DCMA NSEO MANUFACTURING PROCESS SURVEILLANCE (MPS) CHECKLIST #31

BALANCING OF SHAFTS

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| |  |  | | --- | --- | | **SUPPLIER & CAGE:** |  | |  |  | | **LOCATION:** |  | |  |  |   **Program Type:**   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | 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:**   |  | | --- | |  |   **Supplier Procedure Number(s), Title(s) & Revision Level(s)/Date(s):**   |  | | --- | |  |  |  |  |  | | --- | --- | --- | | 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: | |  | |

**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? |  |  |  |
| 1. Are procedures available to the personnel performing the balance test with clear acceptance criteria? |  |  |  |
| 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)? |  |  |  |
| 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? |  |  |  |
| 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? |  |  |  |
| 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 all non-conforming material segregated, controlled, traceable and procedures exist for disposition of the non-conforming material? |  |  |  |
| 1. Are balance test results documented and traceable to the actual shaft, personnel and equipment used in the testing? |  |  |  |
| 1. Particular attention needs to be placed on the following important balance set-up, inspection and test parameters. **Check and Verify:** |  |  |  |
| * 1. Shaft is placed on pedestal and rollers to accommodate the shaft to a level position and on centerline with the drive shaft. |  |  |  |
| * 1. The drive shaft/bar is balanced/adjusted within the procedure/work instruction requirements. |  |  |  |
| * 1. All cables and any other type of measuring equipment are properly connected to assure valid results. |  |  |  |
| * 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. |  |  |  |
| * 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? |  |  |  |
| 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? |  |  |  |
| 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)? |  |  |  |
| 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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