

IMPORTANT NOTICE: A printed copy of this document may not be the version currently in effect. The current official version is available via the Sandia National Laboratories Yucca Mountain Project Online Documents web site.

**SANDIA NATIONAL LABORATORIES
CIVILIAN RADIOACTIVE WASTE MANAGEMENT
TECHNICAL PROCEDURE (TP)**

TP-263

DIGITAL BALANCE CALIBRATION AT NEW ENGLAND RESEARCH, INC.

Revision 0

Effective Date: 10/14/03

Original Signed by Peter J. Boyd
Author: Peter J. Boyd

10/14/03
Date

Original Signed by Ronald H. Price
Technical Reviewer: Ronald H. Price

10/14/03
Date

Original Signed by James F. Graff
Quality Assurance Reviewer: James F. Graff

10/14/03
Date

(Reviewer signatures above document the review and resolution of comments.)

REVISION HISTORY

<u>Revision</u>	<u>Description</u>
0	Initial issue

1.0 Scope and Objective

The objective of this Technical Procedure (TP) is to define the process for New England Research, Inc. (NER) to calibrate digital balances. This procedure is intended for implementation in a laboratory environment, in conjunction with work for the Yucca Mountain Project (YMP).

2.0 Prerequisites

Before performing work under this technical procedure, personnel must be trained by the author or the Principal Investigator (PI), and they must demonstrate their proficiency in performing the work in this procedure. The PI has the responsibility for generating a record of the personnel proficiency training, as well as the responsibility that work is performed and documented in accordance with this procedure.

The personnel using this procedure are responsible for ensuring that a controlled copy of this procedure is available and used for performing the work in this procedure.

3.0 Description of Activity

Digital balances are used to weigh test samples. Mechanical properties test samples are weighed prior to testing in order to provide information in determining their bulk densities. Powdered samples are weighed during pycnometry procedures used to determine their grain densities.

Balance calibrations are carried out to verify accurate balance operation. The balances to be used are calibrated by comparing their response to a set of certified weights. At least annual calibrations of the balances, using calibration weights certified traceable to the National Institute of Standards and Technology (NIST), will ensure that accurate masses are being recorded during weighing procedures.

4.0 Activity Process

All calibration information will be recorded on the Balance Calibration Data Sheet (BCDS, in Appendix A) in accordance to the requirements specified in AP-12.1Q, *Control of Measuring and Test Equipment and Calibration Standards*.

1. Provide the identification and traceability information requested on the BCDS.
2. Record the temperature under which the calibration is being made.
3. Make certain the balance has been leveled on a stable surface, is clean, and has been turned on long enough to properly warm-up.
4. In the order presented on the BCDS (not to exceed balance capacity), place each certified weight on the balance pan and record the displayed value.
5. The balance will be considered to be within specification if the measurements of the masses meet the tolerances specified on the data table. If the tolerance for any mass is exceeded, the balance calibration must be adjusted. The adjustment shall be

performed per the manufacturer's procedure for the particular balance. Following the adjustment, the balance calibration shall be checked again, steps 1 through 4 repeated, and the BCDS shall be continued as needed.

6. In specification balances shall be labeled to indicate their calibration status. The label shall include:
 - a) Make/Model/Serial Number of balance
 - b) Date of most recent calibration
 - c) Due date of next calibration
 - d) Name/Signature of operator that performed calibration

5.0 Safety

There are no special safety hazards, only the normal hazards of the equipment. Operations will be in accordance with safety requirements of the facility where the work is being performed and that of the employer of person(s) performing the work.

6.0 Nonconformances, Deviations, and Corrective Actions

Any nonconformances or deviations must be reported to the PI as soon as possible. Deviations, deficiencies and corrective actions must be determined and documented in accordance with AP-16.1Q, *Condition Reporting and Resolution*.

7.0 QA Records

QA records, and any corrections or changes thereto, generated as a result of implementing this procedure will be prepared and submitted as inclusionary QA records (QA:QA) by the PI in accordance with AP-17.1Q, *Records Management*.

The QA records include:

- Proficiency training records (Section 2.0)
- Calibration records
- Balance Calibration Data Sheets (BCDS) (Appendix A)

8.0 References

AP-12.1Q, *Control of Measuring and Test Equipment and Calibration Standards*

AP-16.1Q, *Condition Reporting and Resolution*

AP-17.1Q, *Records Management*

Appendix A

BALANCE CALIBRATION DATA SHEET (BCDS)

Page ___ of ___

Section I – Identification / Traceability

Make/Model/Serial # of balance to be calibrated: _____

Date of calibration: _____ Date of last calibration: _____

Readability of Balance (for each range if more than one): _____

Make/Model/Serial # of certified standard weight set(s): _____

Date(s) of last certification of standard weight set(s): _____

Temperature during calibration: _____ °C

Section II – Calibration Verification Data

Nominal Mass (g)	Certified Mass (g)	Balance Response (g)	Deviation(g)	Tolerance(g)
1				±0.002
2				±0.002
5				±0.002
10				±0.002
20				±0.002
50				±0.002
100				±0.01
200				±0.01
350				±0.01

Based on deviations from the tolerances, the balance is (check one): In Specification _____
Out of Specification _____

Note: If "In Specification", the balance calibration is completed. If "Out of Specification", then perform the manufacturer's procedure for adjusting the balance calibration, rerun the calibration, and take appropriate steps to mark data collected with this balance since previous calibration.

Comments: _____

Work performed by: _____
Printed _____ Signed _____ Date _____

Company/Division: _____

Location of Work: _____