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CP4-QA-2133 **FRev. 2**	**TITLE**: Metrology Measuring and Test Equipment Calibrations and Certifications	Page 1 of 9

DOCUMENT CATEGORY: ☐ Administrative ☒ Technical

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REVISION/CHANGE LOG

Revision/Change Letter	Description of Changes	Pages Affected	Date of Revision/Change
FR0	Blue Sheeted Version	All	10/20/2017
FR1	Initial Release. Changes from FPDP to FRNP throughout document; removed step 6.2 as well as the Projects Quality Manager signature line on all corresponding forms.	All	12/12/2017
FR2	Incorporated new step to refer to new forms: CP4-QA-2133-F42 and CP4-QA-2133-F43 as well as minor grammatical changes.	All	6/11/19

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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides the instructions for the inspection, calibration, and certification of Quality Control (QC) Metrology Measuring and Test Equipment (M&TE). This procedure also describes the documentation requirements for the inspection, calibration, and certification of Quality Control Metrology M&TE.

1.2 Scope

This procedure applies to QC personnel who are qualified to inspect, calibrate, and certify QC M&TE.

The calibration forms used to record a specific calibration and/or certification are part of each calibration plan. The forms (plans) shall also carry this number for reference and are maintained by Document Control for use.

2.0 REFERENCES

2.1 Use References

- CP3-SM-0017, *Measuring and Test Equipment*
- CP3-QA-2005, *Nonconformance Control*
- CP3-QA-3001, *Issues Management*
- JHA 7347, *General Work Evolutions for Operations Facilities (excluding High Voltage Switchyards)*

2.2 Source References

- 10 CFR 830, Attachment A, 830.122, (e) (4) and (h)(2)
- American National Standards Institute/National Calibration Standards Laboratory (ANSI/NCSL) Z540-1, *Calibration Laboratories and Measuring and Test Equipment-General Requirements, 1994*
- CP2-QA-1000, *Quality Assurance Program Description*
- DOE O 414.1D Administrative Change 1, CRD, Attachment 2, Criterion 5.d and Criterion 8.b

3.0 COMMITMENTS

None

4.0 PRECAUTIONS AND LIMITATIONS

4.1 Precautions

4.1.1 When performing calibrations and/or certifications, personnel should be aware of mechanical and moving parts to avoid injury.

4.2 Limitations

4.2.1 Applicable precautions and limitations are specifically identified in the individual calibration plans.

5.0 PREREQUISITES

5.1 Review JHA 7347, *General Work Evolutions for Operations Controlled Facilities (excluding High Voltage Switchyards)*, prior to performing work in the metrology lab.

5.2 Prerequisites for each QC M&TE calibration and/or certification include the following, as applicable:

- Ensure M&TE or standard(s) used are within calibration period.
- Inspect M&TE for any physical damage.
- Ensure Metrology room temperature is **between 68 and 72°F**, and humidity is **less than 50%.**
- Obtain applicable blank calibration plan and data sheet.

5.3 Test Equipment, Tools, and Supplies

Typical test equipment, tools, and supplies for each QC M&TE calibration and/or certification are listed in the respective calibration plans.

6.0 INSTRUCTIONS

6.1 Use of Calibration Plans

QC Inspector

6.1.1 Perform required QC M&TE calibration and/or certification actions as listed in the respective calibration plan, see Appendix B, *Metrology Calibration Plan Example*.

6.1.2 Perform the periodic review (PR) interval as denoted on the calibration plan, such as 3 months, 6 months, etc. according to the M&TE program.

6.1.3 Complete all areas within the calibration plan and calibration form, marking N/A as applicable.

7.0 ACCEPTANCE CRITERIA

7.1 Each calibration plan provides the acceptance criteria for each QC M&TE calibration/certification.

8.0 POST PERFORMANCE WORK ACTIVITIES

QC Inspector

8.1.1 Complete the calibration plan and calibration form with new calibration data.

8.1.2 Place calibration acceptance and/or rejection tags/stickers on equipment according to procedure CP3-SM-0017, *Measuring and Test Equipment* **and** ensure UE-504, *Calibration Status Label*, is attached to each accepted item.

8.1.3 Place a new use log sheet in the M&TE Use Log Book, form CP3-QA-2133-F42 for primary M&TE and form CP3-QA-2133-F43 for secondary M&TE.

8.1.4 Return accepted items to the customer or retain for QC use.

8.1.5 **If** items are rejected, **then** complete a Nonconformance Report per CP3-QA-2005, *Nonconformance Control*, or CP3-QA-3001, *Issues Management*, **and** attach UE-505, *Calibration Do Not Use Label/Tag*, **and** hold item for further disposition, as applicable.

8.1.6 Enter new certification data into the "Met-Team" program.

9.0 RECORDS

9.1 Records Generated

The following quality assurance records are generated by this procedure:

- CP4-QA-2133-F02, *Metrology Calibration Plan Profilometer/Surface Finish Checker*
- CP4-QA-2133-F03, *Metrology Calibration Plan Shaft Shoulder To Backplate Gage & Micrometer*
- CP4-QA-2133-F05, *Metrology Calibration Plan Sip Measuring Machine*
- CP4-QA-2133-F07, *Metrology Calibration Plan Bevel Protractor*
- CP4-QA-2133-F08, *Metrology Calibration Plan Rockwell Hardness Testers*
- CP4-QA-2133-F10, *Metrology Calibration Plan International Inch Measuring Machine*
- CP4-QA-2133-F11, *Metrology Calibration Plan Depth Micrometers*
- CP4-QA-2133-F12, *Metrology Calibration Plan Setting Rings*
- CP4-QA-2133-F14, *Metrology Calibration Plan Rotary Tables*
- CP4-QA-2133-F15, *Metrology Calibration Plan Electronic Gage Amplifier Probe*
- CP4-QA-2133-F17, *Metrology Calibration Plan Thread Gages*
- CP4-QA-2133-F19, *Metrology Calibration Plan Vernier Calipers*
- CP4-QA-2133-F21, *Calibration Plan Outside Micrometers Metrology*
- CP4-QA-2133-F22, *Metrology Calibration Plan Secondary Standards*
- CP4-QA-2133-F23, *Metrology Calibration Plan Inside Micrometers*
- CP4-QA-2133-F26, *Metrology Calibration Plan Working Gage Pins*
- CP4-QA-2133-F29, *Metrology Calibration Plan Portable Brinell Hardness Tester (500kg)*
- CP4-QA-2133-F30, *Metrology Calibration Plan Optical Comparator*
- CP4-QA-2133-F31, *Metrology Calibration Plan Precision Level*
- CP4-QA-2133-F32, *Metrology Calibration Plan Indi-Square*
- CP4-QA-2133-F33, *Metrology Calibration Plan Brinell Hardness Tester-"Bench Type*
- CP4-QA-2133-F37, *Metrology Calibration Plan Durometers Type A &D*
- CP4-QA-2133-F38, *Metrology Calibration Plan Helmel Microstar CMM*
- CP4-QA-2133-F39, *Metrology Calibration Plan Ultrasonic Calibration Blocks*

- CP4-QA-2133-F40, *Metrology Calibration Plan Side Accumulator Calibration Block*
- CP4-QA-2133-F41, *Metrology Calibration Plan Seraphin Test Cans*
- CP4-QA-2133-F42, *Quality Control M&TE Use Log*
- CP4-QA-2133-F43, *Calibration Standard Log*

9.2 Records Disposition

The records are to be maintained in accordance with CP3-RD-0010, *Records Management Process*.

Appendix A – Acronyms/Definitions

ACRONYMS

ANSI — American National Standards Institute

M&TE — Measuring and Test Equipment

NCR — Nonconformance Report

NIST — National Institute of Standards and Technology

PR — Periodic Review

QC — Quality Control

DEFINITIONS

Certification — the confirmation of certain characteristics of an object has been met and conforms to ANSI or NIST standards.

Inspection —a physical check of individual M&TE for burrs, nicks, scratches, etc., that could prevent M&TE from working properly.

Periodic Review — a QC M&TE review performed on a periodic basis. The review includes an inspection, re-calibration, and/or re-certification of QC M&TE.

Re-Calibration — periodic inspection and testing of QC M&TE, which verifies the item is within acceptable ranges.

Appendix B – METROLOGY CALIBRATION PLAN EXAMPLE

Calibration Plan No: QI-6185-00X	**Rev. No:** 0	**M&TE Status:** PR	**Ref. Docs:**
Component or Item:		**M&TE/Standards Used:**	**Calibration Due Date:**
Temperature: °F Actual Acceptance 68°to 72°		_____	_____
		_____	_____
		_____	_____
Humidity % Actual Acceptance <50%		**M&TE No.:**	**Location:**
Calibration Frequency:		**M&TE Calibration Due Date:** _____/_____/_____	

CALIBRATION INSTRUCTIONS

1.0 Typical Test Equipment, Tools, and Supplies

2.0 Certification

Example

Appendix B – METROLOGY CALIBRATION PLAN EXAMPLE (Continued)

Calibration Plan No: QI-6185-00X	**Rev. No:** 0	**Component or Item Inspected:**

Example