

JUN 30 1998

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St. 37-73 ENGINEERING DATA TRANSMITTAL

Page 1 of 1
1. EDT 625231

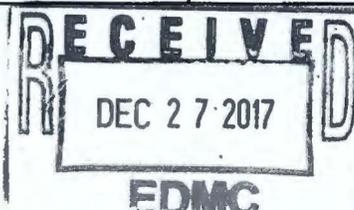
2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) BWHC/324 Facility	4. Related EDT No.: 623079
5. Proj./Prog./Dept./Div.: 300 Area Stabilization Project	6. Design Authority/ Design Agent/Cog. Engr.: SD Landsman	7. Purchase Order No.: NA
8. Originator Remarks: Certification that CsCl powder and pellet materials meet WESF acceptance criteria		9. Equip./Component No.: NA
		10. System/Bldg./Facility: 324 Building
11. Receiver Remarks: NA	11A. Design Baseline Document? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	12. Major Assm. Dwg. No.: NA
		13. Permit/Permit Application No.: NA
		14. Required Response Date: 6-30-98

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	HNF-2928	A11	0	Certification That CsCl Powder and Pellet Materials Meet WESF Acceptance Criteria	E/Q	1/2	1	1

16. KEY					
Approval Designator (F)		Reason for Transmittal (G)		Disposition (H) & (I)	
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	1. Approval 2. Release 3. Information	4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment	4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged	

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)											
(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
1	/	Design Authority	MM Perera	6/25/98	56-81	A1	/	TG Beam	Thomas Beam	6/25/98	56-51
		Design Agent	N/A			3	N/A	F.N. Simmons			56-51
1	/	Cog. Eng.	SD Landsman	6/25/98	L1-02						
1	/	Cog. Mgr.	EJ Bitten	6/25/98	L1-02						
1	/	QA	DH Sandoz	6-25-98	L1-06						
		Safety	NA					Central Files			B1-07
1	/	Env.	DE Rasmussen	6/25/98	L1-04						

18. Signature of EDT Originator <i>E. Bitten</i> Date: 6/29/98	19. Authorized Representative for Receiving Organization <i>[Signature]</i> Date: 6/25/98	20. Design Authority/Cognizant Manager <i>[Signature]</i> Date: 6/25/98	21. DOE APPROVAL (if required) Ctrl. No. N/A <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments
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Certification That CsCl Powder and Pellet Materials Meet WESF Acceptance Criteria

SD Landsman
BWHC, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: 625231 UC: 2000
Org Code: 19350 Charge Code: K4C21
B&R Code: EW7050000 Total Pages: 10 11 v.B.

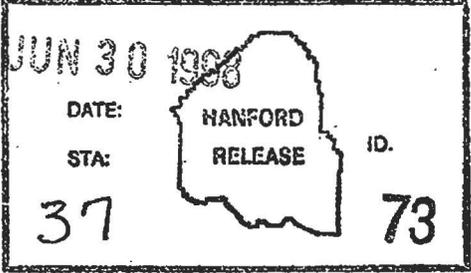
Key Words: Certification, CsCl Powder and Pellet Materials, WESF Acceptance Criteria

Abstract: This document describes the CsCl legacy material created by the Cesium Encapsulation Program (CEP) is acceptable for storage at WESF.

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V. L. Burkland 6/29/98
Release Approval Date



Release Stamp

Approved for Public Release

Certification That the CsCl Powder and Pellet Material Meets WESF Acceptance Criteria

This report documents that the CsCl that will be encapsulated into Inner Containers, WESF Outer Capsules, and WESF Type "W" Overpacks prior to shipping to WESF for long term storage is consistent with the material currently stored in the WESF pool cells. Process knowledge, analytical data, shipping records, and recent characterization smears obtained from South Cell are used as the basis for this conclusion. This letter describes the condition of the cell in which the CsCl, collectively called powder and pellets, was handled and the environment to which it has been exposed, the containers in which the powder and pellets have been stored to date, and the physical form and purity of the CsCl comprising the powder and pellets. The powder and pellets are legacy material created by the Cesium Encapsulation Program (CEP) and destructive analysis of two WESF capsules.

Storage Container Description

The CsCl powder and pellets are stored in release resistant containers. These containers are mechanically closed with a metallic seal. Although the release resistant container is not a special form or normal form container, it is a strong tight container. The containers housing the powder and pellets have not been involved in accidents, have not been dropped, and have not been subjected to chemically harsh environments. In October 1996 a visual inventory of the containers was performed and the powder and pellets were transferred to new release resistant containers. The containers are currently stored in D Cell in a shielded box fabricated specifically for storage of the CsCl. Prior to encapsulation of the powder and pellets, the containers will be returned to South Cell where they will be opened.

Description of CsCl

The CsCl to be packaged for shipment to WESF consists of caked powder, pelletized powder, chunks, and singly-encapsulated pellets. There are two distinct groups of material comprising the powder and pellets: material recovered from the destructive analysis of two WESF capsules (C-1502 and C-1550) and material that was purified for use in the Cesium Encapsulation Program (CEP). During packaging of the powder and pellets for shipment to WESF, separation of the two groups of material will be maintained.

The first group of CsCl is the residual material resulting from the destructive analysis of capsule C-1502, which leaked CsCl at RSI-Atlanta. This project is described in the draft report "Destructive Examination Program Cesium Capsule C1502 Report" by Oakley, Tingey, and Tingey (Attachment 1). The analysis involved removing the WESF

Outer Capsule and sectioning the WESF Inner Capsule, including the CsCl. Prior to sectioning of C-1502, C-1550 (a "sister" capsule to C-1502) was sectioned as practice. Sectioning of C-1502 occurred on September 29, 1992. After sectioning, the chunks of CsCl (approximately 80,000 Ci) were placed into release resistant containers and sealed.

The second group of CsCl is legacy material from the CEP. This physical form of this material is 13,400 Ci of pelletized CsCl (two sizes of pellets: 1-3/8" diameter x 5/8" and 5/16" diameter x 5/16") in release resistant containers, 10,800 Ci of powder in an unopened Type 4 shipping container (this material is presumed to be caked into a solid block), and 4400 Ci of small pellets in 10 singly-encapsulated Nordian capsules. Work with CsCl in South Cell in support of the CEP was initiated on October 9, 1991 and prematurely terminated on April 22, 1992. All handling of the CEP CsCl was performed in South Cell Compartment 1; the material has been stored in release resistant containers since the program was terminated. Material involved with the CEP was purified at Oak Ridge prior to shipment to the Shielded Materials Facility (SMF). Consequently, the CsCl associated with the CEP is purer than the CsCl that is encapsulated and stored at WESF. This material will be maintained and packaged separately from the material generated during destructive analysis of the WESF capsules.

Handling Cell Description

The SMF South Cell Compartment 1 was used for all handling activities associated with the powder and pellets. Compartment 1 was constructed in South Cell when the dose rates were low enough to allow personnel entry into the cell. Historically, South Cell has remained an alpha-free cell. As a result of the CEP, the dose rates in South Cell now average 11 rem/h and the dose rates in compartment 1 are 11,000 rem/h, all from CsCl contamination. Handling of unclad fuel or other material containing dispersible alpha-emitting radionuclides has not occurred in any of the compartments or in South Cell proper. A detailed contamination survey was performed in May 1989 which verified the SMF is free of alpha contamination. (Reference HNF-2849)

Comparison with WESF CsCl

The CsCl from Capsules C-1502 and C-1550 is consistent with the CsCl currently stored at WESF. Analytical data obtained as part of the CEP demonstrates that the CsCl from this program is of higher purity than WESF CsCl because the CsCl was water-washed at Oak Ridge National Laboratory (ORNL) prior to its shipment to the SMF. The analytical report for CsCl batch C-1542, which comprises the powder and pellets, is provided in Attachment 2 and demonstrates that material processing at ORNL reduced the amount of contaminants in the CsCl and did not add other

contaminants. Therefore, the powder and pellets are bounded by the current WESF corrosion studies and associated design basis.

The CsCl powder and pellets originated from WESF and was shipped to the SMF either via ORNL (material from the CEP) or directly (remnants from destructive examination). The shipping records for C-1502 and C-1550 are provided in Attachment 3. No foreign material was added to this material and the contamination in Compartment 1 was a result of the CEP and the two destructive analyses; the remainder of South Cell has been maintained as an alpha-free facility. Consequently, no other radionuclide or form of Cs could have contaminated the CsCl. Recent characterization smears taken in South Cell have verified that the entire SMF is free of alpha-emitters (HNF-2849) and that waste removed from these cells would not be designated as TRU waste. Therefore, the powder and pellets, including the remnants from destructive examination of two WESF capsules, is consistent with WESF CsCl and is within the WESF Part A permit.

Conclusion

Based on process knowledge and the data provided in this report, it can be concluded that the CsCl powder and pellets are consistent with the material currently stored at WESF. In addition, process knowledge and the SMF characterization study demonstrate that the material is not contaminated with alpha contamination. Therefore, the powder and pellet material is bounded by the WESF corrosion studies and associated design basis and the material is not TRU waste. Storage of this material at WESF will not violate the WESF safety basis and is covered by the WESF Part A permit.

Attachment 1
HNF-2928, Rev. 0



DRAFT

Handwritten notes:
NIA
2000-01-28
For [unclear] [unclear]

DESTRUCTIVE EXAMINATION PROGRAM
CESIUM CAPSULE C1502 REPORT

David J. Oakley
Garth L. Tingey
Joel M. Tingey

December 1993

Prepared for

under Contract -----

Battelle, Pacific Northwest Laboratories
Richland, Washington 99352

Handwritten:
M. Pawlak
56-65

Attachment 2
HNF-2928, Rev. 0

ICP Analysis Report
K.E. Ard

File: ICPS174c

Date Analyzed: 03/18 1992
Date Reported: 04/02 1992
Procedure: PNL-ALO-211
MT&E: WA55672

Analyst: *D. E. Smith*
Reviewer: *M. J. ... 9/11/92*

ALO Log#: 92-5174
Sample ID: C1S42-1
ICP Run#: 479
Dilution: 8223 (ug/g)

Control Standard
ICV-1(690)
xx True
1 1
(ug/mL) (ug/mL)

Acceptance Criteria
HS-V-S-4022 / Rev. B P. 3.8.7
Fe < 3% 80% CsCl

(D.L.)				
Ag	0.015		0.48	0.50
Al	0.11	6793	2.05	2.17
As	0.11			
B	0.02	51719		
Ba	0.003	29822	2.01	2.04
Be	0.001		0.51	0.51
Ca	0.01	6831	45.90	51.52
Cd	0.007		0.50	0.50
Ce	0.21			
Co	0.27		0.53	0.52
Cr	0.01		0.50	0.51
Cu	0.005	161 *	0.50	0.52
Dy	0.015			
Fe	0.01	431	1.99	2.04
K	0.5	12063	50.05	52.07
La	0.02			
Li	0.015			
Hg	0.01	435	24.53	25.75
Mn	0.003		0.50	0.52
Mo	0.01	85 *		
Na	0.25	77597	49.53	51.36
Nd	0.11			
Ni	0.025	849	0.50	0.50
Pb	0.08		4.98	5.14
Re	0.02			
Rh	0.13			
Ru	0.05			
Sb	0.4			
Se	0.12			
Si	0.07	25867		
Sr	0.0015	97 *		
Te	0.08			
Th	0.15			
Ti	0.01			
Tl	2			
U	1.5			
V	0.01		0.51	0.51
Zn	0.007	324	3.28	3.32
Zr	0.11			
P	1			

Fe = 431 ppm / 10,000
= 0.0043% < 3%

Total Impurity Conc. $\frac{212,731 \text{ ppm}}{10,000}$

= 21.3% \Rightarrow 78.7% CsCl

Ref. NCR B02535

- Note: 1) Values reliable to 2 1/2 significant digits.
2) Starred results (*) are qualitative only.
3) Sample results have not been adjusted for "blank" contribution.
4) At 50-100 times the D.L., precision is estimated at +/-10% and accuracy at +/-15%.
5) Calibration overrange on Ca and Hg for ICV-1. Results for information only.

Data, including calibration/QC, archived File ICP-325-601 (3/18/92)

Attachment 3
HNF-2928, Rev. 0

5/14/98

Cesium Capsule C-1550

Outer Capsule ID: C-1550
Inner Capsule ID: C-1434
Production #: 82-23
Calibration Date: 8/31/82
Capsule Type: 3
Double Capsule: YES
Capsule Age: 187
Gross Wt.: 8.762
Net Wt.: 2.692
Tare Wt.: 6.070
Melter Location: 4
Pour Temperature: 737
Pour Date: 7/20/82
Pool Cell Date: 9/01/82
PC Location: SHIP/CUT
Original KCi: 56.40
Original Wattage: 270.70
Curies per gram: 15
Wattage Decayed: 188.88
Watt Decay Date: 5/01/98
KCi Decayed: 39.35
KCi Decay Date: 5/01/98
Wattage per gram: 70
Gram Salt: 2.905
Remarks: SHIPPED TO PNL 2-28-90. CAPSULE CUT. LOOSE SALT
Remarks2:
QC Initials: CNH
OP Initials: RLJ
Destination: PNL-CUT
Date Shipped: 2/28/90
Date Updated:
DSI Number:

6/25/98
Page 1

C-1502

Outer Capsule ID: C-1502
Inner Capsule ID: C-1438
Production #: 82-23
Calibration Date: 7/23/82
Capsule Type: 3
Double Capsule: YES
Capsule Age: 191
Gross Wt.: 9
Net Wt.: 3
Tare Wt.: 6
Melter Location: 5
Pour Temperature: 737
Pour Date: 7/20/82
Pool Cell Date: 7/27/82
PC Location: SHIP/CUT
Original KCi: 56
Original Wattage: 268
Curies per gram: 14
Wattage Decayed: 186
Watt Decay Date: 7/01/98
KCi Decayed: 39
KCi Decay Date: 7/01/98
Wattage per gram: 69
Gram Salt: 3
Remarks: SHIPPED TO RSI, ATLANTA 01-22-86. SHIPPED TO ORNL 12-20-88
Remarks2: SHIPPED TO PNL. LEAKER. CUT OPEN 9-29-92
QC Initials: CNH
OP Initials: RLJ
Destination: RSI-A/OR/PNL/CUT
Date Shipped: 1/21/86
Date Updated:
DSI Number:

DISTRIBUTION SHEET

To Distribution	From BWHC/324 Facility	Page 1 of 1
Project Title/Work Order Certification That CsCl Powder and Pellet Materials Meet WESF Acceptance Criteria/K4C21		Date 06/29/98
		EDT No. 625231 ECN No.

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
MM Pereira	S6-81				
SD Landsman	L1-02				
EJ Bitten	L1-02				
DH Sandoz	L1-06				
DE Rasmussen	L1-04				
TG Beam	S6-51				
FN Simmons	S6-51				
SH Norton	L1-02				
GO Hayner	L5-65				
DW Templeton	R3-79				
Central Files	B1-07				