DCMA NSEO MANUFACTURING PROCESS REVIEW (MPR) CHECKLIST #34

MACHINING OPERATIONS

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

* Machining operation results and accompanying documentation incorrect, incomplete or missing
* Machining operations not performed or performed incorrectly
* Machining operations from incorrect drawing revision
* Visual inspection and cleanliness of items
* Lot sample sizes incorrect
* Contractor personnel may not be properly trained to perform machining operations.
* Some contractors may rely on the QAR’s inspection records and results to ensure machining operations compliance and justification to deliver products to the Government.
* Foreign material, if not removed from hardware, can enter and block flow paths, can prevent valves from closing and thus cause leakage, can obstruct moving parts, can interfere with heat transfer, clog filters and other operational problems.
* Foreign material trapped in crevices can cause accelerated local corrosion, and may be released later in life potentially causing the problems listed above.

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

1. Are the personnel performing the manufacturing, engineering, purchasing, testing and quality assurance functions of the appropriate skill/experience level and/or properly trained/certified to produce conforming product?
2. What are the requirements? ***(certifications, qualification, skillset, requisites)?***
3. Record all processing operations observed ***(include type and specification, where applicable) and the corresponding operators’ names.***
4. Verify QA/QC proficiency in measuring/test performance? ***Record names and tests or measurements witnessed.***
5. Is there a written procedure for equipment setup?
6. Observe equipment setup, verify that the operator, and/or setup personnel are in compliance.

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1. Are any personnel certifications expired and are the personnel still working in the process?

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1. Are training records available (review sample) and are they accurate and complete?

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

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1. 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 certifications for raw materials used in the process reviewed for acceptance and maintained on file for review?

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1. Do the raw materials comply with contract/specification and/or supplier-imposed technical requirements, including the prohibition of reclaimed material as may be required? ***What were the materials reviewed?***

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1. Are there controls to ensure conforming material is consistently used in the process?

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1. Was the material's integrity compromised by further processes and/or practices? ***If so, how?***

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**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?*

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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. Are calibrated tools used in the inspection and test process current, adequate and traceable to certifications?

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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?*

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

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1. Are wiping and cleaning cloths for parts checked for grease, oil, etc., of the proper authorized and/or specified material?

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

1. Does the supplier have a documented and established inspection system, and are inspection instructions readily available and utilized by personnel? Record QA/QC Manual Number and Date Approved.

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1. Does the supplier inspect or verify that subcontracted machining operation processes, including cleaning procedures, if applicable, are audited, documented and approved for use per contract requirements?

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1. Do the supplier’s procedures state machining operation methods and accept/reject criteria, and are they clearly documented and understood by personnel?

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1. Review and identify a sample of machining operations being performed by supplier personnel in accordance with procedures, and record number of samples and the result of the review.

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1. Is there an over check program in effect to confirm worker's or inspector's results on a sampling basis and is it known to exist by the workers/inspectors?

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1. Are work instructions, drawings/specifications, etc. readily available and in use by personnel during machining operations, and are they of the correct revisions for their intended function/purpose?

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1. Do inspection records and other data compiled clearly identify the results of machining operations performed and include traceability back to the procedure, lot/heat numbers, instruments used, personnel who performed each machining operation and the finished product inspected?

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1. Does a procedure exist for the rework of any machined product requiring rework?

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1. Are records documented satisfactorily? In ink utilizing "line thru", initial and date procedures for errors?

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1. Do machining operations have in-process inspections or checkpoints and are the results documented?

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1. Is material/product, which has been through the machining operation process, positively controlled, traceable, and have the inspections/tests performed been documented to provide a positive indication of the inspection status of the material (e.g. individual inspected, operation sign-off, inspection stamped/initialed/signed accepted or rejected)?

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1. Pertaining to the applicable cleaning process, is flushing media, (solvents, water, air), monitored and controlled so as not to introduce contamination to the product? Are flushing procedures such as direction, velocity, duration, filter particulate acceptance criteria and equipment detailed in a written procedure?

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1. Do the machining operations have a procedure to clean, de-grease and de-burr finished machined parts? Is MIL-STD-1330 invoked?

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1. Are machining operation work instructions/procedures, travelers, etc. available and being used by personnel performing the tasks, and are the instructions current (latest revision), adequate, and clear, especially for proper configuration and orientation per specification and contract requirements, ***What documents (identifying number & rev) were reviewed?***

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1. Is the product adequately identified with the proper documentation and certifications to provide clear material traceability throughout the products’ processing and does the product match the documentation?

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1. Are changes to methods (instructions) controlled and translated adequately and timely to affected personnel?

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1. Are there adequate methods of segregating accepted and rejected material in use? (e.g. materials awaiting inspection, are they identified and segregated from materials which have been accepted or rejected? **Describe.**

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1. Is there supplier data available for analysis that can substantiate the effectiveness or ineffectiveness of the inspection and testing processes? ***If available, what data was reviewed, and what does the data indicate?***

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1. Are precautions in place to prevent damage and/or contamination to product during and in between machining operation processes?

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

1. Is the process conducted under controlled environmental conditions (clean room, humidity/temperature, etc.) as required by contractual and/or supplier-imposed technical requirements? ***What are the environmental conditions and are they monitored (charts, gages, etc., within calibration)?***

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1. Does the supplier observe ESD practices, if applicable?

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1. Is safety equipment available and in use, if needed? ***What are the safety requirements for this process?***

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1. For products going through a required cleaning process, are the products properly segregated and bagged in an area clean of dirt and debris, as per procedures?

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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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