushing mediums used? Are wiping and cleaning cloths for parts checked for grease, oil, etc., content? (NAV02-A1B)

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1. Are the detection sensors and/or devices used to measure leakage in good working order? Are they of the correct value to permit reliable measurement of leakage?

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1. If packing is used for test purposes, is it the same type as that which is required to be delivered with the product?

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1. Are the materials used to clean the items after test non-detrimental to the part?

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**C. MACHINERY**:

1. Does the supplier have the necessary gages, measuring detection sensors and/or devices to permit reliable inspections to meet the procedural acceptance criteria? (NAV02-A3)

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1. Are the test instruments within the required range for the test pressure being performed? (e.g. normally test value is 2/3 of maximum gage reading) (NAV02-A5)

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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?*(NAV02-A6)

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1. Does the supplier maintain cleanliness and provide for protection of test equipment? Is there a clean room for the machinery? (NAV02-A9)

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1. Are clocks and/or timers available, where applicable?

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

1. Has the hydro or gas leak detection testing procedure been approved by the Navy? If applicable, list the Reference Approval Number.

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1. Does the supplier have an approved cleanliness/flushing procedure? Review a sample of the documents and record. (NAV02-A1A/C)

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1. Do the suppliers’ procedures and work instructions reflect the correct drawing, specifications or other documents that are to be used to perform the test? Whatdocuments (identifying number & rev) were reviewed? (NAV02-A2)

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1. Is the applicable test procedure readily available to the individual performing the test? Does the procedure include a system for the indication of inspection status (e.g. test operation sign-off/inspection stamping)? (NAV02-A4)

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1. Is the product adequately identified on the traveler/router to provide clear material traceability throughout processing?

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1. Is all the pertinent information relating to the test being recorded, and is it traceable back to the instrument used? Review and record a sample of test records to verify traceability of test instruments. (NAV02-A11A/B)

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1. Does the supplier comply with the sample testing requirements of the approved procedure? (NAV02-A8)

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1. Does the supplier have a documented system for maintaining system component cleanliness integrity? Does the supplier maintain cleanliness during test? (NAV02-A7/A10)

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

1. Is the area where the work is being performed uncluttered, clean and free from dirt and debris?

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1. Are proper precautions taken to protect material after test? (parts properly cleaned and stored to prevent corrosion after test). (NAV02-B12)

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1. Are cleaning chemicals stored in an area separate from the testing area?

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1. Is there adequate ventilation in the cleaning area?

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1. Is Personal Protective Equipment (PPE) that may be required available? (eye-wash stations located in the work area, face-shields, chemical resistant aprons and gloves; are they easily accessible?)

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**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.***

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

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| Characteristics Examined: | # Observations |
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1. Identify the inspection methods (W, I, T, V) used to verify conformance with procedures and standards:

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

**PE Comments/Concerns**

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| **Overall MPR 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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