

JUL 24 1998

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

STATION 4

1. EDT 624762

2. To: (Receiving Organization) SST Retrieval Projects		3. From: (Originating Organization) SST Retrieval Projects		4. Related EDT No.: 624378	
5. Proj./Prog./Dept./Div.: W-320		6. Design Authority/ Design Agent/Cog. Engr.: John Bailey		7. Purchase Order No.: NA	
8. Originator Remarks: For Approval and Release				9. Equip./Component No.: POR-007/POR-008	
				10. System/Bldg./Facility: West Tank Farms	
11. Receiver Remarks: 11A. Design Baseline Document? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				12. Major Assm. Dwg. No.: H-14-102610	
				13. Permit/Permit Application No.:	
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1	HNF-2688		0	ATR for Portable Exhauster POR-007/Skid E	Q	1,2	1	
2	HNF-2689		0	ATR for Portable Exhauster POR-008/Skid F	Q	1,2	1	

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E, S, Q, D or N/A (see WHC-CM-3-5, Sec. 12.7)		1. Approval	4. Review	1. Approved	4. Reviewed no/comment
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1	1	Design Authority J.W. Bailey	<i>J.W. Bailey</i>	7/23/98	S2-48	3		W-320 Project Files			
		Design Agent				3		JR Bellomy III		S2-48	
1	1	Cog. Eng. TD Kaiser	<i>RE Larson</i>	7/23/98	S2-48	3		SW Shaw		S2-48	
1	1	Cog. Mgr. RE Larson	<i>RE Larson</i>	7/23/98	S2-48	1	1	JR Kriskovick	<i>JR Kriskovick</i>	7-23-98	S2-48
1		QA KC Conrad	<i>Keith Conrad</i>	7-23-98	S2-48						
		Safety	<i>S. W. Shaw</i>	7-23-98							
		Env.									

18. Signature of EDT Originator <i>S.W. Shaw</i> 7/21/98		19. Authorized Representative for Receiving Organization J.W. Lentsch		20. Design Authority/Cognizant Manager <i>John Bailey</i> 7/23/98		21. DOE APPROVAL (if required) Ctrl. No. <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments	
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# ACCEPTANCE TEST REPORT FOR PORTABLE EXHAUSTER POR-008/SKID F

**J.R. Kriskovich**  
Lockheed Martin Hanford Company, Richland, WA 99352  
U.S. Department of Energy Contract DE-AC06-96RL13200

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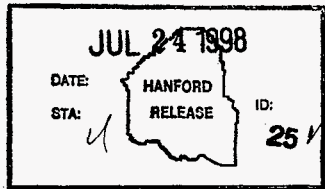
**Abstract:**

This document describes Acceptance Testing performed on Portable Exhauster POR-008/Skid F. It includes measurements of bearing vibration levels, pressure decay testing, programable logic controller interlocks, high vacuum, flow and pressure control functional testing.

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*Kate J. Brown* *7/24/98*  
Release Approval Date



**Approved for Public Release**

HNF-2689  
Rev. 0

**ACCEPTANCE TEST REPORT FOR PORTABLE  
EXHAUSTER POR-008/SKIDF**

by

S. W. Shaw  
July 20, 1998

contact

J. R. Bellomy III

## EXECUTIVE SUMMARY

### INTRODUCTION

Portable Exhauster POR-008 was procured via HNF-0490, "Specification for a Portable Exhauster System for Waste Tank Ventilation." Prior to taking ownership, Acceptance testing was performed at the vendors. However at the conclusion of testing a number of issues remained that required resolution before the exhausters could be used by Project W-320.

The purpose of Acceptance testing documented by this report was to demonstrate compliance of the exhausters with the performance criteria established within HNF-0490, Rev. 1 following a repair and upgrade effort at Hanford. In addition, data obtained during this testing is required for the resolution of outstanding Non-conformance Reports (NCR), and finally, to demonstrate the functionality of the associated software for the pressure control and high vacuum exhauster operating modes provided for by W-320.

Additional testing not required by the ATP was also performed to assist in the disposition and close out of relieving inspection report and for application design information (system curve). Results of this testing are also captured within this document.

### OBSERVATIONS AND CONCLUSIONS

A number of procedural deficiencies were noted in the ATP as identified by the redline/strike out comments captured in this test report. The redline comments noted have been incorporated into the ATP via ECN 647641. A listing of exceptions encountered during the ATP begins on page 108. All exceptions were resolved during testing.

A "technical" exception observed during testing occurred during efforts to operate the exhausters in flow control mode at 1000 CFM (intended to simulate operation connected to a primary tank) while attached to the inlet station and HEPA filter used for testing. When operating in this configuration, exhauster inlet vacuums exceeded the 3.5 INWC interlock value, and shut down the exhauster. Upon consideration this was resolved by removing the G-1 Filter housing cover, by-passing the HEPA filter. A roughing filter was placed over the 12" diameter opening leading to the hose connection, and the butterfly damper (EW-1) was used to establish the 3 INWC vacuum required at the exhauster inlet while operating at 1000 CFM.

Another technical exception occurred during the performance of Section 5.1, "Power System Check." During verification of zero voltage between the L1 and L3 terminals of the 480 Volt main disconnect, a 3.8 V measurement was obtained. This was determined to be an induced voltage, caused by the other energized conductors in the wireway leading to VTP-DS-101.

Noise levels produced by the exhausters were measured during the course of testing at 1000 SCFM, and found to be below the 86 dB allowed by HNF-0490 at a distance of 1 meter from the stack exit. Data obtained during sound level testing is included as Attachment 17.

Although not required by the ATP, system curves were obtained for the exhauster while operating in the high vacuum mode. High efficiency mist eliminators had been removed, seal pot

drain lines in the plenum had been plugged, and the exhauster was connected to a G-1 filter housing equipped with a 1000 CFM HEPA filter by way of a 12 inch diameter hose. Using this data to plot a system curve for both the portable exhauster and the 102-AY annulus it can be shown that POR-007 should be capable of producing a flow of approximately 830 SCFM through the annulus. POR-008 appears a better fit for the 102-AY annulus, and is capable of producing approximately 880 SCFM. Both these values assume clean HEPA filters. Test data and associated graphs for each of the exhausters is included as Attachment 18.

The functionality of the Programmable Logic Controller (PLC) interlocks and message view panel alarm displays were demonstrated successfully

The ability to isolate the seal pot from the plenum using 1" test plugs was demonstrated via the pressure decay testing performed in Section 5.22. As part of that testing it was learned that the methodology to employ for leak testing when using the plugs is to first insert the plug and pressurize the seal pot. Access is then provided to the plugs via the plenum, and the plug seal can be quickly checked using a liquid leak detector. Once the integrity of the plugs within the plenum drains has been established, the plenum is then sealed (HEME and HEPA, and pre-filter covers replaced), and pressure testing of the plenum performed. For the purposes of the ATP, pressure decay testing of the plenum was performed with the seal pot open to atmosphere to ensure that any leakage would be detected.

# TANK FARM ACCEPTANCE TEST PROCEDURE

ATP FOR PORTABLE EXHAUSTERS  
POR-008/SKID F

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## TEST EXECUTION SHEET

Date:

Document Number: HNF-2687

Exhauster Unit Numbers: POR-008/Skid F

### TEST PERSONNEL

COGNIZANT ENGINEER: Terry Kaiser

Test Director: S.W. Shaw  
 Alt Test Director: O.D. Nelson  
 Test Engineer: C.S. Ghormley

### TEST EXECUTION

*[Signature]* 7/15/98  
 Test Director Date

*[Signature]* 7/15/98  
 Acceptance Inspector Date

### TEST APPROVAL AND ACCEPTANCE

----- Without Exception       With Exception/Resolved

----- With Exception/Outstanding

*[Signature]* 7/21/98  
 Test Director Date

*[Signature]* 7/21/98  
 Test Engineer Date

*[Signature]* 7/22/98  
 Cognizant Engineer Date

*[Signature]* 7/23/98  
 A/I Date

*[Signature]* 7-21-98  
 QC Inspector Date

*[Signature]* 7-23-98  
 Quality Assurance Date

*[Signature]* 7/23/98  
 Safety Date

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# TANK FARM ACCEPTANCE TEST PROCEDURE

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 1.0 PURPOSE AND SCOPE

### 1.1 PURPOSE

This Acceptance Test Procedure will ensure that the Exhauster meets the functional, operational, and safety criteria specified in HNF-S-0490, Rev 1. The components that will be tested are listed in the scope section that follows. Fan and pressure testing shall comply with ASME N509 and N510.

### 1.2 SCOPE

1.2.1 This procedure applies to the Emergency Backup 1000 CFM Portable Exhauster (POR-008-VTP/SKID F).

NOTE: All component identification numbers referenced in this procedure are preceded with POR-008. These prefixes will not be repeated throughout the remainder of this document.

1.2.2 The systems/functions that will be tested are:

1.2.2.1 **POWER SYSTEM CHECK**

This check will verify that there is electrical power to the Exhauster systems.

1.2.2.2 **PRESSURE DECAY TEST**

This test demonstrates the integrity of the Exhauster train assembly air boundary, including the Seal Pot.

1.2.2.3 **GLYCOL SYSTEM DECAY TEST**

This test demonstrates the integrity of the glycol heater, reservoir and associated glycol piping.

1.2.2.4 **EXHAUSTER FAN CHECK**

This check will verify that the Exhauster Fan is rotating in the correct direction, and that fan shaft bearing vibration levels are within allowables defined by ANSI N-509.

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 1.2 SCOPE (Cont.)

### 1.2.2.5 HEAT TRACE THERMOSTAT CHECK

This check will verify that the Heat Trace thermostat functions properly.

### 1.2.2.6 FILTER # 1 DP INTERLOCK/ALARM TEST

This test will verify that 1st HEPA filter high-high, low, and Rate-of-Change (ROC) differential pressure interlocks stop the exhaust fan when conditions that simulate the rupture or plugging of the 1st HEPA filter are caused.

### 1.2.2.7 FILTER # 2 DP INTERLOCK/ALARM TEST

This test will verify that 2nd HEPA filter high-high, low, and ROC differential pressure interlocks stop the exhaust fan when conditions that simulate the rupture or plugging of the 2nd HEPA filter are caused.

### 1.2.2.8 FILTER #1 & #2 DP INTERLOCK/ALARM TEST

This test will verify that HEPA filter train high-high, low, and ROC differential pressure interlocks stop the exhaust fan when conditions that simulate the rupture or plugging of the HEPA filter train are caused.

### 1.2.2.9 STACK FLOW INTERLOCK/ALARM TEST

This test will verify that Stack High and Low Flow interlocks stop the exhaust fan when conditions outside operating set points exist.

### 1.2.2.10 SEAL POT INTERLOCK/ALARM TEST

This test will verify that Seal Pot high and low level interlocks stop the exhaust fan when conditions outside operating set points exist, and verify the operation of the seal pot pump.

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 1.2 SCOPE (Cont.)

### 1.2.2.11 GLYCOL INTERLOCK/ALARM CHECK

This check will:

- verify that the Glycol System low coolant level interlock illuminates the rotating beacon, shuts down the glycol system recirculation pump and coolant heater when coolant levels drop below the operational set point.
- verifies operation of the glycol recirculation pump.
- verifies that the glycol system heater is correctly wired.

### 1.2.2.12 THERMOCOUPLE INTERLOCK/ALARM TEST

This test will verify that 1st HEPA filter high and low temperature interlocks perform as required when inlet air temperatures exceed the operational set points.

### 1.2.2.13 PLENUM PRESSURE DP INTERLOCK/ALARM TEST

This test will verify that plenum pressure high vacuum and high pressure interlocks shut down the exhaust fan when operational set points are exceeded.

### 1.2.2.14 GLYCOL HEATER TEST

This test will verify that the Heater and Glycol Circulation Pump function properly, and raise the inlet air temperature 20 degrees F above ambient inlet temperature.

### 1.2.2.15 FAN INLET VACUUM INTERLOCK/ALARM CHECK-PRESSURE CONTROL

This check will verify that the high vacuum interlock and low vacuum alarm are actuated when alarm set points are exceeded with the exhauster operating in its pressure control mode.

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 1.2 SCOPE (Cont.)

### 1.2.2.16 STACK FLOW INTERLOCK/ALARM CHECK-PRESSURE CONTROL

This check will verify the stack flow high interlock and stack flow low alarm function as required when alarm set points are exceeded with the exhauster in its pressure control mode.

### 1.2.2.17 HIGH INLET VACUUM INTERLOCK CHECK - HIGH VACUUM

This check will verify the high vacuum interlock shuts down the fan when the fan inlet allowable vacuum is exceed when the exhauster is in its high vacuum operating mode.

### 1.2.2.18 STACK FLOW ALARM CHECK - HIGH VACUUM

This check will verify that the high stack flow alarm is activated when the alarm set point is exceeded with the exhauster configured in high vacuum operating mode.

### 1.2.2.19 FUNCTIONAL TEST - FLOW CONTROL (1000 SCFM)

This test will verify that the exhauster is capable of maintaining steady state operation at 1000 SCFM using the exhauster's flow control logic.

### 1.2.2.20 FUNCTIONAL TEST - FLOW CONTROL (500 SCFM)

This test will verify that the exhauster is capable of maintaining steady state operation at 500 SCFM using the exhauster's flow control logic.

### 1.2.2.21 FUNCTIONAL TEST - PRESSURE CONTROL

This test will demonstrate the ability of the exhauster to ventilate the 102-AY annulus using the exhauster's programmable logic controller's pressure control algorithms.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 1.2 SCOPE (Cont.)

### 1.2.2.22 FUNCTIONAL TEST - HIGH VACUUM

This test will demonstrate the ability of the exhauster to ventilate the 102-AY annulus using the exhauster's programmable logic controller's high vacuum operation algorithms.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 2.0 INFORMATION

### 2.1 TERMS AND DEFINITIONS

- 2.1.1 DMM -Digital Multimeter
- 2.1.2 DPT -Differential Pressure Transmitter
- 2.1.3 DS -Disconnect Switch
- 2.1.4 HEPA -High Efficiency Particulate Air
- 2.1.5 MPZ -Mini Power Zone
- 2.1.6 ROC -Rate of Change
- 2.1.7 SLC -Small Logic Controller
- 2.1.8 INWC -Inches Water Column

### 2.2 RESPONSIBILITIES

- 2.2.1 Craft:
  - Provide assistance during ATP testing
  - Provide equipment for performance of this ATP.
- 2.2.2 A/I Inspector:
  - Witness Testing and review recorded test data for accuracy and completeness.
- 2.2.3 Quality Assurance
  - Review acceptance test procedure for accuracy and completeness.
  - Review acceptance test report for accuracy and completeness.

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 2.2 RESPONSIBILITIES (Cont.)

### 2.2.4 LOCKHEED MARTIN QC Inspector:

- Witness Testing and review recorded test data for accuracy and completeness for resolution of items identified in Non-conformance reports.

### 2.2.5 Test Director:

- Verifies prerequisites complete prior to start of test
- Maintaining control of the testing process and change record authorization for this ATP
- Ensures all required data is collected
- Ensures Safe and productive accomplishment of testing
- Ensure safe working conditions and practices
- Ensure compliance with test documents
- Ensures review and approval of all modifications to test procedures are completed prior to return to testing
- Acts as direct line of communication and centralized point of control during normal, abnormal, and casualty situations
- Conduct pretest briefings as required
- Schedule/reschedule tests as required
- Conduct pre-job system walkdowns
- Review test documents to validate acceptance



# TANK FARM ACCEPTANCE TEST PROCEDURE

## 2.2 RESPONSIBILITIES (Cont.)

### 2.2.6 Test Engineer:

- Provide technical support during testing.
- Provide programming support during testing.
- Review test documents to validate acceptance.
- Record equipment status and data per this procedure.
- Record data exceptions and other notes as required on the ATP Data Sheets.
- Prepare post testing documents.

## 2.3 REFERENCES

- H-14-102610, "1,000 SCFM Portable Exhauster Piping and Instrumentation Schematic Diagram"
- Vendor Information VI #50024
- FMEF-037, R-3 Standardized Energized Electrical Work Permit.

## 2.4 GENERAL INFORMATION

### 2.4.1 CHANGE CONTROL

- 2.4.1.1 Changes to this procedure that effect technical content shall be made in accordance with HNF-PRO-440.
- 2.4.1.2 Editorial changes may be made to this procedure as required to accommodate procedural/editorial deficiencies that do not effect technical content. Redline changes shall be entered using red ink, initialed and dated by the Test Director. Documentation of redline changes shall be made in the Acceptance Test Report.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 2.4 GENERAL INFORMATION (cont)

### 2.4.2 EXCEPTIONS

- 2.4.2.1 Test exceptions are used to document unexpected test results and identify appropriate actions, not to circumvent performance requirements or document procedural deficiencies.
- 2.4.2.2 All test exceptions shall be given a sequential number and recorded on Attachment 1, ATP TEST LOG.
- 2.4.2.3 Attachment 2, ATP TEST EXCEPTION REPORT, shall be filled out to record and disposition each test exception.

### 2.4.3 ALARM RESPONSE

- 2.4.3.1 This Acceptance Test Procedure identifies all alarms expected as a result of testing and provides instructions for responding to those alarms. During testing of High-High or Low-Low set points, High and Low alarms are also anticipated.
- 2.4.3.2 Unexpected alarms received during testing, that are associated with this test, shall be logged as test exceptions and evaluated by the Test Director for effect on the test.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 2.4 GENERAL INFORMATION (Cont.)

2.4.4 If during performance of this procedure, any of the following conditions are found, **IMMEDIATELY** notify the assigned Test Director, his alternate, or Test Engineer:

- Any equipment malfunction which could prevent fulfillment of functional requirements
- Personnel error or procedural inadequacy which could prevent fulfillment of procedural requirements
- Any other unexpected anomalies.

Test Director shall assess the effect on the equipment and the test and direct either continuation of the test in the same section, proceeding to another attachment or section of the test, or suspension of the test per step 2.4.11 and establishing a safe condition for equipment.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 2.4 GENERAL INFORMATION (Cont.)

2.4.5 Comply with the Hanford Site Wide Lock and Tag policy requirements, HNF-PRO-81.

2.4.6 All Measuring and Test Equipment (M&TE) used during performance of this procedure to collect qualitative data, with the exception of "timing devices", shall meet the following requirements:

- Be within its current calibration cycle as evidenced by an affixed calibration label
- Be capable of the desired range

All exhaustor instrumentation shall be set-up per the direction of the cognizant engineer (calibration stickers not required).

2.4.7 Time keeping shall be made with commercially available timing devices.

2.4.8 It is recommended that the computer be connected to the SLC 500 CPU (per vendor data) throughout the test. However, the computer may be connected and disconnected as required to facilitate exhaustor access, test schedule, and changing weather conditions.

*Ref. step 5.2.3*

*CSA 7/15/98*

2.4.9 Testing in Sections 5.1 through 5.18 with the exception of Sections ~~5.2~~ and 5.10 may be performed either by placing a force on the seal pot, or by filling the seal pot to the prescribed level as identified in Section 5.4. Sections ~~5.2~~, 5.10, and 5.19 through 5.21 must be performed with the seal pot filled. Section 5.22 may be performed with a force on the seal pot or with a filled seal pot at the discretion of the Test Director. Step 5.4.1 may be performed at any time during the test as necessary to fill the seal pot.

*Exception 005  
Add →  
date 7/17/98*

*Acknowledge alarms on MV-101 anytime after MPZ-1 is re-energized.*

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 2.4 GENERAL INFORMATION (Cont.)

### 2.4.10 SYSTEM STATUS

2.4.10.1 Record all changes in equipment configuration, comments and observations by participants, and all other data pertinent to the test on Attachment 1, ATP TEST LOG.

### 2.4.11 SUSPENSION OF TEST AND RESUMING TEST

2.4.11.1 Test Director may unilaterally, for any reason, stop testing, and place equipment in a safe condition. All suspension of testing due to exceptions shall be documented on Attachment 1, ATP TEST LOG.

2.4.11.2 If a section of the test is suspended for any reason prior to completing all steps, the Test Director shall establish initial conditions necessary to resume testing for that section. Previously completed sections need not be repeated unless directed by the Test Director to establish conditions required to resume the test.

2.4.11.3 Sections of this ATP may be performed out of sequence, per Test Directors instructions.

## 2.5 RECORDS

The performance copy of the ATP and all completed attachments shall be filed as a permanent test record (Acceptance Test Report).

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 3.0 PRECAUTIONS AND LIMITATIONS

### 3.1 PERSONNEL SAFETY

- Warning - Energized circuits and leads are contained inside the cabinets. Comply with HNF-PRO-088, "Electrical Work Safety" and the energized electrical work permit in the work package.
- Warning - Exposed piping and valves on the glycol system may be thermally hot.
- Warning - Fan shaft guard shall not be in place during testing to facilitate vibration and temperature readings. Observe caution and comply with barricades per HNF-PRO-101.
- Caution - Heat Trace wires become Hot when energized. Use caution around Heat Trace wires and conduits.
- Caution - Watch out for badgers.

## 4.0 PREREQUISITES

### 4.1 SPECIAL TOOLS, EQUIPMENT, AND SUPPLIES

The following supplies shall be available at the work place:

- Yokogawa hand held transmitter configurer BT-200
- Digital Multi-Meter: Portable, 0-600 volts AC,  $\pm$  5% accuracy  
Cal Serial No. 646-45-08-172 Expiration Date 4/2/99
- Vibration Instrument  
Make IRLD Model 890  
Cal Serial No. 641-84-02-001 Expiration Date 3/4/99

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 4.1 SPECIAL TOOLS, EQUIPMENT, AND SUPPLIES (cont)

- Type J Thermocouple Simulator and connection wire  
Cal Serial No. ~~549-13-55-038~~ Expiration Date 2.10.99
- \* Pressure measurement device, <sup>with Resolution</sup> accurate to  $\pm 0.1$  INWC, Exception Oil  
approximate range of -25 to +25 INWC.  
Cal Serial No. ~~778-31-04-036~~ <sup>646-31-04-085</sup> Expiration Date 10/8/98  
2/23/99
- Barometer (use the Hanford weather station, 373-2716)
- Compressed air source (or blower), pressure reducer (or damper), isolation valve, and safety relief mechanism (rated to relieve at +/- 20" w.g.)
- Vacuum source (Capable of producing -20.0 INWC) and isolation valve
- Computer (to interface SLC Logic program)
- Ice Water
- Portable Calibration System (C-Box) Model 401-18-20 by DrexelBrook.

\* See ATTACHMENT 9 for which device was used on any given pressure test. *WJL 7/10/98*

4.2 PERFORMANCE DOCUMENTS

The following documents may be needed to perform this procedure:

- Low Tox Antifreezeze Material Safety Data Sheet (#MSDSP355)
- Operating Instructions for Yokogawa hand held transmitter configurer BI-200

4.3 CONDITIONS AND ACTIONS

NOTE - Steps in Section 4.3 may be performed in any order.

NOTE -

A daily pre-job briefing shall be performed by the Test Director and documented in Attachment I, ATP TEST LOG.

4.3.1

CONDUCT an initial pretest briefing for all personnel involved in the performance of this ATP.

TEST DIRECTOR INITIALS/DATE:

*[Signature]*  
7/6/98

4.3.2

PERFORM a walkdown inspection of the work area for unusual and/or hazardous conditions.

TEST DIRECTOR INITIALS/DATE:

*[Signature]*  
7/6/98

4.3.3

ENSURE the official ATP copy and all other photocopies to be used during testing are the latest approved revision.

TEST DIRECTOR INITIALS/DATE:

*[Signature]*  
7/6/98



TANK FARM ACCEPTANCE TEST PROCEDURE

4.3 CONDITIONS AND ACTIONS (Cont.)

NOTE - Signature Sheet requirement is ongoing as new individuals become involved in the procedure.

4.3.4 ENSURE all personnel to be involved with performance of this procedure have completed Attachment 3, ATP SIGNATURE SHEET.

TEST DIRECTOR INITIALS/DATE: 7/6/98 *[Signature]*

4.3.5 ENSURE the following filters are in place:

- Prefilter
- First and Second Stage HEPA Filters
- Roughing Filter over Exhauster Inlet when appropriate.

TEST DIRECTOR INITIALS/DATE: 7/6/98 *[Signature]*

4.3.6 ENSURE "GLYCOL EXPANSION RESERVOIR TANK" VTP-TK-001 is approximately 60±5% full by observing "GLYCOL LEVEL GAUGE" VTP-LG-201.

TEST DIRECTOR INITIALS/DATE: 7/6/98 *[Signature]*

4.3.7 ENSURE exhauster valves are aligned per Attachment 5, ATP Initial Valve Lineup prior to the start of testing.

TEST DIRECTOR INITIALS/DATE: 7/6/98 *[Signature]*

4.3.8 ENSURE NEC field inspection is complete.

TEST DIRECTOR INITIALS/DATE: 7/6/98 *[Signature]*

COGNIZANT ENGINEER INITIALS/DATE: 7/6/98 *[Signature]*

4.3.9 ENSURE electrical circuit breakers are aligned per Attachment 4, ATP Initial Electrical Lineup prior to the start of testing.

TEST DIRECTOR INITIALS/DATE: 7/6/98 *[Signature]*

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 4.3 CONDITIONS AND ACTIONS (Cont.)

- 4.3.10 ENSURE the exhauster has been connected to a 480V, 3-Phase power source.

TEST DIRECTOR INITIALS/DATE: 7/6/98 SWL

- 4.3.11 ENSURE that all exhauster instrumentation has been set-up for testing.

TEST DIRECTOR INITIALS/DATE: 7/6/98 SWL

COGNIZANT ENGINEER INITIALS/DATE: 7/6/98 PK

RET  
7/22/98

- 4.3.12 ENSURE that ARMAFLEX insulation pads are installed between exhauster skid pads and ground.

TEST DIRECTOR INITIALS/DATE: 7/6/98 SWL

- 4.3.13 ENSURE 5 Point checks of VTP-FT-184 and VTP-PDT-170 are completed per Attachments 6 and 7.

TEST DIRECTOR INITIALS/DATE: 7/6/98 SWL

COGNIZANT ENGINEER INITIALS/DATE: 7/6/98 PK

RET  
7/22/98

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.0 PROCEDURE

NOTE- For all testing completed in Section 5, if "EXHAUST FAN MOTOR" VTP-M-001 does not start when "START PUSH BUTTON" VTP-PB-101 is pressed, then "STOP PUSH BUTTON" VTP-PB-102 to reset VFD and then PUSH VTP-PB-101.

### 5.1 POWER SYSTEM CHECK

Warning - Energized circuits and leads are contained inside the cabinets. Comply with HNF-PRO-088, "Electrical Work Safety" and the energized electrical work permit in the work package.

5.1.1 ENSURE all enclosure doors are closed and test personnel are clear of voltage hazard.

5.1.2 ENSURE 480 V, 3 phase power to the Exhauster is connected and turned on.

Initial: RS Date: 7-7-98

EXCEPTION #2

5.1.3 POSITION "480 VOLT MAIN DISCONNECT" VTP-DS-101 to ON, <sup>VTP-BRK-101</sup> ~~FOUND ON FOR 008 - VTP-BRK-102, MP21 & MP22~~ <sup>to 101</sup> 9/6/98

5.1.4 PUSH red "PUSH BUTTON EMERGENCY STOP" VTP-PB-103 (located on door of "480 VOLT MAIN DISCONNECT" VTP-DS-101).

5.1.5 ENSURE the "480 VOLT MAIN DISCONNECT" VTP-DS-101 has tripped AND PERFORM the following using a DMM:

5.1.5.1 OPEN the "480 VOLT MAIN DISCONNECT" VTP-DS-101 cabinet door.

5.1.5.2 RECORD voltage between Terminal L1 and Terminal L2.

READING: 0 V INITIALS: RS

5.1.5.3 VERIFY 0 V between Terminal L1 and Terminal L2.

5.1.5.4 RECORD voltage between Terminal L1 and Terminal L3.

READING: 3.0 V INITIALS: RS

EXCEPTION #3

5.1.5.5 VERIFY 0 V between Terminal L1 and Terminal L3.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.1 POWER SYSTEM CHECK (Cont.)

- 5.1.5.6 RECORD voltage between Terminal L2 and Terminal L3.  
*EXCEPTION #3*  
 READING: 3.9V INITIALS: ME
- 5.1.5.7 VERIFY 0 V between Terminal L2 and Terminal L3.
- 5.1.5.8 CLOSE the "480 VOLT MAIN DISCONNECT" VTP-DS-101 cabinet door.
- 5.1.6 RESET the "480 VOLT MAIN DISCONNECT" VTP-DS-101 by turning to OFF then to ON position.

### WARNING

Energized circuits and leads are contained inside the cabinet. Comply with HNF-PRO-088, "Electrical Work Safety". Energized circuits and leads are contained inside the cabinets. Comply with HNF-PRO-088, "Electrical Work Safety" and the energized electrical work permit in the work package.

- SWS 7/7/97* 5.1.7 ~~POSITION Mini Power Zone 480V MAIN "MPZ PRIMARY BREAKER" VTP-BRK-101 to ON (located at Mini Power Zone VTP-DP-101).~~ *Exception 2*
- WLD 7/7/97* 5.1.8 ~~POSITION Mini Power Zone 240V SECONDARY MAIN "MPZ SECONDARY BREAKER" VTP-BRK-102 to ON.~~
- 5.1.9 POSITION the following MPZ 120V circuit breakers to ON:

CIRCUIT BREAKER NUMBER	DESCRIPTION	ON (✓)
MPZ-1	ACTION PAK RELAYS, POWER SUPPLIES, WILKERSON DISPLAY METERS	✓
MPZ-2	GLYCOL PUMP, SEAL POT PUMP, SHUNT TRIP, PILOT LIGHTS, ALARM BEACON	✓
MPZ-3	HEAT TRACE, GLYCOL CONTACTOR, HEAT TRACE LIGHT	✓
MPZ-4	CABINET HEATERS AND FANS	✓
MPZ-5	CONVENIENCE RECEPTACLE	✓

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.1 POWER SYSTEM CHECK (Cont.)

5.1.10 VERIFY the Wilkerson indicators are illuminated by visual inspection AND COMPLETE the following table.

INDICATORS	(/)	INDICATORS	(/)	INDICATORS	(/)	INDICATORS	(/)
VTP-PI-170	✓	VTP-FI-171	✓	VTP-FI-172	✓	VTP-FI-184	✓
VTP-PI-173	✓	VTP-FI-174	✓	VTP-FI-175	✓	VTP-PDI-177	✓
VTP-PDI-178	✓	VTP-PDI-180	✓	VTP-PDI-182	✓	VTP-PDI-181	✓
VTP-TI-176	✓	VTP-TI-179	✓	VTP-LI-185	✓	VTP-LI-205	✓
VTP-TI-183	✓						

5.1.11 VERIFY the Green "ILOFF" indicating light (located on the door of "CONTROL CABINET" VTP-CP-105) is ILLUMINATED:

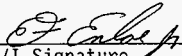
5.1.12 VERIFY the digital readouts on the following DPTs are illuminated.

Transmitter Readout Illuminated	(/)	Transmitter Readout Illuminated	(/)
VTP-PDT-170 (PLENUM)	✓	VTP-PDT-181 (FILTER #1 & #2)	✓
VTP-PDT-178 (PREFILTER)	✓	VTP-PDT-182 (HEPA FILTER #2)	✓
VTP-PDT-177 (HEATER/DEMISTER)	✓	VTP-FI-184 (STACK FLOW)	✓
VTP-PDT-180 (HEPA FILTER #1)	✓		

5.1.13 Test Director VERIFY section 5.1 is complete.

  
 \_\_\_\_\_  
 Test Director Signature Date 7/7/98

5.1.14 A/I Inspector VERIFY section 5.1 is complete.

  
 \_\_\_\_\_  
 A/I Signature Date 7/7/98

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.2 PRESSURE DECAY TEST

- 5.2.1      **PERFORM** valve line-up per Attachment 5, "ATP Initial Valve Lineup"
- 5.2.2      **REMOVE** blind flange from VTP-V-160.
- 5.2.3      **ENSURE** "SEAL POT" VTP-SP-001 is empty by opening the "SEAL POT DRAIN VALVE" VTP-V-160.
- **IF** not empty, allow to empty through VTP-V-160.
- 5.2.4      **CLOSE** "SEAL POT DRAIN VALVE" VTP-V-160.
- 5.2.5      **REPLACE** blind flange on VTP-V-160.
- 5.2.6      **INSTALL** pneumatic pressure testing manifold (with gauge, pressure relief valve, isolation valve, and pressure regulator) into "1st HEPA TEST PORT" VTP-FTP-002.
- 5.2.7      **INSTALL** pressure gauge into "2nd HEPA TEST PORT" VTP-FTP-004.
- 5.2.8      **CONNECT** pressure test air source to testing manifold.
- 5.2.9      **PRESSURIZE** housing/duct assembly to  $+19.5 \pm 0.5$  INWC.
- 5.2.10      **ISOLATE** the air supply from the filter housing.
- 5.2.11      **MAINTAIN** pressure until temperature remains constant within  $\pm 1$  °F as indicated by "1st HEPA INLET TEMPERATURE" VTP-TI-179 for a minimum of 10 minutes.
- NOTE -      Next step starts checking positive pressure decay.
- 5.2.12      **RECORD** the initial time ( $t_i$ ), barometric pressure ( $BP_i$ ), housing pressure ( $P_i$ ), and temperature ( $T_i$ ) on the table provided in Attachment 9.
- **RECORD** pressure and temperature readings once a minute for 15 minutes on Attachment 9.
- 5.2.13      **RECORD** final time ( $t_f$ ), barometric pressure ( $BP_f$ ), housing pressure ( $P_f$ ) and temperature ( $T_f$ ) on the table **AND TRANSFER** required information to Attachment 10.
- 5.2.14      **PERFORM** the leak rate calculations per Attachment 10.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.2 PRESSURE DECAY TEST (Cont.)

- 5.2.15 IF  $Q < L_p$ , then RECORD "PASS" on Attachment 10 and proceed to step 5.2.17.
- Otherwise, RECORD "RETEST" on Attachment 10.
- 5.2.16 IF a retest is needed, then PERFORM the following:
- 5.2.16.1 DETERMINE the leak path(s) and REPAIR leaks as noted on the Exception Resolution.
- 5.2.16.2 REPEAT steps 5.2.9 through 5.2.15 using new data sheets.
- 5.2.17 DISCONNECT the air supply.
- 5.2.18 RELIEVE pressure slowly from housing/duct assembly through Testing Manifold assembly.
- 5.2.19 CONNECT a vacuum source to the Pressure Testing Manifold Assembly.
- 5.2.20 DECREASE housing/duct internal pressure to  
*-20 ± 0.25* ~~-14.5 (±0.5)~~ INWC as indicated by the pressure measuring device.
- 5.2.21 ISOLATE the vacuum source from the filter housing.
- 5.2.22 MAINTAIN constant pressure until temperature remains constant within  $\pm 1$  °F as indicated by "1st HEPA INLET TEMPERATURE" VTP-TI-179 for a minimum of 10 minutes.

*Exception  
010*

*-20 ± 0.25  
w/F  
9/16/98*

5.2 PRESSURE DECAY TEST (Cont.)

- NOTE - Next step starts checking negative pressure decay.
- 5.2.23 RECORD the initial time ( $t_1$ ), barometric pressure ( $BP_1$ ), housing pressure ( $P_1$ ), and temperature ( $T_1$ ) on the table in Attachment 9.
- RECORD pressure and temperature readings once a minute for 15 minutes on Attachment 9.
- 5.2.24 RECORD final time ( $t_2$ ), barometric pressure ( $BP_2$ ), housing pressure ( $P_2$ ) and temperature ( $T_2$ ) on table AND TRANSFER required information to Attachment 10.
- 5.2.25 PERFORM the leak rate calculations per Attachment 10.
- 5.2.26 IF  $Q > L_s$  then RECORD "PASS" on Attachment 10 and go to step 5.2.27.
- Otherwise, RECORD "RETEST" on Attachment 10.
- 5.2.26.1 IF a retest is needed, then PERFORM the following:
- 5.2.26.2 DETERMINE the leak path(s) and REPAIR leaks as noted on the Exception Resolution.
- 5.2.26.3 REPEAT steps 5.2.20 through 5.2.26 using new data sheets.



**TANK FARM ACCEPTANCE TEST PROCEDURE**

**5.2 PRESSURE DECAY TEST (Cont.)**

- 5.2.27 SLOWLY EQUALIZE housing/duct pressure to atmospheric through the Testing Manifold Assembly.
- 5.2.28 DISCONNECT the test equipment.
- 5.2.29 REINSTALL the test port plugs.
- 5.2.30 OPEN High Isolation Valve Main Airstream VTP-V-135.
- 5.2.31 OPEN Low Isolation Valve Main Airstream VTP-V-136.
- 5.2.32 Test Director VERIFY section 5.2 is complete.  
 Test Director Signature [Signature]  
 Date 7/6/98
- 5.2.33 A/I Inspector VERIFY section 5.2 is complete.  
 A/I Signature [Signature]  
 Date 7-9-98
- 5.2.34 QC Inspector VERIFY section 5.2 is complete.  
 QC Signature [Signature]  
 Date 7-9-98

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.3 GLYCOL SYSTEM LEAK TEST

5.3.1 ENSURE glycol heater piping isolation valves are open.

Valve Number	Open (✓)	Valve Number	Open (✓)
VIP-V-201	✓	VIP-V-203	✓
VIP-V-202	✓	VIP-V-204	✓

5.3.2 OPEN the fill cap on the expansion tank

5.3.3 CONNECT the air pressure supply manifold (with gauge, pressure relief valve, isolation valve and pressure regulator) to the expansion tank fill port

5.3.4 SLOWLY PRESSURIZE the heater reservoir and piping to 115.0 (+/- 2) INWC (4.15 +/- 0.72 PSI).  
 READING: 115.2  
 INITIALS: lbf

5.3.5 VISUALLY INSPECT leaks indicated by localized wetting of insulation. Perform this step for a minimum of 15 minutes.

5.3.6 RELEASE PRESSURE from glycol system.

5.3.7 REPAIR any leaks and add additional coolant to the expansion tank per Test Director direction.

5.3.8 SLOWLY PRESSURIZE the heater reservoir and piping to 115.0 (+/- 2) INWC.

5.3.9 ISOLATE the pressure source by closing the manifold isolation valve.

5.3.10 RECORD the initial pressure and time below.

Initial: 115.2  
 PRESSURE  
 TIME 11:00

5.3.11 WAIT 10 minutes

5.3.12 RECORD the final pressure and time.  
 Final: 115.2  
 PRESSURE  
 TIME 11:10

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.3 GLYCOL SYSTEM LEAK CHECK (Cont.)

5.3.12.1 VERIFY there was no pressure drop during the 10 minute time period.

[Signature]  
Test Director

7/8/98  
Date

5.3.13 RELIEVE pressure from the system by slowly opening the manifold release valve.

5.3.14 DISCONNECT and REMOVE the pressure supply and manifold.

5.3.15 Test Director VERIFY section 5.3 is complete.

[Signature]  
Test Director Signature

7/8/98  
Date

5.3.16 A/I Inspector VERIFY section 5.3 is complete.

[Signature]  
A/I Signature

7/8/98  
Date

5.3.17 QC Inspector VERIFY section 5.3 is complete.

[Signature]  
QC Signature

7/8/98  
Date

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.4 EXHAUSTER FAN CHECK

Note - Step 5.4.1 is optional, and may be replaced by a force on the seal pot per 2.4.9.

5.4.1 FILL VTP-SP-001 "SEAL POT" by performing the following:

5.4.1.1 REMOVE fill cover plug attached to VTP-V-162 "SEAL POT FILL PORT VALVE".

5.4.1.2 OPEN VTP-V-162 "SEAL POT FILL PORT VALVE".

5.4.1.3 ADD water to the seal pot until VTP-LI-185 "SEAL POT LEVEL" reads 60% +/- 5% of volume.

Initial: NA WJ Date: 7/1/98

5.4.1.4 CLOSE VTP-V-162 "SEAL POT FILL PORT VALVE".

5.4.1.5 REPLACE the fill plug attached to VTP-V-162 "SEAL POT FILL PORT VALVE".

5.4.2 POSITION the "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102 to ON.

5.4.3 ENSURE "EXHAUST FAN MOTOR" VTP-M-001 does NOT start automatically.

5.4.4 ENSURE Green "I/OFF" light (located on door of "CONTROL CABINET" VTP-CP-105) is ILLUMINATED.

5.4.5 ENSURE Red "ILRUN" light (located on door of "CONTROL CABINET" VTP-CP-105) is NOT ILLUMINATED.

5.4.6 POSITION "FAN CONTROL" VTP-HS-103 to "ENABLE" (located on door of "CONTROL CABINET" VTP-CP-105).

5.4.7 ENSURE exhauster PLC control is in "Flow Control" operating mode.

Ch. S. G. C. L.  
Test Engineer

7/1/1998  
Date

5.4.8 PRESS "STOP PUSH BUTTON" VTP-PB-102 (located on door of "CONTROL CABINET" VTP-CP-105) to reset VFD.

5.4.9 PRESS "START PUSH BUTTON" VTP-PB-101 AND THEN QUICKLY PRESS "STOP PUSH BUTTON" VTP-PB-102 (i.e. bump the fan).

Place Force on SEAL POT →

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.4 EXHAUSTER FAN CHECK (Cont.)

- 5.4.10      **VERIFY** the direction of rotation of the "EXHAUST FAN MOTOR" VTP-M-001 shaft is counter clockwise when viewed from the motor side of the fan housing.
- 5.4.11      **IF** "EXHAUST FAN MOTOR" VTP-M-001 rotation direction is correct,  
GO TO step 5.4.13.
- 5.4.12      **IF** direction of rotation of the "EXHAUST FAN MOTOR" VTP-M-001 is in the incorrect direction,  
**THEN** perform steps 5.4.11.1 through 5.4.11.5.
  - 5.4.12.1    **POSITION** "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102 to OFF.
  - 5.4.12.2    **INSTALL** Personal Locking Device on "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102.
  - 5.4.12.3    **CORRECT** the "EXHAUST FAN" VTP-EF-001 rotation direction by **CORRECTING** the leads at the fan pigtail.
  - 5.4.12.4    **REMOVE** Personal Locking Device from "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102.
  - 5.4.12.5    **REPEAT** steps 5.4.2 through 5.4.11.
- 5.4.13      **OPEN** the High and Low valves on each three valve manifold for the following DPTs:

TRANSMITTER	Valve # HI	Open (✓)	Valve # LO	Open(✓)
VTP-FI-184 (PLENUM)	VTP-V-155	✓	VTP-V-156	✓
VTP-PDT-178 (PREFILTER)	VTP-V-140	✓	VTP-V-141	✓
VTP-PDT-177 (HEATER/DEMISTER)	VTP-V-137	✓	VTP-V-138	✓
VTP-PDT-180 (HEPA FILTER #1)	VTP-V-143	✓	VTP-V-144	✓
VTP-PDT-181 (FILTER #1 & #2)	VTP-V-146	✓	VTP-V-147	✓
VTP-PDT-182 (HEPA FILTER #2)	VTP-V-149	✓	VTP-V-150	✓

- 5.4.14      **POSITION** the "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102 to ON.

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.4 EXHAUSTER FAN CHECK (Cont.)

- 5.4.15 ENSURE VTP-V-155, "HIGH ISOLATION VALVE STACK FLOW TRANSMITTER" and VTP-V-156, "LOW ISOLATION VALVE STACK FLOW TRANSMITTER" are CLOSED.
- 5.4.16 SET timer T4 <sup>7/6/98</sup> setpoint to 600 seconds.
- 5.4.17 PRESS "STOP PUSH BUTTON" VTP-PB-102 to reset VFD.
- 5.4.18 PRESS "START PUSH BUTTON" VTP-PB-101 to turn on "EXHAUST FAN" VTP-EF-001.
- 5.4.19 VERIFY Green "ILOFF" light (located on door of "CONTROL CABINET" VTP-CP-105) is OFF.
- 5.4.20 VERIFY Red "ILRUN" light (located on door of "CONTROL CABINET" VTP-CP-105) is ILLUMINATED.
- 5.4.21 ENSURE fan is operating normally with no unusual noise.

NOTE: Next step starts the "EXHAUST FAN" VTP-EF-001 vibration test. It may be necessary to start the fan several times to acquire all the required data.

- 5.4.22 MEASURE and RECORD the fan vibration data required in the table below with the fan at 60 HZ.
- 5.4.23 VERIFY that the Bearing Vibration Levels on the fan shaft bearings meet the following criteria:
  - Displacement  $\leq$  0.6 MILS (PK-TO-PK) at one times the fan speed
  - OR
  - Velocity  $\leq$  0.11 IN/SEC (PK) at one times the fan speed

Plane	Axial	OK (f)	Horiz.	OK (f)	Vert.	OK (f)
Coupling End Shaft Bearing	.035	✓	.072	✓	.084	✓
Fan End Shaft Bearing	.040	✓	.089	✓	.076	✓

*in/sec*
*in/sec*
*in/sec*

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# TANK FARM ACCEPTANCE TEST PROCEDURE


## 5.4 EXHAUSTER FAN CHECK (Cont.)

- ✓ 5.4.24 PRESS "STOP PUSH BUTTON" VTP-PB-102 (located on door of "CONTROL CABINET" VTP-CP-105) to turn off Exhauster Fan.
- ✓ 5.4.25 VERIFY Exhauster fan has SHUTDOWN.
- ✓ 5.4.26 RESET timer T4<sup>4</sup> setpoint to 10. 7/6/1998
- ✓ 5.4.27 POSITION "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102 to OFF.
- ✓ 5.4.28 REPLACE CAUTION TAPE around fan if required.
- ✓ 5.4.29 OPEN "HIGH ISOLATION VALVE STACK FLOW TRANSMITTER" VTP-V-155  
AND "LOW ISOLATION VALVE STACK FLOW TRANSMITTER" VTP-V-156.


5.4.30 Test Director VERIFY section 5.4 is complete.

  
\_\_\_\_\_  
Test Director Signature 7/6/98  
Date

5.4.31 A/I Inspector VERIFY section 5.4 is complete.

  
\_\_\_\_\_  
A/I Signature 7/6/98  
Date

5.4.32 QC Inspector VERIFY section 5.4 is complete.

  
\_\_\_\_\_  
QC Signature 7-6-98  
Date

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.5 HEAT TRACE CHECK

**Warning -** Energized circuits and leads are contained inside the cabinets. Comply with HNF-PRO-088, "Electrical Work Safety" the energized electrical work permit in the work package.

5.5.1 **REMOVE** rheostat cover from "HEAT TRACE THERMOSTAT" VTP-TS-001 (located on side of "CONTROL CABINET" VTP-CP-105).

**NOTE:** To perform this test outside temperature must be above 40°F.

5.5.2 **SET** "HEAT TRACE THERMOSTAT" VTP-TS-001 at 40°F.

5.5.3 **ENSURE** 0 V at terminals TB6HTC-1 and TB6HTC-2 (located in "HEAT TRACE CABINET" VTP-ENCL-104) using a DMM.

5.5.4 **PLACE** bag of ice water around "HEAT TRACE THERMOSTAT" VTP-TS-001 probe.

5.5.5 **WAIT** 2-5 minutes.

5.5.6 **VERIFY** 120V at terminals TB6HTC-1 and TB6HTC-2 using a DMM.

Initial: RE Date: 7.13.98

5.5.7 **VERIFY** "HEAT TRACE ON" amber light (located at door of "HEAT TRACE CABINET" VTP-ENCL-104) is ILLUMINATED.

5.5.8 **REMOVE** ice from the "HEAT TRACE THERMOSTAT" VTP-TS-001 probe.

5.5.9 **VERIFY** "HEAT TRACE ON" amber light is OFF after probe warms up (1-5 minutes) .

5.5.10 **VERIFY** 0 V at terminals TB6HTC-1 and TB6HTC-2 using a DMM.

5.5.11 **REPLACE** rheostat cover on "HEAT TRACE THERMOSTAT" VTP-TS-001.

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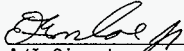
# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.5 HEAT TRACE CHECK (Cont.)


5.5.12 Test Director VERIFY section 5.5 is complete.

  
Test Director Signature      7/13/98  
Date

5.5.12.1 A/I Inspector VERIFY section 5.5 is complete.

  
A/I Signature      7-13-98  
Date

5.5.12.2 QC Inspector VERIFY section 5.5 is complete.

  
QC Signature      7.13.98  
Date

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.6 FILTER #1 DP INTERLOCK/ALARM CHECK

- NOTE -
- Sections 5.6 - 5.18 are intended to test specific interlock set points and operations. Any alarm messages other than those described in the current step of the procedure shall be considered secondary alarms
  - Transmitter VTP-PDT-180 range is 0 - 10".

NOTE- ENSURE that the covers of all Yokogawa and Drexelbrook transmitters and thermocouples **ARE REMOVED** prior to testing on those specific instruments and **RETURNED** after completion of testing.

*CSB* 5.6.1 CONNECT BT-200 to back terminals (plus and minus) of "HEPA FILTER #1 DIFF PRESSURE" VTP-PDT-180.

*CSB* 5.6.2 ENSURE Valve lineup per Attachment 11.

*CSB* 5.6.3 ENSURE "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102 is ON.

*CSB* 5.6.4 ENSURE "FAN CONTROL" VTP-HS-103 (located on door of "CONTROL CABINET" VTP-CP-105) is in the ENABLE position.

*CSB* 5.6.5 ENSURE all alarms are cleared on VTP-MV-101 "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" (located on "ALARM CABINET" VTP-ENCL-107 swing out panel).

*CSB* 5.6.6 PRESS "START PUSH BUTTON" VTP-PB-101.

*CSB* 5.6.7 WAIT for the Exhauster fan to reach steady state operation.

*CSB* 5.6.8 SET the BT-200 to test at 54.0% (53.0%-55.0%).

NOTE - This is equivalent to approximately 5.4 INWC.

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.6 FILTER #1 DP INTERLOCK/ALARM CHECK (Cont.)

CS

5.6.9 VERIFY the following:

- ✓ • "EXHAUST FAN" VTP-EF-001 has SHUTDOWN
- ✓ • Red "ILRUN" light is OFF
- ✓ • Green "ILOFF" light is ILLUMINATED
  
- ✓ • Clear Rotating Beacon VTP-XA-101 (located on stack supporting framing) is ILLUMINATED

NOTE - Any secondary alarms that are still in alarm condition will also be indicated on VTP-MV-101. It may be necessary to wait until the display scrolls through alarms.

- ✓ • "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 displays "FILTER 1 DP HI".

CS

5.6.10 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "+" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.

NOTE - Any secondary alarms that are still in alarm condition will also be indicated on VTP-MV-101. It may be necessary to wait until the display scrolls through alarms.

CS

5.6.11 ENSURE "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 displays "FILTER 1 DP HIHI".

CS

5.6.12 RECORD the pressure indicated by "FILTER #1 DIFF PRESSURE" VTP-PDI-180 (located on door of "CONTROL CABINET" VTP-CP-105).

Indicated Pressure: 5.40 INWC

CS

5.6.13 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "+" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.

- Wait for any secondary alarms and repeat this step until all alarms are cleared on VTP-MV-101.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.6 FILTER #1 DP INTERLOCK/ALARM CHECK (Cont.)

*CS* 5.6.14 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.

NOTE - Any secondary alarms that are still in alarm condition will also be indicated. It may be necessary to wait until the display scrolls through alarms.

*CS* 5.6.15 VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 still displays "FILTER 1 DP HIHI".

*CS* 5.6.16 CLEAR the BT-200 test setting.

*CS* 5.6.17 VERIFY "FILTER #1 DP HI" & "FILTER #1 DP HIHI" have cleared.

*CS* 5.6.18 CLEAR VTP-MV-101, and VERIFY VTP-MV-102 is clear.

*CS* 5.6.19 ACKNOWLEDGE any secondary alarms on VTP-MV-101.

*CS* 5.6.20 ENTER a preset value of 1000 seconds for timer T4:2 (Address T4:2.PRE)

*CS* 5.6.21 PRESS "START PUSH BUTTON" VTP-PB-101.

*CS* 5.6.22 WAIT for the Exhauster fan to reach steady state operation.

*CS* 5.6.23 SET the BT-200 to test 1.0% (0.8% - 1.1%). 0.9% *CS*

NOTE - This is equivalent to approximately 0.1 INWC.

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.6 FILTER #1 DP INTERLOCK/ALARM CHECK (Cont.)

- ① 5.6.24 VERIFY the following:
- ✓ • "EXHAUST FAN" VTP-EF-001 has SHUTDOWN, after 10 <sup>7/6/98</sup> (9-to-13) seconds. *Exception 1* *LW*
  - ✓ • Red "ILRUN" light is OFF
  - ✓ • Green "ILOFF" light is ILLUMINATED
  - ✓ • Clear Rotating Beacon VTP-XA-101 is ILLUMINATED

NOTE - Any secondary alarms that are still in alarm condition will also be indicated. It may be necessary to wait until the display scrolls through alarms.

- ✓ • "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 and VTP-MV-102 display "FILTER 1 DP LO".
- ① 5.6.25 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "←" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.
- Wait for any secondary alarms and repeat this step until all alarms are cleared on VTP-MV-101.
- ① 5.6.26 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.
- ① 5.6.27 CLEAR the BT-200 test setting.
- ① 5.6.28 VERIFY "FILTER 1 DP LO" alarm clears. *in MV-102* *LW* *7/6/98*
- ① 5.6.29 ACKNOWLEDGE any secondary alarms on VTP-MV-101.
- ① 5.6.30 ENTER a preset value of 3 seconds for timer T4:2 (Address T4:2.PRE).
- ① 5.6.31 PRESS "START PUSH BUTTON" VTP-PB-101.
- ① 5.6.32 WAIT for the Exhauster fan to reach steady state operation.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.6 FILTER #1 DP INTERLOCK/ALARM CHECK (Cont.)

*CS* 5.6.33 RECORD the pressure indicated by "HEPA FILTER #1 DIFF PRESSURE" VTP-PDT-180.

Indicated Pressure: ~~0.93~~ ~~0.92~~ <sup>0.93</sup> ~~0.89~~ <sup>0.92</sup> INWC

Note - Alarm in VTP-MV-102 will clear as soon as the alarm condition no longer exists. ROC looks for an increase in flow. Soon after the exhauster has shutdown, there will no longer be a ROC message in VTP-MV-102.

*CS* 5.6.34 SET the BT-200 to test at 0.5 INWC less than the value recorded in the previous step from VTP-PDI-180, and VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 indicates "FILTER 1 DP ROC" within 3 to 6 seconds.

*CS* 5.6.35 RECORD the following:

BT-200 SETTING (%)	PDT-180 (INWC)	PDI-180 (INWC)
3.9% <del>4.2%</del> <i>CS</i>	0.39	0.39

*CS* 5.6.36 VERIFY the following:

- ✓ • "EXHAUST FAN" VTP-EF-001 has SHUTDOWN
- ✓ • Red "ILRUN" light is OFF
- ✓ • Green "ILOFF" light is ILLUMINATED
- ✓ • Clear Rotating Beacon VTP-XA-101 is ILLUMINATED

NOTE - Any secondary alarms that are still in alarm condition will also be indicated. It may be necessary to wait until the display scrolls through alarms.

- ✓ • "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 displays "FILTER 1 DP ROC".

*CS* 5.6.37 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "←" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.

- Wait for any secondary alarms and repeat this step until all alarms are cleared on VTP-MV-101.

*CS* 5.6.38 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.

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# TANK FARM ACCEPTANCE TEST PROCEDURE


## 5.6 FILTER #1 DP INTERLOCK/ALARM CHECK (Cont.)

5.6.39 DISCONNECT BT-200 from "HEPA FILTER #1 DIFF PRESSURE"  
VTP-PDT-180.

5.6.40 Test Director VERIFY section 5.6 is complete.

  
\_\_\_\_\_  
Test Director Signature                      Date                      7/6/98

5.6.41 A/I Inspector VERIFY section 5.6 is complete.

  
\_\_\_\_\_  
A/I Signature                      Date                      7/6/98

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.7 FILTER #2 DP INTERLOCK/ALARM CHECK

NOTE - Transmitter VTP-PDT-182 range is 0 - 6"

5.7.1 **CONNECT** BT-200 to back terminals (plus and minus) of "HEPA FILTER #2 DIFF PRESSURE" VTP-PDT-182.

5.7.2 **ENSURE** Valve lineup per Attachment 11.

5.7.3 **ENSURE** "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102 is ON.

5.7.4 **ENSURE** "FAN CONTROL" VTP-HS-103 (located on door of "CONTROL CABINET" VTP-CP-105) is in the ENABLE position.

5.7.5 **ENSURE** all alarms are cleared on VTP-MV-101 "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" (located on "ALARM CABINET" VTP-ENCL-107 swing out panel).

5.7.6 **PRESS** "START PUSH BUTTON" VTP-PB-101.

5.7.7 **WAIT** for the Exhauster fan to reach steady state operation.

5.7.8 **SET** the BT-200 to test at 061.7% (061.5 to 061.9%).

NOTE - This is equivalent to approximately 3.7 INWC.

5.7.9 **VERIFY** the following:

- ✓ • "EXHAUST FAN" VTP-EF-001 has SHUTDOWN.
- ✓ • Red "ILRUN" light is OFF
- ✓ • Green "ILOFF" light is ILLUMINATED
- ✓ • Clear Rotating Beacon VTP-XA-101 is ILLUMINATED

NOTE - Any secondary alarms that are still in alarm condition will also be indicated on VTP-MV-101. It may be necessary to scroll through the alarms by pressing the "←" button.

- ✓ • "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 DISPLAYS "FILTER 2 DP HI".



# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.7 FILTER #2 DP INTERLOCK/ALARM CHECK (Cont.)

- CP* 5.7.10 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "←" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.
- NOTE - Any secondary alarms that are still in alarm condition will also be indicated on VTP-MV-101. It may be necessary to wait until the display scrolls through alarms.
- CP* 5.7.11 VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 displays "FILTER 2 DP HIHI".
- CP* 5.7.12 RECORD the pressure indicated by "FILTER #2 DIFF PRESSURE" VTP-PDI-182.
- READING: 3.69 INWC
- CP* 5.7.13 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "←" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.
- Wait for any secondary alarms and repeat this step until all alarms are cleared.
- CP* 5.7.14 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.
- NOTE - Any secondary alarms that are still in alarm condition will also be indicated.
- CP* 5.7.15 ENSURE "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 STILL DISPLAYS "FILTER 2 DP HIHI".
- CP* 5.7.16 CLEAR the BT-200 test setting.
- CP* 5.7.17 ACKNOWLEDGE any secondary alarms on VTP-MV-101.
- CP* 5.7.18 ENTER a preset value of 1000 seconds for timer T4:3 (Address T4:3.PRE)
- CP* 5.7.19 PRESS "START PUSH BUTTON" VTP-PB-101.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.7 FILTER #2 DP INTERLOCK/ALARM CHECK (Cont.)

- CP* 5.7.20 WAIT for the Exhauster fan to reach steady state operation.
- CP* 5.7.21 SET the BT-200 to test at 001.6% (001.4-001.8%). *(1.4%)* *CP*
- NOTE - This is equivalent to approximately 0.1 INWC.
- CP* 5.7.22 VERIFY the following:
- ✓ • "EXHAUST FAN" VTP-EF-001 has SHUTDOWN ~~after 10 (7-13) seconds~~ *Per Exception 1, 7/6/98*
  - ✓ • Red "ILRUN" light is OFF
  - ✓ • Green "ILOFF" light is ILLUMINATED
  - ✓ • Clear Rotating Beacon VTP-XA-101 is ILLUMINATED
- NOTE - Any secondary alarms that are still in alarm condition will also be indicated.
- ✓ • "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 AND VTP-MV-102 DISPLAY "FILTER 2 DP LO".
- CP* 5.7.23 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "~~←~~" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.
- ✓ • Wait for any secondary alarms and repeat this step until all alarms are cleared.
- CP* 5.7.24 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.
- NOTE - Any secondary alarms that are still in alarm condition will also be indicated.
- CP* 5.7.25 ~~VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 still displays "FILTER 2 DP LO".~~ *Self 7/6/98 per exception 1*
- CP* 5.7.26 CLEAR the BT-200 test setting.
- ~~5.7.27 VERIFY that "FILTER 2 DP LO" alarm clears~~ *Per Exception 1 7/6/98*
- CP* 5.7.28 ACKNOWLEDGE any secondary alarms on VTP-MV-101.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.7 FILTER #2 DP INTERLOCK/ALARM CHECK (Cont.)

*CS*

5.7.29 ENTER a preset value of 3 seconds for timer T4:3 (Address T4:3.PRE)

*CS*

5.7.30 PRESS "START PUSH BUTTON" VTP-PB-101.

*CS*

5.7.31 WAIT for the Exhauster fan to reach steady state operation.

*CS*

5.7.32 RECORD the pressure indicated by "HEPA FILTER #2 DIFF PRESSURE" VTP-PDT-182.

Indicated Pressure: 0.45 0.989 INWC

Note - Alarm in VTP-MV-102 will clear as soon as the alarm condition no longer exists. ROC looks for an increase in flow. Soon after the exhauster has shutdown, there will no longer be a ROC message in VTP-MV-102.

*CS*

5.7.33 SET the BT-200 to test at 0.5 (0.5-0.55) INWC less than the value recorded in the previous step from VTP-PDI-182, and VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 indicates "FILTER 2 DP ROC" within 3 to 6 seconds.

*CS*

5.7.34 RECORD the following:

BT-200 SETTING (%)	PDI-182 (INWC)	PDI-182 (INWC)
<i>CS</i> 8.0%	0.48	0.48

*CS*

5.7.35 VERIFY the following:

- ✓ • "EXHAUST FAN" VTP-EF-001 has SHUTDOWN after 3-5 seconds.
- ✓ • Red "ILRUN" light is OFF
- ✓ • Green "ILOFF" light is ILLUMINATED
- ✓ • Clear Rotating Beacon VTP-XA-101 is ILLUMINATED

NOTE - Any secondary alarms that are still in alarm condition will also be indicated.

- ✓ • "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 displays "FILTER 2 DP ROC".

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.7 FILTER #2 DP INTERLOCK/ALARM CHECK (Cont.)

*CD*

5.7.36 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "M" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.

- Wait for any secondary alarms and repeat this step until all alarms are cleared on VTP-MV-101.


*De*

5.7.37 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.

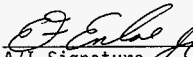
*CD*

5.7.38 DISCONNECT BT-200 from "HEPA FILTER #2 DIFF PRESSURE VTP-PDT-182.

5.7.39 Test Director VERIFY section 5.7 is complete.

  
Test Director Signature 7/16/98  
Date

5.7.40 A/I Inspector VERIFY section 5.7 is complete.

  
A/I Signature 7/16/98  
Date  
*SRIR EXCEPTION #1*

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.8 FILTER #1 & #2 DP INTERLOCK/ALARM CHECK

NOTE - Transmitter VTP-PDT-181 range is 0 - 6".

- ✓ 5.8.1 CONNECT BT-200 to back terminals (plus and minus) of "FILTER TRAIN DIFF PRESSURE" VTP-PDT-181.
- ✓ 5.8.2 ENSURE Valve lineup per Attachment 11.
- ✓ 5.8.3 ENSURE "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102 is ON.
- ✓ 5.8.4 ENSURE "FAN CONTROL" VTP-HS-103 (located on door of "CONTROL CABINET" VTP-CP-105) is in the ENABLE position.
- ✓ 5.8.5 ENSURE all alarms are cleared on VTP-MV-101 "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" (located on "ALARM CABINET" VTP-ENCL-107 swing out panel).
- ✓ 5.8.6 PRESS "START PUSH BUTTON" VTP-PB-101.
- ✓ 5.8.7 WAIT for the Exhauster fan to reach steady state operation.
- ✓ 5.8.8 SET the BT-200 to test at 090.0% (89.5-90.5%).

NOTE - This is equivalent to approximately 5.4 INWC.

5.8.9 VERIFY the following:

- ✓ • "EXHAUST FAN" VTP-EF-001 has SHUTDOWN
- ✓ • Red "ILRUN" light is OFF
- ✓ • Green "ILOFF" light is ILLUMINATED
- ✓ • Clear Rotating Beacon VTP-XA-101 is ILLUMINATED

NOTE - Any secondary alarms that are still in alarm condition will also be indicated.

- ✓ • "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 DISPLAYS "FILTERS 1 & 2 DP HIHI".

5.8.10 RECORD the pressure indicated by "FILTER TRAIN 1/2 PRESSURE" VTP-PDI-181.

READING: 5.40 INWC

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.8 FILTER #1 & #2 DP INTERLOCK/ALARM CHECK (Cont.)

- ✓ 5.8.11 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "←" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.
- Wait for any secondary alarms and repeat this step until all alarms are cleared.
- ✓ 5.8.12 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.
- NOTE - Any secondary alarms that are still in alarm condition will also be indicated.
- ✓ 5.8.13 VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 still displays "FILTERS 1 & 2 DP HIHI".
- ✓ 5.8.14 CLEAR the BT-200 test setting.
- ✓ 5.8.15 VERIFY "FILTERS 1 & 2 DP HIHI" message has cleared from VTP-MV-102.
- ✓ 5.8.16 ACKNOWLEDGE any secondary alarms on VTP-MV-101.
- ✓ 5.8.17 PRESS "START PUSH BUTTON" VTP-PB-101.
- ✓ 5.8.18 WAIT for the Exhauster fan to reach steady state operation.
- ✓ 5.8.19 SET the BT-200 to test at 001.6% (001.4-001.8%).
- NOTE - This is equivalent to approximately 0.1 INWC.
- ✓ 5.8.20 VERIFY the following:
- "EXHAUST FAN" VTP-EF-001 has SHUTDOWN, after 10 seconds
  - Red "ILRUN" light is OFF
  - Green "ILOFF" light is ILLUMINATED
  - Clear Rotating Beacon VTP-XA-101 is ILLUMINATED
- NOTE - Any secondary alarms that are still in alarm condition will also be indicated.
- "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 displays "FILTERS 1 & 2 DP LO".

*Exception*  
1

*7/6/98*  
*WJ*

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.8 FILTER #1 & #2 DP INTERLOCK/ALARM CHECK (Cont.)

✓ 5.8.21 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "+" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.

- Wait for any secondary alarms and repeat this step until all alarms are cleared.

✓ 5.8.22 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.

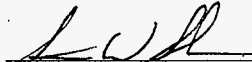
✓ 5.8.23 CLEAR the BT-200 test setting.

~~5.8.24~~ <sup>STEP</sup> <sub>WJF/6/98</sub> VERIFY VTP-MV-102 is no longer displays "FILTERS 1X2 DP LO".

✓ 5.8.25 ACKNOWLEDGE any secondary alarms on VTP-MV-101.

✓ 5.8.26 DISCONNECT BT-200 from "FILTER TRAIN DIFFERENTIAL PRESSURE" VTP-PDT-181.

5.8.27 Test Director VERIFY section 5.8 is complete.



Test Director Signature

7/7/98

Date

5.8.28 A/I Inspector VERIFY section 5.8 is complete.



A/I Signature

7/7/98

Date

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.9 STACK FLOW INTERLOCK/ALARM CHECK

NOTE - Transmitter VTP-FT-184 range is 0 - 4".

- ✓ 5.9.1 CONNECT BT-200 to back terminals (plus and minus) of "STACK FLOW" VTP-FT-184.
- ✓ 5.9.2 ENSURE Valve lineup per Attachment 11.
- ✓ 5.9.3 ENSURE "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102 is ON.
- ✓ 5.9.4 ENSURE "FAN CONTROL" VTP-HS-103 (located on door of "CONTROL CABINET" VTP-CP-105) is in the ENABLE position.
- ✓ 5.9.5 ENSURE all alarms are cleared on VTP-MV-101 "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" (located on "ALARM CABINET" VTP-ENCL-107 swing out panel).
- ✓ 5.9.6 ✓ PRESS "START PUSH BUTTON" VTP-PB-101.
- ✓ 5.9.7 ✓ WAIT for the Exhauster fan to reach steady state operation.
- ✓ 5.9.8 RECORD value indicated by "STACK FLOW" indicator VTP-FI-184.  
READING: \_\_\_\_\_ 1600 \_\_\_\_\_ SCFM
- ✓ 5.9.9 ✓ PLACE the fan in manual mode by setting the auto/manual bit N20:41/6 to 0.
- ✓ 5.9.10 ✓ SET the BT-200 to test at 84.5%, or a value that increases "STACK FLOW" VTP-FI-184 to between 1100 and 1105 CFM. (98%)

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.9 STACK FLOW INTERLOCK/ALARM CHECK (Cont.)

- ✓ 5.9.11            PERFORM the following:
  - ✓ •    VERIFY Clear Rotating Beacon VTP-XA-101 is ILLUMINATED
  - ✓ •    RECORD value indicated on "STACK FLOW" VTP-FI-184.  
          READING:           1101           SCFM
  - ✓ •    VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 AND VTP-MV-102 DISPLAYS "STACK FLOW HI"
  - ✓ •    VERIFY the fan has shut down after a 10 to 20 second delay.
- ✓ 5.9.12            ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "+" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.
  - Wait for any secondary alarms and repeat this step until all alarms are cleared on VTP-MV-101
- ✓ 5.9.13            VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.
- ✓ 5.9.14            VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 maintains alarm message.
- ✓ 5.9.15            CLEAR the BT-200.
- ✓ 5.9.16            VERIFY that the "STACK FLOW HIGH" message has cleared from VTP-MV-102.
- ✓ 5.9.17            ACKNOWLEDGE any secondary alarms on VTP-MV-101.
- ✓ 5.9.18            PRESS "START PUSH BUTTON" VTP-PB-101.
- ✓ 5.9.19            WAIT for the Exhauster fan to reach steady state operation.
- ✓ 5.9.20            PLACE the fan in manual mode by setting the auto/manual bit N20:41/6 to 0.
- ✓ 5.9.21            SET the BT-200 to test at 17.5% or a value required to drop the stack flow between 469 and 464 SCFM as indicated on the stack flow meter VTP-FI-184.

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.9 STACK FLOW INTERLOCK/ALARM CHECK (Cont.)

- ✓ 5.9.22 RECORD the value indicated on "STACK FLOW" VTP-FI-184.  
READING: 964 SCFM
- ✓ 5.9.23 VERIFY the Clear Rotating Beacon VTP-XA-101 ILLUMINATES after 10 to 15 seconds.
- ✓ 5.9.24 VERIFY the fan stops after 30 to 35 seconds.
- 5.9.25 VERIFY the following:
- ✓ • Clear rotating beacon VTP-XA-101 is ILLUMINATED
  - ✓ • Red "ILRUN" light is OFF
  - ✓ • Green "ILOFF" light is ILLUMINATED
  - ✓ • "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 DISPLAYS "STACK FLOW LO".
- ✓ 5.9.26 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "←" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.
- Wait for any secondary alarms and repeat this step until all alarms are cleared on VTP-MV-101.

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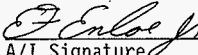
# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.9 STACK FLOW INTERLOCK/ALARM CHECK (Cont.)

- ✓ 5.9.27 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.
- ✓ 5.9.28 CLEAR the BT-200.
- ✓ 5.9.29 DISCONNECT BT-200 from "STACK FLOW" VTP-FT-184.
- 5.9.30 Test Director VERIFY section 5.9 is complete.

 7/7/98  
\_\_\_\_\_  
Test Director Signature Date

- 5.9.31 A/I Inspector VERIFY section 5.9 is complete.

 7/7/98  
\_\_\_\_\_  
A/I Signature Date

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.10 SEAL POT INTERLOCK/ALARM CHECK

INSERT  
5.10.14  
Here per  
Exception #3  
7/16/98

- ✓ 5.10.1 OPEN "SEAL POT PUMP RECYCLE VALVE" VTP-V-163, "SEAL POT PUMP" VTP-V-164, AND "SEAL POT PUMP ENCLOSURE DRAIN VALVE" VTP-V-165.
- ✓ 5.10.2 VERIFY Seal Pot forces are removed (I:3.1).
- ✓ 5.10.3 ENSURE that seal pot has been filled to 60 +/-5%.
- ✓ 5.10.4 ENSURE that the exhauster is configured for either flow or pressure control.  
*Ch. J. S. G. H.*  
Test Engineer 7/9/1998  
Date
- ✓ 5.10.5 ENSURE key is inserted in "SEAL POT PUMP CONTROL" VTP-HS-101.
- ✓ 5.10.6 REMOVE the top from the seal pot pump enclosure.
- ✓ 5.10.7 POSITION circuit breaker MPZ-1 to OFF.

### WARNING

Energized circuits and leads are contained inside the cabinet. Comply with HNF-PRO-088, "Electrical Work Safety". Energized circuits and leads are contained inside the cabinets. Comply with HNF-PRO-088, "Electrical Work Safety" and the energized electrical work permit in the work package.

Exception 4  
108.\*  
LAND THE GREEN LEAD  
WITH THE CALIBRATION SYSTEM'S  
BLACK 3-WIRE TEST LEAD TO  
THE SHD TERMINAL OF THE  
LEVEL TRANSMITTER'S PROBE  
SIDE.

- 5.10.8 CONNECT Drexelbrook C-Box Meter Calibration Unit leads in series with VTP-LT-185 as follows:
  - ✓ 5.10.8.1 OPEN cabinet CP-105, and locate level transmitter about midway up on the right hand side of the cabinet.
  - ✓ 5.10.8.2 REMOVE the leads attached at SHD and CW on the probe side of the level transmitter.
  - ✓ 5.10.8.3 LAND the red lead from the Calibration System's black two wire test lead to the SHD terminal of the level transmitter's probe side.
  - ✓ 5.10.8.4 LAND the blue lead from the Calibrations System's black two wire test lead to the CW terminal of the level transmitter's probe side.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.10 SEAL POT INTERLOCK/ALARM CHECK (Cont.)

- ✓ 5.10.8.5 LIFT the red lead from the Drexelbrook transmitter's signal positive terminal.
- ✓ 5.10.8.6 ATTACH a short (approximately 3") piece of 12 to 18 gauge wire at the signal positive terminal of the Drexelbrook transmitter.
- ✓ 5.10.8.7 CONNECT to the wire just attached with the black alligator clip of the black test lead of the Calibration system. *gray test lead 7/9/98*
- ✓ 5.10.8.8 CONNECT the red alligator clip of the black test lead to the red lead removed from the transmitter in Step 5.10.8.5. *gray test lead 7/9/98 Exception 4*
- ✓ 5.10.8.9 PLUG gray test lead into the calibration system on the right side of the unit above the meter in accordance with the colors painted on the plug connector.
- ✓ 5.10.8.10 PLUG black test lead into the calibration system on the right side of the unit above the knob in accordance with the colored dots painted on the plug connector. *Exception 4 left 7/9/78*
- ✓ 5.10.8.11 LAND ground lead from the black test lead onto the grounding terminal provided on the calibration system.
- ✓ 5.10.9 SET range switch to LOW.
- ✓ 5.10.10 SET meter range to 4-20 mA.
- ✓ 5.10.11 PRESS meter ONLY button ON (down).
- ✓ 5.10.12 SET vernier to 22.5 pF.
- ✓ 5.10.13 POSITION circuit breaker MPZ-1 to ON.
- ✓ 5.10.14 ENSURE Valve lineup per Attachment 11. *Exception 13 7/10/98*
- ✓ 5.10.15 ENSURE "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102 is ON.
- ✓ 5.10.16 ENSURE "FAN CONTROL" VTP-HS-103 (located on door of "CONTROL CABINET" VTP-CP-105) is in the ENABLE position.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.10 SEAL POT INTERLOCK/ALARM CHECK (Cont.)

- ✓ 5.10.17 ENSURE all alarms are cleared on VTP-MV-101 "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" (located on "ALARM CABINET" VTP-ENCL-107 swing out panel).
- ✓ 5.10.18 PRESS "START PUSH BUTTON" VTP-PB-101.
- ✓ 5.10.19 WAIT for the Exhauster fan to reach steady state operation.
- ✓ 5.10.20 SET vernier to 16 pF (8.3 to 8.8mA) or less than 30% of the seal pot level.
- ✓ 5.10.21 RECORD values indicated below:

SEAL POT LEVEL VTP-PI-185	DREXELBROOK VERNIER SETTING (pF)
28%	15.5

- 5.10.22 VERIFY the following:
  - ✓ • "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 AND VTP-MV-102 DISPLAY "SEAL POT LEVEL LO"
  - ✓ • The "EXHAUST FAN" VTP-EF-001 has shutdown
  - ✓ • Red "ILRUN" light is OFF
  - ✓ • Green "ILOFF" light is ILLUMINATED
  - ✓ • Clear Rotating Beacon VTP-XA-101 is ILLUMINATED
  - ✓ • Fan motor does NOT energize when the "START PUSH BUTTON" VTP-PB-101 is pressed.
- ✓ 5.10.23 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "←" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.
  - Wait for any secondary alarms and repeat this step until all alarms are cleared on VTP-MV-101.

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.10 SEAL POT INTERLOCK/ALARM CHECK (Cont.)

- ✓ 5.10.24 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.
- ✓ 5.10.25 VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 maintains alarm message.
- ✓ 5.10.26 SET vernier to 22.5 pF.
- ✓ 5.10.27 PRESS "START PUSH BUTTON" VTP-PB-101.
- ✓ 5.10.28 WAIT for the Exhauster fan to reach steady state operation.
- ✓ 5.10.29 SET vernier to 29 pF or a value between 70-73% of the seal pot level.
- ✓ 5.10.30 RECORD the values indicated below:

SEAL POT LEVEL VTP-PI-185	DREXELBROOK VERNIER SETTING (pF)
70%	29

- ✓ 5.10.31 VERIFY peristaltic pump VTP-P-004 is pumping water by removing insulation and observing hose.
- ✓ 5.10.32 SET vernier to 32 pF or a value greater than 80% of the seal pot level.
- ✓ 5.10.33 RECORD the values indicated below:

SEAL POT LEVEL VTP-PI-185	DREXELBROOK VERNIER SETTING (pF)
80	33

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.10 SEAL POT INTERLOCK/ALARM CHECK (Cont.)

- 5.10.34 VERIFY the following:
- ✓ • Clear rotating beacon VTP-XA-101 is ILLUMINATED
  - ✓ • Red "ILRUN" light is OFF
  - ✓ • Peristaltic Pump is pumping water
  - ✓ • Fan motor does NOT energize when the "START PUSH BUTTON" VTP-PB-101 is pressed
  - ✓ • Green "ILOFF" light is ILLUMINATED
  - ✓ • "EXHAUST FAN" VTP-EF-001 has shutdown.
- ✓ 5.10.35 VERIFY that the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 AND VTP-MV-102 DISPLAY "SEAL POT LEVEL HI".
- ✓ 5.10.36 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "-" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice until all alarms are cleared.
- ✓ 5.10.37 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.
- ✓ 5.10.38 VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 still displays "SEAL POT LEVEL HI".
- ✓ 5.10.39 SET vernier to ~~22.5~~ PF. (35% to 40% on VTP-LI-185).  
*18 PF (17-19 PF) - see fault log #13*
- ✓ 5.10.40 VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 message has cleared.
- ✓ 5.10.41 VERIFY Seal Pot Pump has stopped pumping water.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.10 SEAL POT INTERLOCK/ALARM CHECK (Cont.)

- ✓ 5.10.42 TURN "SEAL POT PUMP CONTROL" VTP-HS-101 to "HAND" position.
- ✓ 5.10.43 VERIFY Seal Pot Pump is pumping water.
- ✓ 5.10.44 RELEASE "SEAL POT PUMP CONTROL" VTP-HS-101 from "HAND" position.
- ✓ 5.10.45 VERIFY Seal Pot Pump has stopped pumping water.
- ✓ 5.10.46 POSITION circuit breaker MPZ-1 to OFF.
- ✓ 5.10.47 DISCONNECT Drexelbrook C-Box.
- ✓ 5.10.48 RECONNECT probe leads to "Seal Pot Level Transmitter" VTP-LT-185.
- ✓ 5.10.49 POSITION circuit breaker MPZ-1 to ON.
- ✓ 5.10.50 VERIFY control cabinet POR-008-VTP-CP-105 digital indicators are illuminated.
- ✓ 5.10.51 RESTORE seal pot forces removed in Step 5.10.2 (I:3.1, binary code: 0010 1001 1100 0000).
- 5.10.52 Test Director VERIFY section 5.10 is complete.
- 5.10.53 A/I Inspector VERIFY section 5.10 is complete.

 7/9/98  
Test Director Signature Date

 7/9/98  
A/I Signature Date

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.11 GLYCOL INTERLOCK/ALARM CHECK

5.11.1 ENSURE the following glycol system isolation valves are open:

Valve Number	Open (✓)	Valve Number	Open (✓)
VTP-V-201	✓	VTP-V-203	✓
VTP-V-202	✓	VTP-V-204	✓

✓ 5.11.2 ENSURE Circuit Breaker MPZ-1 is OFF.

5.11.3 CONNECT Drexelbrook C-Box meter calibration unit leads in series with VTP-LT-205 as follows:

- 5.11.3.1 REMOVE Drexelbrook level probe transmitter cover.
- 5.11.3.2 REMOVE de-term the leads attached at SHD and CW on the probe side of the level transmitter.
- 5.11.3.3 LAND the ~~red~~ <sup>red</sup> lead from the Calibration System's black ~~two~~ <sup>two</sup> wire test lead to the SHD terminal of the level transmitter's probe side.
- 5.11.3.4 LAND the blue lead from the Calibrations System's black ~~two~~ <sup>two</sup> wire test lead to the CW terminal of the level transmitter's probe side.
- 5.11.3.5 LIFT the red lead (FB2-20) from the Drexelbrook transmitter's signal positive terminal.
- 5.11.3.6 ATTACH a short (approximately 3") piece of 12 to 18 gauge wire at the signal positive terminal of the Drexelbrook transmitter.
- 5.11.3.7 CONNECT to the wire just attached with the black alligator clip of the black test lead of the Calibration system. gray Ex. 4. <sup>7/9/98</sup>

*Exception 4*

5.11.3.\*  
*llk*  
 land the green lead from the calibration system's black ~~two~~ <sup>three</sup> wire test lead to the GND terminal of the level transmitter's probe side.  
*7/7/98*

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.11 GLYCOL INTERLOCK/ALARM CHECK (Cont.)

- 5.11.3.8 CONNECT the red alligator clip of the ~~black~~ test lead to the red lead removed from the transmitter in Step 5.11.3.5. *Exception 4 gray 7/7/98 dhl*
- 5.11.3.9 PLUG gray test lead into the calibration system on the right side of the unit above the meter in accordance with the colors painted on the plug connector.
- 5.11.3.10 PLUG ~~black~~ test lead into the calibration system on the ~~right~~ <sup>left</sup> side of the unit above the knob in accordance with the colored dots painted on the plug connector. *Exception 4 WJ 7/7/98*
- 5.11.3.11 LAND ground lead from the black test lead onto the grounding terminal provided on the calibration system.
- 5.11.4 SET range switch to NORMAL.
- 5.11.5 SET meter range to 4-20 mA.
- 5.11.6 PRESS meter ONLY button ON (down).
- 5.11.7 POSITION Circuit Breaker MPZ-1 to ON.
- 5.11.8 SET Vernier Dial to 71 pf.
- NOTE - This is equal to greater than 60-65% volume (13.6 mA).
- 5.11.9 POSITION "GLYCOL PUMP" Control Switch VTP-HS-102 to ON.
- 5.11.10 VERIFY/RECORD the following:
- Value on "GLYCOL LEVEL" VTP-LI-205  
READING: 62%
  - Glycol Circulation Pump is operating by listening to and/or feeling the pump
  - Glycol System has no visible leaks.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.11 GLYCOL INTERLOCK/ALARM CHECK (Cont.)

### WARNING

Energized circuits and leads are contained inside the cabinets. Comply with HNF-PRO-088, "Electrical Work Safety" the energized electrical work permit in the work package.

- 5.11.11 ENSURE VTP-DS-201 "GLYCOL HEATER DISCONNECT" is OFF.
- 5.11.12 REMOVE the thermostat cover on "GLYCOL HEATER" VTP-HTR-001.
- 5.11.13 ENSURE the Heater Thermostat is set to 180°F.
- 5.11.14 REPLACE the thermostat cover on VTP-HTR-001.
- 5.11.15 OPEN door on "GLYCOL HEATER DISCONNECT" VTP-DS-201 cabinet.
- 5.11.16 POSITION the "GLYCOL HEATER DISCONNECT" VTP-DS-201 to ON.
- 5.11.17 ENSURE MPZ-3 is ON.
- 5.11.18 VERIFY the Glycol Heater has started by using the DMM at the "GLYCOL HEATER CONTACTOR" VTP-CON-206 (located at "GLYCOL HEATER DISCONNECT" VTP-DS-201) and performing the following:
  - 5.11.18.1 RECORD voltage between Terminal T1 and Terminal T2.  
READING: 489V
  - 5.11.18.2 RECORD voltage between Terminal T1 and Terminal T3.  
READING: 489V
  - 5.11.18.3 RECORD voltage between Terminal T2 and Terminal T3.  
READING: 488V

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.11 GLYCOL INTERLOCK/ALARM CHECK (Cont.)

- 5.11.19 REDUCE the impedance to 61 pF, or a value equal to 48-50% Volume on the "GLYCOL TANK LEVEL" VTP-LT-205.
- 5.11.20 VERIFY the following:
- Clear rotating beacon VTP-XA-101 is ILLUMINATED
  - Glycol Heater has shutdown by observing that the "GLYCOL HEATER CONTACTOR" VTP-CON-206 is OPEN
  - "GLYCOL CIRCULATION PUMP" VTP-P-001 has shutdown by listening to and/or feeling the pump
  - "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 AND VTP-MV-102 DISPLAY "GLYCOL LEVEL LO".
- 5.11.21 RECORD the liquid level indication on "GLYCOL LEVEL" indicator VTP-LI-205.  
READING: 49%
- 5.11.22 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "←" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.
- Wait for any secondary alarms and repeat this step until all alarms are cleared on VTP-MV-101.
- 5.11.23 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.
- 5.11.24 VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 maintains alarm message.
- 5.11.25 POSITION Circuit Breaker MPZ-1 to OFF.
- 5.11.26 DISCONNECT the DrexelBrook Calibrator from the "GLYCOL TANK LEVEL" transmitter VTP-LT-205.
- 5.11.27 RECONNECT probe leads to transmitter VTP-LT-205.  
→ POSITION SWITCH MPZ-1 ON
- 5.11.28 VERIFY control cabinet POR-008-VTP-CP-105 digital indicators are illuminated.

Exception 6  
SWS 7/7/98

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.11 GLYCOL INTERLOCK/ALARM CHECK (Cont.)

5.11.29 POSITION "GLYCOL PUMP" VTP-HS-102 to OFF.

5.11.30 POSITION VTP-DS-201 "GLYCOL HEATER DISCONNECT" is OFF.

5.11.31 Test Director VERIFY section 5.11 is complete.

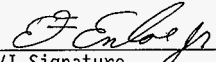
EXCEPTION 7  
7/18/98

→ POSITION MPZ-1 to OFF

  
\_\_\_\_\_  
Test Director Signature

7/7/98  
\_\_\_\_\_  
Date

5.11.32 A/I Inspector VERIFY section 5.11 is complete.

  
\_\_\_\_\_  
A/I Signature

7/7/98  
\_\_\_\_\_  
Date

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.12 THERMOCOUPLE INTERLOCK/ALARM CHECK

### WARNING

Energized circuits and leads are contained inside the cabinets.  
Comply with HNF-PRO-088, "Electrical Work Safety" and the energized electrical work permit in the work package.

EXCEPTION B

ADD ST.P:

ENSURE MPZ-1 IS OFF.

ADD NOTE:

SET Thermocouple Simulator to 100°F prior to connecting to thermocouple.

WLD 7/18/98  
in phot terminal

- ✓ 5.12.1 REMOVE cover from thermocouple VTP-TE-179 and connect thermocouple simulator to thermocouple wires.
- ✓ 5.12.2 POSITION the "GLYCOL HEATER DISCONNECT" VTP-DS-201 to ON.
- ✓ 5.12.3 POSITION circuit breaker MPZ-1 to ON.
- ✓ 5.12.4 POSITION "GLYCOL PUMP" Control Switch VTP-HS-102 to ON.
- ✓ 5.12.5 VERIFY Glycol Heater has started by observing that the "GLYCOL HEATER CONTACTOR" VTP-CON-206 is CLOSED.
- ✓ 5.12.6 PROGRAM the thermocouple simulator to input a temperature to "1st HEPA INLET TEMPERATURE" VTP-TI-179 (200-210°F).
- ✓ 5.12.7 VERIFY the following:
- ✓ • Clear Rotating Beacon VTP-XA-101 is ILLUMINATED
  - ✓ • "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 AND VTP-MV-102 DISPLAYS "HEATER AIR TEMPERATURE HI"
  - ✓ • RECORD "1st HEPA INLET TEMPERATURE" VTP-TI-179 READING: 201°F
  - ✓ • Glycol Heater has shutdown by observing that the "GLYCOL HEATER CONTACTOR" VTP-CON-206 is OPEN.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.12 THERMOCOUPLE INTERLOCK/ALARM CHECK(Cont.)

- ✓ 5.12.8 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "←" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.
- Wait for any secondary alarms and repeat this step until all alarms are cleared on VTP-MV-101.
- ✓ 5.12.9 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.
- ✓ 5.12.10 VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 maintains alarm message.
- ✓ 5.12.11 PROGRAM the thermocouple simulator to input a temperature to "1st HEPA INLET TEMPERATURE" VTP-TI-179 <40°F.
- 5.12.12 VERIFY the following
- ✓. Clear Rotating Beacon VTP-XA-101 is ILLUMINATED
  - ✓. RECORD "1st HEPA INLET TEMPERATURE" VTP-TI-179  
READING: 39° F
  - ✓. "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 AND VTP-MV-102 DISPLAY "HEATER TEMPERATURE LO".  
*7/7/98*
- ✓ 5.12.13 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "←" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.
- Wait for any secondary alarms and repeat this step until all alarms are cleared.
- ✓ 5.12.14 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.
- ✓ 5.12.15 VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 DISPLAYS alarm message.
- ✓ 5.12.16 REMOVE thermocouple wires from thermocouple simulator AND RECONNECT to thermocouple terminals.
- ✓ 5.12.17 VERIFY display is indicating.

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# TANK FARM ACCEPTANCE TEST PROCEDURE


## 5.12 THERMOCOUPLEINTERLOCK/ALARM CHECK(Cont.)

✓ 5.12.18 POSITION the "GLYCOL HEATER DISCONNECT" VTP-DS-201 to OFF.

5.12.19 Test Director VERIFY section 5.12 is complete.

 7/7/98  
\_\_\_\_\_  
Test Director Signature Date

5.12.20 A/I Inspector VERIFY section 5.12 is complete.

 7/7/98  
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A/I Signature Date

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.13 PLENUM PRESSURE DP INTERLOCK/ALARM CHECK

NOTE - Transmitter VTP-PDT-170 range is -5 to +5 INWC.

- ✓ 5.13.1 CONNECT BT-200 to back terminals (plus and minus) of "PLENUM DIFF PRESSURE" VTP-PDT-170.
  - ✓ 5.13.2 ENSURE Valve lineup per Attachment 11.
  - ✓ 5.13.3 ENSURE "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102 is ON.
  - ✓ 5.13.4 ENSURE "FAN CONTROL" VTP-HS-103 (located on door of "CONTROL CABINET" VTP-CP-105) is in the ENABLE position.
  - ✓ 5.13.5 ENSURE all alarms are cleared on VTP-MV-101 "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" (located on "ALARM CABINET" VTP-ENCL-107 swing out panel).
  - ✓ 5.13.6 PRESS "START PUSH BUTTON" VTP-PB-101.
  - ✓ 5.13.7 WAIT for the Exhauster fan to reach steady state operation.
  - ✓ 5.13.8 SET the BT-200 to test at 14.9% (13-17%), or a value greater than -3.5 INWC vacuum.
  - ✓ 5.13.9 VERIFY the following:
    - ✓ • "EXHAUST FAN" VTP-EF-001 has SHUTDOWN
    - ✓ • Red "ILRUN" light is OFF
    - ✓ • Green "ILOFF" light is ILLUMINATED
    - ✓ • Clear Rotating Beacon VTP-XA-101 is ILLUMINATED
- NOTE - Any secondary alarms that are still in alarm condition will also be indicated.
- ✓ • "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 displays "PLENUM VACUUM 1 HI".

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.13 PLENUM PRESSURE DP INTERLOCK/ALARM CHECK (Cont.)

5.13.10 RECORD the following indications:

BT-200 SETTING (%)	VTP-PDT-170 (INWC)	VTP-PI-170 (INWC)
<i>41.9</i>	<i>- 3.510</i>	<i>- 3.51</i>

- ✓ 5.13.11 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "+" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.
  - Wait for any secondary alarms and repeat this step until all alarms are cleared.
  
- ✓ 5.13.12 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.
 

NOTE - Any secondary alarms that are still in alarm condition will also be indicated.
  
- ✓ 5.13.13 ENSURE "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 still displays "PLENUM VACUUM 1 HI".
  
- ✓ 5.13.14 CLEAR the BT-200 test setting.
  
- ✓ 5.13.15 VERIFY the "PLENUM VACUUM 1 HI" message has cleared from VTP-MV-102.
  
- ✓ 5.13.16 ACKNOWLEDGE any secondary alarms.
  
- ✓ 5.13.17 PRESS "START PUSH BUTTON" VTP-PB-101.
  
- ✓ 5.13.18 WAIT for the Exhauster fan to reach steady state operation.
  
- ✓ 5.13.19 SET the BT-200 to test at ~~49%~~ (48-50%). This is equivalent to approximately ~~0.1~~ INWC.

*100% (100-102%) Ex. 9*  
*CSB*  
*7/8/98*  
  
*+5.0 Ex. 9*  
*CSB 7/8/98*

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.13 PLENUM PRESSURE DP INTERLOCK/ALARM CHECK (Cont.)

5.13.20 VERIFY the following:

- ✓ • "EXHAUST FAN" VTP-EF-001 has SHUTDOWN after 10 seconds
- ✓ • Red "ILRUN" light is OFF
- ✓ • Green "ILOFF" light is ILLUMINATED
- ✓ • Clear Rotating Beacon VTP-XA-101 is ILLUMINATED.

NOTE - Any secondary alarms that are still in alarm condition will also be indicated.

- ✓ • "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 AND VTP-MV-102 DISPLAYS "PLENUM ± PRESSURE HI" *WJL*  
7/7/98

5.13.21 RECORD the following indications:

BT-200 SETTING (%)	VTP-PDT-170 (INWC)	VTP-PI-170 (INWC)
<i>WJL</i> 7/7/98 49.6 / 100	<i>WJL</i> 7/7/98 - 0.100 + 5.000	<i>WJL</i> 7/7/98 - 0.09 + 5.02

✓ 5.13.22 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "+" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.

- Wait for any secondary alarms and repeat this step until all alarms are cleared.

✓ 5.13.23 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.

NOTE - Any secondary alarms that are still in alarm condition will also be indicated.

✓ 5.13.24 VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 still DISPLAYS "PLENUM ± PRESSURE HI".

✓ 5.13.25 CLEAR the BT-200 test setting. *WJL* 7/7/98  
1 *WJL* 7/7/98

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.13 PLENUM PRESSURE DP INTERLOCK/ALARM CHECK (Cont.)


✓ 5.13.26 DISCONNECT BT-200 from "1st PLENUM PRESSURE"  
VTP-PDT-170.

5.13.27 Test Director VERIFY that section 5.13 is complete.

  
\_\_\_\_\_  
Test Director Signature

7/8/98  
\_\_\_\_\_  
Date

5.13.28 A/I Inspector VERIFY section 5.13 is complete.

  
\_\_\_\_\_  
A/I Signature

7/8/98  
\_\_\_\_\_  
Date

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.14 GLYCOL HEATER TEST

- ✓ 5.14.1 ENSURE Valve lineup per Attachment 11.
- ✓ 5.14.2 ENSURE "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102 is ON.
- ✓ 5.14.3 ENSURE "FAN CONTROL" VTP-HS-103 (located on door of "CONTROL CABINET" VTP-CP-105) is in the ENABLE position.
- ✓ 5.14.4 ENSURE all alarms are cleared on VTP-MV-101 "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" (located on "ALARM CABINET" VTP-ENCL-107 swing out panel).
- ✓ 5.14.5 PRESS "START PUSH BUTTON" VTP-PB-101 to start "EXHAUST FAN" VTP-EF-001.
- ✓ 5.14.6 POSITION the "GLYCOL HEATER DISCONNECT" VTP-DS-201 to ON.
- ✓ 5.14.7 POSITION "GLYCOL PUMP" Control Switch VTP-HS-102 to ON AND RECORD initial values for time, inlet temperature, and outlet temperature below.

	INITIAL	FINAL
Time and Date	1259 7/7/99	1307 7/7/99
Inlet temperature (°F), VTP-TI-176	96	95
Outlet temperature (°F), VTP-TI-179	97	115

- ✓ 5.14.8 CONTINUE exhauster operation until the airflow temperature indicated by "1st HEPA INLET TEMPERATURE" VTP-TI-179 is 20°F above "INLET TEMPERATURE" VTP-TI-176.
- ✓ 5.14.9 RECORD final values for time, inlet temperature, and outlet temperature.
- ✓ 5.14.10 POSITION HS-102 to OFF.
- ✓ 5.14.11 POSITION DS-201 to OFF.
- ✓ 5.14.12 PUSH "STOP" button.
- ✓ 5.14.13 OPEN VTP-DS-102.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.14 GLYCOL HEATER TEST (Cont.)

5.14.14 Test Director VERIFY section 5.14 is complete.

 7/7/98  
Test Director Signature Date

5.14.15 A/I Inspector VERIFY section 5.14 is complete.

 7/7/98  
A/I Signature Date

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.15 FAN INLET VACUUM INTERLOCK/ALARM CHECK-PRESSURE CONTROL

Note - Transmitter VTP-PDT-170 range is 0 to -20 INWC.

Note - Some adjustment of VTP-V-135 may be required at start up to prevent high/low stack flow set points from being exceeded. Such adjustments do not qualify as a Test Exception.

✓ 5.15.1 ENSURE that the pressure differential transmitter sensing plenum vacuum has been disconnected and the transmitter sensing fan inlet vacuum has been connected.

EXCEPTION 9/11/18  
7/7/18  
Attachment 13  
8, 13, 14  
✓ 5.15.2 ENSURE that the PLC 500 has been configured for Pressure Control, with set points as identified in Attachment 13.

✓ 5.15.3 CONNECT BT-200 to back terminals (plus and minus) of "PLENUM DIFF PRESSURE" VTP-PDT-170.

✓ 5.15.4 ENSURE Valve lineup per Attachment 11.

✓ 5.15.5 CLOSE VTP-V-135 to approximately 75% closed.

✓ 5.15.6 ENSURE "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102 is ON.

✓ 5.15.7 ENSURE "FAN CONTROL" VTP-HS-103 (located on door of "CONTROL CABINET" VTP-CP-105) is in the ENABLE position.

✓ 5.15.8 ENSURE all alarms are cleared on VTP-MV-101 "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" (located on "ALARM CABINET" VTP-ENCL-107 swing out panel).

✓ 5.15.9 PRESS "START PUSH BUTTON" VTP-PB-101.

✓ 5.15.10 WAIT for the Exhauster fan to reach steady state operation.

✓ 5.15.11 PLACE PID in Manual Mode (N20:41/6=0)

✓ 5.15.12 SET the BT-200 to test at 63.8% (63.5-64%). This is equivalent to 12.75 INWC vacuum.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.15 FAN INLET VACUUM INTERLOCK/ALARM CHECK-PRESSURE CONTROL (Cont.)

5.15.13 VERIFY the following:

- ✓ • "EXHAUST FAN" VTP-EF-001 has SHUTDOWN after 5 to 10 seconds.
- ✓ • Red "ILRUN" light is OFF
- ✓ • Green "ILOFF" light is ILLUMINATED.
- ✓ • Clear Rotating Beacon VTP-XA-101 is ILLUMINATED

NOTE - Any secondary alarms that are still in alarm condition will also be indicated.

- ✓ • "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 displays "INLET VACUUM HI".

5.15.14 RECORD value from PRESSURE TRANSMITTER VTP-PDT-170.

READING:     - 12.76     INWC

✓5.15.15 ACKNOWLEDGE the alarm by PRESSING the "I" button, then PRESSING the "+" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.

- ✓ • Wait for any secondary alarms and repeat this step until all alarms are cleared.

✓5.15.16 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.

NOTE - Any secondary alarms that are still in alarm condition will also be indicated.

✓5.15.17 ENSURE "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 still displays "INLET VACUUM HI".

✓5.15.18 CLEAR the BT-200 test setting.

✓5.15.19 VERIFY the "INLET VACUUM HI" message has cleared from VTP-MV-102.

✓5.15.20 ACKNOWLEDGE any secondary alarms.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.15 FAN INLET VACUUM INTERLOCK/ALARM CHECK- PRESSURE CONTROL (Cont.)

- ✓ 5.15.21 PRESS "START PUSH BUTTON" VTP-PB-101.
  - ✓ 5.15.22 WAIT for the Exhauster fan to reach steady state operation.
  - ✓ 5.15.23 PLACE PID in Manual Mode (N20:41/6=0)
  - ✓ 5.15.24 SET the BT-200 to test at 29.9% (29.5-30.5%). This is equivalent to approximately 6 INWC.
  - ✓ 5.15.25 RECORD value from PRESSURE TRANSMITTER VTP-PDT-170.  
READING: \_\_\_\_\_ - 5.98 \_\_\_\_\_ INWC
  - ✓ 5.15.26 VERIFY the following:
    - Clear Rotating Beacon VTP-XA-101 is ILLUMINATED (after 5 to 7 seconds).
- NOTE - Any secondary alarms that are still in alarm condition will also be indicated.
- "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 AND VTP-MV-102 DISPLAYS "INLET VACUUM LO".
- ✓ 5.15.27 CLEAR the BT-200 test setting.
- ✓ 5.15.28 ACKNOWLEDGE uncleared alarms by PRESSING the "1" button, then PRESSING the "+" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.
  - Wait for any secondary alarms and repeat this step until all alarms are acknowledged.
- ✓ 5.15.29 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.
- ✓ 5.15.30 DISCONNECT BT-200 from "1st PLENUM PRESSURE" VTP-PDT-170.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.15 FAN INLET VACUUM INTERLOCK/ALARM CHECK- PRESSURE CONTROL (Cont.)

5.15.31 Test Director **VERIFY** that section 5.15 is complete.

 7/7/98  
Test Director Signature Date

5.15.32 A/I Inspector **VERIFY** section 5.15 is complete.

 7/7/98  
A/I Signature Date

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.16 STACK FLOW INTERLOCK/ALARM CHECK-PRESSURE CONTROL

Note - Transmitter VTP-FT-184 range is 0 - 4".

Note - Some adjustment of VTP-V-135 may be required at start up to prevent high/low stack flow set points from being exceeded. Such adjustments do not qualify as a Test Exception.

- ✓ 5.16.1 ENSURE that the pressure differential transmitter sensing plenum vacuum has been disconnected and the transmitter sensing fan inlet vacuum has been connected.
- ✓ 5.16.2 ENSURE that the PLC 500 has been configured for Pressure Control, with set points as identified in Attachment 13.
- ✓ 5.16.3 CONNECT BT-200 to back terminals (plus and minus) of "STACK FLOW" VTP-FT-184.
- ✓ 5.16.4 ENSURE Valve lineup per Attachment 11.
- ✓ 5.16.5 CLOSE VTP-V-135 to approximately 75% closed.
- ✓ 5.16.6 ENSURE "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102 is ON.
- ✓ 5.16.7 ENSURE "FAN CONTROL" VTP-HS-103 (located on door of "CONTROL CABINET" VTP-CP-105) is in the ENABLE position.
- ✓ 5.16.8 ENSURE all alarms are cleared on VTP-MV-101 "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" (located on "ALARM CABINET" VTP-ENCL-107 swing out panel).
- ✓ 5.16.9 PRESS "START PUSH BUTTON" VTP-PB-101.
- ✓ 5.16.10 WAIT for the Exhauster fan to reach steady state operation.
- ✓ 5.16.11 RECORD value indicated by "STACK FLOW" indicator VTP-FI-184.

READING: 752 SCFM

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.16 STACK FLOW INTERLOCK/ALARM CHECK-PRESSURE CONTROL (Cont.)

- ✓ 5.16.12 PLACE the fan in manual mode by setting the auto/manual bit N20:41/6 to 0.
- ✓ 5.16.13 SET the BT-200 to test at 73%, or at a value sufficient to cause a flow indication of between 1000 and 1005 SCFM at VTP-FI-184, "STACK FLOW".
- 5.16.14 PERFORM the following:
  - ✓ • VERIFY Clear Rotating Beacon VTP-XA-101 is ILLUMINATED
  - ✓ • RECORD value indicated on "STACK FLOW" VTP-FI-184.  
READING: 1002 SCFM
  - ✓ • VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 AND VTP-MV-102 DISPLAYS "STACK FLOW HI"
  - ✓ • VERIFY the fan has shut down.
- ✓ 5.16.15 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "←" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.
  - ✓ • Wait for any secondary alarms and repeat this step until all alarms are cleared on VTP-MV-101
- ✓ 5.16.16 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.
- ✓ 5.16.17 VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 maintains alarm message.
- ✓ 5.16.18 CLEAR the BT-200.
- ✓ 5.16.19 VERIFY "STACK FLOW HI" message has cleared from VTP-MV-102.
- ✓ 5.16.20 ACKNOWLEDGE any secondary alarms on VTP-MV-101.
- ✓ 5.16.21 PRESS "START PUSH BUTTON" VTP-PB-101.
- ✓ 5.16.22 WAIT for the Exhauster fan to reach steady state operation.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.16 STACK FLOW INTERLOCK/ALARM CHECK-PRESSURE CONTROL (Cont.)

- ✓ 5.16.23 PLACE the fan in manual mode by setting the auto/manual bit N20:41/6 to 0.
- ✓ 5.16.24 SET the BT-200 to test at 32.5% or a value required to drop the stack flow between 675 and 670 SCFM as indicated on the stack flow meter VTP-FI-184.
- 5.16.25 RECORD the value indicated on "STACK FLOW" VTP-FI-184.  
READING: 672 SCFM
- 5.16.26 VERIFY the following:
- ✓ • Clear rotating beacon VTP-XA-101 is ILLUMINATED after 10 to 15 seconds.
  - ✓ • "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 DISPLAYS "STACK FLOW LO".
- ✓ 5.16.27 CLEAR the BT-200.
- ✓ 5.16.28 ACKNOWLEDGE uncleared alarms by PRESSING the "1" button, then PRESSING the "←" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.
- Wait for any secondary alarms and repeat this step until all alarms are cleared on VTP-MV-101.
- ✓ 5.16.29 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.
- ✓ 5.16.30 DISCONNECT BT-200 from "STACK FLOW" VTP-FI-184.
- 5.16.31 Test Director VERIFY section 5.16 is complete.

 7/7/98  
Test Director Signature Date

- 5.16.32 A/I Inspector VERIFY section 5.16 is complete.

 7/7/98  
A/I Signature Date

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.17 HIGH INLET VACUUM INTERLOCK CHECK-HIGH VACUUM

- Note - Transmitter VTP-PDT-170 range is 0 to -20 INWC.
- Note - Some adjustment of VTP-V-135 may be required at start up to prevent high/low stack flow set points from being exceeded. Such adjustments do not qualify as a Test Exception.
- ✓ 5.17.1 ENSURE that the pressure differential transmitter sensing plenum vacuum has been disconnected and the transmitter sensing fan inlet vacuum has been connected.
  - ✓ 5.17.2 ENSURE that the PLC 500 has been configured for High Vacuum Operation, with set points as identified in Attachment 14.
  - ✓ 5.17.3 CONNECT BT-200 to back terminals (plus and minus) of "PLENUM DIFF PRESSURE" VTP-PDT-170.
  - ✓ 5.17.4 ENSURE Valve lineup per Attachment 11.
  - ✓ 5.17.5 CLOSE VTP-V-135 to approximately 75% closed.
  - ✓ 5.17.6 ENSURE "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102 is ON.
  - ✓ 5.17.7 ENSURE "FAN CONTROL" VTP-HS-103 (located on door of "CONTROL CABINET" VTP-CP-105) is in the ENABLE position.
  - ✓ 5.17.8 ENSURE all alarms are cleared on VTP-MV-101 "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" (located on "ALARM CABINET" VTP-ENCL-107 swing out panel).
  - ✓ 5.17.9 PRESS "START PUSH BUTTON" VTP-PB-101.
  - ✓ 5.17.10 WAIT for the Exhauster fan to reach steady state operation.
  - ✓ 5.17.11 SET the BT-200 to test at 97.6% (97.5-98.0%), or a value required to increase the inlet vacuum to 19.5 INWC as indicated on VTP-PDT-170.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.17 HIGH VACUUM INTERLOCK CHECK-HIGH VACUUM (Cont.)

- ✓ 5.17.12 VERIFY the following:
- ✓ • "EXHAUST FAN" VTP-EF-001 has SHUTDOWN ~~after~~ after 5-7 seconds. SP 2/10/98
  - ✓ • Red "ILRUN" light is OFF
  - ✓ • Green "ILOFF" light is ILLUMINATED
  - ✓ • Clear Rotating Beacon VTP-XA-101 is ILLUMINATED
- NOTE - Any secondary alarms that are still in alarm condition will also be indicated.
- ✓ • "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 displays "INLET VACUUM HI".
- ✓ 5.17.13 RECORD value from PRESSURE TRANSMITTER VTP-PDT-170.  
READING:     - 19.52     INWC
- ✓ 5.17.14 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "+" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.
- Wait for any secondary alarms and repeat this step until all alarms are cleared.
- ✓ 5.17.15 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.
- NOTE - Any secondary alarms that are still in alarm condition will also be indicated.
- ✓ 5.17.16 ENSURE "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 still displays "INLET VACUUM HI".
- ✓ 5.17.17 CLEAR the BT-200 test setting.
- ✓ 5.17.18 VERIFY "INLET VACUUM HI" has cleared from VTP-MV-102.
- ✓ 5.17.19 ACKNOWLEDGE any secondary alarms.
- ✓ 5.17.20 DISCONNECT BT-200 from "1st PLENUM PRESSURE" VTP-PDT-170.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.17 HIGH VACUUM INTERLOCK CHECK-HIGH VACUUM (Cont.)

5.17.21 Test Director **VERIFY** that section 5.17 is complete.

 7/7/98  
Test Director Signature Date

5.17.22 A/I Inspector **VERIFY** section 5.17 is complete.

 7/7/98  
A/I Signature Date

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.18 STACK FLOW ALARM CHECK-HIGH VACUUM

Note - Transmitter VTP-FT-184 range is 0 - 4".

Note - Some adjustment of VTP-V-135 may be required at start up to prevent high/low stack flow set points from being exceeded. Such adjustments do not qualify as a Test Exception.

- ✓ 5.18.1 ENSURE that the PLC 500 has been configured for High Vacuum Operation, with set points as identified in Attachment 14.
- ✓ 5.18.2 CONNECT BT-200 to back terminals (plus and minus) of "STACK FLOW" VTP-FT-184.
- ✓ 5.18.3 ENSURE Valve lineup per Attachment 11.
- ✓ 5.18.4 CLOSE VTP-V-135 to approximately 75% closed.
- ✓ 5.18.5 ENSURE "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102 is ON.
- ✓ 5.18.6 ENSURE "FAN CONTROL" VTP-HS-103 (located on door of "CONTROL CABINET" VTP-CP-105) is in the ENABLE position.
- ✓ 5.18.7 ENSURE all alarms are cleared on VTP-MV-101 "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" (located on "ALARM CABINET" VTP-ENCL-107 swing out panel).
- ✓ 5.18.8 PRESS "START PUSH BUTTON" VTP-PB-101.
- ✓ 5.18.9 WAIT for the Exhauster fan to reach steady state operation.
- ✓ 5.18.10 RECORD value indicated by "STACK FLOW" indicator VTP-FI-184.  
READING: 758 SCFM
- ✓ 5.18.11 SET the BT-200 to test at 73%, or a value between 1000-1005 SCFM. (77.5%)

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.18 STACK FLOW ALARM CHECK-HIGH VACUUM (Cont.)

5.18.12 PERFORM the following:

- ✓ • VERIFY Clear Rotating Beacon VTP-XA-101 is ILLUMINATED
- ✓ • RECORD value indicated on "STACK FLOW" VTP-FI-184.  
READING: 1004 SCFM
- ✓ • VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 AND VTP-MV-102 DISPLAYS "STACK FLOW HI"

✓ 5.18.13 ACKNOWLEDGE the alarm by PRESSING the "1" button, then PRESSING the "+" button on the "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-101 twice.

- Wait for any secondary alarms and repeat this step until all alarms are cleared on VTP-MV-101

✓ 5.18.14 VERIFY Clear Rotating Beacon VTP-XA-101 is OFF.

✓ 5.18.15 VERIFY "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" VTP-MV-102 maintains alarm message.

✓ 5.18.16 CLEAR the BT-200.

✓ 5.18.17 ACKNOWLEDGE any secondary alarms on VTP-MV-101.

✓ 5.18.18 DISCONNECT BT-200 from "STACK FLOW" VTP-FI-184.

5.18.19 Test Director VERIFY section 5.18 is complete.

  
Test Director Signature                      Date 7/7/98

5.18.20 A/I Inspector VERIFY section 5.18 is complete.

  
A/I Signature                      Date 7/7/98

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.19 FUNCTIONAL TEST - FLOW CONTROL (1000 CFM)

- 5.19.1 CONNECT exhauster to the portable inlet filter station, flex hoses and throttle valve per Figure 1.  
*Remove Lid & Insert Roughing Filter per Exception 1012. JWB 7/14/98*
- NOTE- Figure 1 is a schematic showing a test setup to mimic connecting the portable exhauster to a waste tank.
- 5.19.2 ENSURE exhauster programming is set-up for "flow control" with operating, alarm, and interlock set points as identified in Attachment 8.
- 5.19.3 PERFORM valve line-up per Attachment 11.
- 5.19.4 ENSURE EW-1 is OPEN.
- 5.19.5 PERFORM electrical alignment per Attachment 12.
- 5.19.6 POSITION the "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102 to ON.
- 5.19.7 PRESS "START PUSH BUTTON" VTP-PB-101 to start "EXHAUST FAN" VTP-EF-001.
- 5.19.8 ENSURE *CS* *7/16/98* the "GLYCOL HEATER DISCONNECT" VTP-DS-201 to ON.
- 5.19.9 ENSURE *CS* *7/16/98* the "GLYCOL PUMP" Control Switch VTP-HS-102 to ON.
- 5.19.10 RECORD the values as identified in the table below.

Date: *7/13/1998* Time: *0920* Initials: *CSG*

INDICATOR	NAME	READING
VTP-FI-184	STACK FLOW	<i>1000 SCFM</i>
VTP-VFD-001	VARIABLE FREQUENCY DRIVE	<i>46 Hz</i>
VTP-PI-170	1st PLENUM PRESSURE	<i>-1.32</i>
VTP-PI-177	HEATER DIFF PRESSURE	<i>.59</i>
VTP-PI-178	PREFILTER DIFF PRESSURE	<i>.23</i>
VTP-PI-181	FILTER 1/2 DIFF PRESSURE	<i>2.86</i>
VTP-TI-176	INLET TEMP	<i>84</i>
VTP-TI-179	1st HEPA INLET TEMP	<i>90</i>

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.19 FUNCTIONAL TEST - FLOW CONTROL (1000 CFM) (Cont.)

- 5.19.11 SLOWLY CLOSE EM-1 until VTP-PI-170 indicates a vacuum of 3.0 +/- 0.5 INWC.
- 5.19.12 RECORD the values requested in the Table below after the exhauster has operated for 1 hour.

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Initials: \_\_\_\_\_

INDICATOR	NAME	READING
VTP-FI-184	STACK FLOW	1000
VTP-VFD-001	VARIABLE FREQUENCY DRIVE	52.95
VTP-PI-170	1st PLENUM PRESSURE	-3.05
VTP-PI-177	HEATER DIFF PRESSURE	0.62
VTP-PI-178	PREFILTER DIFF PRESSURE	0.25
VTP-PI-181	FILTER 1/2 DIFF PRESSURE	3.10
VTP-TI-176	INLET TEMP	48
VTP-TI-179	1st HEPA INLET TEMP	124

5.19.13 PRESS "STOP PUSH BUTTON" VTP-PB-102.

5.19.14 Test Director VERIFY section 5.19 is complete.  
 Test Director Signature \_\_\_\_\_ Date 7/14/98

5.19.15 A/I Inspector VERIFY section 5.19 is complete.  
 A/I Signature \_\_\_\_\_ Date 7/14/98

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.20 FUNCTIONAL TEST - FLOW CONTROL (500 CFM)

- ✓ 5.20.1      CONNECT exhauster to the portable inlet filter station, flex hoses and throttle valve per Figure 1.
  
- NOTE-      Figure 1 is a schematic showing a test setup to mimic connecting the portable exhauster to a waste tank.
  
- ✓ 5.20.2      ENSURE exhauster programming is set-up for "flow control" with operating, alarm, and interlock set points as identified in Attachment 8.
  
- ✓ 5.20.3      SET Stack Flow operating point (F8:6) to 500 SCFM.
  
- ✓ 5.20.4      PERFORM valve line-up per Attachment 11.
  
- ✓ 5.20.5      ENSURE EW-1 is OPEN.
  
- ✓ 5.20.6      PERFORM electrical alignment per Attachment 12.
  
- ✓ 5.20.7      POSITION "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102 ON.
  
- ✓ 5.20.8      PRESS "START PUSH BUTTON" VTP-PB-101 to start "EXHAUST FAN" VTP-EF-001.
  
- ✓ 5.20.9      POSITION "GLYCOL HEATER DISCONNECT" VTP-DS-201 ON.
  
- ✓ 5.20.10     POSITION "GLYCOL PUMP" Control Switch VTP-HS-102 ON.
  
- ✓ 5.20.11     RECORD the values as identified in the table below.

Date: 7/9/98      Time: 800      Initials: CSB

INDICATOR	NAME	READING
VTP-FI-184	STACK FLOW	504
VTP-VFD-001	VARIABLE FREQUENCY DRIVE	29.9 Hz
VTP-PI-170	1st PLENUM PRESSURE	-1.57
VTP-PI-177	HEATER DIFF PRESSURE	0.18
VTP-PI-178	PREFILTER DIFF PRESSURE	0.08
VTP-PI-181	FILTER 1/2 DIFF PRESSURE	1.07
VTP-TI-176	INLET TEMP	80
VTP-TI-179	1st HEPA INLET TEMP	96

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.20 FUNCTIONAL TEST - FLOW CONTROL (500 CFM) (Cont.)

- ✓ 5.20.12 SLOWLY CLOSE EW-1 until VTP-PI-170 indicates a vacuum of 3.0 +/- 0.5 INWC.
- ✓ 5.20.13 RECORD the values requested in the Table below after the exhauster has operated for 1 hour.

Date:

Time:

Initials:

INDICATOR	NAME	READING
VTP-FI-184	STACK FLOW	500
VTP-VFD-001	VARIABLE FREQUENCY DRIVE	36.7
VTP-PI-170	1st PLENUM PRESSURE	-3.08
VTP-PI-177	HEATER DIFF PRESSURE	0.19
VTP-PI-178	PREFILTER DIFF PRESSURE	0.08
VTP-PI-181	FILTER 1/2 DIFF PRESSURE	1.14
VTP-TI-176	INLET TEMP	85°
VTP-TI-179	1st HEPA INLET TEMP	152°

- ✓ 5.20.14 PRESS "STOP PUSH BUTTON" VTP-PB-102.
- 5.20.15 Test Director VERIFY section 5.20 is complete.


7/9/98  
 \_\_\_\_\_  
 Test Director Signature Date

- 5.20.16 A/I Inspector VERIFY section 5.20 is complete.


7/9/98  
 \_\_\_\_\_  
 A/I Signature Date

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.21 FUNCTIONAL TEST - PRESSURE CONTROL

Note - Some adjustment of VTP-V-135 may be required at start up to prevent high/low stack flow set points from being exceeded. Such adjustments do not qualify as a Test Exception.

✓ 5.21.1 **CONNECT** exhauster to the portable inlet filter station, flex hoses and throttle valve per Figure 1.

Note- Figure 1 is a schematic showing a test setup to mimic connecting the portable exhauster to a waste tank.

✓ 5.21.2 **ENSURE** that exhauster has been reconfigured with VTP-PDT-170 sensing fan inlet vacuum.

*[Signature]* 7/19/98  
Test Director Signature Date

✓ 5.21.3 **ENSURE** exhauster programming is set-up for "pressure control" with set, alarm, and interlock points as identified in Attachment 13.

*[Signature]* 7/19/98  
Test Director Signature Date

✓ 5.21.4 **PERFORM** valve line-up per Attachment 11.

✓ 5.21.5 **CLOSE** VTP-V-135 to approximately 75% closed.

✓ 5.21.6 **CLOSE** VTP-V-158 "FAN ISOLATION VALVE"

✓ 5.21.7 **PERFORM** electrical alignment per Attachment 12.

✓ 5.21.8 **ENSURE** the "EXHAUST FAN MOTOR DISCONNECT" VTP-DS-102 to ON.

✓ 5.21.9 **OPEN** EW-1.

✓ 5.21.10 **PRESS** "START PUSH BUTTON" VTP-PB-101 to start "EXHAUST FAN" VTP-EF-001.

Note- Valves must be positioned very slowly with the fan operational to prevent a ROC shutdown of the exhauster. If fan shutdown does occur, the Test Director may direct the restart of the fan, and clearing of alarms and does not constitute an exception to the ATP.

✓ 5.21.11 **SLOWLY OPEN** VTP-V-135 until VTP-VI-184 "STACK FLOW" indicates 925 (+/-25) SCFM.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.21 FUNCTIONAL TEST - PRESSURE CONTROL (Cont.)

- ✓ 5.21.12 POSITION the "GLYCOL HEATER DISCONNECT" VTP-DS-201 to ON.
- ✓ 5.21.13 POSITION "GLYCOL PUMP" Control Switch VTP-HS-102 to ON.
- ✓ 5.21.14 RECORD the values as identified in the table below.

Date: 7/9/98 Time: 1125 Initials: CSB

INDICATOR	NAME	READING
VTP-FI-184	FAN STACK FLOW	925
VTP-PDT-170	1st PLENUM PRESSURE	-11.23
VTP-PDT-177	HEATER DIFF PRESSURE	0.632
VTP-PDT-178	PREFILTER DIFF PRESSURE	0.232
VTP-PDT-181	FILTER 1/2 DIFF PRESSURE	2.815
VTP-TI-176	INLET TEMP	100
VTP-TI-179	1st HEPA INLET TEMP	141

- ✓ 5.21.15 SLOWLY CLOSE EW-1 until VTP-FI-184 indicates that flow has been reduced to 700 (+/- 25) SCFM.
- ✓ 5.21.16 RECORD the readings indicated in the table below.

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Initials: \_\_\_\_\_

INDICATOR	NAME	READING
VTP-FI-184	STACK FLOW	719
VTP-PDT-170	1st PLENUM PRESSURE	-11.99

FAN INLET CSB 7/16/98

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.21 FUNCTIONAL TEST - PRESSURE CONTROL (Cont.)

5.21.17 RECORD the values requested in the Table below after the exhauster has operated for 1 hour.

Date:

7/9/98

Time:

12:25

Initials:

*(Signature)*

INDICATOR	NAME	READING
VTP-FI-184	FAN STACK FLOW	715
VTP-PDT-170	1st PLENUM PRESSURE	-12.02
VTP-PDT-177	HEATER DIFF PRESSURE	0.418
VTP-PDT-178	PREFILTER DIFF PRESSURE	0.166
VTP-PDT-181	FILTER 1/2 DIFF PRESSURE	1.930
VTP-TI-176	INLET TEMP	94
VTP-TI-179	1st HEPA INLET TEMP	146

5.21.18 PRESS "STOP PUSH BUTTON" VTP-PB-102.

5.21.19 VERIFY section 5.21 is complete.

*(Signature)*      7/9/98  
 \_\_\_\_\_  
 Test Director Signature      Date

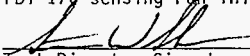
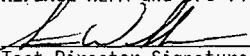
*(Signature)*      7/9/98  
 \_\_\_\_\_  
 A/I Signature      Date

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.22 FUNCTIONAL TEST - HIGH VACUUM

5.22.1 CONNECT exhauster to the portable inlet filter station, flex hoses and throttle valve per Figure 1.

NOTE- Figure 1 is a schematic showing a test setup to mimic connecting the portable exhauster to a waste tank.

- ✓ 5.22.2 ENSURE that exhauster has been configured with VTP-PDT-170 sensing Fan inlet vacuum.  
 7/14/98  
Test Director Signature Date
- ✓ 5.22.3 ENSURE exhauster programming is set-up for high vacuum operation, with operating, alarm, and interlock set points as identified in Attachment 14.
- ✓ 5.22.4 PERFORM valve line-up per Attachment 5.
- ✓ 5.22.5 DISCONNECT PDT-170 sensing line from the fan inlet transition, and CAP transition.
- ✓ 5.22.6 CLOSE VTP-V-158, "FAN ISOLATION VALVE"
- ✓ 5.22.7 PERFORM electrical alignment per Attachment 4.
- ✓ 5.22.8 REMOVE HEME and HEPA, and pre-filters per the direction of the Test Director.
- ✓ 5.22.9 INSTALL 7-1" test plugs in plenum drain lines, and REPLACE HEPA and pre-filters and all covers.  
 7/14/98  
Test Director Signature Date

NOTE- Perform pressure/vacuum decay test to ensure exhauster plenum has been isolated from the seal pot.

- ✓ 5.22.10 REMOVE blind flange from VTP-V-160.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.22 FUNCTIONAL TEST - HIGH VACUUM (cont.)

- ✓ 5.22.11 ENSURE "SEAL POT" VTP-SP-001 is empty by opening the "SEAL POT DRAIN VALVE" VTP-V-160.
  - IF not empty, allow to empty through VTP-V-160.
- ✓ 5.22.12 INSTALL pneumatic pressure testing manifold (with gauge, pressure relief valve, isolation valve, pressure gauge, and pressure regulator) into "1st HEPA TEST PORT" VTP-FTP-002.
- ✓ 5.22.13 CONNECT pressure test air source to testing manifold.
- 5.22.14 PRESSURIZE housing/duct assembly to  $+19.5 \pm 0.5$  INWC.
- 5.22.15 ISOLATE the air supply from the filter housing.
- 5.22.16 MAINTAIN pressure until temperature remains constant within  $\pm 1$  °F as indicated by "1st HEPA INLET TEMPERATURE" VTP-TI-179 for a minimum of 10 minutes.
- 5.22.17 RECORD the initial time ( $t_i$ ), barometric pressure ( $BP_i$ ), housing pressure ( $P_i$ ), and temperature ( $T_i$ ) on the table provided in Attachment 9.
  - RECORD pressure and temperature readings once a minute for 15 minutes on Attachment 9.
- 5.22.18 RECORD final time ( $t_f$ ), barometric pressure ( $BP_f$ ), housing pressure ( $P_f$ ) and temperature ( $T_f$ ) on the table AND TRANSFER required information to Attachment 10.
- 5.22.19 PERFORM the leak rate calculations per Attachment 10.

Test log  
#14: ENSURE POSITION  
main disconnect  
DS-101, MPZ  
NOTE - MAIN BRK-101 and  
MPZ-1 to ON.  
EAG 9/16/98

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.22 FUNCTIONAL TEST - HIGH VACUUM (cont.)

- 5.22.20 IF  $Q < L_s$  then RECORD "PASS" on Attachment 10 and proceed to step 5.22.22.
- Otherwise, RECORD "RETEST" on Attachment 10.
- 5.22.21 IF a retest is needed, then PERFORM the following:
- 5.22.21.1 DETERMINE the leak path(s) and REPAIR leaks as noted on the Exception Resolution.
- 5.22.21.2 REPEAT steps 5.22.14 through 5.22.20 using new data sheets.
- 5.22.22 DISCONNECT the air supply.
- 5.22.23 RELIEVE pressure slowly from housing/duct assembly through Testing Manifold assembly.
- 5.22.24 CONNECT a vacuum source to the Pressure Testing Manifold Assembly.
- 5.22.25 DECREASE housing/duct internal pressure to ~~-14.5~~  $\pm 0.95$  INWC as indicated by the pressure measuring device.
- 5.22.26 ISOLATE the vacuum source from the filter housing.
- 5.22.27 MAINTAIN constant pressure until temperature remains constant within  $\pm 1$  °F as indicated by "1st HEPA INLET TEMPERATURE" VTP-TI-179 for a minimum of 10 minutes.

Exception  
10 SW 7/10/98  
-20 ± 0.95

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.22 FUNCTIONAL TEST - HIGH VACUUM (Cont.)

- NOTE - Next step starts checking negative pressure decay.
- 5.22.28 RECORD the initial time ( $t_i$ ), barometric pressure ( $BP_i$ ), housing pressure ( $P_i$ ), and temperature ( $T_i$ ) on the table in Attachment 9.
- RECORD pressure and temperature readings once a minute for 15 minutes on Attachment 9.
- 5.22.29 RECORD final time ( $t_f$ ), barometric pressure ( $BP_f$ ), housing pressure ( $P_f$ ) and temperature ( $T_f$ ) on table AND TRANSFER required information to Attachment 10.
- 5.22.30 PERFORM the leak rate calculations per Attachment 10.
- 5.22.31 IF  $Q < L_s$  then RECORD "PASS" on Attachment 10 and go to step 5.22.32.
- Otherwise, RECORD "RETEST" on Attachment 10.
- 5.22.31.1 IF a retest is needed, then PERFORM the following:
- 5.22.31.2 DETERMINE the leak path(s) and REPAIR leaks as noted on the Exception Resolution.
- 5.22.31.3 REPEAT steps 5.22.25 through 5.22.31 using new data sheets.

# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.22 FUNCTIONAL TEST - HIGH VACUUM (Cont.)

- 5.22.32 SLOWLY EQUALIZE housing/duct pressure to atmospheric through the Testing Manifold Assembly.
- 5.22.33 DISCONNECT the test equipment.
- 5.22.34 REINSTALL the test port plugs.
- 5.22.35 OPEN High Isolation Valve Main Airstream VTP-V-135.
- 5.22.36 OPEN Low Isolation Valve Main Airstream VTP-V-136.
- 5.22.37 RECONNECT VTP-PT-170 sensing line removed in Step 5.22.5

5.22.38 Test Director VERIFY pressure decay testing is complete.

  
Test Director Signature 7/14/98  
Date

5.22.39 A/I Inspector VERIFY pressure decay testing is complete.

  
A/I Signature 7/15/98  
Date

Note- During High Vacuum Testing of the exhauster, it may be necessary to throttle VTP-V-135 and VTP-V-136 to balance the system (unstable flow condition). The Test Director may authorize positioning of these valves as required at any time during this test.

- 5.22.40 PERFORM valve line-up per Attachment 11.
- 5.22.41 POSITION damper EW-1 approximately 75% closed.
- 5.22.42 ENSURE VTP-V-158 "FAN ISOLATION VALVE" is fully closed.
- 5.22.43 PERFORM Electrical Line-up per Attachment 12.
- 5.22.44 ENSURE all alarms are cleared on VTP-MV-101 "MESSAGE VIEW INTERACTIVE DISPLAY TERMINAL" (located on "ALARM CABINET" VTP-ENCL-107 swing out panel).

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.22 FUNCTIONAL TEST - HIGH VACUUM (Cont.)

5.22.45 PRESS "START PUSH BUTTON" VTP-PB-101 to start "EXHAUST FAN" VTP-EF-001.

Note- EW-1 must be operated very slowly to prevent an ROC shutdown of the exhauster. If fan shutdown does occur, the Test Director may direct the restart of the fan, and does not constitute an exception to the ATP.

Note - Some adjustment of VTP-V-135 and EW-1 may be required at start up to prevent high/low stack flow set points from being exceeded. Such adjustments do not qualify as a Test Exception. Objective is to have VTP-V-135 full open, and make flow adjustments at EW-1.

5.22.46 RECORD fan inlet vacuum (INDICATOR FOR VTP-PDT-170)

-12.68 INWC

5.22.47 POSITION the "GLYCOL HEATER DISCONNECT" VTP-DS-201 to ON.

5.22.48 POSITION "GLYCOL PUMP" Control Switch VTP-HS-102 to ON AND RECORD initial values for time, inlet temperature, and 1st HEPA Inlet temperature below.

"INLET TEMPERATURE" VTP-TI-176

READING: 94°

"1st HEPA INLET TEMPERATURE" VTP-TI-179

READING: 95°

Note - Low Stack Flow alarm may cause fan shutdown during performance of the next step. If this should occur, Test Director may authorize restart of the fan after EW-1 has been repositioned. Testing at flows prescribed in Step 5.22.49 below stack flow alarm point is not required, and a Test Exception is not required.

NOTE- Exhauster may not be able to achieve the higher flow rates identified in the table below. Enter the maximum flow rate and associated vacuum as identified by the Test Director. Enter NA for test points above the maximum ability of the exhauster.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.22 FUNCTIONAL TEST - HIGH VACUUM (Cont.)

Note- If EW-1 lacks sufficient control to perform the next step, the Test Director may authorize adjustments to flow using VTP-V-135. Use of VTP-V-135 to make the adjustments below does not constitute a Test Exception.

5.22.49 SLOWLY CLOSE EW-1 to reduce "STACK FLOW" VTP-FI-184 in 100 SCFM (+/- 15 SCFM) increments. Record VTP-PDT-170 vacuum levels and FI-184 flow rates at each change until table below is completely filled out, or maximum vacuum capacity of the fan is obtained. Enter NA if not applicable.  
THEN PROCEED.

TARGET FLOWS SCFM	900	800	700	600	500
ACTUAL FLOW SCFM	895	805	710	595	497
FAN INLET VACUUM	-12.03	-12.95	-13.00	-13.50	-13.75

5.22.50 SLOWLY OPEN VTP-V-135 OR EW-1 UNTIL

- VTP-FI-184 exceeds 800 SCFM

OR

- VTP-PDT-170 exceeds <sup>7/14/98</sup> 14 INWC.

5.22.51 PERFORM the following after exhauster has operated for 1 hour:

5.22.51.1 RECORD "STACK FLOW" VTP-FI-184

READING: 805 CFM

5.22.51.2 RECORD VTP-PDT-170

READING: <sup>PDT 7/16/98</sup> -11.90 INWC

5.22.51.3 RECORD "INLET TEMPERATURE" VTP-TI-176

READING: 92

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.22 FUNCTIONAL TEST - HIGH VACUUM (Cont.)

5.22.51.4 RECORD "1st HEPA INLET TEMPERATURE" VTP-TI-179

READING: 140

5.22.52 PRESS "STOP PUSH BUTTON" VTP-PB-102.

5.22.53 ALIGN exhauster valves per Attachment 15, ATP Final Valve Lineup.

5.22.54 REMOVE HEPA and pre-filters per the direction of the Test Director.

5.22.55 REMOVE 7-1" test plugs in plenum drain lines, and REPLACE HEPA, HEME and pre-filters, and their covers.

[Signature] 7/15/98  
Test Director Signature Date

5.22.56 Test Director VERIFY section 5.22 is complete.

[Signature] 7/15/98  
Test Director Signature Date

5.22.57 A/I Inspector VERIFY section 5.22 is complete.

[Signature] 7/15/98  
A/I Signature Date

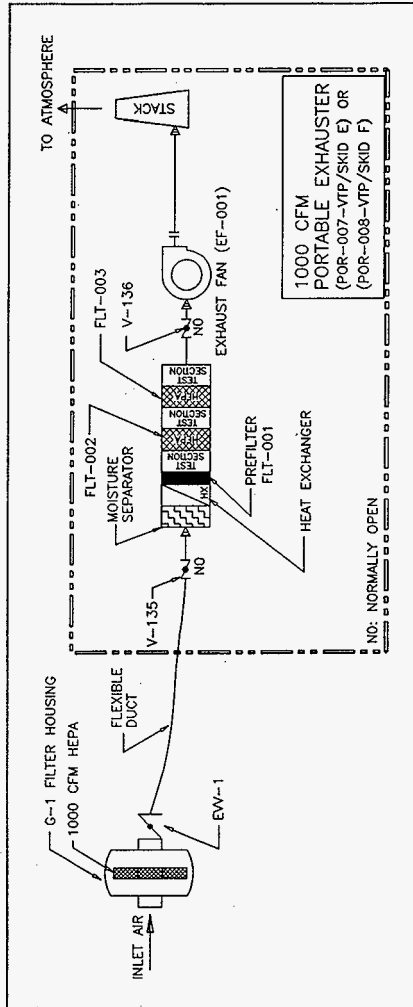
# TANK FARM ACCEPTANCE TEST PROCEDURE

## 5.23 RESTORATION

- NOTE - The following steps will leave the exhauster in a winterization mode because exhauster contains water.
- 5.23.1 REMOVE blind flange from VTP-V-160.
- 5.23.2 ENSURE "SEAL POT" VTP-SP-001 is empty by opening the "SEAL POT DRAIN VALVE" VTP-V-160.
- IF not empty, allow to empty through VTP-V-160.
- 5.23.3 CLOSE "SEAL POT DRAIN VALVE" VTP-V-160.
- 5.23.4 REPLACE blind flange on VTP-V-160.
- 5.23.5 ALIGN exhauster valves per Attachment 15, ATP Final Valve Lineup.
- 5.23.6 POSITION electrical circuit breakers per Attachment 16, ATP Final Electrical Lineup.

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# TANK FARM ACCEPTANCE TEST PROCEDURE



**FIGURE 1 FUNCTIONAL TEST  
HARDWARE CONFIGURATION SCHEMATIC**

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 1 - ATP TEST LOG

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ATP TEST LOG		
Number	Date	Description
1	7/6/98	Conducted Pre-Job Obtained Signature & Initials for Attachment 3. JWL
2	7/6/98	NOTED during Filter Testing that $\Delta p$ across 1 + $\Delta p$ across 2 does not equal $\Delta p$ across 1/2. This is due to sensing line placement. There is a diffuser between Low Side Filter 1 & High Side Filter 2. Thus, there was an $\sim 1''$ WC pressure loss across the diffuser measured on PDT-181, Began Testings with Interlock Checks. Interrupted interlock checks to get section 5.4 complete. JWL

# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 1 - ATP TEST LOG

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ATP TEST LOG		
Number	Date	Description
3	7/6/98	Pulled in redline comments from HNF-26876 learned/generated by Test Exception. JWL
004	7/6/98	NOTE that bearing vibration levels in Section 5.4 are unfiltered. ANSIN-509 provides for filtered levels (Skip Vibration subtracted from Pillow Blocks). Thus, filtered levels would be less than those measured. No instrument is available for getting filtered readings. JWL
005	7/7/98	During performance of Section 5.11, STEP 5.11.18, heater contactor was not pulled in because by that time glycol was at

# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 1 - ATP TEST LOG (This page may be reproduced as necessary)

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ATP TEST LOG		
Number	Date	Description
005 (cont)	7/7/98	thermostat setting of 180°F. With Concurrence of Q.C. & A.T., decision was made to turn off heater & operate exhauster to remove heat from glycol system. Test exception was determined to not be required. <i>WJH</i>
006	7/7/98	Question about Message View Messages. Some Have Roman, some ARABIC numerals. Per Telecon w/ Design Authority, all Message View Messages converted to ARABIC Numerals. <i>WJH</i>

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 1 - ATP TEST LOG (This page may be reproduced as necessary)

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ATP TEST LOG		
Number	Date	Description
007	7/8/98	Pressure Decay testing of plenum started @ 19.5 INWK. After 10 min, Temp had remained stable, but pressure had climbed to 20.5, which was recorded as the initial pressure on Attachment 9, DATA Acquisition, Sht 1. jwl
009	7/9/98	Performed Seal Pot testing in Section 5.10. Interlock checks all OK, but valve line-up closed re-cycle valve. Pump still pumped but dead headed. Does not require retesting, but procedure steps should be changed. jwl

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 1 - ATP TEST LOG

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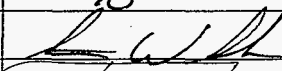
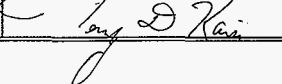
ATP TEST LOG		
Number	Date	Description
010	7/13/98	Obtained Norse level readings to facilitate NCR disposition. <u>Not part of ATP.</u>
011	7/14/98	ATP testing completed.
012	7/15/98	Performed a quick test w/ inlet filter station installed, HEME removed & plugs installed to collect data for generation of a system curve.
013	7/16/98	Found a procedural deficiency in step 5.10.39. Verrier setting was as redlined. Refer to HNF-2686, Test log # 006. <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">236</span> 7/16/98



# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 2 - ATP TEST EXCEPTION REPORT

(This page may be reproduced as necessary)

ATP step number: 5.7.27	ATP Exception Log Number: 1
Description of Exception: After clearing BT-200 Test Setting, Filter 2 DP to Alarm did not clear. Further investigation shows that instrument was "set-up", but not zero'd. No criteria for reset condition/value. Program presently resets @ 0.02 INWC.	
Resolution of Exception: Per Ceq Engineer, Reset Condition "should be acknowledge MV-101 alarm. Change PLC logic to match. Re-run 5.7.18 → 5.7.27. No 10 second delay logic. Modify Procedure Step 5.7.22 Also re-run 5.6.20 - 5.6.28, modify Procedure STEPS 5.6.24 & 5.8.20 to eliminate 10 second delay.	
Date of Resolution:	7/6/98
Test Director signature:	
Project Engineer signature:	

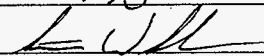
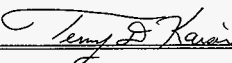
Document No: HNF-2687	Date: July 1, 1998
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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 2 - ATP TEST EXCEPTION REPORT

(This page may be reproduced as necessary)

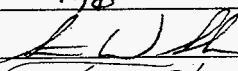
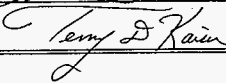
ATP step number: <b>5.1.3</b>	ATP Exception Log Number: <b>002</b>
Description of Exception: <b>Procedure does not align MPZ breakers. Shunt Trip was not energized &amp; did not trip. Error/Omission is procedure breaker line.-up.</b>	
Resolution of Exception: <b>Redline after step 5.1.3 to Turn on POR-008-VTP-BRK-101, "MPZ Primary Breaker", VTP-BRK-<del>100</del><sup>545 7/7/98</sup>102 "MPZ Secondary Breaker, MPZ 1, MPZ 2. Reperform step 5.1.4 through 5.1.5.5 Strike steps 5.1.7 &amp; 5.1.8.</b>	
Date of Resolution:	<b>7/7/98</b>
Test Director signature:	
Project Engineer signature:	

Document No: <b>HNF-2687</b>	Date: <b>July 1, 1998</b>
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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 2 - ATP TEST EXCEPTION REPORT

(This page may be reproduced as necessary)

ATP step number: 5.1.5.4-5.1.5.7		ATP Exception Log Number: 003
Description of Exception: Measured Voltages did not equal Zero.		
Resolution of Exception: Induced Voltage in de-energized conductor results from near (cable-tied together) proximity to energized conductors in the wireway & conduit.		
Date of Resolution:	7/7/98	
Test Director signature:		
Project Engineer signature:		

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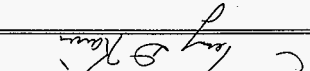
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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 2 - ATP TEST EXCEPTION REPORT

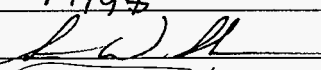
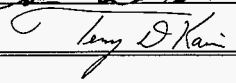
(This page may be reproduced as necessary)

ATP step number: 5.11.3, 5.10.8 <sup>5.11.3</sup> <del>5.11.3</del> <sub>5.11.3</sub> ATP Exception Log Number: 004	
Description of Exception: Calibration System's black 3-wire lead. Procedure needs to provide for ground connection. 5.11.3.8 lead color identified incorrectly. 5.11.3.10 incorrect side of transmitter called out. Make similar changes to step 5.10.8. <del>5.10.8</del> 5.10.8	
Resolution of Exception: Redline procedure to accommodate procedural deficiencies as required to hook-up calibration system correctly.	
Date of Resolution: 7/17/98	
Test Director signature: 	
Project Engineer signature: 	

# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 2 - ATP TEST EXCEPTION REPORT

(This page may be reproduced as necessary)

ATP step number: 5.11.10	ATP Exception Log Number: 005
Description of Exception: "Glycol Level Lo" alarm on MV-101 prevented pump operating.	
Resolution of Exception: Add General note to Procedure that states	
"Acknowledge alarms on MV-101 anytime after MPZ-1 is re-energized.	
Date of Resolution:	7/7/98
Test Director signature:	
Project Engineer signature:	

Document No: HNF-2687	Date: July 1, 1998
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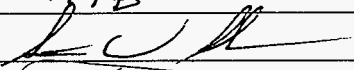
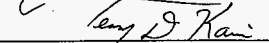






# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 2 - ATP TEST EXCEPTION REPORT (This page may be reproduced as necessary)

ATP step number: 5.12.1	ATP Exception Log Number: 008
Description of Exception: Thermocouple simulator had a setting higher than high temp setpoint. Caused alarm, prevented glycol heater and pump from operating.	
Resolution of Exception: Add one step, one note prior to 5.12.1:	
Step: "ENSURE MPZ-1 is OFF"	
Note: "Set thermocouple simulator to 100 F prior to connecting to thermocouple." input terminals. <span style="float: right;">(see) 7/15/98</span>	
Date of Resolution:	7/7/98
Test Director signature:	
Project Engineer signature:	 Lang D. Kain

*Chapman 7/15/98*

# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 2 - ATP TEST EXCEPTION REPORT

(This page may be reproduced as necessary)

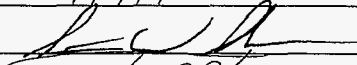
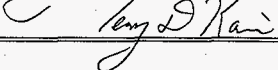
*WKS 7/8/98*

ATP step number: 5.15.2, 5.13.19	ATP Exception Log Number: 009
Description of Exception: Attachment 8 plenum 1 pressure high set point should be 5.0 INWC per Cog engineer. Also effects Attachments 13 & 14. Also noted difficulty with Filter 1 Temp Lo alarm reset, Vacuum Control setpoints PLC values.	
Resolution of Exception: Redline attachments to reflect modified operating parameters and correct values for PLC units. Change step 5.13.19 to read: "100% (100-102%)", "+5.0 INWC". <i>CSB 7/8 98</i>	
Date of Resolution:	<i>7/7/98</i>
Test Director signature:	<i>[Signature]</i>
Project Engineer signature:	<i>Teng S Kai</i>

# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 2 - ATP TEST EXCEPTION REPORT

(This page may be reproduced as necessary)

ATP step number: 5.2.20 & 5.22.25	ATP Exception Log Number: 010
Description of Exception: Procedural deficiency. Steps only require a vacuum of 14.5 INWC, when 20 is required.	
Resolution of Exception: Redline steps 5.2.20 and 5.22.25 to indicate a vacuum of $20.0 \pm 0.5$ INWC is required.	
Date of Resolution:	7/7/98
Test Director signature:	
Project Engineer signature:	

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 2 - ATP TEST EXCEPTION REPORT

(This page may be reproduced as necessary)

ATP step number: 4.1, 2nd bullet	ATP Exception Log Number: 011
Description of Exception: Nomenclature error. Intent was to have a calibrated pressure gauge with RESOLUTION of $\pm 0.1$ INWC.	
Resolution of Exception: Ensure that pressure/vacuum gauges used for testing are calibrated over the required range, and have a resolution of $\pm 0.1$ INWC.	
Date of Resolution:	7/8/98
Test Director signature:	
Project Engineer signature:	

Document No.

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Date:

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 2 - ATP TEST EXCEPTION REPORT

(This page may be reproduced as necessary)

ATP step number: 5.19.1	ATP Exception Log Number: 012
Description of Exception: Test Step requires connection to a portable inlet station. However, cannot reach 1000 CFM through the inlet station with out exceeding the allowable 3.5 INWC inlet vacuum at the exhauster.	
Resolution of Exception: Remove the lid from the G-1 filter station and place the roughing filter over the 12" opening to the damper/hose assembly. Purpose of filter/damper assembly is to mimic tank operation by establishing a partial vacuum at the exhauster inlet. This can be accomplished using the damper EW-1, without flowing air through the HEPA filter. Note that tank inlet filter stations consist of HEPA filter banks (2 or more HEPAs) and will not have similarly large pressure drops at similar flow rates at the test article.	
Date of Resolution:	7/13/98
Test Director signature:	
Project Engineer signature:	

Document No: HNF-2687	Date: July 1, 1998
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**TANK FARM ACCEPTANCE TEST PROCEDURE**

**ATTACHMENT 2 - ATP TEST EXCEPTION REPORT**  
*(This page may be reproduced as necessary)*

ATP step number: 5.10.14		ATP Exception Log Number: 013
Description of Exception: Step 5.10.1 opens recycle valve, then valve		
Time-up in 5.10.14 closes it. Causes Seal Pot Pump to "dead head." Does not		
effect interlock checks or other testing, but should be corrected as procedural		
deficiency.		
Resolution of Exception: Move Step 5.10.14 in front of Step 5.10.1.		
Date of Resolution: 7/9/98		
Test Director signature: <i>[Signature]</i>		
Project Engineer signature: <i>[Signature]</i>		





# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 4 - ATP INITIAL ELECTRICAL LINEUP

COMPONENT #	DESCRIPTION	POSITION	INITIALS
VTP-DS-101	480 VOLT MAIN DISCONNECT	OFF	<i>ll</i>
VTP-DS-102	EXHAUST FAN MOTOR DISCONNECT	OFF	<i>ll</i>
VTP-DS-201	GLYCOL HEATER DISCONNECT	OFF	<i>ll</i>
VTP-BRK-101	MPZ PRIMARY BREAKER "MAIN"	OFF	<i>ll</i>
VTP-BRK-102	MPZ SECONDARY BREAKER "SECONDARY MAIN"	OFF	<i>ll</i>
120V CIRCUIT BREAKERS (LOCATED AT "MINI POWER ZONE" VTP-DP-101)			
MPZ-1	ACTION PAK RELAYS, POWER SUPPLIES, WILKERSON DISPLAY METERS	OFF	<i>ll</i>
MPZ-2	GLYCOL PUMP, SEAL POT PUMP, SHUNT TRIP, PILOT LIGHTS, ALARM BEACON	OFF	<i>ll</i>
MPZ-3	HEAT TRACE, GLYCOL CONTACTOR, HEAT TRACE LIGHT	OFF	<i>ll</i>
MPZ-4	CABINET HEATERS AND FANS	OFF	<i>ll</i>
MPZ-5	CONVENIENCE RECEPTACLE	OFF	<i>ll</i>
MPZ-6	GEMS "GFE" (SPARE)	OFF	<i>ll</i>
MPZ-7	AMS-4 "GFE" (SPARE)	OFF	<i>ll</i>
MPZ-8	FLAMMABLE GAS MONITOR (SPARE)	OFF	<i>ll</i>
MPZ-9	(SPARE)	N/A	N/A
MPZ-10	(SPARE)	N/A	N/A
CONTROL CABINET (VTP-CP-105)			
VTP-HS-103	FAN CONTROL	OFF	<i>ll</i>
VTP-HS-102	GLYCOL PUMP	OFF	<i>ll</i>
VTP-HS-101	SEAL POT PUMP CONTROL	AUTO	<i>ll</i>
VTP-HS-105	CONTROL CABINET HEAT/COOL	OFF	<i>ll</i>
HEAT TRACE CABINET (VTP-ENCL-104)			
VTP-HS-104	HEAT TRACE CABINET HEAT/COOL	OFF	<i>ll</i>

*Do Not Exist  
ll  
7/19/98*

Document No. <b>HNF-2687</b>	Date: <b>July 1, 1998</b>
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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 5 - ATP INITIAL VALVE LINEUP

VALVE #	DESCRIPTION	POSITION	INITIALS
VTP-V-135	HIGH ISOLATION VALVE MAIN AIRSTREAM	CLOSED	ll
VTP-V-136	LOW ISOLATION VALVE MAIN AIRSTREAM	CLOSED	ll
VTP-V-201	HIGH ISOLATION VALVE GLYCOL PUMP	CLOSED	ll
VTP-V-202	LOW ISOLATION VALVE GLYCOL PUMP	CLOSED	ll
VTP-V-203	GLYCOL TANK ISOLATION VALVE	CLOSED	ll
VTP-V-204	HEATER COIL ISOLATION VALVE	CLOSED	ll
VTP-V-205	GLYCOL SYSTEM DRAIN VALVE	CLOSED	ll
VTP-V-301	BACKFLOW PREVENTOR OUTLET ISOLATION VALVE	CLOSED	ll
VTP-V-302	BACKFLOW PREVENTOR INLET ISOLATION VALVE	CLOSED	ll
VTP-V-158	FAN ISOLATION VALVE	CLOSED	ll
VTP-V-160	SEAL POT DRAIN VALVE	CLOSED	ll
VTP-V-161	SEAL POT GRAVITY DRAIN VALVE	CLOSED	ll
VTP-V-162	SEAL POT FILL PORT VALVE	CLOSED	ll
VTP-V-163	SEAL POT PUMP RECYCLE VALVE	CLOSED	ll
VTP-V-164	SEAL POT PUMP VALVE	CLOSED	ll
VTP-V-165	SEAL POT PUMP ENCLOSURE DRAIN VALVE	CLOSED	ll
VTP-V-166	SEAL POT PUMP DRAIN VALVE	CLOSED	ll
VTP-V-137	HIGH ISOLATION VALVE HEATER/DEMISTER TRANSMITTER	CLOSED	ll
VTP-V-138	LOW ISOLATION VALVE HEATER/DEMISTER TRANSMITTER	CLOSED	ll
VTP-V-139	EQUALIZING ISOLATION VALVE HEATER/DEMISTER TRANSMITTER	CLOSED	ll
VTP-V-140	HIGH ISOLATION VALVE PREFILTER TRANSMITTER	CLOSED	ll
VTP-V-141	LOW ISOLATION VALVE PREFILTER TRANSMITTER	CLOSED	ll

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 5 - ATP INITIAL VALVE LINEUP

VALVE #	DESCRIPTION	POSITION	INITIALS
VTP-V-142	EQUALIZING ISOLATION VALVE PREFILTER TRANSMITTER	CLOSED	ll
VTP-V-143	HIGH ISOLATION VALVE HEPA FILTER #1 TRANSMITTER	CLOSED	ll
VTP-V-144	LOW ISOLATION VALVE HEPA FILTER #1 TRANSMITTER	CLOSED	ll
VTP-V-145	EQUALIZATION ISOLATION VALVE HEPA FILTER #1 TRANSMITTER	CLOSED	ll
VTP-V-146	HIGH ISOLATION VALVE HEPA FILTER #1&2 TRANSMITTER	CLOSED	ll
VTP-V-147	LOW ISOLATION VALVE HEPA FILTER #1&2 TRANSMITTER	CLOSED	ll
VTP-V-148	EQUALIZING ISOLATION VALVE HEPA FILTER #1&2 TRANSMITTER	CLOSED	ll
VTP-V-149	HIGH ISOLATION VALVE HEPA FILTER #2 TRANSMITTER	CLOSED	ll
VTP-V-150	LOW ISOLATION VALVE HEPA FILTER #2 TRANSMITTER	CLOSED	ll
VTP-V-151	EQUALIZATION ISOLATION VALVE HEPA FILTER #2 TRANSMITTER	CLOSED	ll
VTP-V-153	STACK (PITOT) VERIS TUBE	OPEN	*N/A
VTP-V-154	STACK (PITOT) VERIS TUBE	OPEN	*N/A
VTP-V-155	HIGH ISOLATION VALVE STACK FLOW TRANSMITTER	CLOSED	ll
VTP-V-156	LOW ISOLATION VALVE STACK FLOW TRANSMITTER	CLOSED	ll
VTP-V-157	EQUALIZING ISOLATION VALVE STACK FLOW TRANSMITTER	CLOSED	ll

\*Stack (pitot) veris tube valves have already been positioned to open.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 6 - VTP-FT-184 FIVE POINT CHECK

BT-200 VALUE	DP READING (PREDICTED) (INWC)	DP READING (ACTUAL)	TRANSMITTER OUTPUT (mA) (PREDICTED)	TRANSMITTER OUTPUT (mA) (ACTUAL)
0%	0.0	0.000	4	4
25%	1.0	1.000	8	8
50%	2.0	2.000	12	12
75%	3.0	3.000	16	16.75
100%	4.0	4.000	20	19.75

All actual values are with +/- 5% of predicted values.

*Tom D. Kavin* RE *7/12/98* 7/6/98  
 Cognizant Engineer Signature Date

*E. Enloe* 7/6/98  
 AI Inspector Signature Date

*PS Glumoff* 7.6.98  
 QC Inspector Signature Date

*[Signature]* 7/6/98  
 Test Director Signature Date

*ca 7/6/98*  
 Used & repaired C-Box for mA reading!

Cal Code 704-13-20-001

Exp Date: 5-1-99 *LW* 7/6/98

# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 7 - VTP-PDT-170 [0-(-20) INWC] FIVE POINT CHECK

BT-200 VALUE	DP READING (PREDICTED) (INWC)	DP READING (ACTUAL)	TRANSMITTER OUTPUT (mA) (PREDICTED)	TRANSMITTER OUTPUT (mA) (ACTUAL)
0%	0.0	0.00	4	4
25%	-5.0	-5.00	8	7.9
50%	-10.0	-10.00	12	11.9
75%	-15.0	-15.00	16	15.75
100%	-20.0	-20.00	20	19.75

All actual values are with +/- 5% of predicted values.

*Tony D. Kassis*      REC 7/22/98      7/6/98  
 Cognizant Engineer Signature      Date

*D. Enloe*      7/6/98  
 AI Inspector Signature      Date

*PJ Elmendorf*      7.6.98  
 QC Inspector Signature      Date

*[Signature]*      7/6/98  
 Test Director Signature      Date

*Used Brockhert C-Box for mA Reading*  
 Cal Code: 704-13-20-001  
 Exp date: 5-1-99  
 CR 7/6/98      *[Signature]* 7/6/98

**TANK FARM ACCEPTANCE TEST PROCEDURE**

**ATTACHMENT 8 - OPERATING/ALARM/INTERLOCK SET POINTS**

ADDRESS	DESCRIPTION	PLC	ENGINEERING UNITS
N18:3	PRE-FILTER DP HI ALARM RESET	9831	1.00 INWC
N18:5	STACK FLOW ALARM RESET	10560	4.83 INWC
N18:8	FILTER 1 DP HI ALARM RESET	8518	6.50 INWC
N18:11	FILTER 2 DP HI ALARM RESET	9615	7.34 INWC
N18:15	GLYCOL LEVEL TO ALARM RESET	10475	79.92%
N18:16	FILTER 1 TEMP HI ALARM RESET	160	160 F
N18:18	FILTER 1 TEMP LO ALARM RESET	13107	45 F
N18:19	SEAL POT LEVEL LO ALARM RESET	7864	35%
N18:20	SEAL POT LEVEL HI ALARM RESET	13107	75%
N19:2	PLENUM 1 PRESSURE LO SET POINT	5240	-3.5 INWC
N19:3	PRE-FILTER DP HI SET POINT	9831	1 INWC
N19:4	STACK FLOW LO SET POINT	16096	470.00 SCFM
N19:5	STACK FLOW HI SET POINT	29242	1100.00 SCFM
N19:6	FILTER 1 LO DP SET POINT	3408	0.10 INWC
N19:7	FILTER 1 DP HIHI SET POINT	10355	5.4 INWC
N19:8	FILTER 1 DP HI SET POINT	9175	4.5 INWC
N19:9	FILTER 2 DP LO SET POINT	3495	0.10 INWC
N19:10	FILTER 2 DP HIHI SET POINT	11360	3.7 INWC
N19:11	FILTER 2 DP HI SET POINT	10267	3.2 INWC
N19:12	FILTERS 1/2 DP LO SET POINT	3495	0.10 INWC
N19:13	FILTERS 1/2 DP HIHI SETPOINT	15073	5.4 INWC
N19:15	GLYCOL LEVEL LO	9831	50%
N19:16	FILTER 1 TEMP HI SET POINT	190	190 F
N19:18	FILTER 1 TEMP LO SET POINT	40	40 F

# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 8 (cont)

ADDRESS	DESCRIPTION	PLC	ENGINEERING UNITS
N19:19	SEAL POT LEVEL LO SET POINT	7209	30%
N19:20	SEAL POT LEVEL HI SET POINT	13763	80%
N19:25	INLET VACUUM LOW	N/A	N/A
N19:26	INLET VACUUM HIGH	N/A	N/A
N19:27	PLENUM 2 PRESSURE HIGH SETPOINT	5243	-3.5 INWC
N19:36	FILTER 1 ROC SET POINT	655	0.50 INWC
N19:37	FILTER 2 ROC SET POINT	655	0.50 INWC
N19:39	PLENUM 1 PRESSURE HI SETPOINT*	<del>14417</del> <sup>16384</sup> 9679	<del>-0.1</del> <sup>+5.0</sup> 3.5 INWC
F8:6	FLOW CONTROL SETPOINT	<del>27152</del> <sup>N/A</sup> 1000	<del>1000.00</del> <sup>500.00</sup> SCFM
F8.7	VACUUM CONTROL SETPOINT	N/A <sup>Ex. 3</sup> <del>7/2/98</del>	INWC

Exemption by  
 7/7/98  
 [Signature]  
 STET  
 CR 7/9/98

\* Bypass these alarms under vacuum control.

# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 9 - DATA ACQUISITION FOR LEAK RATE CALCULATION

(This page may be reproduced as necessary)

DATE: 7/8/98 EXHAUSTER: 008 TEST #: 1

ATP STEP #: 5.2.12

Barometric Pr. (BP <sub>i</sub> ): <u>29.845</u> inHg		Initial time (t <sub>i</sub> ): <u>8:49 AM</u>						
Barometric Pr. (BP <sub>f</sub> ): <u>29.347</u> inHg		Final time (t <sub>f</sub> ): <u>9:04</u>						
TIME	t <sub>i</sub>	t <sub>i</sub> +1	t <sub>i</sub> +2	t <sub>i</sub> +3	t <sub>i</sub> +4	t <sub>i</sub> +5	t <sub>i</sub> +6	t <sub>i</sub> +7
Pr (INWC)	P <sub>i</sub> = <u>19.3</u>	<u>19.3</u>	<u>19.3</u>	<u>19.2</u>	<u>19.3</u>	<u>19.3</u>	<u>19.2</u>	<u>19.2</u>
Temp (°F)	T <sub>i</sub> = <u>81</u>	<u>81</u>	<u>81</u>	<u>81</u>	<u>81</u>	<u>81</u>	<u>82</u>	<u>82</u>
TIME	t <sub>i</sub> +8	t <sub>i</sub> +9	t <sub>i</sub> +10	t <sub>i</sub> +11	t <sub>i</sub> +12	t <sub>i</sub> +13	t <sub>i</sub> +14	t <sub>f</sub> =t <sub>i</sub> +15
Pr (INWC)	<u>19.2</u>	<u>19.2</u>	<u>19.2</u>	<u>19.2</u>	<u>19.2</u>	<u>19.2</u>	<u>19.2</u>	P <sub>f</sub> = <u>19.2</u>
Temp (°F)	<u>82</u>	<u>82</u>	<u>82</u>	<u>82</u>	<u>82</u>	<u>82</u>	<u>82</u>	T <sub>f</sub> = <u>82</u>

NOTE: HANFORD WEATHER STATION - 373-2716

Pressure Gauge: WALLACE & TIEMAN  
 CAL Serial #: 646-31-04-085  
 Expiration DATE: 10/8/98



# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 9 - DATA ACQUISITION FOR LEAK RATE CALCULATION

(This page may be reproduced as necessary)

DATE: 7/1/98 EXHAUSTER: 008 TEST #: 2

ATP STEP #: 5.2.23

Barometric Pr. (BP <sub>i</sub> ): <u>29.345</u> inHg					Initial time (t <sub>i</sub> ): <u>9:46 AM</u>			
Barometric Pr. (BP <sub>f</sub> ): <u>29.440</u> inHg					Final time (t <sub>f</sub> ): <u>10:01</u>			
TIME	t <sub>i</sub>	t <sub>i</sub> +1	t <sub>i</sub> +2	t <sub>i</sub> +3	t <sub>i</sub> +4	t <sub>i</sub> +5	t <sub>i</sub> +6	t <sub>i</sub> +7
Pr. (INWC)	P <sub>i</sub> = <u>20.18</u>	<u>20.26</u>	<u>20.26</u>	<u>20.24</u>	<u>20.24</u>	<u>20.23</u>	<u>20.21</u>	<u>20.20</u>
Temp. (°F)	T <sub>i</sub> = <u>82</u>	<u>82</u>	<u>82</u>	<u>82</u>	<u>82</u>	<u>82</u>	<u>82</u>	<u>82</u>
TIME	t <sub>i</sub> +8	t <sub>i</sub> +9	t <sub>i</sub> +10	t <sub>i</sub> +11	t <sub>i</sub> +12	t <sub>i</sub> +13	t <sub>i</sub> +14	t <sub>f</sub> = t <sub>i</sub> +15
Pr. (INWC)	<u>20.16</u>	<u>20.16</u>	<u>20.13</u>	<u>20.12</u>	<u>20.09</u>	<u>20.08</u>	<u>20.06</u>	P <sub>f</sub> = <u>20.02</u>
Temp. (°F)	<u>82</u>	<u>82</u>	<u>82</u>	<u>82</u>	<u>82</u>	<u>82</u>	<u>82</u>	T <sub>f</sub> = <u>82</u>

NOTE: HANFORD WEATHER STATION - - 373-2716

PRESSURE GAUGE: ROCHESTER INSTRUMENT SYSTEMS  
 CAL SERIAL #: 778-31-04-036  
 Expiration Date: 2/23/99

Document No. <b>HNF-2687</b>	Date: <b>July 1, 1998</b>
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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 9 - DATA ACQUISITION FOR LEAK RATE CALCULATION

(This page may be reproduced as necessary)

DATE: 7/14/98 EXHAUSTER: 008 TEST #: 3

ATP STEP #: 5.22.17

Barometric Pr. (BP <sub>i</sub> ): <u>29.278</u> inHg					Initial time (t <sub>i</sub> ): <u>1:30</u>			
Barometric Pr. (BP <sub>f</sub> ): <u>29.272</u> inHg					Final time (t <sub>f</sub> ): <u>1:45</u>			
TIME	t <sub>i</sub>	t <sub>i</sub> +1	t <sub>i</sub> +2	t <sub>i</sub> +3	t <sub>i</sub> +4	t <sub>i</sub> +5	t <sub>i</sub> +6	t <sub>i</sub> +7
Pr (INWC)	P <sub>i</sub> = <u>20.0</u>	<u>20.0</u>	<u>20.1</u>	<u>20.2</u>	<u>20.3</u>	<u>20.3</u>	<u>20.3</u>	<u>20.4</u>
Temp (°F)	T <sub>i</sub> = <u>88</u>							
TIME	t <sub>i</sub> +8	t <sub>i</sub> +9	t <sub>i</sub> +10	t <sub>i</sub> +11	t <sub>i</sub> +12	t <sub>i</sub> +13	t <sub>i</sub> +14	t <sub>f</sub> =t <sub>i</sub> +15
Pr (INWC)	<u>20.4</u>	<u>20.4</u>	<u>20.5</u>	<u>20.5</u>	<u>20.6</u>	<u>20.6</u>	<u>20.6</u>	P <sub>f</sub> = <u>20.6</u> <i>FWL</i>
Temp (°F)								T <sub>f</sub> = <u>88</u> <i>FWL</i>

NOTE: HANFORD WEATHER STATION - 373-2716

PRESSURE GAUGE: WALLACE & TIERNAN

CAL Serial #: 646-31-04-085

Expiration Date: 10/8/98

NOTE: Pressure initially set at 19.5 INWC.  
Pressure climbed during 10 min Hold  
prior to data acquisition. *FWL*

# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 9 - DATA ACQUISITION FOR LEAK RATE CALCULATION

(This page may be reproduced as necessary)

DATE: 7/14/98 EXHAUSTER: 008 TEST #: 4

ATP STEP #: 5.22.28

Barometric Pr. (BP <sub>i</sub> ):		<u>29.272</u> inHg				Initial time (t <sub>i</sub> ):				<u>2:26</u>
Barometric Pr. (BP <sub>f</sub> ):		<u>29.267</u> inHg				Final time (t <sub>f</sub> ):				<u>2:41</u>
TIME	t <sub>i</sub>	t <sub>i</sub> +1	t <sub>i</sub> +2	t <sub>i</sub> +3	t <sub>i</sub> +4	t <sub>i</sub> +5	t <sub>i</sub> +6	t <sub>i</sub> +7		
Pr (INWC)	P <sub>i</sub> = <u>19.59</u>	<u>19.59</u>	<u>19.60</u>	<u>19.59</u>	<u>19.59</u>	<u>19.59</u>	<u>19.63</u>	<u>19.60</u>		
Temp (°F)	T <sub>i</sub> = <u>89</u>									
TIME	t <sub>i</sub> +8	t <sub>i</sub> +9	t <sub>i</sub> +10	t <sub>i</sub> +11	t <sub>i</sub> +12	t <sub>i</sub> +13	t <sub>i</sub> +14	t <sub>f</sub> =t <sub>i</sub> +15		
Pr (INWC)	<u>19.55</u>	<u>19.58</u>	<u>19.55</u>	<u>19.55</u>	<u>19.54</u>	<u>19.54</u>	<u>19.52</u>		P <sub>f</sub> = <u>19.49</u>	
Temp (°F)									T <sub>f</sub> = <u>89</u>	

NOTE: HANFORD WEATHER STATION - 373-2716

Pressure Gauge: Rochester Instrument Systems  
 CAL Serial #: 778-31-04-036  
 Expiration Date: 2/23/99

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 10 - LEAKAGE RATE CALCULATION

(This page may be reproduced as necessary)

DATE: 7/18/98 EXHAUSTER: 008 TEST # : 1

WORKSHEET

	INITIAL	FINAL
Time	$t_i = 8:49$	$t_f = 9:04$
Pressure (psig)	$P_i = \frac{20.840}{19.3} \text{ INWC} / 27.7$ $= 19.3 \Rightarrow .69675$	$P_f = \frac{20.847}{19.2} \text{ INWC} / 27.7$ $= 19.2 \Rightarrow .693141$
Barometric pr (inHg)	$BP_i = 29.345 \text{ inHg} \times 0.491$ $= 14.408$	$BP_f = 29.347 \text{ inHg} \times 0.491$ $= 14.409$
Duct pr (psfa)	$DP_i = (P_i + BP_i)(144)$ $= 2175.141$	$DP_f = (P_f + BP_f)(144)$ $= 2174.76$
Temperature (°R)	$T_i = 81 \text{ °F}$ $T_{iR} = T_i + 460 = 541 \text{ °R}$	$T_f = 82 \text{ °F}$ $T_{fR} = T_f + 460 = 542 \text{ °R}$

\* Same as Test # entered on Attachment 9

Test Volume:  $V = 55.7$  cubic feet

Gas constant:  $R = 53.35$  ft lb/(lb\*degR)

Test Duration:  $\Delta t = (t_f - t_i) = 15$  minutes

$$Q = \frac{4.00}{(DP_i/T_{iR} - DP_f/T_{fR})V} / (R \times \Delta t \times 0.075) = 0.0089 \text{ SCFM}$$

*Assuming Non Zero Turn*

$Q$  is the Average total leak rate per ASME N510-1989, Section 6.5.3.9, in standard ft<sup>3</sup>/min (SCFM).

$L_s =$  Allowable Leak Rate = 0.3 SCFM

(PASS/RETEST)

Test Director Signature

Date

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 10 - LEAKAGE RATE CALCULATION

(This page may be reproduced as necessary)

DATE: 7/8/98 EXHAUSTER: 008 TEST\* #: 1

	INITIAL	FINAL
Time	$t_i = 8:49$	$t_f = 9:04$
Pressure (psig)	$P_i = \frac{19.3}{.69} \text{ INWC} / 27.7$	$P_f = \frac{19.2}{.69} \text{ INWC} / 27.7$
Barometric pr (inHg)	$BP_i = \frac{29.345}{14.408} \text{ inHg} \times 0.491$	$BP_f = \frac{29.347}{14.409} \text{ inHg} \times 0.491$
Duct pr (psfa)	$DP_i = (P_i + BP_i)(144)$ $= 2175.1$	$DP_f = (P_f + BP_f)(144)$ $= 2174.7$
Temperature ( $^{\circ}$ R)	$T_i = 81^{\circ}\text{F}$ $T_{iR} = T_i + 460 = 541^{\circ}\text{R}$	$T_f = 82^{\circ}\text{F}$ $T_{fR} = T_f + 460 = 542^{\circ}\text{R}$

\* Same as Test # entered on Attachment 9

Test Volume:  $V = 55.7$  cubic feet

Gas constant:  $R = 53.35$  ft lb/(lb\*degR)

Test Duration:  $\Delta t = (t_f - t_i) = 15$  minutes

$Q = \frac{4.020}{4.020} \frac{DP_i/T_{iR} - DP_f/T_{fR}}{R \times \Delta t \times 0.075} V = \emptyset$  SCFM

$\emptyset$  Q is the Average total leak rate per ASME N510-1989, Section 6.5.3.9, in standard ft<sup>3</sup>/min (SCFM).

$L_s =$  Allowable Leak Rate = 0.3 SCFM

Pass  
(PASS/RETEST)

  
Test Director Signature

7/8/98  
Date

# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 10 - LEAKAGE RATE CALCULATION

(This page may be reproduced as necessary)

DATE: 7/8/98 EXHAUSTER: 008 TEST\* #: 2

	INITIAL	FINAL
Time	$t_i = 9:46$	$t_f = 10:01$
Pressure (psig)	$P_i = 20.28$ INWC / 27.7 $= 0.7321$	$P_f = 20.02$ INWC / 27.7 $= .722$
Barometric pr (inHg)	$BP_i = 29.345$ inHg x 0.491 $= 14.408$	$BP_f = 29.440$ inHg x 0.491 $= 14.455$
Duct pr (psfa)	$DP_i = (P_i + BP_i)(144)$ $= 2180$	$DP_f = (P_f + BP_f)(144)$ $= 2185$
Temperature (°R)	$T_i = 82$ °F $T_{iR} = T_i + 460 = 542$ °R	$T_f = 82$ °F $T_{fR} = T_f + 460 = 542$ °R

\* Same as Test # entered on Attachment 9

Test Volume:  $V = 55.7$  cubic feet

Gas constant:  $R = 53.35$  ft lb/(lb\*degR)

Test Duration:  $\Delta t = (t_f - t_i) = 15$  minutes

$$Q = (DP_i/T_{iR} \swarrow_{4.022} / DP_f/T_{fR} \swarrow_{4.032}) V / (R \times \Delta t \times 0.075) = \cancel{0} \text{ SCFM}$$

$\cancel{0}$  Q is the Average total leak rate per ASME N510-1989, Section 6.5.3.9, in standard ft<sup>3</sup>/min (SCFM).

$L_s =$  Allowable Leak Rate = 0.3 SCFM

PASS

(PASS/RETEST)

[Signature]  
Test Director Signature

7/8/98  
Date

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 10 - LEAKAGE RATE CALCULATION

(This page may be reproduced as necessary)

DATE: 7/14/98

EXHAUSTER: 008

TEST\* #: 3

**WORKSHEET**

	INITIAL	FINAL
Time	$t_i = 1:30$	$t_f = 1:45$
Pressure (psig)	$P_i = 20.0 \text{ INWC} / 27.7$ $= .7$	$P_f = 20.7 \text{ INWC} / 27.7$ $= .7$
Barometric pr (inHg)	$BP_i = 29.278 \text{ inHg} \times 0.491$ $= 14.375$	$BP_f = 29.272 \text{ inHg} \times 0.491$ $= 14.373$
Duct pr (psfa)	$DP_i = (P_i + BP_i)(144)$ $= 2170.8$	$DP_f = (P_f + BP_f)(144)$ $= 2170.5$
Temperature ( $^{\circ}\text{R}$ )	$T_i = 88^{\circ}\text{F}$ $T_{iR} = T_i + 460 = 548^{\circ}\text{R}$	$T_f = 88^{\circ}\text{F}$ $T_{fR} = T_f + 460 = 548^{\circ}\text{R}$

\* Same as Test # entered on Attachment 9

Test Volume:  $V = 55.7$  cubic feet

Gas constant:  $R = 53.35$  ft lb/(lb\*degR)

Test Duration:  $\Delta t = (t_f - t_i) = 15$  minutes

$Q = (DP_i/T_{iR} - DP_f/T_{fR})V / (R \times \Delta t \times 0.075) = 0$  SCFM

$Q$  is the Average total leak rate per ASME N510-1989, Section 6.5.3.9, in standard  $\text{ft}^3/\text{min}$  (SCFM).

$L_s = \text{Allowable Leak Rate} = 0.3$  SCFM

(PASS/RETEST)

Test Director Signature

Date

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 10 - LEAKAGE RATE CALCULATION

(This page may be reproduced as necessary)

DATE: 7/14/98 EXHAUSTER: 008 TEST\* #: 3

	INITIAL	FINAL
Time	$t_i = 1:30$	$t_f = 1:45$
Pressure (psig)	$P_i = 20.0$ INWC / 27.7 $= 0.7$	$P_f = 20.7$ INWC / 27.7 $= 0.7$
Barometric pr (inHg)	$BP_i = 29.270$ inHg x 0.491 $= 14.375$	$BP_f = 29.272$ inHg x 0.491 $= 14.373$
Duct pr (psfa)	$DP_i = (P_i + BP_i)(144)$ $= 2170.8$	$DP_f = (P_f + BP_f)(144)$ $= 2170.5$
Temperature ( $^{\circ}R$ )	$T_i = 88$ $^{\circ}F$ $T_{iR} = T_i + 460 = 548$ $^{\circ}R$	$T_f = 88$ $^{\circ}F$ $T_{fR} = T_f + 460 = 548$ $^{\circ}R$

\* Same as Test # entered on Attachment 9

Test Volume:  $V = 55.7$  cubic feet

Gas constant:  $R = 53.35$  ft lb/(lb\*degR)

Test Duration:  $\Delta t = (t_f - t_i) = 15$  minutes

$Q = (DP_i/T_{iR} - DP_f/T_{fR}) V / (R \times \Delta t \times 0.075) = 0$  SCFM

$Q$  is the Average total leak rate per ASME N510-1989, Section 6.5.3.9, in standard ft<sup>3</sup>/min (SCFM).

$L_s =$  Allowable Leak Rate = 0.3 SCFM

PASS  
(PASS/RETEST)

  
Test Director Signature

7/14/98  
Date



# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 10 - LEAKAGE RATE CALCULATION

(This page may be reproduced as necessary)

DATE: 7/14 EXHAUSTER: 008 TEST\* #: 4

WORKSHEET

	INITIAL	FINAL
Time	$t_i = 2:26$	$t_f = 2:41$
Pressure (psig)	$P_i = 19.59$ INWC / 27.7 $= .71$	$P_f = 19.49$ INWC / 27.7 $= .70$
Barometric pr (inHg)	$BP_i = 29.272$ inHg x 0.491 $= 14.373$	$BP_f = 29.267$ inHg x 0.491 $= 14.370$
Duct pr (psfa)	$DP_i = (P_i + BP_i)(144)$ $= 2171.95$	$DP_f = (P_f + BP_f)(144)$ $= 2170.08$
Temperature (°R)	$T_i = 89$ °F $T_{iR} = T_i + 460 = 549$ °R	$T_f = 89$ °F $T_{fR} = T_f + 460 = 549$ °R

\* Same as Test # entered on Attachment 9

Test Volume:  $V = 55.7$  cubic feet

Gas constant:  $R = 53.35$  ft lb/(lb\*degR)

Test Duration:  $\Delta t = (t_f - t_i) = 15$  minutes

$Q = (DP_i/T_{iR} - DP_f/T_{fR})V / (R \times \Delta t \times 0.075) = 0$  SCFM

$Q$  is the Average total leak rate per ASME N510-1989, Section 6.5.3.9, in standard ft<sup>3</sup>/min (SCFM).

$L_s =$  Allowable Leak Rate = 0.3 SCFM

\_\_\_\_\_  
(PASS/RETEST)                      Test Director Signature                      Date

Document No. <b>HNF-2687</b>	Date: <b>July 1, 1998</b>
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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 10 - LEAKAGE RATE CALCULATION

(This page may be reproduced as necessary)

DATE: 7/14/98 EXHAUSTER: 008 TEST\* #: 004

	INITIAL	FINAL
Time	$t_i = 2:26$	$t_f = 2:41$
Pressure (psig)	$P_i = 19.59$ INWC / 27.7 $= 0.71$	$P_f = 19.49$ INWC / 27.7 $= 0.70$
Barometric pr (inHg)	$BP_i = 29.272$ inHg x 0.491 $= 14.373$	$BP_f = 29.267$ inHg x 0.491 $= 14.370$
Duct pr (psfa)	$DP_i = (P_i + BP_i)(144)$ $= 2171.95$	$DP_f = (P_f + BP_f)(144)$ $= 2170.08$
Temperature (°R)	$T_i = 89$ °F $T_{iR} = T_i + 460 = 549$ °R	$T_f = 89$ °F $T_{fR} = T_f + 460 = 549$ °R

\* Same as Test # entered on Attachment 9

Test Volume:  $V = 55.7$  cubic feet

Gas constant:  $R = 53.35$  ft lb/(lb\*degR)

Test Duration:  $\Delta t = (t_f - t_i) = 15$  minutes

$Q = (DP_i/T_{iR} - DP_f/T_{fR})V / (R \times \Delta t \times 0.075) = 0$  SCFM

$Q$  is the Average total leak rate per ASME N510-1989, Section 6.5.3.9, in standard ft<sup>3</sup>/min (SCFM).

$L_s =$  Allowable Leak Rate = 0.3 SCFM

PASS  
(PASS/RETEST)

[Signature] 7/14/98  
Test Director Signature Date

# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 11 - FUNCTIONAL TEST VALVE LINEUP

VALVE #	DESCRIPTION	POSITION	INITIALS
VTP-V-135	HIGH ISOLATION VALVE MAIN AIRSTREAM	OPEN	ll ✓
VTP-V-136	LOW ISOLATION VALVE MAIN AIRSTREAM	OPEN	ll ✓
VTP-V-201	HIGH ISOLATION VALVE GLYCOL PUMP	OPEN	ll ✓
VTP-V-202	LOW ISOLATION VALVE GLYCOL PUMP	OPEN	ll ✓
VTP-V-203	GLYCOL TANK ISOLATION VALVE	OPEN	ll ✓
VTP-V-204	HEATER COIL ISOLATION VALVE	OPEN	ll ✓
VTP-V-205	GLYCOL SYSTEM DRAIN VALVE	CLOSED	ll ✓
VTP-V-301	BACKFLOW PREVENTOR OUTLET ISOLATION VALVE	CLOSED	ll ✓
VTP-V-302	BACKFLOW PREVENTOR INLET ISOLATION VALVE	CLOSED	ll ✓
VTP-V-158	FAN ISOLATION VALVE	OPEN	ll ✓
VTP-V-160	SEAL POT DRAIN VALVE	CLOSED	ll ✓
VTP-V-161	SEAL POT GRAVITY DRAIN VALVE	CLOSED	ll ✓
VTP-V-162	SEAL POT FILL PORT VALVE	CLOSED	ll ✓
VTP-V-163	SEAL POT PUMP RECYCLE VALVE	CLOSED	ll ✓
VTP-V-164	SEAL POT PUMP VALVE	OPEN	ll ✓
VTP-V-165	SEAL POT PUMP ENCLOSURE DRAIN VALVE	OPEN	ll ✓
VTP-V-166	SEAL POT PUMP DRAIN VALVE	OPEN	ll ✓
VTP-V-137	HIGH ISOLATION VALVE HEATER/DEMISTER TRANSMITTER	OPEN	ll ✓
VTP-V-138	LOW ISOLATION VALVE HEATER/DEMISTER TRANSMITTER	OPEN	ll ✓
VTP-V-139	EQUALIZING ISOLATION VALVE HEATER/DEMISTER TRANSMITTER	CLOSED	ll ✓
VTP-V-140	HIGH ISOLATION VALVE PREFILTER TRANSMITTER	OPEN	ll ✓
VTP-V-141	LOW ISOLATION VALVE PREFILTER TRANSMITTER	OPEN	ll ✓

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# TANK FARM ACCEPTANCE TEST PROCEDURE

VALVE #	DESCRIPTION	POSITION	INITIALS
<b>ATTACHMENT 11 (cont) FUNCTION TEST VALVE LINEUP</b>			
VTP-V-142	EQUALIZING ISOLATION VALVE PREFILTER TRANSMITTER	CLOSED	ll ✓
VTP-V-143	HIGH ISOLATION VALVE HEPA FILTER #1 TRANSMITTER	OPEN	ll ✓
VTP-V-144	LOW ISOLATION VALVE HEPA FILTER #1 TRANSMITTER	OPEN	ll ✓
VTP-V-145	EQUALIZATION ISOLATION VALVE HEPA FILTER #1 TRANSMITTER	CLOSED	ll ✓
VTP-V-146	HIGH ISOLATION VALVE HEPA FILTER #1&2 TRANSMITTER	OPEN	ll ✓
VTP-V-147	LOW ISOLATION VALVE HEPA FILTER #1&2 TRANSMITTER	OPEN	ll ✓
VTP-V-148	EQUALIZING ISOLATION VALVE HEPA FILTER #1&2 TRANSMITTER	CLOSED	ll ✓
VTP-V-149	HIGH ISOLATION VALVE HEPA FILTER #2 TRANSMITTER	OPEN	ll ✓
VTP-V-150	LOW ISOLATION VALVE HEPA FILTER #2 TRANSMITTER	OPEN	ll ✓
VTP-V-151	EQUALIZATION ISOLATION VALVE HEPA FILTER #2 TRANSMITTER	CLOSED	ll ✓
VTP-V-153	STACK (PITOT) VERIS TUBE	OPEN	*N/A ✓
VTP-V-154	STACK (PITOT) VERIS TUBE	OPEN	*N/A ✓
VTP-V-155	HIGH ISOLATION VALVE STACK FLOW TRANSMITTER	OPEN	ll ✓
VTP-V-156	LOW ISOLATION VALVE STACK FLOW TRANSMITTER	OPEN	ll ✓
VTP-V-157	EQUALIZING ISOLATION VALVE STACK FLOW TRANSMITTER	CLOSED	ll ✓

\*Stack (pitot) veris tube valves have already been positioned to open.

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 12 - FUNCTIONAL TEST ELECTRICAL LINEUP

COMPONENT #	DESCRIPTION	POSITION	INITIALS
VTP-DS-101	480 VOLT MAIN DISCONNECT	ON	ll
VTP-DS-102	EXHAUST FAN MOTOR DISCONNECT	ON	ll
VTP-DS-201	GLYCOL HEATER DISCONNECT	ON	ll
VTP-BRK-101	MPZ PRIMARY BREAKER "MAIN"	ON	ll
VTP-BRK-102	MPZ SECONDARY BREAKER "SECONDARY MAIN"	ON	ll
120V CIRCUIT BREAKERS (LOCATED AT "MINI POWER ZONE" VTP-DP-101)			
MPZ-1	ACTION PAK RELAYS, POWER SUPPLIES, WILKERSON DISPLAY METERS	ON	ll
MPZ-2	GLYCOL PUMP, SEAL POT PUMP, SHUNT TRIP, PILOT LIGHTS, ALARM BEACON	ON	ll
MPZ-3	HEAT TRACE, GLYCOL CONTACTOR, HEAT TRACE LIGHT	ON	ll
MPZ-4	CABINET HEATERS AND FANS	ON	ll
MPZ-5	CONVENIENCE RECEPTACLE	ON	ll
MPZ-6	GEMS "GFE" (SPARE)	ON	ll
MPZ-7	AMS-4 "GFE" (SPARE)	ON	ll
MPZ-8	FLAMMABLE GAS MONITOR (SPARE)	ON	ll
MPZ-9	(SPARE)	N/A	N/A
MPZ-10	(SPARE)	N/A	N/A
CONTROL CABINET (VTP-CP-105)			
VTP-HS-103	FAN CONTROL	ON	ll
VTP-HS-102	GLYCOL PUMP	ON	ll
VTP-HS-101	SEAL POT PUMP CONTROL	AUTO	ll
VTP-HS-105	CONTROL CABINET HEAT/COOL	OFF	ll
HEAT TRACE CABINET (VTP-ENCL-104)			
VTP-HS-104	HEAT TRACE CABINET HEAT/COOL	OFF	ll

Do Not  
EXIST  
7/19/98

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 13 - FUNCTIONAL TEST PRESSURE CONTROL OPERATIONAL, ALARM, INTERLOCK SET POINTS

ADDRESS	DESCRIPTION	PLC	ENGINEERING UNITS
N18:3	PRE-FILTER DP HI ALARM RESET	9831	1.00 INWC
N18:5	STACK FLOW ALARM RESET	10560	4.83 INWC
N18:8	FILTER 1 DP HI ALARM RESET	8518	6.50 INWC
N18:11	FILTER 2 DP HI ALARM RESET	9615	7.34 INWC
N18:15	GLYCOL LEVEL LO ALARM RESET	10475	79.92%
N18:16	FILTER 1 TEMP HI ALARM RESET	160	160 F
N18:18	FILTER 1 TEMP LO ALARM RESET	<del>13107</del> 45	45 F
N18:19	SEAL POT LEVEL LO ALARM RESET	7864	35%
N18:20	SEAL POT LEVEL HI ALARM RESET	13107	75%
N19:2	PLENUM 1 PRESSURE LO <sup>8</sup> SET POINT	5240	-3.5 INWC
N19:3	PRE-FILTER DP HI SET POINT	9831	1 INWC
N19:4	STACK FLOW LO SET POINT	20356	675.00 SCFM
N19:5	STACK FLOW HI SET POINT	27152	1000.00 SCFM
N19:6	FILTER 1 LO DP SET POINT	3408	0.10 INWC
N19:7	FILTER 1 DP HIHI SET POINT	10355	5.40 INWC
N19:8	FILTER 1 DP HI SET POINT	9175	4.50 INWC
N19:9	FILTER 2 DP LO SET POINT	3495	0.10 INWC
N19.10	FILTER 2 DP HIHI SET POINT	11360	3.7 INWC
N19.11	FILTER 2 DP HI SET POINT	10267	3.2 INWC
N19:12	FILTERS 1/2 DP LO SET POINT	3495	0.10 INWC
N19:13	FILTERS 1/2 DP HIHI SETPOINT	15073	5.40 INWC
N19:15	GLYCOL LEVEL LO	9831	50%
N19:16	FILTER 1 TEMP HI SET POINT	190	190 F
N19:18	FILTER 1 TEMP LO SET POINT	40	40 F
N19:19	SEAL POT LEVEL LO SET POINT	7209	30%

VLL  
7/17/98  
Ex. 9

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 13 (Cont)

ADDRESS	DESCRIPTION	PLC	ENGINEERING UNITS
N19:20	SEAL POT LEVEL HI SET POINT	13763	80%
N19:25	INLET VACUUM LOW	7209	6 INWC
N19:26	INLET VACUUM HIGH	11633	12.75 INWC
N19:27	PLENUM 2 PRESSURE HIGH SETPOINT	N/A	N/A
N19:36	FILTER 1 ROC SET POINT	655	0.50 INWC
N19:37	FILTER 2 ROC SET POINT	655	0.50 INWC
N19:39	PLENUM 1 PRESSURE HI SETPOINT*	14417 <sup>16384</sup> <del>9699</del>	<del>0.5</del> <sup>+5.0</sup> INWC
F8:6	FLOW CONTROL SETPOINT	N/A	N/A
F8.7	VACUUM CONTROL SETPOINT	<del>11141</del> 12	12 INWC

*Ex. 9*  
*7/7/98*

*Ex. 9*  
*7/7/98*

\* Bypass these alarms under vacuum control.

# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 14 - FUCTIONAL TEST HIGH VACUUM OPERATIONAL, ALARM, INTERLOCK SET POINTS

ADDRESS	DESCRIPTION	PLC	ENGINEERING UNITS
N18:3	PRE-FILTER DP HI ALARM RESET	9831	1.00 INWC
N18:5	STACK FLOW ALARM RESET	10560	4.83 INWC
N18:8	FILTER 1 DP HI ALARM RESET	8518	6.50 INWC
N18:11	FILTER 2 DP HI ALARM RESET	9615	7.34 INWC
N18:15	GLYCOL LEVEL LO ALARM RESET	10475	79.92%
N18:16	FILTER 1 TEMP HI ALARM RESET	160	160 F
N18:18	FILTER 1 TEMP LO ALARM RESET	<del>33107</del> 45 Engineering 7/19/98 WLL	45 F
N18:19	SEAL POT LEVEL LO ALARM RESET	7864	35%
N18:20	SEAL POT LEVEL HI ALARM RESET	13107	75%
N19:2	PLENUM 1 PRESSURE LO <sup>2</sup> SET POINT	5240	-3.5 INWC
N19:3	PRE-FILTER DP HI SET POINT	9831	1 INWC
N19:4	STACK FLOW LO SET POINT	20356	675.00 SCFM
N19:5	STACK FLOW HI SET POINT	27152	1000 SCFM
N19:6	FILTER 1 LO DP SET POINT	3408	0.10 INWC
N19:7	FILTER 1 DP HIHI SET POINT	10355	5.40 INWC
N19:8	FILTER 1 DP HI SET POINT	9175	4.50 INWC
N19:9	FILTER 2 DP LO SET POINT	3495	0.10 INWC
N19.10	FILTER 2 DP HIHI SET POINT	11360	3.7 INWC
N19.11	FILTER 2 DP HI SET POINT	10267	3.2 INWC
N19:12	FILTERS 1/2 DP LO SET POINT	3495	0.10 INWC
N19:13	FILTERS 1/2 DP HIHI SETPOINT	15073	5.40 INWC
N19:15	GLYCOL LEVEL LO	9831	50%
N19:16	FILTER 1 TEMP HI SET POINT	190	190 F
N19:18	FILTER 1 TEMP LO SET POINT	40	40 F
N19:19	SEAL POT LEVEL LO SET POINT	7209	30%

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# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 14 (Cont)

ADDRESS	DESCRIPTION	PLC	ENGINEERING UNITS
N19:20	SEAL POT LEVEL HI SET POINT	13763	80%
N19:25	INLET VACUUM LOW	7209	6 INWC
N19:26	INLET VACUUM HIGH	16056	19.5 INWC
N19:27	PLENUM 2 PRESSURE HIGH SETPOINT	N/A	N/A
N19:36	FILTER 1 ROC SET POINT	655	0.50 INWC
N19:37	FILTER 2 ROC SET POINT	655	0.50 INWC
N19:39	PLENUM 1 PRESSURE HI SETPOINT*	14417 <i>16384</i>	<i>5.0</i> -0.3.5 INWC
F8:6	FLOW CONTROL SETPOINT	N/A	N/A
F8.7	VACUUM CONTROL SETPOINT	16834 <i>N/A</i>	MAXIMUM

\* Bypass these alarms under vacuum control.

*Ex. 9*  
*WV*  
*7/7/98*  
*WV*  
*7/8/98*  
*WV*  
*7/7/98*

*Ex. 9*

# TANK FARM ACCEPTANCE TEST PROCEDURE

## ATTACHMENT 15 - ATP FINAL VALVE LINEUP

VALVE #	DESCRIPTION	POSITION	INITIALS
VTP-V-135	HIGH ISOLATION VALVE MAIN AIRSTREAM	CLOSED	LL
VTP-V-136	LOW ISOLATION VALVE MAIN AIRSTREAM	CLOSED	LL
VTP-V-201	HIGH ISOLATION VALVE GLYCOL PUMP	CLOSED	LL
VTP-V-202	LOW ISOLATION VALVE GLYCOL PUMP	CLOSED	LL
VTP-V-203	GLYCOL TANK ISOLATION VALVE	CLOSED	LL
VTP-V-204	HEATER COIL ISOLATION VALVE	CLOSED	LL
VTP-V-205	GLYCOL SYSTEM DRAIN VALVE	CLOSED	LL
VTP-V-301	BACKFLOW PREVENTOR OUTLET ISOLATION VALVE	CLOSED	LL
VTP-V-302	BACKFLOW PREVENTOR INLET ISOLATION VALVE	CLOSED	LL
VTP-V-158	FAN ISOLATION VALVE	CLOSED	LL
VTP-V-160	SEAL POT DRAIN VALVE	CLOSED	LL
VTP-V-161	SEAL POT GRAVITY DRAIN VALVE	CLOSED	LL
VTP-V-162	SEAL POT FILL PORT VALVE	CLOSED	LL
VTP-V-163	SEAL POT PUMP RECYCLE VALVE	CLOSED	LL
VTP-V-164	SEAL POT PUMP VALVE	CLOSED	LL
VTP-V-165	SEAL POT PUMP ENCLOSURE DRAIN VALVE	CLOSED	LL
VTP-V-166	SEAL POT PUMP DRAIN VALVE	CLOSED	LL
VTP-V-101	HIGH ISOLATION VALVE PLENUM TRANSMITTER	CLOSED	LL
VTP-V-102	LOW ISOLATION VALVE PLENUM TRANSMITTER	CLOSED	LL
VTP-V-103	EQUALIZATION ISOLATION VALVE PLENUM TRANSMITTER	CLOSED	LL
VTP-V-137	HIGH ISOLATION VALVE HEATER/DEMISTER TRANSMITTER	CLOSED	LL
VTP-V-138	LOW ISOLATION VALVE HEATER/DEMISTER TRANSMITTER	CLOSED	LL
VTP-V-139	EQUALIZING ISOLATION VALVE HEATER/DEMISTER TRANSMITTER	CLOSED	LL

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# TANK FARM ACCEPTANCE TEST PROCEDURE

VALVE #	DESCRIPTION	POSITION	INITIALS
VTP-V-140	HIGH ISOLATION VALVE PREFILTER TRANSMITTER	CLOSED	<i>RL</i>
VTP-V-141	LOW ISOLATION VALVE PREFILTER TRANSMITTER	CLOSED	<i>RL</i>
VTP-V-142	EQUALIZING ISOLATION VALVE PREFILTER TRANSMITTER	CLOSED	<i>RL</i>
VTP-V-143	HIGH ISOLATION VALVE HEPA FILTER #1 TRANSMITTER	CLOSED	<i>RL</i>
VTP-V-144	LOW ISOLATION VALVE HEPA FILTER #1 TRANSMITTER	CLOSED	<i>RL</i>
VTP-V-145	EQUALIZATION ISOLATION VALVE HEPA FILTER #1 TRANSMITTER	CLOSED	<i>RL</i>
VTP-V-146	HIGH ISOLATION VALVE HEPA FILTER #1&2 TRANSMITTER	CLOSED	<i>RL</i>
VTP-V-147	LOW ISOLATION VALVE HEPA FILTER #1&2 TRANSMITTER	CLOSED	<i>RL</i>
VTP-V-148	EQUALIZING ISOLATION VALVE HEPA FILTER #1&2 TRANSMITTER	CLOSED	<i>RL</i>
VTP-V-149	HIGH ISOLATION VALVE HEPA FILTER #2 TRANSMITTER	CLOSED	<i>RL</i>
VTP-V-150	LOW ISOLATION VALVE HEPA FILTER #2 TRANSMITTER	CLOSED	<i>RL</i>
VTP-V-151	EQUALIZATION ISOLATION VALVE HEPA FILTER #2 TRANSMITTER	CLOSED	<i>RL</i>
VTP-V-153	STACK (PITOT) VERIS TUBE	OPEN	*N/A
VTP-V-154	STACK (PITOT) VERIS TUBE	OPEN	*N/A
VTP-V-155	HIGH ISOLATION VALVE STACK FLOW TRANSMITTER	CLOSED	<i>RL</i>
VTP-V-156	LOW ISOLATION VALVE STACK FLOW TRANSMITTER	CLOSED	<i>RL</i>
VTP-V-157	EQUALIZING ISOLATION VALVE STACK FLOW TRANSMITTER	CLOSED	<i>RL</i>

\*Stack (pitot) veris tube valves have already been positioned to open.

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**TANK FARM ACCEPTANCE TEST PROCEDURE**

**ATTACHMENT 16 - ATP FINAL ELECTRICAL LINEUP**

COMPONENT #	DESCRIPTION	POSITION	INITIALS
VTP-DS-101	480 VOLT MAIN DISCONNECT	ON	<i>[Handwritten Signature]</i>
VTP-DS-102	EXHAUST FAN MOTOR DISCONNECT	OFF	<i>[Handwritten Signature]</i>
VTP-DS-201	GLYCOL HEATER DISCONNECT	OFF	<i>[Handwritten Signature]</i>
VTP-BRK-101	MPZ PRIMARY BREAKER "MAIN"	ON	<i>[Handwritten Signature]</i>
VTP-BRK-102	MPZ SECONDARY BREAKER "SECONDARY MAIN"	ON	<i>[Handwritten Signature]</i>
120V CIRCUIT BREAKERS (LOCATED AT "MINI POWER ZONE" VTP-DP-101)			
MPZ-1	ACTION PAK RELAYS, POWER SUPPLIES, MILKERSON DISPLAY METERS	OFF	<i>[Handwritten Signature]</i>
MPZ-2	GLYCOL PUMP, SEAL POT PUMP, SHUNT TRIP PILOT LIGHTS, ALARM BEACON	OFF	<i>[Handwritten Signature]</i>
MPZ-3	HEAT TRACE, GLYCOL CONTACTOR, HEAT TRACE LIGHT	ON	<i>[Handwritten Signature]</i>
MPZ-4	CABINET HEATERS AND FANS	ON	<i>[Handwritten Signature]</i>
MPZ-5	CONVENIENCE RECEPTACLE	OFF	<i>[Handwritten Signature]</i>
MPZ-6	GEMS "GFE" (SPARE)	OFF	<i>[Handwritten Signature]</i>
MPZ-7	AMS-4 "GFE" (SPARE)	OFF	<i>[Handwritten Signature]</i>
MPZ-8	FLAMMABLE GAS MONITOR (SPARE)	OFF	<i>[Handwritten Signature]</i>
MPZ-9	(SPARE)	N/A	N/A
MPZ-10	(SPARE)	N/A	N/A
CONTROL CABINET (VTP-CP-105)			
VTP-HS-103	FAN CONTROL	OFF	<i>[Handwritten Signature]</i>
VTP-HS-102	GLYCOL PUMP	OFF	<i>[Handwritten Signature]</i>
VTP-HS-101	SEAL POT PUMP CONTROL	AUTO	<i>[Handwritten Signature]</i>
VTP-HS-105	CONTROL CABINET HEAT/COOL	COOL	<i>[Handwritten Signature]</i>
VTP-HS-104	HEAT TRACE CABINET (VTP-ENCL-104)	COOL	<i>[Handwritten Signature]</i>

*[Handwritten Note: 3/19/95, MPZ, ENCL, 16 Not]*

**ATTACHMENT 17**  
**NOISE LEVEL TEST DATA**

7/13/98

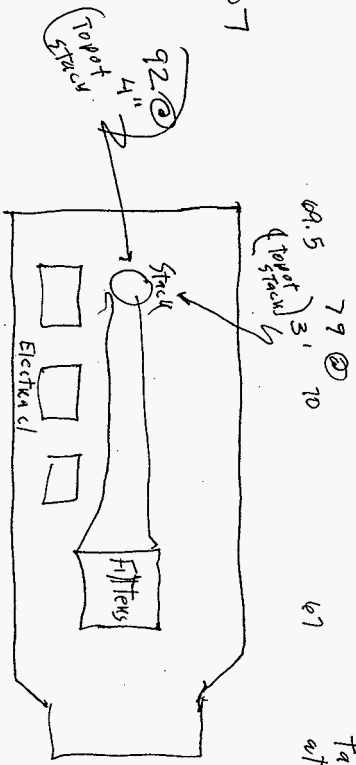
Portable Exhaust Shirts Sound Levels

Backyard

away from chiller fans  
L7 ~~away from chiller fans~~ 7/13/98  
C9 Side of chiller fans

All readings dba scale.  
Taken ~ 6 feet from units  
at ground level

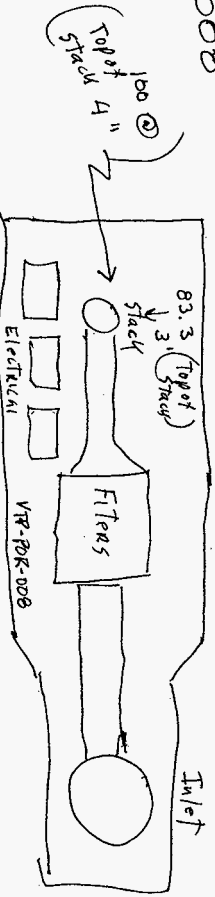
007



71 68.4 68 66  
73 72.5 69

METER  
Bauer & Kuch  
Type 223,  
Serial # 1735186  
Purchased 5/31/86  
Cal Date 9 Mar 89

008



8 MW  
7/13/98 72.6 72 71 71

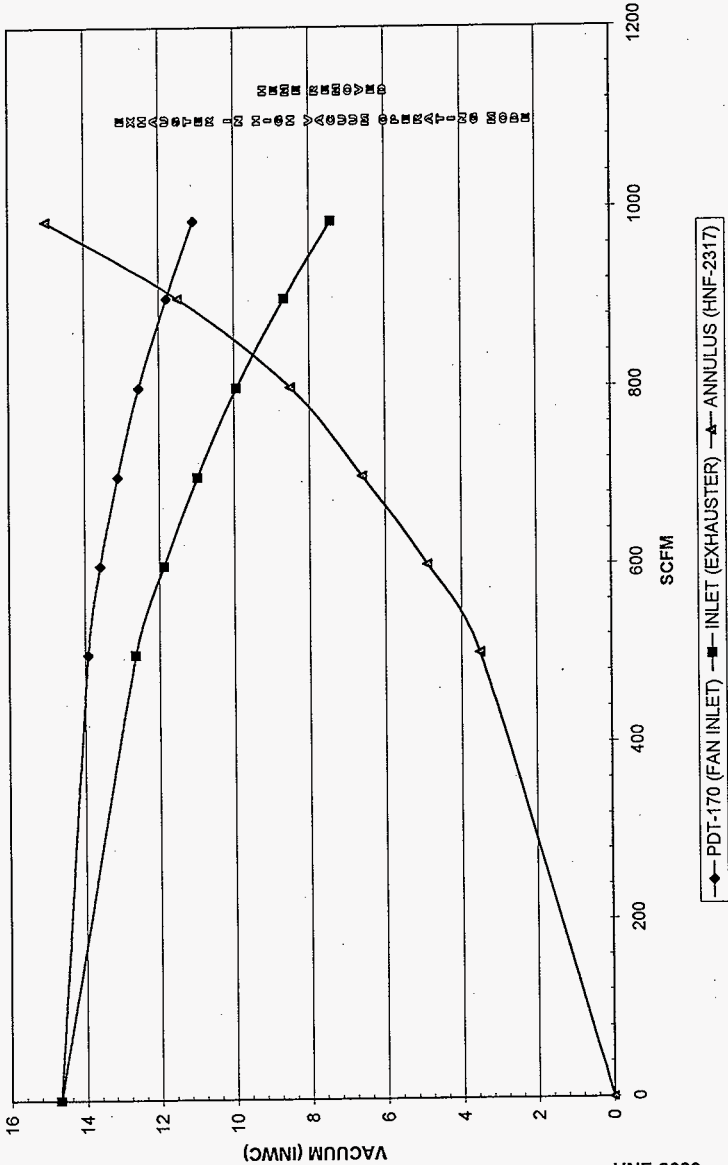
Drawn by Annamalen CSP.  
FETF Safety  
RW than Ford.  
22 MAR

**ATTACHMENT 18**  
**SYSTEM PERFORMANCE TEST DATA**

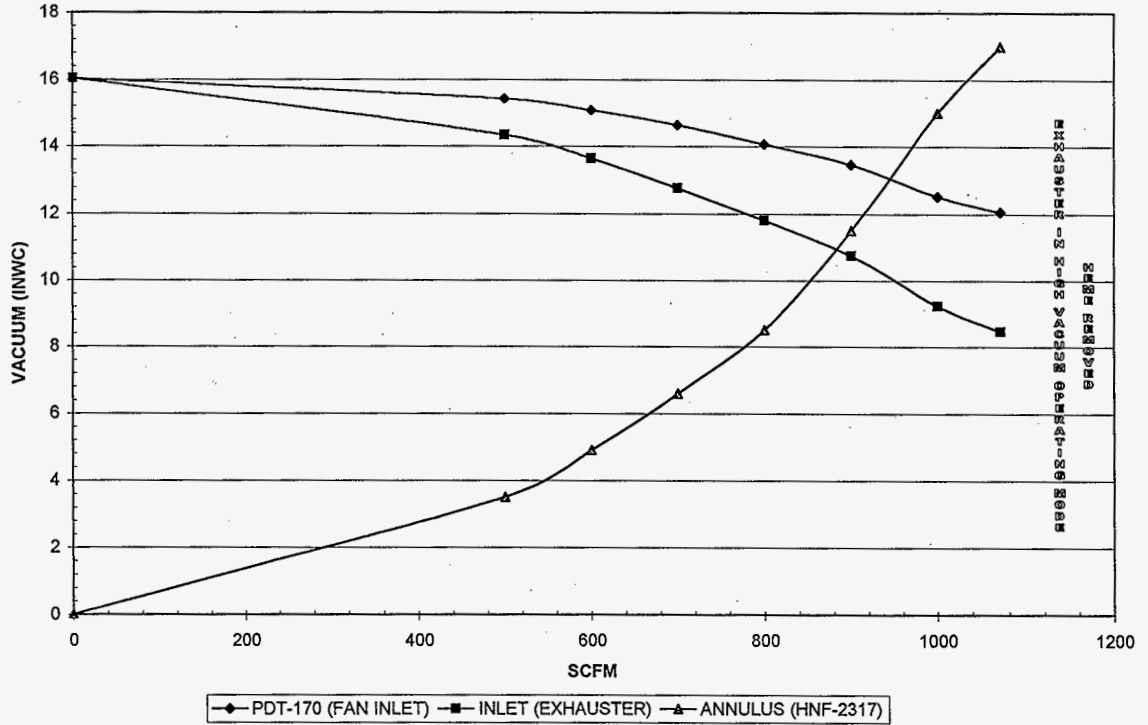
<b>COMPARISON OF POR-007 VS POR-008 VS 102-AY ANNULUS</b>								
FLOW (SCFM)	0	500	600	700	800	900	1000	1070
INLET (EXHAUSTER) 007 VACUUM (INWC)	14.7	12.637	11.874	10.972	9.928	8.645	7.415	
INLET (EXHAUSTER) 008 VACUUM (INWC)	16.04	14.335	13.648	12.775	11.804	10.763	9.234	8.464
ANNULUS (from HNF-2317)	0	3.5	4.9	6.6	8.5	11.5	15	17
<b>TEST DATA FOR POR-007</b>								
FLOW (SCFM)	0	500	600	700	800	900	986	
PDT-170 (FAN INLET) (VACUUM, INWC)	14.7	13.92	13.58	13.1	12.54	11.8	11.07	
PDT-181 (HEPA BANK) (DP, INWC)		1.111	1.484	1.857	2.28	2.76	3.2	
PDT-178 (PRE-FILTER) (DP, INWC)		0.092	0.118	0.144	0.172	0.203	0.231	
PDT-177 (HEATER) (DP, INWC)		0.08	0.104	0.127	0.16	0.192	0.224	
INLET VACUUM (INWC, Calculated)	14.7	12.637	11.874	10.972	9.928	8.645	7.415	
<b>TEST DATA FOR POR-008</b>								
FLOW (SCFM)	0	500	600	700	800	900	1000	1070
PDT-170 (FAN INLET) (VACUUM, INWC)	16.04	15.42	15.08	14.64	14.07	13.47	12.52	12.06
PDT-181 (HEPA BANK) (DP, INWC)		0.935	1.237	1.613	1.963	2.349	2.854	3.13
PDT-178 (PRE-FILTER) (DP, INWC)		0.076	0.1	0.128	0.154	0.182	0.22	0.236
PDT-177 (HEATER) (DP, INWC)		0.074	0.095	0.124	0.149	0.176	0.212	0.23
INLET VACUUM (INWC, Calculated)	16.04	14.335	13.648	12.775	11.804	10.763	9.234	8.464



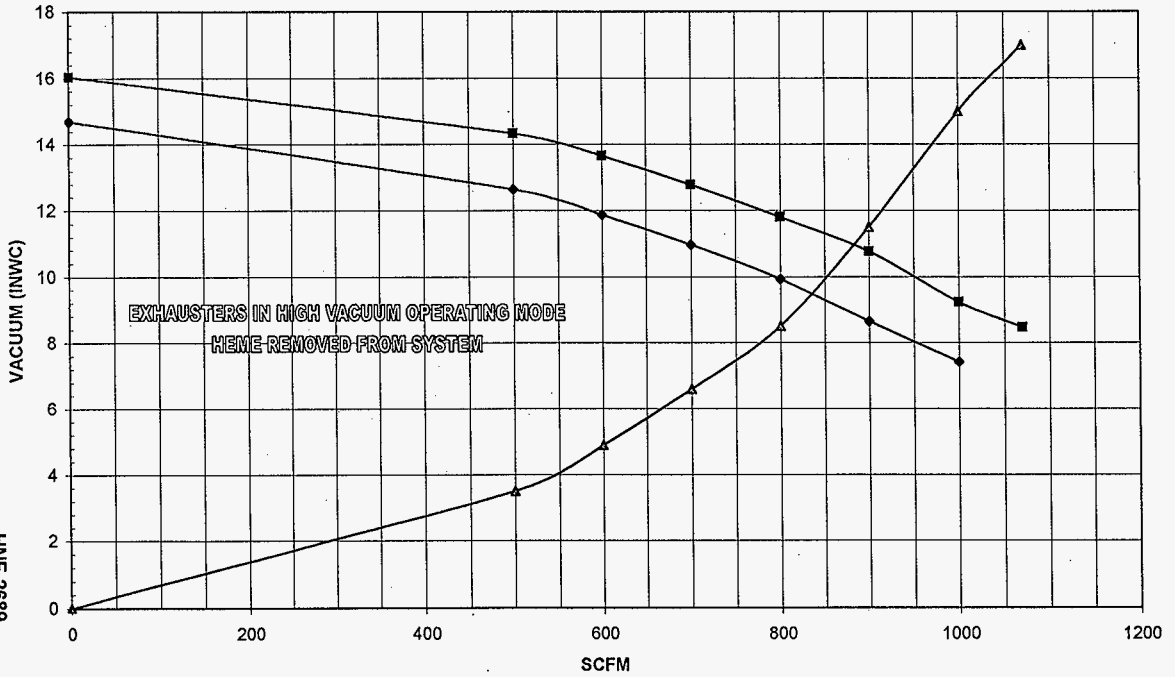
POR-007 VS 102-AY ANNULUS



POR-008 VS 102-AY ANNULUS



# PORTABLE EXHAUSTER COMPARISON



◆ INLET (EXHAUSTER) 007    ■ INLET (EXHAUSTER) 008    ▲ ANNULUS (HNF-2317)