DCMA NSEO MANUFACTURING PROCESS REVIEW (MPR) CHECKLIST #14

TORQUE

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

* Does the supplier have an effective system in place to ensure proper calibration of torque tools?
* Does the supplier have procedures defining the proper use of the torque tools?
* Do the supplier’s procedures define the proper use of extensions?
* Are supplier personnel following proper techniques for applying torque to multiple bolts/nuts, (i.e. a star pattern)
* Verify the supplier is flowing down all requirements. (Passing down contractually invoked drawings and specifications to any subcontractors involved in assembly with torque requirements)
* Verify the torque tool is calibrated and the correct range for the required job.
* If supplier personnel are using an extension, verify computations have been made to adjust the torque value, and that the computation is in accordance with accepted practice.
* Verify any required torque pattern is being followed to prevent damage to mating surfaces.
* If the torque tool is the dial indicator type, verify that the reading is taken correctly. (i.e. is the operator at an angle that would produce an inaccurate reading?)
* Have all documentation requirements been complied with?

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

1. Are the personnel performing the Torque and quality assurance functions of the appropriate skill/experience level and/or properly trained/certified to produce conforming product? ***What are the requirements?***

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

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1. Is there a system in place for remedial training when errors occur? Where is it documented, and are records of remedial training available?

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**B. MATERIALS**:

1. Do the supplier procedures address special torque requirements for special materials like non-metallic and bi-metallic? (NAV14-A13)

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1. Does the torque procedure/work instruction address re-torqueing the same item many times? (i.e. after loosening and tightening many times, an item like a self-locking nut, will lose the ability to properly lock).(NAV14-A14)

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**C. MACHINERY**:

1. Are the tools/instruments being utilized for torque operations calibrated, correct range for task, properly maintained and stored, and controlled for issue? (NAV14-A4)

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1. Does the procedure/work instruction address the proper use of a torque multiplier wrench? (NAV14-A8)

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

1. Is a procedure/work instruction readily available for torque requirements? Record torque procedure/work instruction number and appropriate approval. Do the procedures/work instructions address torque safety records? (NAV14-A5A/B/6)

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1. Are torque requirements identified in purchase order, procurement specification, drawing or other documents? *Specify.* (NAV14-A1)

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1. Are torque results documented and traceable to components, materials, areas, etc.? Are torque results/certification required by purchase order or other document readily available for review? (NAV14-A2/3)

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1. Are items requiring torque properly marked, sealed, and/or lockwired, etc., when required by specifications, after proper values have been obtained? (NAV14-A7)

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1. Is a procedure/process invoked that provides periodic Quality Assurance monitoring/oversight of torque operations? (NAV14-A9)

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1. Are torque records retained as required by specifications or procurement documents? (NAV14-A10)

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1. Do the procedures/work instructions provide for resolving over torque deficiencies? (NAV14-A12)

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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. Has sufficient work area been allocated to the Torque process being performed?

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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. If available, witness a torque operation on a component. If not available, verify by interview that the operator is familiar with the process and procedure/work instruction. (NAV14-A5C/D)***

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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: |  |
|  |  |
| Drawing Number & Revision: |  |
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| Lot Size and Sample Size: |  |

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| Review and record a sample of data where torque was accomplished to verify the process. Record tool serial numbers, torque values, and verify any traceability of purchase order requirements. Record any other characteristics examined: (NAV14-A11) | # 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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