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CP4-ES-0043 FRev. 2	TITLE: Temperature Control for Sample Storage	Page 1 of 6

DOCUMENT CATEGORY: ☐ Administrative ☒ Technical

LEVEL OF USE: ☒ Information Level ☐ Reference Level ☐ Continuous Use

FUNCTIONAL AREA: Environmental Stewardship **SUBJECT MATTER AREA:** Sampling	**SUBJECT MATTER EXPERT**: Sam Martin, Field Sample Team, Lead
NUCLEAR SAFETY REVIEW DOCUMENTATION: FRNP-19-0001-D	**APPROVED BY/DATE** (Signature on file): Kelly Layne, Environmental Stewardship 1-2-19
REQUIRED REVIEW DATE (or expiration date for temporary change): 1/2/22	**EFFECTIVE DATE**: 1/3/19

REVISION/CHANGE LOG

Revision/Change Letter	Description of Changes	Pages Affected	Date of Revision/Change
FR0	Initial FRNP release	All	10/20/17
FR1	Non-intent changes only	All	12/14/17
FR2	Updated to include verification of thermometer	All	1/2/19

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1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide a system for the documentation and maintenance of controlled temperatures for storage areas holding samples requiring ≤6 °C preservation by 40 Code of Federal Regulations (CFR) 136.3 or other regulatory guidelines.

1.2 Scope

This procedure applies to any person performing environmental sampling activities for the Deactivation & Remediation (D&R) contractor and subcontractor personnel for sampling of non-fissile material at the U.S. Department of Energy (DOE)-owned Paducah site. The requirements in this procedure apply to temperature controlled storage areas in C-730 and C-710.

2.0 REFERENCES

2.1 Use References

CP3-RD-0010, *Records Management Process*

2.2 Source References

- Federal Register, 40 Code of Federal Regulations Part 136.3.
- The NELAC Institute (TNI) Standards
- Quality Systems Manual for Environmental Laboratories, Department of Energy
- SW-846, 3rd Edition, Test Methods of Evaluating Solid Waste.

3.0 COMMITMENTS

None

4.0 PRECAUTIONS AND LIMITATIONS

None

5.0 PREREQUISITES

5.1 The following are needed to complete this procedure.

- National Institute of Standards and Technology (NIST) traceable thermometers
- Glycerin or water
- Recording disc
- CP4-ES-0043-F01, *Daily/Weekly Fridge Chart Form*

5.2 Verification of NIST traceable thermometer shall be conducted annually.

5.3 Thermometer may be verified against a NIST reference thermometer or shipped to a qualified vendor for verification.

5.4 Thermometer should be verified in their range of use.

5.5 Temperature of refrigerators shall be recorded on CP4-ES-0043-F01 each work day.

6.0 INSTRUCTIONS

6.1 Temperature Control Check

Sampler

6.1.1 Confirm proper operation of the refrigerated storage area.

A. **When** refrigerator is installed for sample storage, place NIST traceable thermometer in an area representative of the overall temperature of the refrigerator.

B. **If** temperature is recorded using an automatic disc recorder, **then** replace recorder disc weekly, logging the date, time, and signature on recorder disc each time disc is placed and /or removed.

C. Read temperature of NIST traceable thermometer each work day and record on CP4-ES-0043-F01.

D. **If** applicable, **then** compare reading on NIST thermometer with recorder disc.

- For refrigerator temperatures**, if** reading on disc does **not** reflect reading on thermometer 0°C to 6°C, **then** adjust temperature on disc recorder.

E. **If** thermometer reading is **not** within acceptance limits, recheck the thermometer in approximately one hour.

F. **If** thermometer reading is still **not** within acceptance limits, adjust refrigerator according to manufacturer's instructions **and** bring temperature to within acceptable operating limits.

G. **If** adjustment does **not** bring temperature into acceptable limits, **then** remove samples, place in an acceptable refrigerator, tag the unit out of service, **and** contact maintenance for adjustment and/or repair.

H. **If** applicable, document nonconformances **and** actions taken to correct problem on recorder disc **and** on CP4-ES-0043-F01.

6.2 Thermometer Verification

6.2.1 Ship NIST reference thermometer for calibration verification at least every 5 years.

NOTE:
Verification does **not** have to be performed **if** NIST traceable thermometer is purchased annually.

6.2.2 Verify NIST traceable thermometer annually by performing the following:

A. Place a certified NIST traceable thermometer in use beside the thermometer to be verified. Let stabilize for 30 minutes; **or**

B. Perform an ice point check by placing the thermometer in an ice bath.

C. Read and record the temperature shown on the thermometer after it stabilizes.

NOTE:
Readings are considered the same if they are within the limit of uncertainty for the thermometer.

6.2.3 **If** the reading is **not** the same as the NIST traceable thermometer for the verification method **or** 0°C for the ice point check, **then** calculate the correction factor for the thermometer **and** note it on the temperature log and calibration label for that thermometer **or** replace the thermometer.

7.0 ACCEPTANCE CRITERIA

Refrigerator temperature: 0°C to 6°C

8.0 POST PERFORMANCE WORK ACTIVITIES

File the recording disc in accordance with CP3-RD-0010, *Records Management Process*.

9.0 RECORDS

9.1 Records Generated

The following records may be generated by this procedure:

- Recording disc
- CP4-ES-0043-F01, Daily/*Weekly Fridge Chart*

9.2 Records Disposition

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

Appendix A – Acronyms/Definitions

ACRONYMS

CFR –Code of Federal Regulations

NIST –National Institute of Standards and Technology

D&R – Deactivation and Remediation

DOE – U.S. Department of Energy

DEFINITIONS

Traceability –the ability to relate measurements to national standards or to a nationally accepted measurement system.

Work Day – Day on which work is regularly scheduled. This excludes weekends, holiday, and occasional single days of absence.