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PERFORM ULTRASONIC TESTING ON Cs CAPSULE OVERPACKS

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Richland, Washington

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OVERPACK TEST PROCEDURE

WESF

HNF-5563

Revision 0

**PERFORM ULTRASONIC TESTING ON Cs CAPSULE
OVERPACKS**

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Revision Status

Change Number	Date	Change Document	Page(s)	Description
Rev 0,	01/06/2000		All	New procedure.

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1.0 PURPOSE AND SCOPE

This procedure provides a safe, uniform method for the performance of the ultrasonic weld inspection of the Cesium capsule overpacks. The inspection system will detect cracks, lack of fusion, and lack of penetration. This computer controlled automated system will perform the examination once the capsule overpack has been placed in the pool cell.

Examination of the capsule overpacks will be in accordance with drawing H-2-83014, REV. 0, and a certified NDE examiner will perform the test procedure, provide analysis, and test documentation.

2.0 REFERENCES

- 2.1 EO-906-003, Transfer and Storage of Capsules
- 2.2 COGEMA-SVUT-INS-007.2, REV 0, Ultrasonic Test Procedure
- 2.3 H-2-83014, Rev 0, Cesium Capsule Type-W Calibration Standard
- 2.4 ASME Boiler and Pressure Vessel Code

3.0 PERSONNEL REQUIREMENTS

- 3.1 Radiological Control Technician (RCT), as required.
- 3.2 Nuclear Process Operator (NPO), as required.
- 3.3 System Testing Engineer.
- 3.4 Cogema Engineering NDE personnel shall be certified to COGEMA-SVQP-014, REV. 0, Qualification and Certification of NDE Personnel.
- 3.5 Quality Assurance Representative

4.0 PRECAUTIONS AND LIMITATIONS

- 4.1 IOSR WARNING - AC 5.10 "Movement of heavy loads over ACTIVE POOL CELLS is prohibited unless performed in according to a recovery plan or an emergency response procedure."
- 4.2 This is a step-by-step compliance procedure. However, Sections may be performed in any sequence. Steps within each Section may be repeated, or performed out-of-order with the approval of the test director. No step sequence changes shall void previously performed Steps. Steps not required for procedure completion shall be indicated as such by entering "N/A" in the appropriate spaces. An explanation must be provided in the COMMENTS section of the data sheet.
- 4.3 If during performance of this procedure, any of the following conditions are found, **immediately** stop work, place equipment in a safe condition, and notify the Configuration Control Authority (CCA), Facility Representative for Capsule Overpack NDE Testing, or designee.
- Any equipment malfunction which could prevent fulfillment of its functional requirements.
 - Personnel error or procedural inadequacy which could prevent fulfillment of procedural requirements.
- 4.4 Contact CCA or designee for additional instructions, if changing plant conditions affect work or delays are anticipated to extend work past end of shift.
- 4.5 If any waste is generated during performance of this procedure, consult Facility Waste Coordinator for specific instructions to ensure compliance with HNF and DOE environmental standards, as applicable, for disposal.
- 4.6 Alarms expected to be generated due to performance of this procedure:
- None
- 4.7 The test fixture will remain submerged in the pool cell until removal is specified by the test director (*i.e.* for repairs, maintenance or upon completion of tasks). Due to safety authorization basis considerations, prior to performing any heavy load rigging over active pool cells, (such as the installation or removal of the NDE fixture), all capsules must be removed from the affected cell.
- 4.8 Efforts must be made to minimize exposure time for capsules in the test stand. Radiological exposure will contribute to premature component failure.

5.0 SPECIAL TOOLS, EQUIPMENT, AND MATERIALS

- 5.1 Sonix Ultrasonic Test Fixture
- 5.2 Sonix two channel UT system, including motor controller, computer interface with Flex Scan software, pulsers, and Printer
- 5.3 Ultrasonic calibration standard
- 5.4 Capsule Tongs
- 5.5 Test Barrier Signs/Rope

6.0 PREREQUISITES

- 6.1 Obtain release from CCA prior to beginning performance of this testing activity.
- 6.2 Capsule overpacks are to be located in Pool Cell 1.
- 6.3 Overhead crane and catwalk are operable.
- 6.4 Sonix system is operable.
- 6.5 UT Equipment is installed in the Pool Cell 12.
- 6.6 Camera and light systems are operable.
- 6.7 EO-906-003, Transfer and Storage of Capsules, Attachment A, Engineering Capsule Transfer Plan, has been completed for movement of the capsules.

7.0 CAPSULE OVERPACK INSPECTION

NOTE:

"Cal" is a generic term identifying calibration of the test standard. This may additionally be considered a "pre-cal" or a "post-cal", depending on whether it was performed before or after the capsule test. Both tests are required to qualify the capsule inspection. Several capsules may be inspected before a "post-cal" is performed. This is at the discretion of the test director.

NDE

- 7.1 **PERFORM** Cal as required by COGEMA-SVUT-INS-007.2, REV. 0, Ultrasonic Test Procedure and **RECORD** in Data Sheet.

NCO

- 7.2 **OBTAIN** capsule overpack per EO-906-003.

NOTE

An overpack identification number is located on the side of the capsule nearest the "Hot End" to aid in identifying the "Hot End".

OPS

- 7.3 **PLACE** capsule overpack in test stand as follows:

7.3.1 **ORIENT** with "Hot End " up.

7.3.2 **PLACE** in test stand.

7.3.3 **CLOSE** test stand gate.

QA

- 7.4 **VERIFY** and **RECORD** capsule overpack number and orientation on data sheet using underwater camera system.

NDE

- 7.5 **PERFORM** scans per vendor test procedure COGEMA-SVUT-INS-007.2, REV. 0, Ultrasonic Test Procedure.

NCO

- 7.6 **WHEN** scan is completed,
THEN FLIP capsule overpack as follows:

- 7.6.1 **OPEN** test stand gate.
- 7.6.2 **REMOVE** and **ORIENT** with "Cold End " up.
- 7.6.3 **PLACE** in test stand.
- 7.6.4 **CLOSE** test stand gate.

QA

- 7.7 **VERIFY** and **RECORD** capsule overpack orientation on data sheet using underwater camera system.

NDE

- 7.8 **PERFORM** scans per vendor test procedure COGEMA-SVUT-INS-007.2.

NDE

- 7.9 **WHEN** an acceptable inspection has been performed,
THEN **RECORD** date and Test Record Number on data sheet.

NCO

- 7.10 **WHEN** scan is completed,
THEN **REMOVE** capsule overpack as follows:

- 7.10.1 **OPEN** test stand gate.
- 7.10.2 **REMOVE** overpack capsule.
- 7.10.3 **RETURN** to storage per EO-906-003.

Test Director/NDE/QA

- 7.11 **SIGN** Data Sheet confirming completion of work.

Test Director/NDE/QA

- 7.12 **IF** additional capsules are to be inspected,
THEN **REPEAT** Steps 7.1 through 7.10 for each capsule overpack,
OTHERWISE **GO TO** Section 8.0 RESTORATION.

8.0 RESTORATION

- 8.1 **IOSR WARNING - AC 5.10** "Movement of heavy loads over **ACTIVE POOL CELLS** is prohibited unless performed in according to a recovery plan or an emergency response procedure."

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- 8.2 Ensure all test equipment has been disconnected and removed.
- 8.3 No testing labels will be attached to the capsules.
- 8.4 Remove test fixture from the pool cell, if directed by the test director.

9.0 TESTING AND ACCEPTANCE

- 9.1 The signatures on the attached Data Sheet provide verification of the performance of the Capsule Overpack Ultrasonic Inspection.

10.0 DISPOSITION

- 10.1 Inform CCA or designee testing is complete.
- 10.2 Record in COMMENTS section of PM/S Data Sheet, Work Request Number(s) of any work documents generated as a result of this instruction, if applicable.
- 10.3 Return Work Document(s) to Work Control.

11.0 BIBLIOGRAPHY

- 11.1 HNF-CD-WM-IOSR-001, *Interim Operational Safety Basis*.
- 11.2 HNF-SD-WM-SEL-008, *WESF Safety Equipment List*
- 11.3 ASME Boiler and Pressure Vessel Code, Section V, 1999
- 11.4 ASNT SNT-TC-1A, 1996
- 11.5 H-3-307504, Rev 0, *Capsule Overpack Drawing*
- 11.6 H-2-83014, Rev 0, *Cesium Capsule Type-W Calibration Standard*
- 11.7 HNF-PRO-081, *Hazardous Energy Control Program*.
- 11.8 HNF-PRO-083, *Personal Protection*.
- 11.9 HNF-PRO-085, *Hand and Portable Power Tools*.
- 11.10 HNF-PRO-088, *Electrical Work Safety*.
- 11.11 HSRM-1, *Hanford Site Radiological Control Manual*, Chapter 2, Part 3, "Posting," and Chapter 3, Part 2, "Work Preparation."

ULTRASONIC INSPECTION OF THE CAPSULE OVERPACKS – DATA SHEET

(Page 1 of 2)

CALIBRATION TEST TABLE

TYPE TEST	Time	Date
Pre-Calibration		
Post-Calibration		

(QA) Step 7.4

CAPSULE NO: _____ Orientation: _____

_____/_____
 QA Print Name QA Signature Date

(QA) Step 7.7

Orientation: _____

_____/_____
 QA Print Name QA Signature Date

(NDE) Step 7.9

Date test performed _____

Test Record Number _____

Step 7.11

NDE:

_____/_____
 Print Name Signature Date

Quality Assurance Engineer:

_____/_____
 Print Name Signature Date

Test Director:

_____/_____
 Print Name Signature Date

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(Page 2 of 2)

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