2. To: (Receiving Organization) WASTE TANK SAMPLING ENGINEERING		3. From: (Originating Organization) CHARACTERIZATION EQUIPMENT		4. Related EDT No.: NONE							
5. Proj./Prog./Dept./Div.: CORE SAMPLING ANCILLARY EQUIPMENT ETN-94-0023		6. Cog. Engr.: J.L. SMALLEY		7. Purchase Order No.: 404870							
8. Originator Remarks: THE ATTACHED ATP IS TRANSMITTED FOR APPROVAL AND RELEASE.				9. Equip./Component No.: N/A							
				10. System/Bldg./Facility: 200 GENERAL							
11. Receiver Remarks:				12. Major Assm. Dwg. No.: N/A							
				13. Permit/Permit Application No.: N/A							
				14. Required Response Date: 2-8-95							
15. DATA TRANSMITTED											
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Desig- nator	(G) Reason for Trans- mittal	(H) Orig- inator Dispo- sition	(I) Receiv- er Dispo- sition			
1	WHC-SD-WM-ATP-124		0	NITROGEN CHILLER ACCEPTANCE TEST PROCEDURE	Q	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. J.L. SMALLEY	<i>J.L. Smalley</i>	2/7/95	R1-17	Central Files (2)		2/8/95		3	
1	1	Cog. Mgr. R.J. BLANCHARD	<i>R.J. Blanchard</i>	2/7/95	R1-17	O.S.T.I. (2)		2/8/95		3	
1	1	QA J.J. VERDERBER	<i>J.J. Verderber</i>	2/13/95	S1-57						
		Safety N/A									
		Env. N/A									
1	1	CORE SAMPLING COG. AP MOUSEL	<i>AP Mousel</i>	2/6/95							
18. AJ KOSTELNIK <i>AJ Kostelnik</i> 1-31-95 Signature of EDT Date Originator		19. AP MOUSEL <i>AP Mousel</i> 2/6/95 Authorized Representative Date for Receiving Organization		20. R.J. BLANCHARD <i>R.J. Blanchard</i> 3/2/95 Cognizant Manager Date		21. DOE APPROVAL (if required) Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments					

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RELEASE AUTHORIZATION

Document Number: WHC-SD-WM-ATP-124, REV.0

Document Title: Nitrogen Chiller Acceptance Test Procedure

Release Date: March 7, 1995

**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

March 7, 1995

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2. Title Nitrogen Chiller Acceptance Test Procedure	3. Number WHC-SD-WM-ATP-124	4. Rev No. 0
5. Key Words Rotary Mode Core Sampling, Nitrogen Purge Gas, WHC-S-0249, Chiller, Trailer, ETN-94-0023	6. Author Name: AJ Kostelnik Signature Organization/Charge Code 71510/N4XB1	
7. Abstract This document includes the inspection and testing requirements for the Nitrogen Chiller unit. The Chiller will support the Rotary Mode Core Sampling System during the summer. The Chiller cools the Nitrogen Purge Gas that is used when drilling in tank wastes to cool the drill bit.		
8. RELEASE STAMP <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 10px auto;"><div>OFFICIAL RELEASE BY WHC DATE MAR 07 1995</div><div style="text-align: right;"> <i>Sta. 4</i></div></div>		

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MASTER

1.0 INTRODUCTION

This test will be performed by the Seller at the Seller's facility. This test will exercise the Nitrogen Chiller to verify that it will meet the operating requirements stated in specification WHC-S-0249. An inspection will be performed by the Test Witness to verify compliance with other requirements contained in the specification but not verified by the run test.

The operating requirements are to cool 100 SCFM of Nitrogen at 0-150 psig from 110°F to 40°F when the ambient temperature is 110°F. The flow rates of Nitrogen for the test will be 100 SCFM at both 100 psig and 150 psig and 30 SCFM at 100 psig. The different pressures change the density of the Nitrogen vapor which affects the heat transfer rate. The 30 SCFM flow will simulate normal use and will provide a reference for normal equipment operation.

2.0 QUALITY ASSURANCE

Quality Assurance support is not required for the performance of this test. A Westinghouse Hanford Company Characterization Equipment Engineer shall witness the test at the Seller's location, shall sign for verification of inspection items, and shall record all of the necessary data.

Test instrument calibration is not required except as noted in the Test Equipment Required section. Measurements that are out of the bounds of the specified range should be reverified with another instrument as required. The WHC Engineer shall determine if reverification of measurements is required. Deviations or discrepancies involving the test procedure and equipment performance shall be documented on the exception sheet. These exceptions shall be resolved by the Seller with approval from the WHC Engineer.

3.0 INSPECTION

3.1 Verify the Chiller has the following features prior to beginning the test portion of the ATP.

_____ 3.1.1 Manufacturers nameplate including equipment electrical requirements.

_____ 3.1.2 240 VAC, single phase power is required for operation.

_____ 3.1.3 ASME "U" stamp on the shell of the heat exchanger. Maximum Allowable Working Pressure (MAWP) is 150 psig. The heat exchanger has an ASME pressure relief valve with an ASME "UV" stamp set to relieve at 150 psig, per ASME code.

_____ 3.1.4 Hose connections are equipped with a Hansen LL12-K46 plug on the inlet and a Hansen LL12-H46 socket on the outlet.

_____ 3.1.5 Controls to automatically switch the Chiller to stand-by mode when there is no Nitrogen demand. Nitrogen inlet and outlet temperature indication.

- _____ 3.1.6 All controls, valves, switches...are labeled.
- 3.2 Verify the trailer has the following features.
 - _____ 3.2.1 Mainframe and platform shall be manufacturer's standard with adequate capacity for the load imposed. Record GVW _____
 - _____ 3.2.2 The trailer and equipment are arranged for weight distribution and ease of operation.
 - _____ 3.2.3 Hitch - Pintle type, adjustable, minimum 2-3/4 inch.
 - _____ 3.2.4 Main Jack - Screw type w/drop foot, capacity suited to trailer.
 - _____ 3.2.5 Leveling Jacks - Screw type w/drop foot, (all four corners).
 - _____ 3.2.6 Safety chains with hooks.
 - _____ 3.2.7 Chock blocks.
 - _____ 3.2.8 Electrical - ICC/DOT approved, sealed system, rubber isolated.
 - _____ 3.2.9 Paint - Unit is painted white and the paint is in good condition. The bottom of the trailer is undercoated for rust protection.

4.0 TEST EQUIPMENT REQUIRED

The equipment required to conduct this test shall be provided by the Seller except as noted below.

- 4.1 Seller supplied equipment.
 - 4.1.1 Electrical power for all equipment.
 - 4.1.2 Nitrogen Supply Trailer with an adequate supply of consumables to conduct the testing.
 - 4.1.3 Nitrogen Chiller - Power required: 15 amps, 240 VAC, 1 ϕ
 - 4.1.4 Several 1" hoses with couplings. Enough hose is needed to connect the system as described in the Equipment Set-up section. All of the equipment is built with Hansen LL12-H46 and LL12-K46 couplings installed. One of the hoses, the vent hose, needs a valve at the end to control the flow of Nitrogen.
 - 4.1.5 A Thermometer for measuring the ambient temperature, 0-120°F scale.
 - 4.1.6 A Thermocouple for measuring surface temperatures of the equipment.

4.1.7 Clamp on Ammeter for measuring current draw for comparison to equipment ratings.

4.1.8 A "HOT" space: Shop space, or tent, or semi-trailer with enough heat to maintain 110°F ambient. A propane space heater may provide the necessary heat.

4.2 Westinghouse Hanford Company supplied equipment.

4.2.1 Nitrogen Heater - Power required: 30 amps, 240/120 VAC, 1 ϕ . Power must be supplied by Norco.

4.2.2 CALIBRATED Flowmeter with a pressure indication for measuring Nitrogen flows of 30 SCFM at 100 psig, 100 SCFM at 100 psig, and 100 SCFM at 150 psig. Power required: 10 amps, 120VAC. Record Flowmeter serial number and calibration due date. SN _____, Cal. _____.

5.0 TEST EQUIPMENT SET-UP

This section describes a general test configuration to be used as a guide for conducting the test. The sketch in Appendix A depicts the suggested configuration.

- 5.1 The Nitrogen Trailer should be set to operate in an open area to keep the noise from the propane generator from interfering with monitoring of the Chiller. The hose from the Nitrogen Trailer will be connected to the inlet of the Nitrogen Heater.
- 5.2 The Nitrogen Heater should be set-up on level ground and connected to electrical power. The Heater may be included in the hot space. However, avoid placing it too near the heat source for the "HOT" space as too much heat may affect the thermostatic controls of the Heater. Connect a hose to the outlet of the Nitrogen Heater and the Inlet of the Chiller.
- 5.3 The Chiller unit must be located in the "HOT" space. Connect it to a power source and run the outlet to the flowmeter.
- 5.4 The flowmeter assembly should be located outside of the "HOT" space. Connect it with a hose to the outlet of the Chiller. At least 10 feet of hose should be between the flowmeter and the valve at the end of the vent line. The 10 feet is needed to reduce the effects of venting to atmosphere on the flowmeter. The vent line should exhaust outside of the hot space to keep the noise from the exhausted Nitrogen from affecting Chiller monitoring.

6.0 RUN TEST

This section describes the execution of the test. Note any variations which must be made to adjust for actual test conditions on an exception sheet. Measurements which are beyond the expected value shall be addressed as exceptions and resolved prior to completion of testing.

- 6.1 After the test equipment is set-up and the Chiller has been in the "HOT" space long enough for the average Chiller temperature to reach 100°F (The Chiller has warmed-up to ambient). Start the flow of Nitrogen through the system and adjust the flow rate to 100±10 SCFM at 150±10 psig.
- 6.2 Start the Nitrogen heater with the exit gas temperature set between 110°F and 120°F.
- 6.3 When the temperature of the Nitrogen exiting the Chiller is warmer than 100°F the Chiller may be started. Within 5-6 minutes after Chiller start-up, the temperature of the Nitrogen should be colder than 40°F at the Chiller exit.
- 6.4 Continue to monitor the Chiller and make recordings as required on the DATA RECORD. Record any observations, such as...current draw, cycle times, noises, water condensation, ice formation, equipment hot spots, etc...
- 6.5 Stop the flow of Nitrogen and monitor the Chiller until it automatically stops operating. Record the time lapse between shutting off the Nitrogen and Chiller shutdown.
- 6.6 Readjust the flow rate and pressure to 100±10 SCFM at 100±10 psig. Restart the Chiller when the Nitrogen Outlet temperature exceeds 100°F and record data as required. Stop the flow of Nitrogen and record time of the shut-off of the Nitrogen and the Chiller automatic shutdown before proceeding.
- 6.7 Readjust the flow rate of the Nitrogen to 30±10 SCFM at 100±10 psig and record data as required. Record the duration of time between restoring flow and the automatic restart of the Chiller.

7.0 DATA RECORD

Record the data at the stated intervals. Record observations of the Chiller's operation. The observations will be useful as information later when the equipment is used in the field.

TEST DATA: 100 SCFM @ 150 PSIG		
TIME (min)	INLET TEMPERATURE (90-110°F)	OUTLET TEMPERATURE (30-40°F)
0:00		
1:00		
2:00		
3:00		
4:00		
5:00		
6:00		
7:00		
8:00		
9:00		
10:00		
15:00		
20:00		
25:00		
30:00		

Start-up "HOT" Space Ambient Temperature: _____ °F

Nitrogen shut-off: _____

(Time)

Chiller shut-off: _____

(Time)

OBSERVATIONS: _____

Electrical Current Draw _____

Recorder Name/Signature: _____ Date _____

TEST DATA: 100 SCFM @ 100 PSIG		
TIME	INLET TEMPERATURE (90-110°F)	OUTLET TEMPERATURE (30-40°F)
0:00		
1:00		
2:00		
3:00		
4:00		
5:00		
6:00		
7:00		
8:00		
9:00		
10:00		
15:00		
Stop Flow _____ Chiller Stop _____ Time Time		
30 SCFM @ 100 PSIG		
Start Flow _____ Chiller Start _____ Time Time		
0:00		
5:00		
10:00		
15:00		

Start-up "HOT" Space Ambient Temperature: _____ °F

OBSERVATIONS: _____

Electrical Current Draw _____

Recorder Name/Signature: _____ Date _____

APPENDIX A

Figure 1 SUGGESTED TEST EQUIPMENT SET-UP.

Description of exception and resolution.

[illegible]

PRINT NAME	COMPANY	SIGNATURE	DATE

*** Make additional copies as required.**