DISTRIBUTION SHEET

To DISTRIBUTION		From G. A. Funston		Page 1 of 1	
				Date June 9, 1995	
Project Title/Work Order Rocky Flats Ash Test Procedure (Sludge Stabilization)				EDT No. 155832	
				ECN No.	
Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
G. B. Chronister	T5-50	X			
M. L. De Vries	T5-55	X			
M. W. Gibson	T5-55	X			
D. R. Groth	T4-19	X			
W. S. Lewis	T5-55	X			
L. T. Cunningham	T5-55	X			
G. A. Funston	T5-55	X			
S. E. Nunn	T3-01	X			
Central Files (1)	A3-88 L8-04	X			
O.S.T.I. (2)	A3-36 L8-07	X			

JUN 14 1995 55 Sta. 5					ENGINEERING DATA TRANSMITTAL					Page 1 of <u>1</u> 1. EDT 155832	
2. To: (Receiving Organization) Distribution			3. From: (Originating Organization) PFP Process Engineering			4. Related EDT No.: N/A					
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(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
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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 4. Review 2. Release 5. Post-Review 3. Information 6. Dist. (Receipt Acknow. Required)		1. Approved 4. Reviewed no/comment 2. Approved w/comment 5. Reviewed w/comment 3. Disapproved w/comment 6. Receipt acknowledged	

(G)	(H)	17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)						(G)	(H)		
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1	1	Cog.Eng. W. S. Lewis	<i>W. S. Lewis</i>	6/12/95	T5-55						
1	1	Cog. Mgr. M. W. Gibson	<i>M. W. Gibson</i>	6/14/95	T5-55						
1	1	QA A-B PARULEKAR	<i>A-B. Parulekar</i>	6/12/95							
1	1	Safety S.G. NUNN	<i>S.G. Nunn</i>	6/14/95							
		Env.									
1		G. A. Funston	<i>G. A. Funston</i>	6/14/95							
1	1	Operations G. B. Chronister									

18. <i>G. A. Funston</i> 6/14/95 Signature of EDT Originator Date		19. N/A Authorized Representative Date for Receiving Organization		20. <i>M. W. Gibson</i> 6/14/95 Cognizant Manager Date		21. DOE APPROVAL (if required) Ctrl. No. N/A ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments	
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RELEASE AUTHORIZATION

Document Number: WHC-SD-CP-TP-087, Rev. 0

Document Title: Rocky Flats Ash Test Procedure (Sludge Stabilization)

Release Date: 6/14/95

**This document was reviewed following the
procedures described in WHC-CM-3-4 and is:**

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

Chris Willingham
C. Willingham

6/14/95

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SUPPORTING DOCUMENT		1. Total Pages 7
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8. RELEASE STAMP <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> OFFICIAL RELEASE BY WHC DATE JUN 14 1995 55 Sta. 5 </div>		

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DATA SHEETS

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MASTER

1. TEST ITEM IDENTIFICATION

Rocky Flats Ash items have been identified as the next set of materials to be stabilized. This test is being run to determine charge sizes and soak times to completely stabilize the Rocky Flats Ash items. The information gathered will be used to generate the heating rampup cycle for stabilization.

2. GENERAL DESCRIPTION

2.1 Test Objective

This test will provide information to determine charge sizes, soak times and mesh screen sizes (if available at time of test) for stabilization of Rocky Flats Ash items to be processed in the HC-21C Muffle Furnace Process. Once the charge size and soak times have been established, a program for the temperature controller of the HC-21C Muffle Furnace Process will be generated for processing Rocky Flats Ash.

2.2 Test Method

The process test will include heating individual 500 gram charges of Rocky Flats Ash to 1000°C for 1, 2, or 3 hours with or without a mesh screen over the charge to prevent lofting. After each charge has completed its run of 1, 2, or 3 hours, a Loss-On-Ignition (LOI) test will be done to determine if the soak time was long enough (LOI < .5% is acceptable). If a acceptable LOI is not reached after running the 500 gram charge for 1, 2 or 3 hours, the same test will be run using a 400 gram charge. This results in six test furnace charges. Further test charges may be run at the direction of the test engineer within the limits of a maximum 500 grams per charge.

3. TEST CONDITION LIMITS

Furnace or furnaces are operating.

4. INSTRUMENTS

Electronic Scale, Thermocouple readout.

5. FACILITIES, EQUIPMENTS, AND MATERIALS

The furnaces located in glovebox HC-21C in room 230-A will be used to perform the Rocky Flats Ash material tests. A mesh screen will be used on top of the boat to help prevent lofting of the material (this was noticed as a slight problem during the previous stabilization campaign). Also, the electronic scale, sieve trays and mortar and pestle in glovebox HC-21A in room 230-B will be used. This equipment is part of sludge stabilization process equipment.

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6. SAFETY

All individuals involved in performing this procedure are required to read, understand and comply with the applicable RWP that governs the work under the sludge stabilization project.

The complete discussion of the safety concerns for running the Rocky Flats Ash can be found in USQ PFP-95-19. A summary of the important items is provided.

Rocky Flats Ash contains on the average 22% Carbon (IDC 420, Pulverized Incinerator Ash, October 29, 1991, Rev 0). Carbon, when heated in the presence of oxygen, can form carbon monoxide which is flammable in concentrations between 12.5% to 74%. A TGA/mass spectroscopy analysis was performed on a sample of granular carbon to determine maximum CO formation rates. The test results (Internal Memo 15530-95-LTC-039) indicated that CO₂ is preferentially formed as long as there is sufficient oxygen present. The minimum flow rate of air was established to be .86 scfm, and the procedure sets the flow at 1 scfm or greater (Internal Memo 15530-95-LTC-039). If CO were to form there is sufficient air flow through the furnaces to maintain the CO concentrations below the 12.5% flammability concentration.

Another potential scenario is an explosion due to the presence of lead nitrate. IDC 420 indicates the potential for lead in the feed to the incinerator at Rocky Flats. The material was heated to over 450 °C prior to being shipped to Hanford. The decomposition temperature of lead nitrate is 180 °C. Therefore, any lead nitrate present in the feed has already decomposed and will not be present in the ash that is being stabilized.

7. TEST DATA

Data to be recorded during this test procedure includes material item number, weight of the charge, number of hours at 1000°C, LOI sample number, mesh size, LOI results for the charge and any other process information that maybe useful.

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8. PROCEDURE

Adjustments to the test procedure may be necessary in the field as the test run progresses. Therefore the Test Engineer is permitted to accommodate minor changes in direction resulting from facility description variants. Each change shall be approved per WHC-CM-3-5, Section 12.7. Change authorizations obtained by the telephone shall be noted as such.

A. PROCESS TEST

1. Test engineer should record material item number, date, charge number, and charge size on the Rocky Flats Ash data sheet.
2. Test Rocky Flats Ash material in HC-21C furnaces.
 - a. Have operators prepare to run furnaces with Rocky Flats Ash as charge material per procedure ZO-160-032.
 - b. Prior to placing the boats into the furnace, test engineer will determine where the thermocouples should be located for the test. One or both furnaces may be utilized for the test.
 - c. Test engineer to request operators to place mesh on top of boat if they are available. Record mesh size on data sheet. Enter NONE if none are available.
 - d. Test engineer to request operators to run Rocky Flats Ash for either a 1, 2, or 3 hour dwell time (using program 3 or 7) at 1000°C and record the dwell time on the Rocky Flats Ash data sheet for each charge.
 - e. Record the thermocouple and furnace temperatures every 15 minutes or time increment determined by the test engineer on the furnace thermocouple data sheet.
 - f. After the furnace cycle has been completed, have the operators sieve and sample each boat for LOI individually per procedure ZO-160-034. Test engineer to record the sample number on the Rocky Flats Ash data sheet.
 - g. After LOI results are known, test engineer to record on the Rocky Flats Ash data sheet.
 - h. Repeat steps 1 - 2.g as many times as needed to get enough information to satisfy, Section 2.2.

ROCKY FLATS ASH DATA SHEET

[illegible]

FURNACE THERMOCOUPLE DATA SHEET

FURNACE THERMOCOUPLE DATA SHEET

DATE _____

[illegible]