DISTRIBUTION SHEET

To	From	Page 1 of 1			
DISTRUBTION	M. L. De Vries	Date			
Project Title/Work Order		EDT No. 608704			
Heat Exchanger Bypass Test Procedure		ECN No.			
Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
G. B. Chronister	T5-50	X			
L. T. Cunningham	T5-50	X			
M. L. De Vries	T5-55	X			
G. A. Funston	T5-55	X			
M. W. Gibson	T5-55	X			
W. S. Lewis	T5-55	X			
Central Files	L8-04	X			
O.S.T.I. (2)	L8-07	X			

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

NOV 15 1994

55

SAS

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 608704

2. To: (Receiving Organization) Distrubtion	3. From: (Originating Organization) PFP Process Engineering	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: HC-21C/15530	6. Cog. Engr.: W. S. Lewis	7. Purchase Order No.: N/A
8. Originator Remarks: USQ for ECN #705019L applies for this test procedure. No Unreviewed Safety Question exists.		9. Equip./Component No.:
		10. System/Bldg./Facility: 73T/234-5Z/2Z
		11. Receiver Remarks:
		12. Major Assm. Dwg. No.:
		13. Permit/Permit Application No.: N/A
		14. Required Response Date:

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	WHC-SD-CP-TC-031	1	0	Heat Exchanger Bypass Test Procedure	N/A	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				
(G)	(H)	17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)							(G)	(H)	
Reason	Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	Reason	Disp.
1	1	Cog.Eng. W. S. Lewis	<i>W. S. Lewis</i>	11/15/94	T5-55						
1	1	Cog. Mgr. M. W. Gibson	<i>M. W. Gibson</i>	11/15/94	T5-55						
		QA									
		Safety									
		Env.									
1		M. L. De Vries			T5-55						
1		Operations	<i>M. L. De Vries</i>	11/15/94							

18. Signature of EDT Originator <i>M. L. De Vries</i> Date 11-15-94	19. Authorized Representative Date for Receiving Organization 	20. Cognizant Manager Date <i>M. W. Gibson</i> 11/15/94	21. DOE APPROVAL (if required) Ctrl. No. N/A ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments
---	--	--	---

RELEASE AUTHORIZATION

Document Number: WHC-SD-CP-TC-031, REV.0

Document Title: Heat Exchanger Bypass Test Procedure

Release Date: November 15, 1994

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

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

Kara M. Broz

November 15, 1994

TRADEMARK DISCLAIMER. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

This report has been reproduced from the best available copy. Available in paper copy and microfiche. Printed in the United States of America. Available to the U.S. Department of Energy and its contractors from:

U.S. Department of Energy
Office of Scientific and Technical Information (OSTI)
P.O. Box 62
Oak Ridge, TN 37831
Telephone: (615) 576-8401

Available to the public from:

U.S. Department of Commerce
National Technical Information Service (NTIS)
5285 Port Royal Road
Springfield, VA 22161
Telephone: (703) 487-4650

MASTER

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

TABLE OF CONTENTS

	PAGE
1. TEST ITEM IDENTIFICATION	3
2. GENERAL DESCRIPTION	3
2.1 Test Objective	3
2.2 Test Method	3
3. TEST CONDITION LIMITS	3
4. TOOLS	3
5. FACILITIES, EQUIPMENTS, AND MATERIALS	3
6. SAFETY	4
6.1 Safety	4
6.2 Pre-job Meeting	4
6.3 Table 1 - PRE-JOB SAFETY/OPERABILITY BRIEFING LIST	4
7. TEST DATA	5
8. PROCEDURE	5
7. DATA SHEETS	
FURNACE # 1 TEMPERATURE DATA SHEET	6
FURNACE # 2 TEMPERATURE DATA SHEET	7

1. TEST ITEM IDENTIFICATION

The following equipment will be used to perform the test procedure. One furnace, FUR-1 or FUR-2 will be used to stabilize Plutonium (Pu) bearing material. The off-gas system for the furnace will also be used which includes a ceramic filter, heat exchanger, rotameter, needle valve and the 26 inch vacuum system. During the test, the heat exchanger of the off-gas system will be bypassed.

2. GENERAL DESCRIPTION

2.1 Test Objective

The HC-21C Muffle Furnace Process has been experiencing problems with corrosion of the off-gas piping system. During the processing cycle, condensation is forming and corroding the off-gas piping. The corrosion products build up in the rotameters and cause them to be dysfunctional. The condensation is suspected to be occurring in the heat exchanger, so the test will bypass the heat exchanger to verify this.

This process test will help to establish a temperature profile for the off-gas system near the rotameter (FI-21C-1 or FI-21C-2). Also, this information will be used to help determine the location and cause of water condensation that is occurring in the off-gas equipment.

2.2 Test Method

The process test will include operating one of the two furnaces in Room 230A to stabilize Pu bearing material. The off-gas from the process under normal conditions goes through a heat exchanger before entering the 26" vacuum system but during the process test the heat exchanger will be bypassed. During the test run, various temperature readings will be taken and visual inspections done.

3. TEST CONDITION LIMITS

Work package 2Z-94-02073 has had modification work per ECN #705019L completed and signed off.

Modification work complete:

TEST ENGINEER

If excessive liquid makes rotameter uncontrollable stop test procedure.

If temperature on lines outside of the glovebox that are not insulated rise above > 180° F, stop test procedure.

4. INSTRUMENTS

2 Portable Thermocouple

5. FACILITIES, EQUIPMENTS, AND MATERIALS

An ECN, #705019L, has been written to allow the heat exchangers to be bypassed.

[illegible]

7. TEST DATA

Data to be recorded during this test procedure include temperatures and visual information of water formation taken during a processing cycle to stabilize Pu bearing material.

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 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 will determine which furnace will be used for the test procedure.
2. Using ZO-160-032, have an operator prepare one charge and initiate appropriate heating cycle for the HC-21C furnace that will be used for the test.
3. Record the following information on the charge to be processed.

Furnace Used: _____

Description of Material: _____

Furnace Program Used: _____

4. Record the following data on the appropriate furnace data sheet, (FURNACE # 1 or FURNACE # 2 TEMPERATURE DATA SHEET) during the process.
 - a. Every 1/2 hour record the following:
 - Furnace temperature
 - Inlet temperature to rotameter FI-21C-1 or FI-21C-2
 - Outlet temperature to rotameter FI-21C-1 or FI-21C-2
 - Outlet temperature from needle valve, V-21C-1 or V-21C-2
 - Inlet temperature to V-21C-10, 26" vacuum system isolation valve (located in room 263)
 - Outlet temperature from V-21C-10, 26" vacuum system isolation valve (located in room 263)
 - b. Watch for formation of water in the rotameter. If water forms in rotameter, record the time and temperature at which the water formed. Please record quantified amount and any description of the liquid if unusual.

PFP SLUDGE
STABILIZATION

HEAT EXCHANGER BYPASS TEST
PROCEDURE

WHC-SD-CP-TC-031
Page 6 of 7 Rev. 0

FURNACE # 1 TEMPERATURE DATA SHEET

Time																	
Date																	
Initial																	
Furnace Temperature TIC-21C-1																	
Rotameter(FI-21C-1) Inlet Temp.																	
Rotameter(FI-21C-1) Outlet Temp.																	
Temperature after valve, V-21C-1																	
Temperature before valve, V-21C-10 (Room 263)																	
Temperature after valve, V-21C-1 (Room 263)																	

TEMPERATURE OF WATER CONDENSATION: _____

TIME OF WATER CONDENSATION: _____

QUANTIFIED AMOUNT OF WATER CONDENSATION: _____

OBSERVATIONS/COMMENTS: _____

PFP SLUDGE
STABILIZATION

HEAT EXCHANGER BYPASS TEST
PROCEDURE

WHC-SD-CP-TC-031
Page 7 of 7 Rev. 0

FURNACE # 2 TEMPERATURE DATA SHEET

Time																
Date																
Initial																
Furnace Temperature TIC-21C-2																
Rotameter(FI-21C-2) Inlet Temp.																
Rotameter(FI-21C-2) Outlet Temp.																
Temperature after valve, V-21C-2																
Temperature before valve, V-21C-10 (Room 263)																
Temperature after valve, V-21C-1 (Room 263)																

TEMPERATURE OF WATER CONDENSATION: _____

TIME OF WATER CONDENSATION: _____

QUANTIFIED AMOUNT OF WATER CONDENSATION: _____

OBSERVATIONS/COMMENTS: _____