DCMA NSEO MANUFACTURING PROCESS SURVEILLANCE (MPS) CHECKLIST #31

BALANCING OF SHAFTS

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

**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:**

* The contractor does not have an effective system in place to ensure proper calibration of balancing equipment.
* Procedures defining the proper use of the balance equipment?
* Contractor personnel do not follow proper techniques to detect, locate and measure unbalance of marine propellers.
* Government source inspection shall in no way replace contractor inspection or otherwise relieve the contractor of their responsibility to furnish acceptable products.
* Contractors recall system does not adequately control the calibration of balance equipment.
* Test results and accompanying documentation is incorrect, incomplete or missing.
* Operations not performed in the proper or specified sequence.
* Improper handling equipment can damage machined surfaces.
* Operations not being performed from the latest or specified drawing revision or work instructions.

**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 shafting controlled and traceable throughout the balance process?
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| 1. Are procedures available to the personnel performing the balance test with clear acceptance criteria?
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| 1. Are balance work instructions, testing and inspection and testing procedures, travelers, etc. being used current, adequate, clear, concise and up to date (latest revision)?
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| 1. Have personnel performing the balance test been qualified on the basis of appropriate education, skill/experience level and/or have they been properly trained/certified to perform balance inspections as required? Do training records exist?
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| 1. Is the area where the balancing is being performed organized with the proper tools, gauges or other necessary equipment and is it uncluttered, 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. Are balance test results documented and traceable to the actual shaft, personnel and equipment used in the testing?
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| 1. Particular attention needs to be placed on the following important balance set-up, inspection and test parameters. **Check and Verify:**
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| * 1. Shaft is placed on pedestal and rollers to accommodate the shaft to a level position and on centerline with the drive shaft.
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| * 1. The drive shaft/bar is balanced/adjusted within the procedure/work instruction requirements.
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| * 1. All cables and any other type of measuring equipment are properly connected to assure valid results.
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| * 1. The correct parameters are entered into the balance machine, (Location of the pedestal/rollers, distance between the rollers, radius of the shaft, rotation speed in RPM, allowable unbalance in units of oz-in or koz-in and shaft length)
 |  |  |  |
| * 1. The actual rotation of the shaft is at the specified RPM per the drawing/specification requirements.
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| * 1. The results are recorded properly on the inspection documentation including the actual results. (Static, Dynamic etc.)
 |  |  |  |
| 1. Is the Balancing inspection and test equipment used by personnel adequate to examine supplies in compliance with contractual specifications and drawing(s), and is this equipment a part of the manufacturer’s calibration program? What items of equipment were sampled and were they within the calibration/check cycle?
 |  |  |  |
| 1. Is software used in balance inspection and testing equipment (ATE) correct to assure product complies with specifications and drawing? What program(s) and revision level(s)/date(s) was reviewed?
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| 1. Are balance inspection records and data compiled to clearly identify the results of the balance tests performed and include traceability back to the procedure, machine, job/contract numbers, instruments used, personnel who performed each inspection and test and the finished product inspected?
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| 1. Are shafts, which have been through the balance process, positively controlled, traceable and identified to indicate its inspection status (e.g. individual operation sign-off/inspection stamping/accepted or rejected)?
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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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