DCMA NSEO QUALITY PROCESS REVIEW

(QPR) CHECKLIST #04

CALIBRATION/CONTROL OF MEASURING & TEST EQUIPMENT

Applicable Standards: ANI Z540.1 / ISO 9001-2000 / ISO 10012 - 2003

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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 Concerns and Guidance:**

* Measurement and Test Equipment (M&TE) must be accurately calibrated to assure supplies and services comply with prescribed contract/customer requirements.
* Inaccurate readings may give false indications that material/parts meet contractual requirements, which could lead to catastrophic results.
* Close tolerances cannot be verified unless precision M&TE is accurately calibrated and compared to a higher standard
* Not all M&TE used to verify customer requirements are calibrated or verified at periodic intervals.
* The recall system may not be able to accurately locate and track all M&TE spread throughout the contractor’s facility.
* New M&TE purchases may not be calibrated or verified before being put to use and may not be included in the calibration process.
* Some M&TE may not be calibrated and/or validated to ensure measurements are traceable to a higher standard.
* Any missing or outdated sticker may be an indication of a calibration system problem.

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

1. Are personnel involved in calibrating M&TE trained to local calibration procedures and the appropriate higher level requirements?

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1. Are employees of the supplier trained in the use of calibrated Measuring and Test Equipment?

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1. Does the supplier maintain records of this training?

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1. Is there a system in place for remedial training when errors occur? Where is it documented?

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1. Are records maintained?
2. Are records of the remedial training available?
3. Is the root cause documented?
4. Does the remedial training address the root cause?
5. Is the remedial training capable of preventing recurrence?
6. Does the supplier use outside calibration laboratories?

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1. Are outside laboratories evaluated for acceptability?

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1. If a third party performs these evaluations, record the accreditation organization used and what the standard is accredited is to.

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1. Are these laboratories on an approved subcontractor list?

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1. List Calibration Labs used.

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**B. MATERIALS**:

1. Are applicable tools, gauges and test equipment used in the calibration of M&TE traceable to a National Institute of Standards Technology Standard or Intrinsic Standard?

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1. Is all equipment that can affect the results of calibrations calibrated and/or verified before being used to calibrate M&TE?

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1. Are inactive standards identified as “inactive” or “calibration not required”?

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1. Are tools, gauges and test equipment identified in a manner to indicate calibration status?

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* 1. Does the identification include Date calibrated, date inspected and/or date due for calibration/inspection?

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* 1. Does the identification include Item identity or serial number that is traceable to a detailed calibration record?

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* 1. Are Tamper resistant seals used to protect operator accessible adjustments that would invalidate calibration?

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* 1. Are items which are not calibrated to their full capability or which require functional check only labeled to indicate the applicable condition?

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1. Are the standards utilized of a sufficient accuracy level to attain a 4 to 1 test accuracy ratio for the characteristic being calibrated?

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1. If other test accuracy ratios less than 4 to 1 are maintained, are they limited by the state of the art or allowed by contract?

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1. Are calibration intervals for measuring and test equipment and measurement standards established to assure that M&TE will remain in tolerance throughout the calibration interval?

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1. Does the supplier have a system to recall all calibrated items at the end of their calibration interval?

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1. Are items returned for calibration as scheduled and/or when found to have broken calibration seals, are damaged, or are malfunctioning?

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1. Does the calibration lab or calibration contractor provide the end user notification of any out of tolerance conditions?

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**C. MACHINERY**:

1. Does the supplier have the necessary gauges and measuring devices to permit reliable inspections to meet the procedural acceptance criteria?

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1. Are employee-owned tools and gauges used for product acceptance subject to the same controls as company-owned equipment?

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1. Are customer-furnished tools, gauges and test equipment adequately controlled?

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1. Does each piece of measuring and test equipment used to determine compliance with customer technical specifications have a calibration/inspection record?

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

1. Does the supplier have a documented system to control the use and calibration of measuring and test equipment?

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1. Does the supplier have a documented system to manage and perform calibration of M&TE? Are calibration/recall procedures readily available to the calibrating personnel?

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1. Are personnel involved in calibrating M&TE trained to local calibration procedures and the appropriate higher level requirements with a record of this training maintained?

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1. Do the calibration procedures provide for the following? (Record a positive determination for each item in the block below.)
	1. Adjustment of calibration frequency?
	2. Determining the adequacy of measuring/test equipment and procedures?
	3. Identification and prevention of use of any equipment which does not perform satisfactorily?
	4. Definition of significant out-of-tolerance conditions?
	5. Written notification by calibration activity to the user or a designated organization of significant out-of-tolerance conditions?
	6. Corrective action by supplier on affected product?
	7. A checkout and accountability system to assist in locating M&TE equipment for recall purposes?

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1. Do the calibration/inspection records reflect? (Record a positive determination for each item in the block below.)
	1. Item identity number and name?
	2. Frequency of calibration?
	3. Procedure used for calibration/inspection?
	4. Date calibrated/inspected and due date for next calibration/inspection?
	5. Personnel performing calibration/inspection?
	6. Calibration actions taken (adjustments, repairs, etc.)?
	7. Actual measurements/values documented before and after calibration actions?
	8. Standard used (traceable to NIST)?

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1. When M&TE is found to be out of calibration, does the supplier have a method for determining the impact on previously accepted products?

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1. When M&TE is found to be out of calibration, does the supplier have a method for notifying customers who may have received affected product?

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

1. Is calibrated M&TE used in a controlled environment to limit the impact on the results of measurements?

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1. Where this is not possible are the environmental affects monitored and recorded to correct measurement results?

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1. Are adequate facilities used for transportation, storage and calibration of all tools, gauges and test equipment?

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1. Does the Calibration Lab maintain cleanliness and provide for protection of test equipment?

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1. Does the Calibration Lab monitor and control environmental factors in order to mitigate their effects on the calibration process or provide appropriate adjustments when necessary?

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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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