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ENGINEERING DATA TRANSMITTAL

Page 1 of

1. EDT 600181

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
Distribution	Characterization Monitoring Development	613252
5. Proj./Prog./Dept./Div.:	**6. Cog. Engr.:**	**7. Purchase Order No.:**
95C-EWW-451/Tank Characterization/75240/N2144	TC Schneider	N/A
8. Originator Remarks:		**9. Equip./Component No.:**
(ETN-95-0033, USQ Screening #TF-95-0046) This ATP is being transmitted for approval.		N/A
		10. System/Bldg./Facility: 241 General/105AN
11. Receiver Remarks:		**12. Major Assm. Dwg. No.:** H-14-100438
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: 2-23-96

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Designator	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	WHC-SD-WM-ATP-161	--	0	GAS CHARACTERIZATION SYSTEM 241-AN-105 FIELD ACCEPTANCE TEST PROCEDURE	SQ	1	1	1

16. KEY

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

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.
1	1	Cog.Eng. WE Meeusen		2/29/96	S5-05	DD Tate	DD Tate	2/24/96	L6-37	1	1
1		Cog. Mgr. GN Hanson		2/29/96	S5-05						
1	1	QA JJ Verderber		2-26-96	S1-57						
1	1	Safety SU Zaman	for	2/28/96	R3-08						
		Env.									
1	1	EK Straalsund		2/23/96	L6-37						
1	1	TC Schneider		2/23/96	L6-37						

18. TC Schneider 2/23/96
Signature of EDT Originator — Date

19. N/A
Authorized Representative for Receiving Organization — Date

20. GN Hanson 2/29/96
Cognizant Manager — Date

21. DOE APPROVAL (if required) Ctrl. No.
[] Approved
[] Approved w/comments
[] Disapproved w/comments

BD-7400-172-2 (04/94) GEF097

GAS CHARACTERIZATION SYSTEM 241-AN-105 FIELD ACCEPTANCE TEST PROCEDURE

TC Schneider
Westinghouse Hanford Co., Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-87RL10930

EDT/ECN: 600181 UC: 2030
Org Code: 75240 Charge Code: N2144
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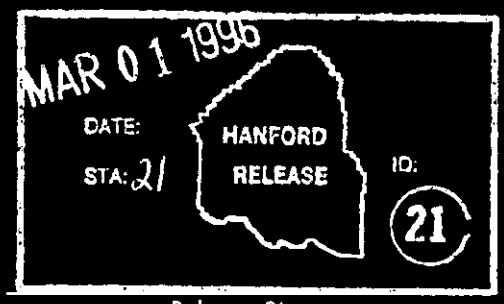
Key Words: Flammable, Hydrogen, Watch List, Nitrous Oxide, Tanks, Monitoring, Ammonia, Gas Characterization

Abstract: This document details the field Acceptance Testing of a gas characterization system being installed on waste tank 241-AN-105. The gas characterization systems will be used to monitor the vapor spaces of waste tanks known to contain measurable concentrations of flammable gases.



Karen A. Holland 3/1/96
Release Approval Date

Release Stamp

Approved for Public Release

GAS CHARACTERIZATION SYSTEM

241-AN-105 FIELD ACCEPTANCE TEST PROCEDURE

IMPACT LEVEL 3SQ

Issued by

Thomas C. Schneider

Characterization Monitoring Development

February 1996

TABLE OF CONTENTS

TEST EXECUTION SHEET

GCS Unit Number: VTP-PNL-105Y

Reference Doc: WHC-SD-WM-ATP-161

TEST PERSONNEL				
TITLE	PRINT NAME	SIGNATURE	INITIAL	DATE
WHC SYSTEM ENGINEER				
TEST DIRECTOR				
RECORDER				
CONSTRUCTION REPRESENTATIVE				

TEST EXECUTION			
TITLE	PRINT NAME	SIGNATURE	DATE
WHC SYSTEM ENGINEER			
TEST DIRECTOR			
RECORDER			
CONSTRUCTION REPRESENTATIVE			

WHC TEST APPROVAL AND ACCEPTANCE

_____Without Exception

_____With Exception - Resolved

_____With Exception - Outstanding

_____

System Engineer Date

GAS CHARACTERIZATION SYSTEM ACCEPTANCE TEST PROCEDURE

1.0 PURPOSE

The purpose of this document is to demonstrate that the Gas Characterization System (GCS) is installed per the intended design. Actual test execution steps are in Sections 9.0 and 10.0.

2.0 REFERENCES

2.1 DRAWINGS

DRAWING NO.	TITLE
H-14-100434	Waste Tank Gas Characterization System Drawing Tree & Index
H-14-100435	Waste Tank Gas Characterization System Piping & Instr Diag
H-14-100436	Waste Tank Gas Characterization System One-line Diag
H-14-100437	Waste Tank Gas Characterization System Elementary Diag
H-14-100438	Waste Tank Gas Characterization System Assy
H-14-100439	Waste Tank Gas Characterization System Instr/Valve PNL Assy
H-14-100440	Waste Tank Gas Characterization System GC Cab Assy
H-14-100441	Waste Tank Gas Characterization System Computer Cab Assy
H-14-100442	Waste Tank Gas Characterization System Junction Box Assy
H-14-100443	Waste Tank Gas Characterization System Wiring Diag
H-14-100444	Waste Tank Gas Characterization System GC Cab Wiring Diag
H-14-100445	Waste Tank Gas Characterization System Computer Cab Wiring Diag
H-14-100446	Waste Tank Gas Characterization System Loop Diag
H-14-100447	Waste Tank Gas Characterization System Interconnection Diag
H-14-100449	AN Farm Waste Tank Gas Characterization Installation

2.2 ENGINEERING CHANGE NOTICES

The following Engineering Change Notice was prepared to document the system installation into the 241-AN tank farm:

ECN Number W-451-2

3.0 RESPONSIBILITIES

Each organization participating in the conduct of this ATP will designate personnel for the responsibilities and duties as defined herein for their respective roles. The names of these designees shall be provided to the Recorder for listing on the Recorder's copy of the Test Execution Sheet prior to the performance of any part of this ATP.

3.1 WHC SYSTEM ENGINEER

3.1.1 Designate a test director.

3.1.2 Coordinate testing with facility management.

3.1.3 Act as liaison between the participants in acceptance testing.

3.1.4 Distribute the approved testing schedule as soon as possible, but at least two days prior to testing.

3.1.5 Ensure field testing and inspection has been completed.

3.1.6 Schedule and conduct a pre-ATP meeting with test participants prior to start of testing.

3.1.7 Notify the persons performing and witnessing the test prior to the start of testing.

3.1.8 Notify all concerned parties when a change is made in the testing schedule.

3.1.9 Sign Test Execution Sheet when ATP is approved and accepted.

3.1.10 Take necessary action to clear exceptions to the ATP.

3.1.11 Sign Exception Sheet when exception has been resolved.

3.1.12 Provide a distribution list for the approved and accepted ATP.

3.1.13 Determine if a filed change is classified as Major or Minor.

3.2 TEST DIRECTOR

3.2.1 Coordinate all acceptance testing.

3.2.2 Confirm that field testing and inspection of the system or portion of the system to be tested has been completed.

3.2.3 Stop any test which may cause damage to the system until the test procedure has been revised.

3.2.4 Approve field changes to the ATP.

3.2.5 Obtain revisions to the ATP, as necessary, to comply with authorized field changes or to accommodate existing field conditions.

3.2.6 Evaluate recorded data, discrepancies, and exceptions.

3.2.7 Obtain from the WHC Project Engineer, any information or changes necessary to clear or resolve objections.

3.2.8 Sign Test Execution Sheet when ATP has been performed.

3.2.9 Sign Test Exception Sheet when acceptable retest has been performed.

3.2.10 Obtain required signatures on the ATP Master prior to reproduction and distribution.

3.2.11 Conduct daily prejob safety meetings with participating personnel. The meetings and attendees will be noted in the Test Log.

3.3 WHC SAFETY

3.3.1 Review and approve ATP.

3.3.2 Evaluate results of testing.

3.3.3 Review and approve any Major procedure changes. See section 4.0 for definition of Major and Minor procedure changes.

3.4 RECORDER

3.4.1 Perform all recording using black ink.

3.4.2 Record names of all designated personnel on Recorder's copy of ATP prior to start of testing.

3.4.3 Observe tests, record test data and maintain test log.

3.4.4 Sign the Test Execution Sheet and Exception sheet(s) as the Recorder.

3.4.5 Initial and date every test step on the Recorder's copy as it is completed, next to the step number or on a table, when provided. On tables where there is not room for both the initial and date, date may be entered in space provided at bottom of column.

3.4.6 Record authorized field changes to the ATP.

3.4.7 Record exceptions and test steps that are not performed on the Test Exception Sheet. Have the information transferred in ink or typed to the Master Exception Sheet(s). Additional Exception Sheets are to be added as needed.

3.4.8 Orally notify the Test Director at time the objection is made.

3.4.9 Assign page number to Data Sheets and Exception Sheets, after ATP is complete. Record Page numbers for these items and make corrections, as necessary, to page numbers shown for these pages in the index.

3.4.10 Transfer the final test results with Recorder's signature and dates for each step to the Master in ink or type. Submit the completed Master to the Test Director for approval signatures and distribution. Retain the Recorder's copy and a copy of the Master in the field project files.

3.5 WHC QA

3.5.1 Review and approve ATP.

3.5.2 Evaluate results of testing.

3.5.3 Review and approve any Major procedure changes. See section 4.0 for definition of Major and Minor procedure changes.

3.6 CONSTRUCTION REPRESENTATIVE

3.6.1 Organize and perform this acceptance test under coordination of the Test Director.

3.6.2 Confirm that all equipment required for performing this test (as listed in Section 8.2) will be available at start of testing.

3.6.3 Provide equipment required for performing this acceptance test, which has not been designated as being provided by others.

3.6.4 Sign Test Execution sheet.

3.7 OCCUPATIONAL SAFETY AND HEALTH

Individuals shall carry out their assigned work in a safe manner to protect themselves, others, and the equipment from undue hazards and to prevent damage to property and environment. Facility line managers shall assure the safety of all activities within their areas to prevent injury, property damage, or interruption of operation.

4.0 ACCEPTANCE TEST PROCEDURE CHANGE CONTROL

Acceptance testing is to be conducted in accordance with the steps and requirements specified in this procedure. Field changes are designated as either Minor or Major.

4.1 MAJOR PROCEDURE CHANGE

A major procedure change is defined as any change which affects the intent of the acceptance test procedure or affect Quality or Safety. Major field changes require written approval of the System Engineer, Test Director, Construction Representative, WHC Quality, and WHC Safety. Major field changes shall also be recorded as a test exception.

4.2 MINOR PROCEDURE CHANGE

A minor procedure change is defined as a change which does not affect the intent of the acceptance test procedure. Typically minor changes involve procedure clarifications or changes to the sequence of test steps to facilitate conduct of testing. Minor field changes can be made in pen and ink and require approval of the Test Director and Construction Representative.

5.0 TEST EXECUTION

The acceptance test procedures detailed in Sections 9.0 and 10.0 shall be performed in sequential steps starting with Section 9.0. The Test Director may direct performance of major sections of the procedure out of sequence if the testing does not compromise safety or the intent of the ATP. As required by Section 3.4, the Recorder will initial and date every test step in the space provided on the Recorder's copy of the ATP as each step is completed. Any steps that require verified readings must also be recorded in the EXPECTED RESULTS column of the test procedure.

It is the intent to perform this procedure uninterrupted from beginning to end. If the testing is terminated due to time constraints at the end of a major section, the system will be placed in a safe configuration by the Test Director, with concurrence of the facility manager, and the terminated test configuration noted in the Test Log. The test will restart at the next shift by reestablishing the noted test configuration. If testing is terminated due to a Test Exception, the equipment will be placed into a safe configuration and noted in the Test Log if testing cannot continue until the Test Exception is resolved. If testing may continue, the initial conditions will be established per the next major test section. Upon Test Exception Resolution, the test configuration noted in the Test Log will be reestablished and appropriate sections of the test will be reperformed per the Test Exception Resolution requirements.

5.1 WITHOUT EXCEPTION

5.1.1 Check applicable space on Test Execution Sheet to show that the ATP has been performed and no exceptions have been recorded.

5.1.2 Sign and date Test Execution Sheet in the spaces provided.

5.1.3 Distribute requisite copies and send master of ATP to the ATR preparer.

5.2 WITH EXCEPTION/RESOLVED

5.2.1 Check applicable space on Test Execution Sheet to show that the ATP has been performed with exceptions recorded and resolved.

5.2.2 Sign and date Test Execution Sheet in the spaces provided.

5.2.3 Distribute requisite copies and send master of ATP to the ATR preparer.

5.3 WITH EXCEPTION/OUTSTANDING

5.3.1 Check applicable space on Test Execution Sheet to show that the ATP has been performed with exceptions recorded, part or all of which are presently outstanding, unresolved.

5.3.2 Sign and date Test Execution Sheet in the spaces provided.

5.3.3 Distribute requisite copies and send master of ATP to the ATR preparer.

6.0 RECORDING AND RESOLVING EXCEPTIONS

6.1 GENERAL

Exceptions to the ATP are sequentially numbered and recorded on individual Exception Sheets. This enables case-by-case resolution, recording, approval, and distribution of each exception.

6.2 RECORDING

6.2.1 Number each exception sequentially as it occurs and record it on an Exception Sheet.

6.2.2 Enter name and organization of objecting party for each exception.

6.2.3 Enter planned action to resolve each exception when such determination is made.

6.3 RETEST/RESOLUTION

6.3.1 Record the action taken to resolve each exception. Action taken may not be the same as planned action.

6.3.2 When action taken results in an acceptable retest, sign and date Retest Execution and Acceptance section of the Exception Sheet.

6.3.3 When action taken does not involve an acceptable retest, strike out the Retest Execution and Acceptance section of the Exception Sheet. Resolve exception as shown under 6.4 below.

6.4 APPROVAL AND ACCEPTANCE

6.4.1 The WHC System Engineer provides final approval and acceptance of exception by checking one of the following on Exception Sheet:

- Retest Approved and Accepted: Applicable when Retest Execution and Acceptance section is completed.
- Exception Accepted-As-Is: Requires detailed explanation.
- Other: Requires detailed explanation.

6.4.2 The Project Engineer signs and dates the Exception Sheet and obtains other internal approval, if required.

6.5 DISTRIBUTION

Distribute requisite copies of completed Exception Sheets to the ATR preparer.

7.0 SYSTEM DESCRIPTION

The Gas Characterization System (GCS) is a support structure for analytical gas monitoring activities on Hanford Underground Storage Tanks (UST). The system is designed to support three analytical instruments consisting of two gas chromatographs (GC) and one Fourier Transform Infrared (FTIR) spectrometer. Included in this support is a high flow rate sampling

line including a sealed bellows sample pump, electrical utilities, flow system panel with manual and electrically controlled valves, a bottle rack to house gases for GC column operation and calibration, flow instrumentation necessary to characterize the gas monitoring instruments, and computer communication and interface equipment to transfer measurement information to a remote location.

8.0 TEST CONDITIONS AND EQUIPMENT REQUIRED

8.1 TEST CONDITIONS

The Acceptance Test Procedure WHC-SD-WM-ATP-160 has been performed on the main system assembly at the vendors facility. The following conditions shall exist at the start of the acceptance testing:

____ 8.1.1 Systems being tested have been inspected for workmanship and for compliance with design.

____ 8.1.2 Continuity and megger tests have been performed on portions of the electrical systems being tested, as required.

____ 8.1.3 Leak tests on the pneumatic systems have been performed.

____ 8.1.4 Power is **OFF** to components of systems being tested. All circuit breakers and fuses are in the de-energized condition.

____ 8.1.5 All test instruments have a currently valid calibration stamp attached that indicates a calibration traceable to the National Institute of Standards and Testing.

____ 8.1.6 All process instruments have a currently valid calibration stamp attached that indicates a calibration traceable to the National Institute of Standards and Testing.

____ 8.1.7 Personnel responsible for directing and witnessing the performance of the tests described in this ATP have read and understand appropriate certified vendor information (CVI) pertaining to the operation of the equipment to be tested. (All HVAC and process monitoring and control instruments, not analytical and computing systems, should be understood.)

____ 8.1.8 All sample line valves, inside and outside of enclosure, are **CLOSED**.

____ 8.1.9 All analytical instrumentation has been tested to insure proper function.

____ 8.1.10 All nameplates, equipment tags, etc. included in the system installation project have been installed/attached.

____ 8.1.11 All penetrations into the GCS structure have been sealed to keep dust, rain snow etc. out. The door has weather seal(s) installed.

____ 8.1.12 The system facility power has been connected to the facility disconnect switch.

_____ _____
Construction Representative Date

_____ _____
System Engineer Date

8.2 EQUIPMENT REQUIRED

The Contractor shall supply all test equipment unless otherwise noted. The following list is provided as an aid and is not intended to be an all exhaustive list. Record pertinent information such as model number, serial number and calibration information as required in the Test Log.

- Multi-meter (AC volts, DC volts and DC current)

- Assorted hand tools

9.0 TEST PROCEDURE FOR THE ELECTRICAL SYSTEMS

This procedure will demonstrate that the facility electrical systems have been installed and function properly.

9.1 GCS POWER DISTRIBUTION

The procedures below will verify that the power distribution system operates properly. Included in this system is the 241-AN facility power distribution breaker (EDS-MCC-102 C1), a facility voltage step down transformer (EDS-XFMR-110), a GCS facility disconnect switch (VTP-DS-110) and the main power distribution panel (VTP-DP-110) located on the interior wall opposite the entrance door. The main buss is connected to a surge suppression system to protect the load side from major power transients and near by lightning strikes. The power distribution panel supplies power directly to

the non sensitive items like the sample pump, HVAC unit, interior and exterior lighting and unconditioned GFCI power receptacles and sample gas line trace heat. In addition, it provides a 40 ampere feed to a 7.5 KVA power conditioning and isolation transformer, which in turn feeds VTP-JBX-110. The equipment supplied power through VTP-JBX-110 consist of the instrumentation sensitive to line transients, like the GC's, FTIR, temperature monitors and controllers, and computer equipment.

The initial condition of this test assumes that the power source has been connected, the sample pump and heat trace element has been connected to the appropriate circuits, all VTP-DP-110 line and load breakers are open, all VTP-JBX-110 breakers and fuses are open, and all fuses in the computer cabinet analog and discrete drawers 1 and 2 are open.

PROCEDURE STEP	EXPECTED RESULTS	SIGNATURE	COMMENTS
9.1.1 Close the EDS-MCC-102 C1 circuit breaker to supply system power.	EDS-MCC-102 C1 CLOSED		
9.1.2 Measure and record the incoming voltage at the disconnect switch.	L1-L2 240 _____ L1-Neu 120 _____ L2-Neu 120 _____ Neu-Gnd 0		
9.1.3 Close the disconnect switch and the DP-110 main breaker. Measure and record the DP-110 buss voltages.	L1-L2 240 _____ L1-Neu 120 _____ L2-Neu 120 _____ Neu-Gnd 0		
9.1.4 Close CB-6 in DP-110 to energize the interior lights.	Interior lights operate		
9.1.5 Close DP-110 CB-10 and perform a manual test of the GFCI breaker to assure proper operation. Verify by measuring and recording the voltage across receptacle hot and neutral. Reset GFCI breaker.	North Wall RCPT L-Neu 0 _____ Neu-Gnd 0 _____ South Wall RCPT L-Neu 0 _____ Neu-Gnd 0 _____		
9.1.6 Open CB-10 in DP-110.	CB-10 OPEN		

PROCEDURE STEP	EXPECTED RESULTS	SIGNATURE	COMMENTS
9.1.7 Close DP-110 CB-12 and perform a manual test of the exterior GFCI receptacle. Verify by measuring and recording the voltage across the receptacle hot and neutral. Reset the GFCI receptacle.	Exterior RCPT L-Neu 0 _____ Neu-Gnd 0 _____		
9.1.8 Open CB-12 in DP-110.	CB-12 OPEN		
9.1.9 Remove the plug from SV-103 and Open the following valves: SV-103, SV-104, SV-112, SV-113 and SV-118	SV-103 Plug removed and listed valves OPEN		
9.1.10 Disconnect the pump (P-110) outlet sample line at the closest convenient Swagelock fitting.	Sample outlet line disconnected		
9.1.11 Close the double pole breaker CB-5/7 in DP-110. Verify that sample pump P-110 operates.	P-110 operational		
9.1.12 Open CB-5/7 in DP-110.	CB-5/7 OPEN		
9.1.13 Replace the plug on SV-103 and close the following valves: SV-103, SV-104, SV-112, SV-113 and SV-118	SV-103 Plug replaced and listed valves CLOSED		
9.1.14 Reconnect pump outlet sample line.	Sample outlet reconnected		
9.1.15 Close the double pole breaker CB-1/3 in DP-110. Verify that the HVAC thermostat is set to heat only to 70° F.	CB-1/3 CLOSED and thermostat set to 70° F.		

9.2 ELECTRICAL HEAT TRACE CONTROL

The sample gas heat trace has been installed prior to this test. The heat trace element will provide the heat source to verify that the controller temperature sensing element responds properly to a change in temperature.

PROCEDURE STEP	EXPECTED RESULTS	SIGNATURE	COMMENTS
9.2.1 Close DP-110 circuit breaker 9 to provide the main heat trace power.	Breaker 9 CLOSED		
9.2.2 Close FU-6 in JBX-110 to energize the heat trace controller TIC-110. Verify that the LED display on the controller is indicating a nominal ambient temperature. Record that temp.	FU-6 CLOSED Indicated temp. _____		
9.2.3 Adjust the temperature control set point 1, to 10 degrees above the indicated temperature.	Set Point 1 ADJUSTED		
9.2.4 Verify that the indicated temperature begins to increase within three minutes.	Temperature INCREASES.		
9.2.5 Verify that the heat trace controller functions. Record the indicated temperature when the controller begins to control, (nominally 10 minutes).	Indicated Temp. _____ (NOMINAL 10° CHANGE)		
9.2.6 Open DP-110 circuit breaker 9 and JBX-110 FU-6.	Breaker 9 and FU-6 OPEN		

9.3 REVIEW

Check that steps 9.1 through 9.2 inclusive have been completed.

_____
Test Director Signature

10.0 TEST PROCEDURE FOR THE PNEUMATIC SYSTEMS

This procedure will functionally verify that all newly installed process lines and devices perform to the design intent.

10.1 INITIAL CONDITIONS

The initial conditions will establish the power and the pneumatic alignment to perform the pneumatic system verifications.

10.1.1 Verify the following breaker, switch and fuse line up.

DP-110 Breakers OPEN:	5/7, 8, 9, 10 and 12
DP-110 Breakers CLOSED:	MAIN, 1/3, 2/4 and 6
DP-110 Switches CLOSED:	27 and 29
JBX-110 Breakers CLOSED:	CB-A, CB-B, CB-C, CB-D and CB-E
JBX-110 Fuses OPEN:	FU-4, FU-5, FU-6 and FU-7
JBX-110 Fuses CLOSED:	FU-1, FU-2, FU-3, FU-8 and FU-9
Analog Drawer 1 Fuses CLOSED:	FU-1, FU-2, FU-3, FU-4 and FU-5
Discrete Drawer 2 Fuses CLOSED:	FU-1 and FU-2

Breakers, Fuses and Switches are aligned: _____
Test Director Signature

10.1.2 Verify the following valve line up.

All the system valves shall be CLOSED with the exception of the following:

The following listed valves shall be OPEN:

SV-113	SV-121	SV-126	SV-131
SV-136	FIV-120	FIV-130	FIV-150

The listed valves are aligned: _____
Test Director Signature

10.2 GC CARRIER GAS CONNECTIONS

PROCEDURE STEP	EXPECTED RESULTS	SIGNATURE	COMMENTS
10.2.1 Visually verify that N_2 carrier gas bottles are connected through the manifold to PCV-160.	N_2 bottles connected		
10.2.2 Visually verify that He carrier gas bottles are connected through the manifold to PCV-162.	He bottles connected		
10.2.3 Obtain the control screen for NT-120 (GC1) on the system monitor. Select INSTRUMENT STATUS.	GC1 INSTRUMENT STATUS DISPLAYED		
10.2.4 Verify that the Column Pressures indicate near zero. Record indicated column pressures.	Col A Press_____ Col B Press		
10.2.5 Open N_2 bottle isolation valves.	Bottle valves OPEN		
10.2.6 Open SV-164 and set PCV-160 to 80 psig.	SV-164 OPEN PCV-160 set to 80 psig		
10.2.7 Open SV-160.	SV-160 OPEN		
10.2.8 Verify that the Column Pressures indicate between 20 and 30 psig. Record the pressures.	Col A Press_____ Col B Press		
10.2.9 Close the N_2 bottle isolation valves and allow the carrier gas press. to bleed off.	N_2 Carrier Gas Bottle Valves CLOSED		
10.2.10 Obtain the control screen for NT-130 (GC2) on the system monitor. Select INSTRUMENT STATUS.	GC2 INSTRUMENT STATUS DISPLAYED		
10.2.11 Verify that the Column Pressures indicate near zero. Record indicated column pressures.	Col A Press_____ Col B Press		
10.2.12 Open He bottle isolation valves.	Bottle valves OPEN		

PROCEDURE STEP	EXPECTED RESULTS	SIGNATURE	COMMENTS
10.2.13 Open SV-166 and set PCV-162 to 80 psig.	SV-166 OPEN PCV-162 set to 80 psig		
10.2.14 Open SV-162.	SV-162 OPEN		
10.2.15 Verify that the Column Pressures indicate between 20 and 30 psig. Record the pressures.	Col A Press____ Col B Press		
10.2.16 Close the He bottle isolation valves and allow the carrier gas press. to bleed off.	He Carrier Gas Bottle Valves CLOSED		
10.2.17 Shut down the operating system control for NT-120 from the System Keyboard/Monitor.	NT-120 Operating System Shut Down		
10.2.18 Shut down the operating system control for NT-130 from the System Keyboard/Monitor.	NT-130 Operating System Shut Down		
10.2.19 Close the following valves after the carrier gas pressures have decayed: SV-160, SV-162, SV-164 and SV-166	SV-160, SV-162, SV-164, & SV-166 CLOSED		

10.3 CALIBRATION GAS CONNECTIONS

The following section will verify that the calibration gas connections are properly constructed per the appropriate design drawings.

PROCEDURE STEP	EXPECTED RESULTS	SIGNATURE	COMMENTS
10.3.1 Visually verify that H_2 cal. gas bottle is connected to PCV-161.	H_2 cal. gas PROPERLY CONNECTED		
10.3.2 Open the H_2 cal. gas bottle isolation valve.	Bottle isolation valve OPEN		
10.3.3 Adjust PCV-161 to nominally 5 psig.	PCV-161 set to 5 psig		
10.3.4 Remove the plug from SV-129 and open SV-129.	SV-129 PLUGGED and OPEN		

10.3.5 Open SV-128 and verify no gas flow from SV-129.	SV-128 OPEN with NO FLOW		
10.3.6 Open SV-161 and verify that gas flows from SV-129.	SV-161 OPEN with FLOW		
10.3.7 Close the H_2 cal. gas bottle isolation valve and allow the cal. gas pressure to bleed off.	Bottle isolation valve CLOSED		
10.3.8 Close SV-161, SV-128, SV-129 and plug SV-129.	SV-161, SV-128, SV-129 CLOSED & SV-129 PLUGGED		
10.3.9 Visually verify that CH_4 cal. gas bottle is connected to PCV-163.	CH_4 cal. gas PROPERLY CONNECTED		
10.3.10 Open the CH_4 cal. gas bottle isolation valve.	Bottle isolation valve OPEN		
10.3.11 Adjust PCV-163 to nominally 5 psig.	PCV-163 set to 5 psig		
10.3.12 Remove the plug from SV-139 and open SV-139.	SV-139 PLUGGED and OPEN		
10.3.13 Open SV-138 and verify no gas flow from SV-139.	SV-138 OPEN with NO FLOW		
10.3.14 Open SV-163 and verify that gas flows from SV-139.	SV-163 OPEN with FLOW		
10.3.15 Close the CH_4 cal. gas bottle isolation valve and allow the cal. gas pressure to bleed off.	Bottle isolation valve CLOSED		
10.3.16 Close SV-163, SV-138, SV-139 and plug SV-139.	SV-163, SV-138, SV-139 CLOSED & SV-139 PLUGGED		

10.4 GCS SHUTDOWN

The following section will secure the GCS system following the ATP performance. It is assumed that the system configuration is the condition following Section 10.3.

PROCEDURE STEP	EXPECTED RESULTS	INITIAL	COMMENTS
10.4.1 Turn OFF all analytical and computing instruments at their local ON/OFF switch.	All A and C instruments OFF		
10.4.2 CLOSE the nitrogen carrier gas bottles isolation valves.	Nitrogen gas bottles isolation valves CLOSED		
10.4.3 CLOSE the helium carrier gas bottles isolation valves.	Helium gas bottles isolation valves CLOSED		
10.4.4 CLOSE all GCS pneumatic line valves, inside and outside.	All system valves CLOSED		

PROCEDURE STEP	EXPECTED RESULTS	INITIAL	COMMENTS
10.4.5 VERIFY the following breaker, switch and fuse positions: DP-110 Breakers and Switches OPEN 5/7, 8, 9, 10 & 12 CLOSED MAIN, 1/3, 2/4, 6, 27 & 29 JBX-110 Breakers and Fuses OPEN FU-7 CLOSED CB-A, CB-B, CB-C, CB-D, CB-E, FU-1, FU-2, FU-3, FU-4, FU-5, FU-6, FU-8 and FU-9 ANALOG DRAWER CLOSED FU-1, FU-2, FU-3, FU-4 and FU-5 OPEN FU-6, FU-7, FU-8, FU-9 and FU-10 DISCRETE DRAWER CLOSED FU-1 and FU-2	BREAKERS, SWITCHES AND FUSES IN THE POSITION LISTED.		

10.4.6 The Test Director, by his signature below, states that the GCS equipment installation complies with the design documents and is functional.

_____

Test Director Date

11.0 TEST RECORD SHEETS

11.1 TEST EXCEPTION SHEET

Test Exception Sheets are used to document exceptions to the test procedure. Actions taken regarding disposition are noted on the exception sheet. Typical dispositions are:

1. Test approved with exception (i.e. rerun of the acceptance test unnecessary).
2. Entire acceptance test to be repeated after the discrepancy has been corrected.
3. Acceptance Test Procedure step(s) affected to be repeated after the discrepancy has been corrected.

Test Exception Sheets are included in Appendix A.

11.2 TEST LOG SHEET

Test Log Sheets are used to document test start and stop times and to document any other notes concerning the execution of the Acceptance Test Procedure.

Test Log Sheets are included in Appendix B.

APPENDIX A: TEST EXCEPTION SHEETS

TEST EXCEPTION SHEET

GCS Unit Number:			Title of Test:		
EXCEPTIONS			**CORRECTION APPROVAL**		
Procedure Number	Date	Description	Initials/Date		
			Project Engineer	WHC QA	WHC SAFETY

OBJECTING PARTY: _____
Recorder Date

ACCEPTABLE RETEST PERFORMED:

_____ _____
Construction Representative Date Test Director Date

EXCEPTION RESOLVED: _____
WHC System Engineer Date

APPENDIX B: TEST LOG SHEET

TEST LOG

DATE/TIME	COMMENTS

DISTRIBUTION SHEET

To	From	Page 1 of 1
DISTRIBUTION	Characterization Monitoring Development	Date Feb. 13, 1996
Project Title/Work Order		EDT No. 600181
95C-EWW-451, Tank Characterization / N2144		ECN No. N/A

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
RE Bauer	L6-37				X
GN Hanson	S5-05				X
GD Johnson	S7-15				X
JW Lentsch	S7-15				X
DT Lott	R3-25	X			
WE Meeusen	S5-05	X			
TL Ostrander	S3-10	X			
JJ Verderber	S1-57				X
TC Schneider	L6-37	X			
DD Tate	L6-37				X
JD Thorne	S5-10	X			
CV Vo	L6-37	X			
SU Zaman	R3-08				X
PA Clark	R3-49	X			
ICF Kaiser Const. Doc. Control	S2-53	X			
Central Files	A3-88	X			