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## ENGINEERING DATA TRANSMITTAL

Page 1 of 1  
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1	1	Design Authority	W. F. ZUROFF	1/13/01							
1	1	Design Agent	F. M. MAIDEN	5/7/24							
1	1	Cog. Eng.	J. E. LAMPHERE	5/1/24							
1	1	Cog. Mgr.	M. R. KOCH	5/7/24							
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# OPERATIONAL TEST REPORT FOR SX-103 PUMPING, INSTRUMENTATION AND CONTROL SKID "V"

**M. R. KOCH**

CH2MHILL HANFORD GROUP, INC.

Richland, WA 99352

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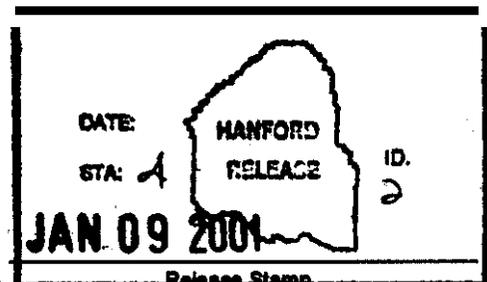
**Abstract:** This Operational Test Report (OTR) provides the test results for the operational testing of SX-103 Pumping, Instrumentation and Control Skid "V". The OTR summarizes the results and provides a completed and signed copy of the OTP in the Appendix.

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Approved For Public Release

OPERATIONAL **TEST** REPORT (OTR) FOR **SX-103** PUMPING,  
INSTRUMENTATION AND **CONTROL (PIC) SKID**  
**SKID "V"**

1. PURPOSE

The purpose of this test report is to document the operational test results and conclusions from the completed Operational Test Procedure (**OTP-200-004 Rev. B-5**) ~~that~~ was performed on **SX-103** PIC Skid **"V"**. IS PIC Skid Configuration Drawing H-2-829998 provides traceability for **SX-103** PIC skid **"V"** hardware, software, and test documentation

2. SCOPE

The ~~scope~~ of ~~this~~ operational test included testing of system parameters and functions. The system checked are listed in Section 1.2 of the **OTP** and include process instrumentation, system electrical, process ~~air~~, water drip and interlocks. The attachment to ~~this~~ test report is a copy of the actual test that was performed. The test ~~was~~ conducted by Interim Stabilization and witnessed by the Cognizant Engineer.

3. TEST RESULTS

The test was completed and signed ~~off~~ on **October 18, 2000**. No test exceptions were noted during the performance of ~~the test~~.

4. CONCLUSION

The test demonstrated the proper operation of **SX-103** PIC Skid **"V"**. **All** test exceptions were resolved and documented in the OTP exceptions records attached to the **OTP**.

5. ATTACHMENT

Attached to ~~this~~ report, as Appendix A is a copy of the completed and signed **OTP**.

NOTE: Ladder Logic printout was ~~not~~ included with ~~attached~~ copy of **OTP** but *can* be viewed in the software release documentation "RPP-6204".

**WORKING COPY**

**TANK FARM PLANT OPERATING PROCEDURE**

**GENERAL**

**Operational Test Procedure for 6000 Series Pumping And Instrumentation  
Control Skids**

**PCA Incorporated:** TF-2000-236  
**Procedure Signatures for:** OTP-200-004, B-5  
**Type of Change:** Modification  
**Review Designer:** NA  
**USQ Screening Number:** TF-00-0180, Rev. 1

<b>POSITION/ORG</b>	<b>DELEGATE</b>	<b>DATE</b>
<b>Nuclear Chemical Operator (NCO)</b>	<u>B. D. Foreman</u>	<u>09/28/2000</u>
<b>Stabilization Manager</b>	<u>D. J. Saueressig</u>	<u>10/05/2000</u>
<b>Radiological Control</b>	<u>N/A</u>	
<b>Cog Engineer/Interim Stabilization Engineering (ISE)/Design Authority</b>	<u>W. F. Zuroff</u>	<u>10/04/2000</u>
<b>Technical Writer (RPPP-IS)</b>	<u>D. D. Barkost</u>	<u>10/06/2000</u>
<b>Approval Authority</b>	<u>D. J. Saueressig</u>	<u>10/05/2000</u>

Type	Document No.	Rev/Mod	Release Date	Page
<b>REFERENCE</b>	<b>OTP-200-004</b>	<b>B-5</b>	<b>10/09/2000</b>	<b>1 of 84</b>

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## **1.0 PURPOSE AND SCOPE**

### **1.1 Purpose**

This OTP will test and verify the equipment required for Saltwell pumping of specified tank meets the specified Functional Requirements, Safety Requirements, Radiological Requirements, Operations Requirements, and provides a record of the functional test results. The systems/functions that will be tested are listed in the SCOPE Section that follows.

### **1.2 Scope**

The following systems will be tested by this OTP:

- Electrical and Process Air System
- Water Drip System
- Weight Factor and Specific Gravity System
- Diaphragm Operated Valve (DOV) Automatic and Manual Operation
- Jet Pump Flowmeter Operation
- Flammable/Combustible Gas Monitor (FGM/CGM) Interface
- Jet Pump Valving Interlock
- Leak Detection Interlock
- Receiver Tank Interlocks

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## 2.0 INFORMATION

### 2.1 Terms And Definitions

2.1.1	cfh	-	cubic feet per hour
2.1.2	CGM	-	Combustible Gas Monitor
2.1.3	DMM	-	Digital Multimeter
2.1.4	DOV	-	Diaphragm Operated Valve
2.1.5	DTAM	-	Data Table Access Module
2.1.6	FGM	-	Flammable Gas Monitor
2.1.7	FQIT	-	SALW-FQIT-6001* (SUPERNATANT FLOW XMTR)
2.1.8	gpm	-	gallons per minute
2.1.9	IA	-	Instrument Air
2.1.10	IN. W. G.	-	Inches Water Gauge
2.1.11	OCS	-	Operator Control Station
2.1.12	PLC	-	Programmable Logic Controller
2.1.13	PKV	-	Pressure Relief Valve
2.1.14	SGT		Specific Gravity Transmitter
2.1.15	WFIE		Weight Factor Instrument Enclosure

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## 2.2 Responsibilities

2.2.1 Quality Assurance is responsible for:

- Witnessing and signing steps as identified in OTP
- Verifying the procedure sections are performed correctly.

2.2.2 Test Director is responsible for:

- Providing the equipment found in Subsection 4.1 of this procedure
- Recording equipment status and data per this procedure
- Conducting pre-job planning meeting as necessary
- Conducting pre-job system walkdown
- Scheduling/rescheduling of the test as required
- Recording data, exceptions and other notes as required.

2.2.3 Engineering personnel are responsible for:

- Providing technical support during testing
- Providing programming support during testing
- Forcing data in Programmable Logic Controller (PLC) program during testing.

2.2.4 Maintenance personnel are responsible for:

- Providing assistance during testing.

2.2.5 Operations personnel are responsible for:

- Performing valving manipulations on PIC Skid *Systems* and Test equipment
- Starting, stopping, and controlling equipment related to Saltwell operations
- Controlling and monitoring parameters from the Data Table Access Module (DTAM), or Operator Control Station (OCS).

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## 2.2 Responsibilities (Cont.)

2.2.6 Health Physics personnel are responsible for:

- Ensuring RWP requirements are met during field portion of testing
- Surveying tools and equipment out of the Farm
- Providing guidance to craft personnel in maintaining good health physics practices.

## 2.3 References

2.3.1 The following documents were used to write or are referenced in this procedure:

- HNF-IP-0842, RPP ADMINISTRATION
- RPP-PRO-079, JOB HAZARD ANALYSIS
- RPP-PRO-OSS, ELECTRICAL WORK SAFETY
- RPP-PRO-1819, ENGINEERING REQUIREMENTS
- JOHNSON YOKOGAWA ADMAG AM SERIES MANUFACTURER INFORMATION
- FOXBORO 823 DP SERIES ELECTRONIC DIFFERENTIAL PRESSURE CELL MANUFACTURER INFORMATION

## 2.4 General Information

2.4.1 After completion of Section 5.1, subsequent sections may be performed out of order, as directed by the Test Director.

2.4.2 All entries recorded in this procedure shall be made in black ink

2.4.3 Any non-conformance of the instrumentation or unexpected results during testing shall be logged in the Operational Test Procedure EXCEPTIONS LOG and thoroughly documented on a Operational Test Procedure EXCEPTION RECORD.

2.4.4 Do NOT perform any part of this procedure on faulty equipment. If faulty equipment is discovered, STOP the execution of that section of this procedure and resolve the problem and/or continue with a different section.

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**2.4 General Information (Cont.)**

- 2.4.5 This procedure does NOT contain any separate data/verification sheets. Verification of procedural steps and validity of the data is incorporated into the specific section.
- 2.4.6 A Job Hazard Analysis form will be used in conjunction with the pre-job safety meeting form when any unusual hazards are identified. The PRE-JOB MEETING FORM will be used to document all attendees.
- 2.4.1 Tests interrupted due to work breaks, personnel support, faulty equipment or other reasons may require performing equipment manipulations such as valving, power down, Lock and Tag, or alami acknowledgment in order to leave the equipment in a safe condition. The Test Director may deviate from test steps in order to assure safe equipment configuration. Configuration shall be noted so the equipment may be restored at the resumption of testing. Shift Management shall be kept apprised of test status and equipment condition.
- 2.4.8 Acknowledge applicable alarms per Test Director.
- 2.4.9 Sections 5.1 through 5.10 of this procedure are generally performed in the shop prior to equipment placement in the field. Daily release requirements through the Shift office must be met for field portions of testing.
- 2.4.10 In some instances, such as Emergency Pumping Skid testing, the OCS will be untested or not required. Test sections 5.6 and 5.11 will not be performed. Blanks representing OCS data shall be completed with an "NA" in other test sections.
- 2.4.11 If this test procedure is to be used to verify operability after major corrective maintenance on either the PIC Skid or saltwell pump/jumper assembly, the Cognizant Engineer shall define the applicable sections of the procedure. Blanks in all other test sections shall be completed with an "N/A".
- 2.4.12 This procedure is designed to be re-usable for many skid installations. Each skid designator will replace the asterisk (\*) in device names used throughout this procedure.

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**2.5 Records**

2.5.1 The completed WORKING COPY of this procedure, including all exception logs and exception records generated by this procedure, will be kept as permanent records.

2.5.2 **RECORD** the following information for this procedure:

Tank Number: SX-103

Skid Designator: "✓"

2.5.3 **RECORD** the following information or "NA" if an OCS is NOT TESTED.

OCS Location (Building Number): 244-5

2.5.4 **IF** the procedure is to be used for post-maintenance testing, Cognizant Engineer **RECORD** applicable section numbers. "N/A" sections which will NOT be used.

✓ 5.1   ✓ 5.2   ✓ 5.3   ✓ 5.4   ✓ 5.5

✓ 5.6   ✓ 5.7   ✓ 5.8   ✓ 5.9   ✓ 5.10

✓ 5.11   ✓ 5.12   ✓ 5.13   N/A 5.14

**3.0 PRECAUTIONS AND LIMITATIONS**

**3.1 Personnel Safety**

**Warning** - Energized circuits and leads are contained inside the cabinet. Observe appropriate electrical precautions. Comply with RPP-PRO-OSE. Electrical Work Safety to avoid personnel electrical shock hazards.

**Caution** - Relief valve (SALW-PRV-6001\*) will actuate and relieve pressure at 25 psig.

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**3.2 Radiation And Contamination Control**

- 3.2.1 HPT assistance is required in accordance with RWP.
- 3.2.2 The test shall be STOPPED and the Shift Manager immediately notified, if radiation levels significantly increase as determined by a radiation monitor.
- 3.2.3 Work in Radiological Areas will be performed using a RWP, following review by Radiological Control per the ALARA program (HNF-IP-0842, Vol VII, Section 17.1).

**3.3 Environmental Compliance**

Discharging clean water upon completion CANNOT cause erosion or puddling.

**3.4 Limits**

DO NOT perform any tank intrusive work without the express authorization of the Shift Manager.

**4.0 PREREQUISITES**

Note - Equipment shall be available before the step associated with that piece of equipment.

4.1 The Following Supplies Shall Be Available at the Work Place:

- Digital Multimeter (DMM): Portable, 0-600 volts ac,  $\pm 2\%$  accuracy.  
Calibration No. 820-45-08-016 Expiration Date 6/25/01 QA Kw 10/11/00
- Transmation current (milliamp) simulator or equivalent  
Calibration No. 817-13-20-007 Expiration Date 9/18/01 QA Kw 10/11/00
- Manometer - minimum range 0-500 IN. W.G. Must have a read out of variable test pressure.  
Calibration No. 820-35-40-007 Expiration Date 7/18/01 QA Kw 10/11/00
- Manometer - minimum range 0-50 IN. W.G. Must have a read out of variable test pressure.  
Calibration No. 1-42 Expiration Date NIP QA NIP

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### 4.0 Prerequisites (Cont.)

- Manometer - minimum range 0-30 psig. Must have a read out of variable test pressure.

Calibration No. N/A Expiration Date N/A QA N/A

- Flowmeter Calibrator (Required for Brooks flowmeters only - NA lines for skids with Yokogawa flowmeters)

Calibration No. N/A Expiration Date N/A QA N/A

- Calibration gas - methane 1.5% in air (30% LFL [Required for CGMs - NA lines for Flammable Gas Monitors])

Gas Bottle Lot No. 406140 Concentration 1.5 %Methane QA KLW 10/11/00

- Saltwell Jet pump Juniper
- Kotarner or Flowmeter
- Jumper Test Assembly
- 2 way radios for communication between Tank Farm and local control room
- 480V 3 Phase Power Source

Note - Test sections may coincide prior to assembly of all test equipment. Test Director is responsible to assure all equipment necessary for a given section is available.

#### 4.2 The Following Conditions must Be Met Before this Test May Commence:

- 4.2.1 The Jet Pump Jumper and Jumper assembly have been placed on the pump recirculation apparatus.
- 4.2.2 The PIC Skid water tank and run-in tank have been adequately filled for testing.
- 4.2.3 The Jet Pump Jumper **AND** Jumper Assembly have been electrically **AND** pneumatically connected to the PIC Skid.
- 4.2.4 A pre-job safety meeting has been held before performing this procedure in accordance with HNF-IP-0842, Vol V Section 4.1, PIE-JOB BRIEFING, ATTACHMENT A.

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**4.0 Prerequisites (Cont.)**

- 4.2.5 The PIC Skid has been grounded in preparation for shop or field testing.
- 4.2.6 Test gauges **AND** rotameter have been installed in correct locations as indicated by the Test Director.
- 4.2.7 A printed copy of Ladder Logic and Alarm Table for the Pump Instrumentation and Control Skid is available at the work site. Copies may be kept outside of Radiological areas until necessary
- 4.2.8 A P&ID for applicable skid is available at the work site.
- 4.2.9 All personnel initialing or signing this procedure must also enter signature/initials on the PROCEDURE PERFORMER SIGNATURE SHEET.
- 4.2.10 Ensure the following PIC Skid Valves are OPEN prior to starting this OTP  
 SALW-V-6035\* (equalizing)  SALW-V-6036\* (equalizing)

Note - Depending on the PIC Skid being tested, the following valve list identifies all possible valves that may require attention.

4.2.11 **ENSURE** the following PIC Skid valves are CLOSED, as applicable, prior to starting this OTP **AND** NIA those valves NOT installed:

- |   |   |   |
|---|---|---|
| <input checked="" type="checkbox"/> SALW-V-6001*      | <input checked="" type="checkbox"/> SALW-V-6002*      | <input checked="" type="checkbox"/> SALW-V-6003*      |
| <input checked="" type="checkbox"/> SALW-V-6004*      | <input checked="" type="checkbox"/> SALW-V-6005*      | <input checked="" type="checkbox"/> SALW-V-6006*      |
| <input checked="" type="checkbox"/> SALW-V-6007*      | <input checked="" type="checkbox"/> SALW-V-6008*      | <input checked="" type="checkbox"/> SALW-V-6011*      |
| <input checked="" type="checkbox"/> SALW-V-6012*      | <input checked="" type="checkbox"/> SALW-V-6013*      | <input checked="" type="checkbox"/> SALW-V-6014*      |
| <input checked="" type="checkbox"/> SALW-V-6015*      | <input checked="" type="checkbox"/> SALW-V-6016*      | <input checked="" type="checkbox"/> SALW-V-6017'      |
| <input checked="" type="checkbox"/> SALW-V-6018*      | <input checked="" type="checkbox"/> SALW-V-6019*      | <input checked="" type="checkbox"/> SALW-V-6020*      |
| <input checked="" type="checkbox"/> SALW-V-6021*      | <input checked="" type="checkbox"/> SALW-V-6025*      | <input checked="" type="checkbox"/> SALW-V-6026*      |
| <input checked="" type="checkbox"/> SALW-V-6027*      | <input checked="" type="checkbox"/> SALW-V-6028*      | <input checked="" type="checkbox"/> SALW-V-6029*      |
| <input checked="" type="checkbox"/> SALW-V-6030*      | <input checked="" type="checkbox"/> SALW-V-6031*      | <input checked="" type="checkbox"/> SALW-V-6032*      |
| <input checked="" type="checkbox"/> SALW-V-6034*      | <input checked="" type="checkbox"/> SALW-V-6035* (hi) | <input checked="" type="checkbox"/> SALW-V-6035* (lo) |
| <input checked="" type="checkbox"/> SALW-V-6036* (hi) | <input checked="" type="checkbox"/> SALW-V-6036* (lo) | <input checked="" type="checkbox"/> SALW-V-6037*      |
| <input checked="" type="checkbox"/> SALW-V-6043*      | <input checked="" type="checkbox"/> SALW-V-6044*      | <input checked="" type="checkbox"/> SALW-V-6046'      |
| <input checked="" type="checkbox"/> SALW-V-6047*      | <input checked="" type="checkbox"/> SALW-V-6048*      | <input checked="" type="checkbox"/> SALW-V-6049*      |
| <input checked="" type="checkbox"/> SALW-V-6050*      | <input checked="" type="checkbox"/> SALW-V-6051*      | <input checked="" type="checkbox"/> SALW-V-6052*      |
| <input checked="" type="checkbox"/> SALW-V-6053*      | <input checked="" type="checkbox"/> SALW-V-6054*      | <input checked="" type="checkbox"/> SALW-V-6055*      |
| <input checked="" type="checkbox"/> SALW-V-6056*      | <input checked="" type="checkbox"/> SALW-V-6038*      | <input checked="" type="checkbox"/> SALW-V-6045*      |

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### 4.0 Prerequisites (Cont.)

4.2.12 ENSURE the following Drip Control Box valves are CLOSED, as applicable, AND NA those valves NOT installed.

<input checked="" type="checkbox"/> SALW-V-6160*	<input checked="" type="checkbox"/> SALW-V-6162*	<input checked="" type="checkbox"/> SALW-V-6163*
<input checked="" type="checkbox"/> SALW-V-6161*	<input checked="" type="checkbox"/> SALW-V-6167*	<input checked="" type="checkbox"/> SALW-V-6169*
<input checked="" type="checkbox"/> SALW-V-6164*	<input checked="" type="checkbox"/> SALW-V-6165*	<input checked="" type="checkbox"/> SALW-V-6166*
<input checked="" type="checkbox"/> SALW-V-6171*		

4.2.13 ENSURE the following PIC Skid circuit disconnects and breakers are OPEN (OFF), as applicable, prior to starting this OTP.

<input checked="" type="checkbox"/> SALW-DS-6002*	<input checked="" type="checkbox"/> SALW-DS-6003*	<input checked="" type="checkbox"/> SALW-DS-6004*
<input checked="" type="checkbox"/> SALW-DS-6005*		

Note - The following breakers are located in SALW-DP-6001\*.

<input checked="" type="checkbox"/> Breaker "MAIN"	
<input checked="" type="checkbox"/> Breaker 1	<input checked="" type="checkbox"/> Breaker 2
<input checked="" type="checkbox"/> Breaker 3	<input checked="" type="checkbox"/> Breaker 4
<input checked="" type="checkbox"/> Breaker 5	<input checked="" type="checkbox"/> Breaker 6
<input checked="" type="checkbox"/> Breaker 7	<input checked="" type="checkbox"/> Breaker 8
<input checked="" type="checkbox"/> Breaker 9	<input checked="" type="checkbox"/> Breaker 10
<input checked="" type="checkbox"/> Breaker 11	<input checked="" type="checkbox"/> Breaker 12
<input checked="" type="checkbox"/> Breaker 13	<input checked="" type="checkbox"/> Breaker 14

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**4.0 Prerequisites (Cont.)**

Note - Verification of instrument calibration must be performed before the step associated with that instrument.

4.3 VERIFY the current calibration AND RECORD the calibration date and calibration due date on the Table below

INSTRUMENT	CALIBR/FUNCT CHECK DATE	NEST DUE DATE
SALW-PS-6004*	8/22/00	8/22/01
SALW-WFT-6002*	8/22/00	8/22/01
SALW-LT-6003*	8/22/00	8/22/01
SALW-SGT-6001*	8/22/00	8/22/01
SALW-CONV-6001*	8/22/00	8/22/01
SALW-FQIT-6001*	8/22/00	8/22/01
SALW-PI-6001*	8/22/00	8/22/01
SALW-PI-6002*	8/22/00	8/22/01
SALW-PI-6003*	8/22/00	8/22/01
SALW-PI-6004*	8/22/00	8/22/01
SALW-PI-6005*	8/22/00	8/22/01
SALW-PI-6006*	8/22/00	8/22/01
SALW-PI-6007*	8/22/00	8/22/01
SALW-PI-6008*	8/21/00	8/21/01
SALW-PI-6011*	8/22/00	S 1
SALW-PI-6012*	8/22/00	8/22/01
SALW-CGT-6001* (IF APPLICABLE)	10/9/00	10/24/00

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**4.0 Prerequisites (Cont.)**

4.4 Test Director **VERIFY** that Section 4.0 has been **COMPLETED** by **SIGNING** below.

*[Signature]*                      10/11/00  
Test Director Signature                      Date

4.5 Quality Assurance Inspector **VERIFY** that Section **4.0** has been **COMPLETED** by **SIGNING** below.

*[Signature]*                      10/11/00  
Quality Assurance Inspector Signature                      Date

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**5.0 PROCEDURE**

DISCONNECT SWITCH	ENERGIZED (•)
SALW-DS-6002*	✓
SALW-DS-6003*	/
SALW-DS-6004*	✓
SALW-DS-6005*	✓

SKIDS A THROUGH J DISCONNECT SWITCH	ENERGIZED (•)
"MAIN", 1, 3, & 11	<i>N/A</i>
2, (WEIGHT FACTOR INSTRUMENT ENCLOSURE)	/
8, (LEAK DETECTION/HEAT TRACE)	
6, (WATER TANK HEATER)	
7, (INSTRUMENT ENCLOSURE [PLC])	
4, (AIR COMPRESSOR CABINET HEATER & [1] RECEPTACLE)	
5, (RECEPTACLE)	
9, (FGM AND HEATER)	
10, (INTRINSICALLY SAFE PANEL)	
12, (HEAT TRACE FOR DIPTUBES AND IA LINE, HEAT TRACE SAMPLE/RETURN)	↓

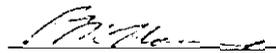
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**5.1 Electrical and Process Air Power-up (Cont.)**

SKIDS K THROUGH XW DISCONNECT SWITCH	ENERGIZED (•)
"MAIN"	✓
7, (WEIGHT FACTOR INSTRUMENT ENCLOSURE)	✓
3, (LEAK DETECTION/HEAT TRACE)	✓
8, WATER TANK HEATER)	✓
5, (INSTRUMENT ENCLOSURE [PLC])	✓
4, (AIR COMPRESSOR CABINET HEATER & [I] RECEPTACLE)	✓
9, (RECEPTACLE)	✓
11, (PIT FGM PUMP AND HEATER) (IF APPLICABLE)	N/A
6, (INTRINSICALLY SAFE PANEL)	✓
10, (HEAT TRACE FOR DIPTUBES AND IA LINE, PIT HEAT TRACE SAMPLE/RETURN)	✓
1, (DOME FGM PUMP AND HEATER) (IF APPLICABLE)	N/A
2, (DOME HEAT TRACE SAMPLE/RETURN) OR (LEAK DETECTION IN INSTRUMENT ENCLOSURE)	✓
12, (INSTR CABINET AC AND HEATER RECEPTACLE)	✓
13, (DOME FGM HEATER TRACE)OR(REMOTE DRIP PANEL)(IF APPLICABLE)	N/A
14, (PIT FGM HEATER TRACE) (IF APPLICABLE)	N/A

- 5.1.3      **ACKNOWLEDGE** any initial skid or FGM alarms.
  
- 5.1.4      **OPEN** valve(s) SALW-V-6034\*, SALW-V-6050\*, and SALW-V-6053\*, as applicable (located in the Air COMP Cabinet).
  
- 5.1.5      **START** air compressor SALW-CMP-6001\* by **POSITIONING** switch on the SALW-DS-6004\* to the HAND or ON position.
  
- 5.1.6      **VERIFY** that Air Compressor starts and builds up pressure **AND** shuts off at 86 to 94 psig, as indicated by SALW-PI-6006\*.

      10/11/00  
 Test Director Signature      Date

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**5.1 Electrical and Process Air Power-up (Cont.)**

5.1.7 , VALVE in air to the PIC Skid Water Tank by **SLOWLY PERFORMING** the following:

5.1.7.1 **SLOWLY OPEN** valve SALW-V-6025\* (located in the air compressor cabinet).

5.1.7.2 **SLOWLY OPEN** valve SALW-V-6027\* (located near the water tank)

5.1.7.3 **SLOWLY OPEN** valve(s) SALW-V-6028\* (not installed on all PIC Skids) and SALW-V-6052\*, as applicable (located near the water tank)

5.1.7.4 **ADJUST** Pressure Regulator Valve SALW-PCV-6006\* to 30 psi (27 to 33 psig) as indicated by SALW-PI-6008\*.

5.1.8 VALVE IN air to SALW-PNL-6002\* (WFIE Cabinet) by **PERFORMING** the following:

5.1.8.1 **SLOWLY OPEN** valve SALW-V-6026\* and SALW-V-6051\*, as applicable (located in the Air Compressor Cabinet).

5.1.8.2 **SLOWLY OPEN** valve SALW-V-6001\*, located in the bottom of SALW-PNL-6002\* (WFIE Cabinet).

5.1.8.3 **ADJUST** pressure control valve SALW-PCV-6001\* in SALW-PNL-6002\* (WFIE Cabinet) to 20 psi (17.5 to 22.5 psi) as indicated by the pressure gauge located on the face of the valve.

5.1.8.4 **SLOWLY OPEN** valve SALW-V-6004\*, located in the middle of SALW-PNL-6002\* (WFIE Cabinet).

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**5.1 Electrical and Process Air Power-up (Cont.)**

- 5.1.8.5 **SLOWLY OPEN** valve SALW-V-6003\*, located in the middle of SALW-PNL-6002\* (WFIE Cabinet).
  
- 5.1.8.6 **SLOWLY OPEN** valve SALW-V-6005\*, located in the bottom left of SALW-PNL-6002\* (WFIE Cabinet) and valve SALW-V-6166\*, as applicable.
  
- 5.1.8.7 **SLOWLY OPEN** valve SALW-V-6006\*, located in the bottom left of SALW-PNL-6002\* (WFIE Cabinet)
  
- 5.1.8.8 **SLOWLY OPEN** valve SALW-V-6007\*, located in the bottom left of SALW-PNL-6002\* (WFIE Cabinet) and valve SALW-V-6165\*, as applicable.
  
- 5.1.8.9 **SLOWLY OPEN** valve SALW-V-6002\*, located in the bottom left of SALW-PNL-6002\* (WFIE Cabinet).
  
- 5.1.8.10 **SLOWLY OPEN** valve SALW-V-6020\*, located in the middle left of SALW-PNL-6002\* (WFIE Cabinet).
  
- 5.1.8.11 **SLOWLY OPEN** valve SALW-V-6021\*, located in the middle left of SALW-PNL-6002\* (WFIE Cabinet).
  
- 5.1.8.12 **SLOWLY OPEN** valve SALW-V-6019\*, located in the middle left of SALW-PNL-6002\* (WFIE Cabinet).

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**5.1 Electrical and Process Air Power-up (Cont.)**

5.1.9 **ADJUST** the air flow through the diptubes by **PERFORMING** the following:

5.1.9.1 **ADJUST** flow to **dip** tubes to 1.5 cfh (1.0 to 2.0 cfl) as indicated by SALW-FIV-6002\*

5.1.9.2 **ADJUST** flow to dip tubes to 1.5 cfh (1.0 to 2.0 cfh) as indicated by SALW-FIV-6003\*.

5.1.9.3 **ADJUST** flow to dip tubes to 1.5 cfh (1.0 to 2.0 cfl) as indicated by SALW-FIV-6004\*

5.1.9.4 **ENSURE** flows obtained in steps are all within 0.25 cfh of each othsr.

  
\_\_\_\_\_  
Test Director Signature                      10/11/00  
Date

5.1.10 **VALVE** IN SALW-WFT-6002\* **AND** SALW-SGT-6001\* by **PERFORMING** the following:

5.1.10.1 **ENSURE** the **LOW** side **AND** **HIGH** side isolation valves, located on SALW-V-6036\* in cabinet SALW-PNL-6002\* (WFIE Cabinet) are **OPEN**

5.1.10.2 **ENSURE** the **EQUALIZING** valve on valve manifold SALW-V-6036\* in cabinet SALW-PNL-6002\* (WFIE Cabinet) is **CLOSED**.

5.1.10.3 **ENSURE** the **LOW** side **AND** the **HIGH** side isolation valves, located on SALW-V-6035\* in cabinet SALW-PNL-6002\* (WFIE Cabinet) are **OPEN**.

5.1.10.4 **ENSURE** the **EQUALIZING** valve on valve manifold SALW-V-6035\* in cabinet SALW-PNL-6002\* (WFIE Cabinet) is **CLOSED**.

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**5.1 Electrical and Process Air Power-up (Cont.)**

**5.1.11 CONFIRM** that a signal is present between SALW-PNL-6002\* (WFIE Cabinet) Instruments and the PLC by **PERFORMING** the following:

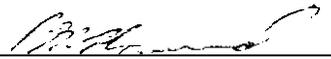
5.1.1.1.1 **VERIFY** Weight Factor is approximately 0.0" (0.0 to 0.5") Water Gauge as **INDICATED** by DTAM. **IF DTAM DISPLAYS " <<<< "** indicating less than zero, **VERIFY** continuity between the transmitter and the PLC **AND PROCEED** with the test.

                      10/11/00  
Test Director Signature                      Date

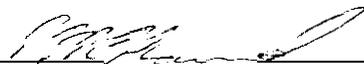
5.1.1.1.2 **VERIFY** Specific Gravity is approximately 0.0" (0.0 to 0.5") Water Gauge as **INDICATED** by DTAM. **IF DTAM DISPLAYS " <<<< "** indicating less than zero, **VERIFY** continuity between the transmitter and the PLC **AND PROCEED** with the test.

                      10/11/00  
Test Director Signature                      Date

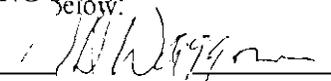
5.1.1.1.3 **VERIFY** Flow rate is approximately 0.0 (0.0 to 0.5 gpm) Gallons Per Minute as **INDICATED** by DTAM. **IF DTAM DISPLAYS " <<<< "** indicating less than zero, **VERIFY** continuity between the transmitter and the PLC **AND PROCEED** with the test.

                      10/11/00  
Test Director Signature                      Date

5.1.12 Test Director **VERIFY** that Section 5.1 is **COMPLETE** by **SIGNS** below

                      10/11/00  
Test Director Signature                      Date

5.1.13 Quality Assurance Inspector **VERIFY** that Section 5.1 is **COMPLETE** by **SIGNING** below:

                      10-11-00  
Quality Assurance Inspector Signature                      Date

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**5.2 Water Drip System**

Note - , If this OTP is being performed with a Drip Control Box, Section 5.14 should be performed instead of this test section.

If Driptubes are not installed in test area, process air and drip water will be expelled from the side of SALW-PNL-6002\* (WFIE Cabinet).

5.2.1 If necessary, **ATTACH** temporary portable hose from diptube outlet to high and medium diptubes from the bottom of the weight factor enclosure. (from valves SALW-V-6005\* and SALW-V-6007\*).

ROUTE the flexible hose to a suitable drain AND) **SECURE**.



5.2.2 **ACTUATE** the Dip Tube Drip system by **SLOWLY OPENING** the following valves:

VALVES	OPES (•)
SALW-V-6018* located in the bottom right of SALW-PNL-6002* (WFIE Cabinet)	✓
SALW-V-6016* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	✓
SALW-V-6013* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	✓
SALW-V-6008* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	✓

**CAUTION**

**Relief valve (SALW-PRV-6001\*) will actuate and relieve pressure at 25 psig**

(WFIE Cabinet).



5.2.4 **ADJUST** valve SALW-V-6014\* to **allow** APPROXIMATELY 2 drops second as **INDICATED** by sight glass SALW-FG-6001\* (1 to 3 drops/second).



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**5.2 Water Drip System (Cont.)**

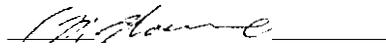
5.2.5 **ADJUST** valve SALW-V-6015\* to allow APPROXIMATELY 2 drops/second as INDICATED by sight glass SALW-FG-6002' (1 to 3 drops/second).

Note - Instrument air to the Diaphragm Operated Valve will remain valved in for testing in subsequent steps.

5.2.6 VALVE OUT the dip tube drip water by SLOWLY CLOSING the following:

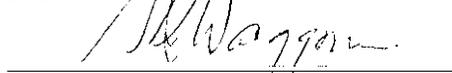
VALVE	CLOSED ( )
SALW-V-6015* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	✓
SALW-V-6014* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	✓
SALW-V-6008* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	✓
SALW-V-6013* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	✓

5.2.7 Test Director **VERIFY** that Section 5.2 is COMPLETE by **SIGNING** below:

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

\_\_\_\_\_  
 10/11/00  
 Date

5.2.8 Quality Assurance Inspector **VERIFY** that Section 5.2 is COMPLETE by **SIGNING** below:

  
 \_\_\_\_\_  
 Quality Assurance Inspector Signature

\_\_\_\_\_  
 10-11-00  
 Date

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**5.3 Analog Input Signals**

**5.3.1 PERFORM WATER TANK LEVEL TEST**

5.3.1.1 **PREPARE** the Water Tank Level Transmitter SALW-LT-6003\* for test signals by **PERFORMING** the following:

A. **ENSURE** valve SALW-V-6029\*, located in the bottom of SALW-PNL-6003\* (WATER TANK ENCL), is CLOSED.

B. **ENSURE** valve SALW-V-6031\*, located in the bottom of SALW-PNL-6003\* (WATER TANK ENCL), is CLOSED.

5.3.1.2 **CONNECT** 0-50 IN. W.G. test Manometer pressure source to the HIGH PRESSURE vent/test port of the level transmitter SALW-LT-6003\*.

5.3.1.3 **VERIFY** the LOW PRESSURE vent/test port of the level transmitter SALW-LT-6003\* is OPEN to atmosphere.

5.3.1.4 **ADJUST** the test Manometer on the SALW-LT-6003\* to a pressure of 31 IN. W.G. (30 to 32 IN. W.G.).

OPERATOR CONTROL STATION WATER TANK LEVEL (RANGE: 28.5 TO 33.5 Inches)	DATA TABLE ACCESS MODULE WATER TANK LEVEL (RANGE: 28.5 TO 33.5 Inches)
31.0	31.0

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<b>OPERATOR CONTROL STATION WATER TANK LEVEL</b> (RANGE: 9.5 to 10.5 inches OR 11.7 to 12.7 inches)	<b>DATA TABLE ACCESS MODULE WATER TANK LEVEL</b> (RANGE: 9.5 to 10.5 inches OR 11.7 to 12.7 inches)
11.9	11.9

5.3.1.10 **SLOWLY INCREASE** the test Manometer pressure to 15.5 IN. W.G (14.5 to 16.5 IN. W.G.



<b>OPERATOR CONTROL STATION WATER TANK LEVEL</b> (RANGE: 14.5 to 16.5 inches)	<b>DATA TABLE ACCESS MODULE WATER TANK LEVEL</b> (RANGE: 14.5 to 16.5 inches)
15.5	15.5

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5.3 Analog Input Signals (Cont.)

5.3.1.12 VERIFY the Water Tank Low Level alarm CLEARS at the OCS

5.3.1.13 REMOVE the test manometer from the SALW-LT-6003\* high pressure vent/test port, AND RE-INSTALL vent plugs.

5.3.1.14 RESTORE the Water Tank Level Transmitter SALW-LT-6003\* by PERFORMING the following:

A. OPEN valve SALW-V-6029\*.

B. OPEN valve SALW-V-6031\*.

5.3.2 PERFORM WEIGHT FACTOR TEST

5.3.2.1 VERIFY that NO PLC input signals are FORCED and the forcing function is DISABLED.

Note - If Drip Control Box is used, manometer pressure source will be connected to the High Pressure dip tube on the Drip Control Box.

5.3.2.2 CONNECT the 0-500 IN. W.G. test Manometer pressure source to the HIGH PRESSURE dip tube

5.3.2.3 ENSURE SALW-V-6001\* is CLOSED. **d**

5.3.2.4 ENSURE SALW-V-6005\* is OPEN.

5.3.2.5 ENSURE SALW-V-6006\* is OPEN.

5.3.2.6 ENSURE adjustment valves on SALW-FIV-6002\*, SALW-FIV-6003\*, SALW-FIV-6004\* are CLOSED. **d**

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**5.3 Analog Input Signals (Cont.)**

5.3.2.7 ENSURE the LOW side and HIGH side isolation valves, located on SALW-V-6036\* 3-Valve Manifold in cabinet SALW-PNL-6002\* (WFIE Cabinet) are OPEN.

5.3.2.8 ENSURE the EQUALIZING valve located on SALW-V-6036\* 3-Valve Manifold in cabinet SALW-PNL-6002\* (WFIE Cabinet) is CLOSED.

5.3.2.9 SET the test Manometer to 125 IN. W.G.

5.3.2.10 OBSERVE OCS and DTAM AND RECORD the Weight Factor on the Table below.

OPERATOR CONTROL STATION WEIGHT FACTOR READING (RANGE: 120 to 130 inches)	DATA TABLE ACCESS MODULE WEIGHT FACTOR READING (RANGE: 120 to 130 inches)
<i>125.2</i>	<i>125.2</i>

5.3.2.11 BLEED off pressure from the Manometer.

5.3.2.12 DISCONNECT the 0-500 IN. W.G. test Manometer pressure source

5.3.2.13 CLOSE valve SALW-V-6006\*.

8.3.2.14 OPEN the EQUALIZING valve, located on SALW-V-6036\*.

5.3.2.15 CLOSE the LOW side and HIGH side isolation valves, located on SALW-V-6036\*.

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**5.3 Analog Input Signals (Cont.)**

**5.3.3 , PERFORM SPECIFIC GRAVITY TEST**

Note - A mock signal to the specific gravity transmitter is required to keep a low saltwell level alarm from preventing testing of other instrumentation.

If Drip Control Box is used, manometer pressure source will be connected to the High Pressure dip tube on the Drip Control Box.

- 5.3.3.1. **CONNECT** the 0-50 IN. W. G test Manometer pressure source to the HIGH PRESSURE dip tube.
- 5.3.3.2. **ENSURE** valve SALW-V-6007\* is OPEN
- 5.3.3.3. **ENSURE:** valve SALW-V-6005\* is OPEN.
- 5.3.3.4. **ENSURE** the LOW side and the HIGH side isolation valves, located on SALW-V-6035\* in cabinet SALW-PNL-6002\* (WFIE Cabinet) are OPEN.
- 5.3.3.5. **ENSURE** the EQUALIZING valve, located on SALW-V-6035\* in cabinet SALW-PNL-6002" (WFIE Cabinet), is CLOSED.
- 5.3.3.6. **SET** the test Manometer to 5 IN. W.G. (4.7 to 5.3 IN. W.G.). **d**
- 5.3.3.7. **OBSERVE** OCS and DTAM **AND RECORD** the Specific Gravity on the Table below.

manometer  
4.99

OPERATOR CONTROL STATION SPECIFIC GRAVITY READING (RANGE: 4.6 to 5.4 inches)	DATA TABLE ACCESS MODULE SPECIFIC GRAVITY READING (RANGE: 4.65 to 5.35 inches)
5.0	5.05

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**5.3 Analog Input Signals (Cont.)**

**5.3.4 PERFORM FLOW METER TEST**

- 5.3.4.1 **IF** necessary to configure the flowmeter, **UNPLUG** the power cord to the SALW-FQIT-6001\* (SUPERNATANT FLOW XMTR) .
  
- 5.3.4.2 **IF** a Brooks flowmeter is **USED**. **CONFIGURE** SALW-FQIT-6001\* to receive signals from a hand held calibrator.
  
- 5.3.4.3 **ENSURE** SALW-FQIT-6001\* is **POWERED** and **COSFIGURED** for simulated flow signals.
  
- 5.3.4.4 **SIMULATE** a flow signal of 2.0 gpm with the hand held calibrator. or from flowmeter face plate.
  
- 5.3.4.5 **VERIFY** the SALW-FQIT-6001\* transmitter is **OPERATING PROPERLY** by **RECORDING** the following:

<b>OPERATOR CONTROL STATION 'SUPERNATANT FLOW (RANGE: 1.8 to 2.2 gpm)</b>	<b>DATA TABLE ACCESS MODULE SUPERNATANT FLOW (RANGE: 1.8 TO 2.2 gpm)</b>	<b>SUPERNATANT FLOW XMTR SUPERNATANT FLOW (RANGE: 1.8 TO 2.2 gpm)</b>
<i>2.00</i>	<i>1.997</i>	<i>2.0</i>

- 5.3.4.6 **RESTORE** the SALW-FQIT-6001\* to its original configuration

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**5.3 Analog Input Signals (Cont.)**

Note - This test only performed when jet pump jumper and pump are physically mated on the run-in stand in the shop or in the field.

**5.3.5 PERFORM DISCHARGE PRESSURE TEST**

5.3.5.1 **ENSURE** Pump recirculation apparatus is **FILLED** with water **AND CONFIGURED** to circulate water through the Jet Pump jumper.

5.3.5.2 **PLACE** JR-1 valve in the **PROCESS** position.

5.3.5.3 At the discretion of the Test Director, **INSTALL** temporary interlock jumpers, **OR INITIATE** a software force on pump permissive interlocks for equipment **NOT** installed or out of service.

5.3.5.4 **USING** the DTAM, **START** the Jet Pump.

5.3.5.5 **RECORD** the following pressures on the Table below:

SALW-PI-6012* JET PUMP SUCTION PRESSURE	DTAM DISCHARGE PRESSURE	SALW-PI-6011* JET PUMP DISCHARGE PRESSURE
37.2	72	72.3

5.3.5.6 **USING** the DTAM, **STOP** the Jet Pump

**5.3 Analog Input Signals (Cont.)**

**5.3.6 PERFORM PIT FLAMMABLE/COMBUSTIBLE GAS MONITOR TEST**

5.3.6.1 **CONNECT** a current source to one of the following:

Model 4.0 FGM TB2 terminals 15(+) and 16(-)

Model 4.46 FGM wires 501(+) and 502(-) at PLC-AO

PIC Skid Instrniment Enclosure, PLC MODULE 1, IN 0(+) and IN 0(-).



5.3.6.2 **SET** current source to 4 Ma (3.75 to 4.25 Ma).



5.3.6.3 **RECORD** the DTAM and OCS Flammable Gas DISPLAY on the "Pit FGM/CGM Output" below.

5.3.6.4 **SET** current source to 10 Ma (9.75 to 10.25 Ma).



5.3.6.5 **RECORD** the DTAM and OCS Flammable Gas DISPLAY on the "Pit FGM/CGM Output" below.

5.3.6.6 **SET** curront source to 20 mA (19.75 to 20.25 mA).



5.3.6.7 **RECORD** the DTAM and OCS Flammable Gas DISPLAY on the "Pit FGM/CGM Output" below.

Input (mA)	Pit FGM/CGM Output	
	DTAM	OCS
4	0	0
10	37.5	37.5
20	100	100

5.3.6.8 **DISCONNECT** the current source, **AND** if necessary

**RESTORE** loop INTERRUPTED in Step 5.3.6.1



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**5.3 Analog Input Signals (Cont.)**

Note - This test only performed if a dome space FGM is installed

**5.3.7 PERFORM DOME SPACE FLAMMABLE GAS MONITOR TEST**

5.3.7.1 **CONNECT** a current source to one of the following:

- Model 4.0 FGM TB2 terminals 15(+) and 16(-)
- Model 4.46 FGM wires 501(+) and 502(-) at PLC-A0
- PIC **Skid** Instrument Enclosure, PLC MODULE 6, IN 0(+) and IN 0(-).

5.3.7.2 **SET** current source to 4 mA (3.75 to 4.25 mA).

5.3.7.3 **RECORD** the DTAM and OCS Flammable Gas DISPLAY on the "Dome Space FGM Output" below.

5.3.7.4 **SET** current source to 10 mA (9.75 to 10.25 mA).

5.3.7.5 **RECORD** the DTAM and OCS Flammable Gas DISPLAY on the "Dome Space FGM Output" below.

5.3.7.6 **SET** current source to 20 mA (19.75 to 20.25 mA).

5.3.7.7 **RECORD** the DTAM and OCS Flammable Gas DISPLAY on the "Dome Space FGM Output" below.

Input (mA)	Dome Space FGM Output)	
	DTAM	OCS
4		
10		
20		

5.3.7.8 **DISCONNECT** the current source, **AND** if necessary,

**RESTORE** loop INTERRUPTED in Step 5.3.7.1.

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**5.3 Analog Input Signals (Cont.)**

**5.3.8 PERFORM THERMOCOUPLE TEST**

5.3.8.1 **WARM** thermocouple SALW-TE-6004\*, located in the Instrument Enclosure.

5.3.8.2 **VERIFY** DTAM and **OCS DISPLAY** a **CHANGED** temperature (OCS and DTAM should match  $\pm 2^\circ$  F).

*[Signature]* 10/11/00  
Test Director Signature Date

5.3.8.3 **ALLOW** SALW-TE-6004\* to **RETURN** to ambient temperature.

**NOTE -** Steps 5.3.8.4 through 5.3.8.6 only performed if SALW-TE-6005\* is installed.

5.3.8.4 **WARM** thermocouple SALW-TE-6005\*, located in the Water Enclosure.

5.3.8.5 **VERIFY** DTAM and **OCS DISPLAY** a **CHANGED** temperature (OCS and DTAM should match  $\pm 2^\circ$  F).

*[Signature]* 10/11/00  
Test Director Signature Date

5.3.8.6 **ALLOW** SALW-TE-6005\* to **RETURN** to ambient temperature

**NOTE.** Steps 5.3.8.7 through 5.3.8.9 only performed if SALW-TE-6006\* is installed.

5.3.8.7 **WARM** thermocouple SALW-TE-6006\*, located in the WFIE.

5.3.8.8 **VERIFY** DTAM and **OCS DISPLAY** a **CHANGED** temperature (OCS and DTAM should match  $\pm 2^\circ$  F).

*[Signature]* 10/11/00  
Test Director Signature Date

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**5.3 Analog Input Signals (Cont.)**

5.3.8.9 **ALLOW** SALW-TE-6006\* to **RETURN** to ambient temperature.

5.3.8.10 **WARM** thermocouple SALW-TE-6001\*, located in SALW-PNL-6001\* INSTRUMENT AIR ENCLOSURE.

5.3.8.11 **VERIFY** DTAM and OCS **DISPLAY** a CHANGED temperature (OCS and DTAM should match  $\pm 2^\circ$  F).

*[Signature]*                      10/11/03  
Test Director Signature                      Date

5.3.8.12 **ALLOW** SALW-TE-6001\* to **RETURN** to ambient temperature.

5.3.8.13 **WARM** thermocouple SALW-TE-6002\*, located on the Jet Pump.

5.3.8.14 **VERIFY** DTAM and OCS **DISPLAY** a CHANGED temperature OCS and DTAM (should match  $\pm 2^\circ$  F).

*[Signature]*                      10/11/00  
Test Director Signature                      Date

5.3.8.15 **ALLOW** SALW-TE-6002\* to **RETURN** to ambient temperature.

Note - Jumper insulation will prevent thermocouple access.

5.3.8.16 **IF** accessible, **WARM** thennocouple SALW-TE-6003\* (Jet Pump over temperature thermocouple located on the saltwell Jet Pump juniper).

5.3.8.17 **VERIFY** DTAM and OCS **DISPLAY** temperature (OCS and DTAM should match  $\pm 2^\circ$  F).

*[Signature]*                      10/11/00  
Test Director Signature                      Date

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**5.3 Analog Input Signals (Cont.)**

5.3.8.18 **ALLOW** SALW-TE-6003\* to **RETURN** to ambient temperature.



5.3.9 **REMOVE** any jumpers or forces NOT required for the next section.



5.3.10 Test Director **VERIFY** that Section 5.3 is **COMPLETE** by **SIGNING** below.

*[Signature]*  
Test Director Signature

10/11/00  
Date

5.3.11 Quality Assurance Inspector **VERIFY** that Section 5.3 is **COMPLETE** by **SIGNING** below.

*[Signature]*  
Quality Assurance Inspector Signature

10-11-00  
Date

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**5.4 Discrete Input Signals**

**5.4.1 PERFORM VALVE POSITION TEST**

- 5.4.1.1 **ENSURE** the JR-1 valve is in the **PROCESS** position.
- 5.4.1.2 **VERIFY** the JR-1 valve indicates "norm" at the DTAM **AND** "PROCESS" at the OCS.
- 5.4.1.3 **PLACE** the JR-1 valve in the **FLUSH** position.
- 5.4.1.4 **VERIFY** the JR-1 valve indicates "NON-PROCESS" at the DTAH1 **AND** "FLUSH" at the OCS.
- 5.4.1.5 **PLACE** the JR-1 valve in the **PRIME** position.
- 5.4.1.6 **VERIFY** the JR-1 valve indicates "NON-PROCESS" at the DTAM **AND** "PRIME" at the OCS.

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**5.4 Discrete Input Signals (Cont.)**

**5.4.2 PERFORM FLUSH LINE PRESSURE TEST**

- 5.4.2.1 **PLACE** the JR-I valve in the PROCESS position.
- 5.4.2.2 **VERIFY** a water supply is **CONNECTED** to the jumper flush host.
- 5.4.2.3 **ENSURE** Pump recirculation apparatus is **FILLED** with water **AND CONFIGURED** to circulate water through the Jet Pump jumpsr.
- 5.4.2.4 At the discretion of the Test Director, **ENSURE** temporary interlock jumpers, **OR** software forces have been **INSTALLED** on pump permissive interlocks for equipment NOT installed or out of service.
- 5.4.2.5 **USING** the DTAM, **START** the Jet Pump.
- 5.4.2.6 **VERIFY** Jet Pump **OPERATION** at the OCS.
- 5.4.2.7 **ACTUATE** pressure transducer SALW-PT-6014\* (old name "PS-2") by **PRESSURIZING** the flush line with water.
- 5.4.2.8 **VERIFY** the Jet Pump **IMMEDIATELY SHUTS DOWN** at the DTAM and OCS.
- 5.4.2.9 **VERIFY** flush line high pressure alarm 3, "FLUSH PRESSURE HI" **ANNUNCIATES** at the DTAM and OCS.
- 5.4.2.10 **SMUT OFF** the water supply to the flush line.
- 5.4.2.11 **CYCLE** JR-1 valve to **CLEAR** the flush line high pressure alarm.
- 5.4.2.12 **ACKNOWLEDGE** alarms at DTAM and OCS.

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**5.4 Discrete Input Signals (Cont.)**

5.4.3 **PERFORM RECIRCULATION FLUSH LINE PRESSURE TEST**

- 5.4.3.1 **PLACE** the JR-1 valve in the PROCESS position
- 5.4.3.2 **VERIFY** a water supply is **CONNECTED** to recirculation flush line.
- 5.4.3.3 **ENSURE** Pump recirculation apparatus is **FILLED** with water **AND CONFIGURED** to circulate water through the Jet Pump Juniper.
- 5.4.3.4 At the discretion of the Test Director, **ENSURE** temporary interlock jumpers, **OR** software forces have been **INSTALLED** on pump permissive interlocks for equipment NOT installed or out of service.
- 5.4.3.5 **USING** the DTAM, **START** the Jet Pump.
- 5.4.3.6 **VERIFY** Jet Pump **OPERATION** at the OCS.
- 5.4.3.7 **ACTUATE** pressure transducer SALW-PT-6013\* by **PRESSURIZING** the recirculation flush line with water. **d**
- 5.4.3.8 **VERIFY** the Jet Pump **IMMEDIATELY SHUTS DOWN** at the DTAM and OCS.
- 5.4.3.9 **VERIFY** recirculation flush line high pressure alarm 39, "RECIRC FLUSH PRSS HI" **ANNUNCIATES** at the DTAM and OCS.
- 5.4.3.10 **SHUT OFF** the water supply to the recirculation flush line. **d**
- 5.4.3.11 **ACKNOWLEDGE** alarms at DTAM and OCS.

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**5.4 Discrete Input Signals (Cont.)**

5.4.4 **PERFORM LOW PRESSURE INTERLOCK TEST**

- 5.4.4.1 PLACE JR-1 valve in the PROCESS position.
- 5.4.4.2 ENSURE the pump is NOT PRIMED.
- 5.4.4.3 At the discretion of the Test Director, ENSURE temporary interlock jumpers, OR software forces have been INSTALLED on pump permissive interlocks for equipment NOT installed or out of service
- 5.4.4.4 USING the DTAM, START the Jet Pump.
- 5.4.4.5 VERIFY the Jet Pump SHUTS DOWN in approximately thirty (30) seconds (25 to 35 seconds).
- 5.4.4.6 VERIFY transfer line low pressure alarm "XFR PRESSURE LOW" ANNUNCIATES at the DTAM and OCS
- 5.4.4.7 ACKNOWLEDGE alarms at DTAM and OCS.

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**5.4 Discrete Input Signals (Cont.)**

Note - This test only performed when jet pump juniper and pump are physically mated on the run-in stand in the shop or in the field.

**5.4.5 PERFORM HIGH PRESSURE INTERLOCK TEST**

5.4.5.1 **IF** a water rani will be **USED**:

A. **PLACE** JR-1 valve in the **PRIME** position.

B. **USING** skill of the craft **CONNECT** a water ram to the jet pump jumper **AND SLOWLY PRESSURIZE** the pump and jumper to 140 psi **USING** water.

5.4.5.2 **IF** pump will develop 140 psi:

A. **PLACE** JR-1 valve in the **PROCESS** position.

B. At the discretion of the Test Director, **ENSURE** temporary interlock jumpers, **OR** software forces have been **INSTALLED** on pump permissive interlocks for equipment **NOT** installed or out of service

C. **START** jet pump with JK-2, **BYPASS** valve and **DOV CLOSED**.

5.4.5.3 **VERIFY** the "XFR PRESSURE HIGH" alarms at DTAM (alarm 2) and OCS **WHEN** pressure reaches 140psi (130 to 150 psi).

5.4.5.4 **RESTORE** pump and juniper to original configuration.

5.4.5.5 **ACKNOWLEDGE** alarms at DTAM and OCS.

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**5.4 Discrete Input Signals (Cont.)**

**5.4.6** REMOVE any jumpers or forces NOT required for the next section.



**5.4.7** Test Director **VERIFY** that Section 5.4 is COMPLETE by **SIGNING** below.

*[Signature]*                      10/12/00  
Test Director Signature                      Date

**5.4.8** Quality Assurance Inspector **VERIFY** that Section 5.4 is COMPLETE by **SIGNING** below.

*[Signature]*                      10/12/00  
Quality Assurance Inspector Signature                      Date

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**5.5 Specific Gravity Transmitter Operation**

5.5.1 At the discretion of the Test Director, **ENSURE** temporary interlock jumpers, **OR** software forces have been **INSTALLED** on pump permissive interlocks for equipment NOT installed or out of service.

5.5.2 **SET** the test manometer on the specific gravity transmitter to 13 IN. W.G.

5.5.3 **ENSURE** the following valves are OPEN:

Valve Number	Status
SALW-V-6034*	✓
SALW-V-6026*	
SALW-V-6001*	
SALW-V-6004*	✓
SALW-V-6002*	✓

**CONFIGURED** to circulate water through the saltwell Jet Pump.

5.5.6 **START** the Jet Pump **USING** the DIAM, **AND PLACE** the system in automatic

5.5.7 **VERIFY** the DOV **RIOVES** OPEN.

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OPERATOR CONTROL STATION SPECIFIC GRAVITY READING (RANGE: 12.6 to 13.4 inches)	DATA TABLE ACCESS MODULE SPECIFIC GRAVITY READING (RANGE: 12.65 to 13.35 inches)
13.0	13.02

Note - SALW-PI-6005\* pressure is to be read IMMEDIATELY WHEN the "SGT LOW" alarm occurs.

5.5.9 **VERY SLOWLY DECREASE** the test manometer pressure UNTIL the DTAM "SGT LOW" (alarm 13) **ANNUNCIATES**.



5.5.10 **VERIFY AND ACKNOWLEDGE** the Specific Gravity Low Alarm at the DTAM and OCS.



5.5.11 **RECORD** the following:

PARAMETER	READING
OPERATOR CONTROL STATION SPECIFIC GRAVITY (RANGE: 3 to 4)	3.5
DATA TABLE ACCESS MODULE SPECIFIC GRAVITY (RANGE: 3 to 4)	3.52
SPECIFIC GRAVITY MANOMETER READING (RANGE: 3 to 4 IN. W.G.)	3.56
DOV POSITION (% OPEN) [RANGE: FULLY CLOSED]	0%
SALW-PI-6005* PRESSURE (RANGE: 2 to 4 psig)	4

5.5.12 **VERY SLOWLY INCREASE** the test manometer pressure to 10 IN. W.G.



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**5.5 Specific Gravity Transmitter Operation (Cont.)**

5.5.13 **OBSERVE** the OCS and DTAM **AND RECORD** the specific gravity readings below:

OPERATOR CONTROL STATION SPECIFIC GRAVITY READING (RANGE: 9 to 11 inches)	DATA TABLE ACCESS MODULE SPECIFIC GRAVITY READING (RANGE: 9 to 11 inches)
10.0	10.16

5.5.14 **VERIFY** the Specific Gravity Low Alarm **CLEARs** at the OCS and at the DTAM.



5.5.15 **VERIFY** the DOV **MOVES OPEN**.



5.5.16 **SHUT OFF** the jet pump **USING** the DTAM.



5.5.17 **REMOVE** any jumpers or forces **NOT** required for the next section.



5.5.1s Test Director **VERIFY** that Section 5.5 is **COMPLETE** by **SIGNING** below

John Hardy  
Test Director Signature

10/11/00  
Date

5.5.19 Quality Assurance Inspector **VERIFY** that Section 5.5 is **COMPLETE** by **SIGNING** below.

JL Waggoner  
Quality Assurance Inspector Signature

10-11-00  
Date

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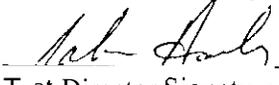
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**5.6 Specific Gravity Setpoint Change**

- 5.6.1 **PLACE** the saltwell jumper JR-1 valve in the PROCESS position.
  
- 5.6.2 **ENSURE** pump recirculation apparatus is **FILLED** with water **AND CONFIGURED** to CIRCULATE water through the saltwell Jet Pump.
  
- 5.6.3 **START** the Jet Pump using the DTAM.
  
- 5.6.4 **SET** the DOV Specific Gravity setpoint to 8 inches at the OCS.
  
- 5.6.5 **VERIFY** the DOV Specific Gravity setpoint is 8 inches at the DTAM **AND** the OCS  

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

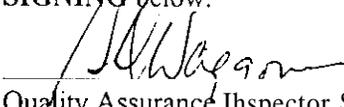
10-11-00  
Date
  
- 5.6.6 **SET** the DOV Specific Gravity setpoint to 6 inches at the DTAM
  
- 5.6.7 **VERIFY** the DOV Specific Gravity setpoint is 6 inches at the OCS.  

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

10-11-00  
Date
  
- 5.6.8 **USING** DTAM, **STOP** the Jet Pump.
  
- 5.6.9 Test Director **VERIFY** that Section 5.6 is **COMPLETE** by **SIGNING** below  

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

10-11-00  
Date
  
- 5.6.10 Quality Assurance Inspector **VERIFY** that Section 5.6 is **COMPLETE** by **SIGNING** below.  

  
\_\_\_\_\_  
Quality Assurance Inspector Signature

10-11-00  
Date

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**5.7 Diaphragm Operated Valve Automatic/Manual Operation**

Note - , This system is a Proportional Integral Derivative controller for controlling the liquid level in the saltwell screen. The Specific Gravity Transmitter reads unadjusted liquid level once the middle diphibe leg is uncovered by declining liquid levels.

The system uses the signal from the Specific Gravity Transmitter as the Process Variable. The controller compares the process variable to the setpoint and adjusts the DOV position accordingly (manipulated variable).

The purpose of this test section is to verify the DOV trend is toward achieving the setpoint while different process variables are simulated.

**DATA TABLE ACCESS MODULE (AUTOMATIC)**

5.7.1 ENSURE the Saltwell Pump and Jumper Assembly, **AND** the PIC Skid are **CONFIGURED** for AUTOMATIC DOV level control by **PERFORMING** the following:

5.7.1.1 SET the test manometer on the Specific Gravity Transmitter to a pressure of 0 IN. W.G.

5.7.1.2 ENSURE the following valves are OPEN:

Valve Number	
SALW-V-6034*	✓
SALW-V-6026*	✓
SALW-V-6001*	✓
SALW-V-6004*	✓
SALW-V-6002*	✓

5.7.1.3 PLACE the saltwell juniper JR-I valve in the PROCESS position

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**5.7 Diaphragm Operated Valve Automatic/Manual Operation (Cont.)**

- 5.7.1.4 At the discretion of the Test Director, ENSURE temporary interlock jumpers, OR software forces have been INSTALLED on pump permissive interlocks for equipment NOT installed or out of service.
- 5.7.1.5 **ENSURE** that only alarms "JET PUMP SHUTDOWN" (alami 12) and "SGT LOW" (alarm 13) on the DTAM are DISPLAYED.
- 5.7.1.6 ENSURE pump recirculation apparatus ~~is~~ FILLED with water **ASD** CONFIGURED to CIRCULATE water through the saltwell Jet Pump.
- 5.7.1.7 **START** the Jet Pump USING the DTAM.
- 5.7.1.8 **SET** DOV Specific Gravity Controller to AUTO with setpoint of seven (7) inches USING the DTAM.
- 5.7.1.9 SET the test manometer to a pressure of 14 IN. W.G
- 5.7.1.10 VERIFY the DOV **MOVES** to a more OPEN position.
- 5.7.1.11 **SET** the test manometer to a pressure of 6 IN W.G
- 5.7.1.12 VERIFY the DOV **MOVES** to a more CLOSED position.

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**5.7 Diaphragm Operated Valve Automatic/Manual Operation (Cont.)**

**DATA TABLE ACCESS MODULE (MANUAL)**

5.7.2 **VERIFY** the MANUAL CONTROL of the DOV is OPERATIONAL by **PERFORMING** the following steps:

5.7.2.1 **IF** a test port is installed at SALW-PI-6005\*, **ENSURE** a 0-30 psig manometer is attached to the test port.  N/A

5.7.2.2 **SET** the test manometer on the Specific Gravity Transmitter to a pressure of 15 IN. W.G. (14 to 16 IN. W.G.).

5.7.2.3 **SET** DOV Specific Gravity Controller to MANUAL CONTROL USING the DTAM.

5.7.2.4 **SET** the DOV to 0% OPEN USING the manual control on the DTAM.

Note - DOV position is read from a metal pointer mounted on the valve stem. Indication is approximate valve position only, and is NOT intended to be readable to a high degree of precision.

5.7.2.5 **RECORD** the following:

DOV POSITION (RANGE: 0 - 10% OPEN)	SALW-PI-6005* PRESSURE (RANGE: 2 to 4 psig)	SALW-PI-6005* MANOMETER (RANGE: 2 to 4 psig)
0%	4	N/A

5.7.2.6 **SET** the DOV to 25% OPEN USING the manual control on the DTAM.

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**5.7 Diaphragm Operated Valve Automatic/Manual Operation (Cont.)**

5.7.2.7 **RECORD** the following:

DOV POSITION (RANGE: 15% to 35% OPEN)	SALW-PI-6005* PRESSURE (RANGE 5 to 7 psig)	SALW-PI-6005* MANOMETER (RANGE: 5 to 7 psig)
25%	7	N/A

5.7.2.8 **SET** the DOV to 75% OPEN **USING** the manual control on the DTAM.

5.7.2.9 **RECORD** the following:

DOV POSITION (RANGE: 65% to 85% OPEN)	SALW-PI-6005* PRESSURE (RANGE: 11 to 13 psig)	SALW-PI-6005* MANOMETER (RANGE: 11 to 13 psig)
75%	13	N/A

DOV POSITION (RANGE: 90% to 110% OPEN)	SALW-PI-6005* PRESSURE (RANGE: 14 to 16 psig)	SALW-PI-6005* MANOMETER (RANGE: 14 to 16 psig)
100%	15.5	N/A

5.7.2.12 **VERY SLOWLY DECREASE** the Specific Gravity Transmitter test manometer pressure while **OBSERVING** the DOV.

5.7.2.13 **VERIFY** the DOV remains **FULLY OPEN** while the test manometer is **DECREASED UNTIL** the "SGT LOW" (DTAM alarm 13) **ANNUNCIATES**

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**5.7 Diaphragm Operated Valve Automatic/Manual Operation (Cont.)**

5.7.2.14 **VERIFY** the DOV IMMEDIATELY CLOSES **WHEN** the "SGT LOW" (DTAM alami 13) ANNUNCIATES.



5.7.2.15 **SHUT DOWN** the Jet Pump with DTAM



**OPERATOR CONTROL STATION (AUTO)**



Valve Number	
SALW-V-6034*	✓
SALW-V-6026*	✓
SALW-V-6001*	✓
SALW-V-6004*	✓
SALW-V-6002*	✓

5.7.3.3 **ENSURE** the saltwell jumper JR-1 valve is in the PROCESS position.



5.7.3.4 At the discretion of the Test Director, **ENSURE** temporary interlock: jumpers, OR software forces have been **INSTALLED** on pump permissive interlocks for equipment NOT installed or out of service



5.7.3.5 **ENSURE** that only alarms "JET PUMP SHUTDOWN" (alarm 12) and "SGT LOW" (alami 13) are **DISPLAYED** on the OCS.



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**5.7 Diaphragm Operated Valve Automatic/Manual Operation (Cont.)**

- 5.7.3.6 **ENSURE** pump recirculation apparatus is **FILLED** with water **AND CONFIGURED** to **CIRCULATE** water through the saltwell Jet Pump.
- 5.7.3.7 **START** the Jet Pump **USING** the DTAM.
- 5.7.3.8 **SET** the Specific Gravity Controller to **AUTO** with setpoint of 7 inches **USING** the OCS.
- 5.7.3.9 **SET** the test manometer to a pressure of 14 IN. W.G. (13 to 15 IN. W.G.).
- 5.7.3.10 **VERIFY** the DOV **MOVES** to a more OPEN position
- 5.7.3.11 **SET** the test manometer to a pressure of 6 IN. W.G
- 5.7.3.12 **VERIFY** the DOV **MOVES** to a more CLOSED position.

**OPERATOR CONTROL STATION (MANUAL)**

- 5.7.4 **VERIFY** the **MANUAL CONTROL** of the DOV is **OPERATIONAL** by **PERFORMING** the following steps:
  - 5.7.4.1 **IF** a test port is installed at SALW-PI-6005\*, **ENSURE** a 0-30 psig manometer is attached to the test port 
  - 5.7.4.2 **SET** the test manometer on the Specific Gravity Transmitter to a pressure of 15 IN. W.G. (14 to 16 IN. W.G.).
  - 5.7.4.3 **SET** the DOV Specific Gravity Controller to **MANUAL CONTROL** **USING** the OCS.
  - 5.7.4.4 **SET** the DOV to 0% OPEN **USING** the manual control on the OCS.

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DOV POSITION (RANGE: 0-10% OPEN)	SALW-PI-6005* PRESSURE (RANGE: 2 to 4 psig)	SALW-PI-6005* MANOMETER (RANGE: 2 to 4 psig)
<i>E . 0</i>	<i>4</i>	<i>N/A</i>

5.7.4.6 SET the DOV to 30% OPEN USING the manual control on the OCS.



DOV POSITION (RANGE: 20% to 40% OPEN)	SALW-PI-6005* PRESSURE (RANGE: 5.6 to 7.6 psig)	SALW-PI-6005* MANOMETER (RANGE: 5.6 to 7.6 psi.)
<i>40%</i>	<i>7.5</i>	<i>N/A</i>

DOV POSITION (RANGE: 60% to 80% OPEN)	SALW-PI-6005* PRESSURE (RANGE: 10.4 to 12.4 psig)	SALW-PI-6005* MANOMETER (RANGE: 10.4 to 12.4 psig)
<i>75%</i>	<i>12.2</i>	<i>N/A</i>



DOV POSITION (RANGE: 90% to 110% OPEN)	SALW-PI-6005* PRESSURE (RANGE: 14 to 16 psig)	SALW-PI-6005* MANOMETER (RANGE: 14 to 16 prig.)
<i>100%</i>	<i>15.5</i>	<i>N/A</i>

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**5.7 Diaphragm Operated Valve Automatic/Manual Operation (Cont.)**

5.7.4.12 **VERY SLOWLY DECREASE** the Specific Gravity Transmitter test manometer pressure while **OBSERVING** the DOV.

5.7.4.13 **VERIFY** the DOV remains FULLY OPEN while the test manometer is DECREASED **UNTIL** the OCS SGT LOW alarm ANNUNCIATES.

5.7.4.14 **VERIFY** the DOV IMMEDIATELY CLOSES **WHEN** the OCS SGT LOW alarm ANNUNCIATES.

5.7.4.15 **SHUT DOWN** the Jet Pump with the OCS.

5.7.5 **IF** installed, **REMOVE** the manometer from the SALW-PI-6005\* test port.

5.7.6 **REMOVE** any Jumpers or forces NOT required for the next section

5.7.7 Test Director **VERIFY** that Section 5.7 is COMPLETE by **SIGNING** below.

John Hardy 10-11-00  
Test Director Signature Date

5.7.8 Quality Assurance Inspector **VERIFY** that Section 5.7 is COMPLETE by **SIGNING** below.

A. W. Aggum 10-11-00  
Quality Assurance Inspector Signature Date

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**5.8 Jet Pump Flowmeter Operation**

5.8.1 **ENSURE** the Saltwell Jumper Flow Element is **COMMUNICATING PROPERLY** with the FQIT SALW-FQIT-6001\* and DTAM by **PERFORMING** the following:

- 5.8.1.1 **PLACE** the saltwell jumper JR-1 valve in the **PROCESS** position.
- 5.8.1.2 **ENSURE** Pump recirculation apparatus is **FILLED** with water **AND CONFIGURED** to **CIRCULATE** water through the saltwell Jet Pump.
- 5.8.1.3 **ENSURE** the 0 - 50 IN. W.G. test manometer is still **ATTACHED** to the high pressure dip tube **AND** set to 15 IN. W.G. (14 to 16 IN. W.G.)
- 5.8.1.4 **ENSURE** a rotameter has been **INSTALLED** in series with the juniper flow element.
- 5.8.1.5 **ENSURE** the DTAM and OCS are **CONFIGURED** for **MANUAL CONTROL**.
- 5.8.1.6 At the discretion of the Test Director, **ENSURE** temporary interlock jumpers, **OR** software forces have been **INSTALLED** on pump permissive interlocks for equipment **NOT** installed or out of service.
- 5.8.1.7 **SET** the DOV to 0% **OPEN USING** the manual control on the DTAM.
- 5.8.1.8 **START** the Jet Pump **USING** the DTAM.
- 5.8.1.9 **ADJUST** valve JR-2 as **DIRECTED** by the Test Director to achieve the required flow rates in the following steps.

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**'5.8 Jet Pump Flowmeter Operation (Cont.)**

5.8.2 **RECORD** initial readings, and the time readings were taken.

DATA TABLE ACCESS MODULE TOTALIZER (Gallons)	FQIT TOTALIZER GALLONS	TIME
270	564	1240

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (gpm)	(INSTN) FQIT FLOWRATE (gpm)	DTAM FLOWRATE (gpm)	OCS FLOWRATE (gpm)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
65	65	65	1	1.0	1.0	1.0	280	574

5.8.5 **VERIFY** that Test Rotameter flowrate, FQIT SALW-FQIT-6001\* flowrate, DTAM flowrate, **AND** OCS flowrate are within  $\pm 0.1$  gpm.



5.8.6 **SUBTRACT INITIAL** totalizer reading for DTAM from the current totalizer reading for DTAM.

**RECORD** result: 10 gallons

5.8.7 **SUBTRACT INITIAL** totalizer reading for FQIT from the current totalizer reading for FQIT.

**RECORD** result: 10 gallons

5.8.8 **VERIFY** results from the above two steps are within  $\pm 5.0$  gallons.



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DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (gpm)	(INSTR) FQIT FLOWRATE (gpm)	DTAM FLOWRATE (gpm)	OCS FLOWRATE (gpm)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
86%	86%	90%	2.2	2.06	2.07	2.07	290	58.5

5.X.14      **VERIFY** results from the above two steps are within  $\pm 5.0$  gallons.



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**. 5.8 Jet Pump Flowmeter Operation (Cont.)**

5.8.15 'ADJUST the DOV Controller to **OBTAIN** a flowrate of approximately 3.0 gpm (2.85 to 3.15 gpm) through the jumper, as INDICATED on the FQIT.

5.8.16 **RECORD** the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (gpm)	(INSTR) FQIT FLOWRATE (gpm)	DTAM FLOWRATE (gpm)	OCS FLOWRATE (gpm)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
98%	98%	100%	3.0	2.99	3.0	3.0	297	592

5.8.17 **VERIFY** that Test Rotameter flowrate, FQIT SALW-FQIT-6001\* flowrate. DTAM flowrate, **AND** OCS flowrate are within  $\pm 0.3$  gpm.

5.8.18 **SUBTRACT INITIAL** totalizer reading for DTAM from the current totalizer reading for DTAM.

**RECORD** result: 27 gallons

5.8.19 **SUBTRACT INITIAL** totalizer reading for FQIT from the current totalizer reading for FQIT.

**RECORD** result: 28 gallons

5.8.20 **VERIFY** results from the above two steps are within  $\pm 5.0$  gallons.

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**5.8 Jet Pump Flowmeter Operation (Cont.)**

Note - 'Steps 5.8.21 through 5.8.26 only performed if flowmeter is configured for flowrate of 7.0 gpm or greater.

5.8.21 **ADJUST** the DOV Controller to **OBTAIN** a flowmtc of approximately 7.0 gpm (6.65 to 7.35 gpm) through the jumper, as **INDICATED** on the FQIT.



5.8.22 **RECORD** the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (gpm)	(INSTR) FQIT FLOWRATE (gpm)	DTAM FLOWRATE (gpm)	OCS FLOWRATE (gpm)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
100%	100%	100%	7.0	7.2	7.2	7.2	308	604

5.8.23 **VERIFY** that Test Rotameter flowrate, FQIT SALW-FQIT-6001\* flowrate, DTAM flowrate, AND OCS flowrate are within  $\pm 0.7$  gpm



5.8.24 **SUBTRACT INITIAL** totalizer reading for DTAM from the current totalizer reading for DTAM.

**RECORD** result: 38 gallons

5.8.25 **SUBTRACT INITIAL** totalizer reading for FQIT from the current totalizer reading for FQIT.

**RECORD** result: 40 gallons

5.8.26 **VERIFY** results from the above two steps are within  $\pm 5.0$  gallons.



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**5.8 Jet Pump Flowmeter Operation (Cont.)**

Note - Steps 5.8.27 through 5.8.32 only performed if flowmeter is configured for flowrate of 10.0 gpm or greater.

5.8.27 **ADJUST** the DOV Controller to OBTAIN a flowrate of approximately 10.0 gpm (9.5 to 10.5 gpm) through the jumper, as INDICATED on the FQIT.

*N/A*

5.8.28 **RECORD** the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (gpm)	(INSTR) FQIT FLOWRATE (gpm)	DTAM FLOWRATE (gpm)	OCS FLOWRATE (gpm)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
<i>N/A</i>								

5.8.29 **VERIFY** that Test Rotameter flowrate, FQIT SALW-FQIT-6001\* flowrate, DTAM flowrate, AND OCS flowrate are within  $\pm 1.0$  gpm

, &

5.8.30 **SUBTRACT INITIAL** totalizer reading for DTAM from the current totalizer reading for DTAM.

**RECORD** result: *1.17* gallons

5.8.31 **SUBTRACT INITIAL** totalizer reading for FQIT from the current totalizer reading for FQIT.

**RECORD** result: *1.17* gallons

5.8.32 **VERIFY** results from the above two steps are within  $\pm 5.0$  gallons.

*N/A*

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**5.8 Jet Pump Flowmeter Operation (Cont.)**

Note - Steps 5.8.33 through 5.8.38 **only** performed if flowmeter is configured for flowrate greater than **14.0**gpm.

**5.8.33** **ADJUST** the **DOV** Controller to **OBTAIN** a flowrate of approximately 14.0 gpm (13.3 to 14.7 gpm) through the jumper, as **INDICATED** on the **FQIT**

**OR**

**OPEN** valve JR-2 and the **DOV** (to 100%) to **OBTAIN** the maximum flowrate.

*N/A*

**5.8.34** **RECORD** the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (gpm)	(INSTR) FQIT FLOWRATE (gpm)	DTAM FLOWRATE (gpm)	OCS FLOWRATE (gpm)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
<i>N/A</i>								

**5.8.35** **VERIFY** that Test Rotameter flowrate, FQIT SALW-FQIT-6001\* flowrate, DTAM flowrate, **AND** OCS flowrate are within  $\pm 1.4$  gpm

*N/A*

**5.8.36** **SUBTRACT INITIAL** totalizer reading for DTAM from the current totalizer reading for DTAM.

**RECORD** result: *N/A* gallons

**5.8.37** **SUBTRACT INITIAL** totalizer reading for FQIT from the current totalizer reading for FQIT.

**RECORD** result: *N/A* gallons

**5.8.38** **VERIFY** results from the above two steps are within  $\pm 5.0$  gallons.

*N/A*

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**5.8 Jet Pump Flowmeter Operation (Cont.)**

5.8.39 'CLOSE the DOV (to 0%) USING the manual control.



5.8.40 ENSURE valve JR-2 is CLOSED



5.8.41 RECORD the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (gpm)	(INSTR) FQIT FLOWRATE (gpm)	DTAM FLOWRATE (gpm)	OCS FLOWRATE (gpm)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
0%	0%	0%	0	0	0	0	316	611

5.8.42 VERIFY that Test Rotameter flowrate, FQIT SALW-FQIT-6001\* flowrate, DTAM flowrate, AND OCS flowrate all indicate 0.0 gpm (0.0 to 0.1 gpm).



5.8.43 SUBTRACT INITIAL totalizer reading for DTAh1 from the current totalizer reading for DTAM.

RECORD result: 46 gallons

5.8.44 SUBTRACT INITIAL totalizer reading for FQIT from the current totalizer reading for FQIT.

RECORD result: 47 gallons

5.8.45 VERIFY results from the above two steps are within ± 5.0 gallons.



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**5.8 Jet Pump Flowmeter Operation (Cont.)**

5.8.46 **OPEN** the DOV (to 100%) using manual control.



5.8.47 **RECORD** the following:

TEST ROTAMETER FLOWRATE (gpm)	DTAhl FLOWRATE (gpm)
	7

5.8.48 **USING** the DTAM, **STOP** the Jet Pump



5.8.49 **REMOVE** the test manometer.



5.8.50 **ISOLATE** the Specific Gravity Transmitter from the system.

5.8.50.1 **OPEN** the Specific Gravity Transmitter EQUALIZING valve located on SALW-V-6035\*.



5.8.50.2 **CLOSE** the LOW side and NIGH side isolation valves located on SALW-V-6035\*



5.8.50.3 **CLOSE** valve SALW-V-6005\*.



5.8.50.4 **CLOSE** valve SALW-V-6007\*.



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**5.8 Jet Pump Flowmeter Operation (Cont.)**

5.8.51 REMOVE any jumpers or forces NOT required for the next section.



5.8.52 Test Director **VERIFY** that Section 5.8 is COMPLETE by SIGNING below

*[Signature]*  
Test Director Signature

10/12/00  
Date

5.8.53 Quality Assurance Inspector **VERIFY** that Section 5.8 is COMPLETE by SIGNING below.

\* *[Signature]*  
Quality Assurance Inspector Signature

10/12/00  
Date

\* RETESTED DUE TO ADJUSTED  
FGIT LOW SIDE TO MATCH FLOW HEAD  
KW 10/12/00

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**5.9 Combustible Gas Monitor Operation**

Note - This test section only performed if a CGM is installed.

5.9.1 **ENSURE SALW-FCV-6001\*** is CLOSED

5.9.2 OPEN the calibration gas bottle isolation valve and SALW-V-6055'.

5.9.3 'CRACK OPEN SALW-FCV-6001\*' to initiate test gas flow and **OBSERVE** percent LFL reading on DTAM.

Note - Alarm 25, "CGM HIGH LFL" should annunciate at 20% LFL.

5.9.4 Continue to **SLOWLY OPEN SALW-FCV-6001\* UNTIL** alarm 25, "CGM HIGH LFL" ANNUNCIATES at the DTAM and OCS.

5.9.5 RECORD the percent LFL DISPLAYED at the DTAM at the point of alarm

<p><b>DATA TABLE ACCESS MODULE</b> % Lower Flammability Limit</p>
---

5.9.6 ACKNOWLEDGE alarms at the OCS and DTAM

5.9.7 **CLOSE SALW-FCV-6001\***.

5.9.8 **WAIT UNTIL** the gas surrounding the sensor DISSIPATES and the gas concentration reading RETURNS to normal.

5.9.9 ACKNOWLEDGE alarm at SALW-CGT-6001' by **PLACING** a magnet to the base of the transducer at the point indicated **UNTIL** the "RSET" message is DISPLAYED.

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**5.9 Combustible Gas Monitor Operation (Cont.)**

- 5.9.10     **PLACE** the JR-1 valve in the PROCESS position.
  
- 5.9.11     **ENSURE** Pump recirculation apparatus is filled with water **AND** configured to circulate water through the saltwell Jet Pump jumper.
  
- 5.9.12     At the discretion of the Test Director, **ENSURE** temporary interlock jumpers, **OR** software forces have been installed on pump permissive interlocks for equipment not installed or out of service.
  
- 5.9.13     **USING** the DTAM, **START** the Jet Pump.
  
- 5.9.14     **VERIFY** Jet Pump operation at the OCS.
  
- 5.9.15     **SIRIUL'ANEOUSLY** OPEN SALW-FCV-6001\* to provide test gas flow of one liter per minute **AND START** a stopwatch.
  
- 5.9.16     **STOP** the stopwatch **WHEN** the Combustible Gas Transmitter INDICATES 27% LFL
  
- 5.9.17     RECORD the elapsed time  

SALW-CGT-6001\*  
Elapsed Time
  
- 5.9.18     VERIFY the elapsed time is LESS than ninety (90) seconds
  
- 5.9.19     **VERIFY** the Jet Pump SHUT DOWN at the DTAM and OCS.

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**5.9 Combustible Gas Monitor Operation (Cont.)**

5.9.20' ACKNOWLEDGE alarm at the DTAM and OCS.

Note - Test gas concentration is 30% LFL

5.9.21 WAIT UNTIL DTAM reaches a stable maximum value for percent LFL.

5.9.22 RECORD the percent LFL displayed at the DTAM and at the OCS

OPERATOR CONTROL STATION Maximum % Lower Flammability Limit	DATA TABLE ACCESS RIODULE Maximum Lower Flammability Limit
28.7	28.7

5.9.23 CLOSE the calibration gas bottle isolation valve.

5.9.24 OPEN SALW-V-6048\* and SALW-V-6054\* to purge the test gas from the lines

5.9.25 WAIT UNTIL the gas surrounding the sensor DISSIPATES and the gas concentration reading RETURNS to normal.

5.9.26 CLOSE SALW-FCV-6001\*, SALW-V-6054\*, and SALW-V-6055\*.

5.9.27 VERIFY the Jet Pump can not be started using the DTAM because alarm 25, "CGM HIGH LFL" is LATCHED.

5.9.28 ACKNOWLEDGE alarm at SALW-CGT-6001\*.

5.9.29 VERIFY that alarm 25, "CGM HIGH LFL" CLEARS at the OCS and at the DTAM

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**5.9 Combustible Gas Monitor Operation (Cont.)**

- 5.9.30 USING the DTAM, **START** the Jet Pump.
- 5.9.31 REMOVE Combustible Gas Transmitter SALW-CGT-6001\* housing. **d**
- 5.9.32 UNPLUG the black keyed plug inside transmitter to SIMULATE a loss of sensor.
- 5.9.33 VERIFY the Jet Pump IMMEDIATELY SHUTS DOWN at the DTAM and OCS.
- 5.9.34 VERIFY that alarm 31, "CGM TROUBLE" ANNUNCIATES at the DTAM.
- 5.9.35 ACKNOWLEDGE alarm at the DTAM and OCS.
- 5.9.36 VERIFY the Jet Pump CAN NOT be started using the DTAM because of alarm 31, "CGM TROUBLE."
- 5.9.37 REPLACE the keyed plug and the transmitter housing.
- 5.9.38 VERIFY that alarm 31, "CGM TROUBLE" **CLEAR**s at the DTAM.
- 5.9.39 REMOVE any jumpers or forces NOT required for the next section.
- 5.9.40 Test Director **VERIFY** that Section 5.9 is COMPLETE by **SIGNING** below  
John Hardy 10-11-00  
Test Director Signature Date
- 5.9.41 Quality Assurance Inspector **VERIFY** that Section 5.9 is COMPLETE by **SIGNING** below.  
N. Wagon 10-11-00  
Quality Assurance Inspector Signature Date

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**5.10 Jet Pump Valving Interlock**

- 5.10.1 **PLACE** the saltwell jumper JR-1 valve in the PROCESS position.
  
- 5.10.2 **ENSURE** Pump recirculation apparatus is **FILLED** with water **AND CONFIGURED** to CIRCULATE water through the saltwell Jet Pump.
  
- 5.10.3 At the discretion of the Test Director, **ENSURE** temporary interlock jumpers, **'OR** software forces have been **INSTALLED** on pump permissive interlocks for equipment NOT installed or out of service.
  
- 5.10.4 **USING** the DTAM, **START** the Jet Pump.
  
- 5.10.5 **VERIFY** Jet Pump OPERATION at the OCS.
  
- 5.10.6 **PLACE** the JR-I Valve, on the Jet Pump jumper, in the FLUSH position
  
- Note - Alarm 3, "FLUSH PRESSURE HI" may be received.
  
- 5.10.7 **VERIFY** the following:
  - Jet Pump IMMEDIATELY SHUTS DOWN
  - Alarm 5, "JR-I POSITION NOT PROCESS" is DISPLAYED at DTAM AND "FLUSH" at OCS
  - Alarm 12, "JET PUMP SHUTDOWN" is DISPLAYED at DTAM and "SHUTDOWN" at OCS.
  
- 5.10.8 **VERIFY** the Jet Pump CAN NOT be RE-STARTED with the JR-I valve in the FLUSH position.
  
- 5.10.9 **ENSURE** all alarms have been **ACKNOWLEDGED** at the DTAM and OCS.

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**5.10 Jet Pump Valving Interlock (Cont.)**

- 5.10.10 PLACE the JR-I valve in the PROCESS position
- 5.10.11 RESTART the Jet Pump USING the DTAM
- 5.10.12 VERIFY Jet Pump OPERATION at the OCS.
- 5.10.13 PLACE the JR-1 valve in the PRIME position
- Note - Alarm 3, "FLUSII PRESSURE HI" may be received.
- 5.10.14 VERIFY the following:
  - Jet Pump IMMEDIATELY SHUTS DOWN
  - Alarm 5, "JR-I POSITION NOT PROCESS" is DISPLAYED at DTAM AND "PRIME" at OCS
  - Alarm 12, "JET PUMP SHUTDOWN" is DISPLAYED at DTAM AND "SHUTDOWN" at OCS.
- 5.10.15 VERIFY the Jet Pump CAN NOT be RE-STARTED with the JR-1 valve in the PRIME position.
- 5.10.16 ENSURE all alarms have been ACKNOWLEDGED at the DTAM and OCS.
- 5.10.17 REMOVE any junipers or forces NOT required for the next section.
- 5.10.18 Test Director VERIFY that Section 5.10 is COMPLETE by SIGNING below.
 

	<u>10-11-00</u>
Test Director Signature	Date
- 5.10.19 Quality Assurance Inspector VERIFY that Section 5.10 is COMPLETE by SIGNING below.
 

	<u>10-11-00</u>
Quality Assurance Inspector Signature	Date

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**5.11 Operator Control Station Jet Pump Shutdown Test**

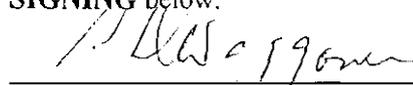
- 5.11.1 PLACE the Jet Pump JR-1 valve in the PROCESS position.
- 5.11.2 ENSURE Pump recirculation apparatus is **FILLED** with water **AND CONFIGURED** to CIRCULATE water through the saltwell Jet Pump.
- 5.11.3 At the discretion of the Test Director, **ENSURE** temporary interlock jumpers, **OR** software forces have been **INSTALLED** on pump permissive interlocks for equipment NOT installed or out of service.
- 5.11.4 USING the DTAM, **START** the Jet Pump.
- 5.11.5 **VERIFY** Jet Pump OPERATION at the OCS
- 5.11.6 USING the OCS, **SHUT DOWN** the Jet Pump.
- 5.11.7 **VERIFY** the SHUTDOWN alarm at the OCS
- 5.11.8 **ACKNOWLEDGE** alarms at DTAM and OCS
- 5.11.9 **REMOVE** any jumpers or forces NOT required for the next section.

5.11.10 Test Director **VERIFY** that Section 5.11 is COMPLETE by **SIGNING** below.

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

\_\_\_\_\_  
 10-11-00  
 Date

5.11.11 Quality Assurance Inspector **VERIFY** that Section 5.11 is COMPLETE by **SIGNING** below.

  
 \_\_\_\_\_  
 Quality Assurance Inspector Signature

\_\_\_\_\_  
 10-11-00  
 Date

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**5.12 Leak Detection and Interlock Check**

Note - **Leak** Detector Interlock checks can be performed in any sequence.

OCS wording of alarms may be different than DTAM, but must have the same general meaning.

Pump operation will be simulated during this test section

5.12.1 Cognizant Engineer shall **LIST** all relevant leak detectors in pump pit, valve pits, clean out boxes, and encasements along transfer route in the table below. Any unused lines in the table shall be marked with an "N/A".

5.12.2 **VERIFY AND RECORD** functional check and next due date on the Table below.

LEAK DETECTOR	FUNCTIONAL CHECK DATE	NEXT DUE DATE
1) S-102 PUMP PIT	10/13/00	01/13/01
2) S-109 PUMP PIT	<del>10/13/01</del> 10/13/00 Tue	01/13/01
3) SX-103 PUMP PIT	<del>10/13/01</del> 10/13/00 Tue	01/13/01
4) SX-105 PUMP PIT	<del>10/13/01</del> 10/13/00 Tue	01/13/01
5) SY-02A PUMP PIT	<del>10/13/01</del> 10/13/00 Tue	01/13/01
6) SY-A VALVE PIT	<del>10/13/01</del> 10/13/00 Tue	01/13/01
7) S-A VALVE PIT	10/13/00	01/13/01
8) S-C VALVE PIT	<del>10/13/01</del> 10/13/00 Tue	01/13/01
9) SX-A VALVE PIT	<del>10/13/01</del> 10/13/00 Tue	01/13/01
10)		
11)		
12)		
13)		
14)		
15)		

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5.12 Leak Detection and Interlock Check (Cont.)

5.12.8 CHECK the leak detector interlocks corresponding to the leak detectors entered in the previous Table by PERFORMING the following steps AND CHECKING the appropriate space WHEN COMPLETE:

LEAK DETECTOR	CHECK COMPLETE (✓)
1) S-102 PUMP PIT	✓
2) S-109 PUMP PIT	✓
3) SX-103 PUMP PIT	✓
4) SX-105 PUMP PIT	✓
5) SY-OIA PUMP PIT	✓
6) SY-A VALVE PIT	✓
7) S-A VALVE PIT	✓
8) S-C VALVE PIT	✓
9) SX-A VALVE PIT	✓
10)	
11)	
12)	
13)	
14)	
15)	

5.12.8.1 IF REQUIRED, ENSURE the PIC Skid is CONFIGURED and ready to receive leak detector signal.

5.12.8.2 USING DTAM, START the Jet Pump.

5.12.8.3 VERIFY Jet Pump START at OCS.

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**5.12 Leak Detection and Interlock Check (Cont.)**

**WARNING**

**Energized circuits and leads are contained inside the cabinet. Observe appropriate electrical precautions. Comply with RPP-PRO-088, ELECTRICAL WORK SAFETY to avoid personnel electrical shock hazards.**

- 5.12.8.4 **TEST** leak detector **USING** Leak Detector Test Circuit, jumper, or by immersing probe, as required.
  
- 5.12.8.5 **VERIFY** and **ACKNOWLEDGE** the following:
  - **IMMEDIATE** Jet Pump **SHUTDOWN**
  - Alarm 12, "JET PUMP SHUTDOWN" is **ANNUNCIATING** at the DTAM and "SHUTDOWN" at the OCS
  - A Leak Detection Alarm is **ANNUNCIATING** at the DTAM **AND** at the OCS
  
- 5.12.8.6 **VERIFY** the Jet Pump **CAN NOT be RE-STARTED** at the DTAM **WHEN** the alarm is **ACTIVE**.
  
- 5.12.8.7 **RETURN** the leak detector to **OPERATION** by **PERFORMING** the following:
  - A. **IF** a jumper was **INSTALLED** in Step 5.12.8.4, **REMOVE** jumper.
  - B. **VERIFY** the Leak Detection Alarm **RESETS** at the DTAM and OCS.
  - C. **RESET** the remote Master Pump Shutdown, if required

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**5.12 Leak Detection and Interlock Check (Cont.)**

5.12.9. **IF** Master Pump Shutdown EXISTS, **PERFORM** the following steps.

- 5.12.9.1 **RESTART** the Jet Pump **USING** DTAM.
- 5.12.9.2 **SHUTDOWN** the Jet Pump **USING** the manual Master Pump Shutdown.
- 5.12.9.3 **VERIFY IMMEDIATE** Jet Pump **SHUTDOWN AND** the Leak Detection Alarm is **ANNUNCIATING**.
- 5.12.9.4 **ACKNOWLEDGE** alarms at the DTAM and OCS.
- 5.12.9.5 **RESET** the Master Pump Shutdown.
- 5.12.9.6 **RESTART** the Jet Pump **USING** DTAM
- 5.12.9.7 **SHUTDOWN** the Jet Pump **USING** the manual Master Pump Shutdown at a second location (if it exists).
- 5.12.9.8 **VERIFY IMMEDIATE** Jet Pump **SHUTDOWN AND** the Leak Detection Alarm **is** **ANNUNCIATING**.
- 5.12.9.9 **ACKNOWLEDGE** alarms at the DTAM and OCS.
- 5.12.9.10 **RESET** the Master Pump Shutdown

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**5.12 Leak Detection and Interlock Check (Cont.)**

**INTERLOCK TEST**

Note - It is the intent of this section to test all transfer system and FGM/CGM interlocks not previously tested in the leak detector section. Included would be Double Contained Receiver Tank (DCRT) high level alarms, dilution tank low level alarms, FGM/CGM alarms, leak detection not previously tested, and encasement and receiver tank pressurization alarms.

- The Cognizant Engineer is responsible for reviewing the installation design and identifying all appropriate interlocks to be tested.

5.12.10 Cognizant Engineer shall **ENTER** all interlocks (by relay or device designation) not tested by a separate section in the Table below.

RELAY/DEVICE DESIGNATION	JET PUMP SHUTDOWN (✓)	ALARM MESSAGE RECEIVED
1) Communication failure S/D S-102, S-109, SX-103 & SX-105	✓	DTAM SHUT DOWN - COMM FAIL
		OCS PLC & DATA HIGHWAY S/P
2) High flush pressure @ S-102 S/D SX-103	✓	DTAM Pump S/D S FLUSH PRESS HIGH
		OCS HIGH FLUSH PRESS @ 102 S/D
3) High flush pressure @ S-109 S/D SX-103	✓	DTAM Pump S/S FLUSH PRESS HIGH
		OCS HIGH FLUSH PRESSURE
4) High flush pressure @ SX-105 S/D SX-103	✓	DTAM Pump S/D - SX-FRAME FLUSH HIGH
		OCS FLUSH PRESSURE HIGH S/D
5) High flush pressure @ SX-103 S/D S-102, S-109 & SX-105	✓	DTAM Pump S/D FLUSH PRESS HIGH
		OCS FLUSH HIGH & S/D
6) Recirc flush pressure signal loss @ S-102 S/D SX-103	N/A	DTAM
		OCS
7) Recirc flush pressure signal loss @ S-109 S/D SX-103	✓	DTAM Pump S/D RECIRC FLUSH SIGNAL LOSS
		OCS RECIRC FLUSH SIGNAL LOSS S/P

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## 5.12 Leak Detection and Interlock Check (Cont.)

### INTERLOCK TEST

Note - It is the intent of this section to test all transfer system and FGM/CGM interlocks not previously tested in the leak detector section. Included would be Double Contained Receiver Tank (DCKT) high level alarms, dilution tank low level alarms, FGM/CGM alarms, leak detection not previously tested, and encasement and receiver tank pressurization alarms.

- The Cognizant Engineer is responsible for reviewing the installation design and identifying all appropriate interlocks to be tested.

5.12.10 Cognizant Engineer shall **ENTER** all interlocks (by relay or device designation) not tested by a separate section in the Table below.

RELAY/DEVICE DESIGNATION	JET PUMP SHUTDOWN (✓)	ALARM MESSAGE RECEIVED
1) Recirc flush pressure signal loss @ SX-105 S/D SX-103	✓	DTAM S/D SX FARM RECIRC FLUSH SIGNAL
		OCS SX FARM RECIRC FLUSH SIGNAL LOSS S/P
2) Recirc flush pressure signal loss @ SX-103 S/D S102, S-109 & SX-105	✓	DTAM S/D RFPRT SIGNAL LOSS
		OCS RFPRT SX RECIRC FLUSH LOSS S/P
3) Jumper flush pressure signal loss @ S-102 S/D SX-103	<del>N/A</del>	<del>DTAM</del>
		<del>OCS</del>
4) Jumper flush pressure signal loss @ S-109 S/D SX-103	✓	DTAM S/D JUMPER FLUSH SIGNAL LOSS
		OCS JFPT SIGNAL LOSS S/P
5) Jumper flush pressure signal loss @ SX-105 S/D SX-103	✓	DTAM S/D JUMPER FLUSH SIGNAL LOSS
		OCS JFPT Sig. LOSS S/P
6) Jumper flush pressure signal loss @ SX-103 S/D S-102, S-109 & SX-IUS	✓	DTAM S/D JFPT SIGNAL LOSS
		OCS 103 JFPT SIGNAL LOSS S/P
7) High recirc pressure @ S-102 S/D SX-103	✓	DTAM S/D SFARM High RECIRC PRESSURE
		OCS RECIRC FLUSH HIGH S/P

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## 5.12 Leak Detection and Interlock Check (Cont.)

### INTERLOCK TEST

Note - It is the intent of this section to test all transfer system and FGM/CGM interlocks not previously tested in the leak detector section. Included would be Double Contained Receiver tank (DCRT) high level alarms, dilution tank low level alarms. FGM/CGM nlrms, leak detection not previously tested. and encasement and receiver tank pressurization alarms.

- The Cognizant Engineer is responsible for reviewing the installation design and identifying all appropriate interlocks to be tested.

5.12.10 Cognizant Engineer shall **ENTER** all interlocks (by relay or device designation) not tested by a separate section in the Table below

RELAY/DEVICE DESIGNATION	JET PUMP SHUTDOWN (✓)	ALARM MESSAGE RECEIVED
1) High recirc pressure @ S-109 S/D SX-103	✓	DTAM S/D RECIRC FLUSH HIGH
		OCS RECIRC PRESS HIGH S/D
2) High recirc pressure @ SX-105 S/D SX-103	✓	DTAM S/D SX FARM HIGH RECIRC PRESS
		OCS S <sup>x</sup> RECIRC PRESS HIGH S/D
3) High recirc pressure @ SX-103, S/D S-102, S-109 & SX-105	✓	DTAM S/D RECIRC FLUSH HIGH
		OCS S <sup>x</sup> RECIRC FLUSH HIGH S/D
4) S-102 JR-1 not in prime S/D SX-103 after T/D	✓	DTAM S TANK S/D TIMER Act.
		OCS S SHUTDOWN TIMER
5) S-109 JR-1 not in prime S/D SX-103 after T/D	✓	DTAM S TANK S/D TIMER Act
		OCS S S/D TIMER
6) SX-105 JR-1 not in prime S/D SX-103 after T/D	✓	DTAM SX TANK S/D TIMER Act
		OCS S S/D TIMER
7) SX-103 JR-1 not in prime S/D S-102, S-109 & SX-105 after T/D	✓	DTAM NO LOCAL
		OCS 102 109 + 105 S/D TIMER

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## 5.12 Leak Detection and Interlock Check (Cont.)

### INTERLOCK TEST

Note - It is the intent of this section to test all transfer system and FGM/CGM interlocks not previously tested in the leak detector section. Included would be Double Contained Receiver Tank (DCRT) high level alarms, dilution tank low level alarms, FGM/CGM alarms, leak detection not previously tested, arid encasement and receiver tank pressurization alarms.

- The Cognizant Engineer is responsible for reviewing the installation design and identifying all appropriate interlocks to be tested.

5.12.10 Cognizant Engineer shall **ENTER** all interlocks (by relay or device designation) not tested by a separate section in the Table below.

RELAY/DEVICE DESIGNATION	JET PUMP SHUTDOWN (✓)	ALARM MESSAGE RECEIVED
1) S-102 JR-1 in flush S/D SX-103	✓	DTAM S/O S TANK IN FLUSH
		OCS S FLUSH POSITION
2) S-109 JR-1 in flush S/D SX-103	✓	DTAM S/O S TANK IN FLUSH
		OCS S FLUSH
3) SX-105 JR-1 in flush S/D SX-103	✓	DTAM S/O SX TANK IN FLUSH
		OCS SX FLUSH S/O
4) SX-103 JR-1 in flush S/D S-102, S-109 & SX-105	✓	DTAM JR-1 NOW PROCESS S/O NO DATA
		OCS SX FLUSH POSITION
5) DILUTION LOW FLOW	✓	DTAM DILUTION TANK NO FLOW
		OCS DILUTION TANK H <sub>2</sub> O NO FLOW
6)		DTAM
		OCS
7)		DTAM
		OCS

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**5.12 Leak Detection and Interlock Check (Cont.)**

- 5.12.11 **NOTIFY** TMACS Operator, 242-A Evaporator Operator (if transfer is in east Area), and Shift Manager that this section is about to begin.
- 5.12.12 For each relay LISTED in the Table above, **PERFORM** the following.
  - 5.12.12.1 **USING** the DTAM, **START** the Jet Pump, **AND OBSERVE** the pump run light is ON.

**WARNING**

**Energized circuits and leads are contained inside the cabinet. Observe appropriate electrical precautions. Comply with RPP-PRO-088, ELECTRICAL WORK SAFETY to avoid personnel electrical shock hazards.**

Note - Craft will determine a safe method of deactivating each device. Test pushbuttons, mock input signals, shorting across secondary of induction relay coils, lifting coil leads, or pulling device from socket may be used.

- 5.12.12.2 **DE-ACTIVATE** the relay to **SIMULATE** an alarm condition.
- 5.12.12.3 **VERIFY** DTAM and OCS DISPLAY alarm 12, "JET PUMP SHUTDOWN" **AND** an interlock message.
- 5.12.12.4 **RECORD** a check mark in the Table if Jet Pump shutdown occurs.
- 5.12.12.5 **RECORD** the interlock alarm messages received at DTAM and OCS in the Table.
- 5.12.12.6 **ACKNOWLEDGE** the alarms at DTAM and OCS.
- 5.12.12.7 **VERIFY** the Jet Pump **CAN NOT** be **RE-STARTED** at the DTAM **WHEN** the alarm is **ACTIVE**.
- 5.12.12.8 **RESTORE** the circuit (remove simulated alarm condition).

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**5.12 Leak Detection and Interlock Check (Cont.)**

5.12.13 **NOTIFY** TMACS Operator, **242-A** Evaporator Operator (if transfer is in east Area), and Shift Manager that this section is **COMPLETE**.

*ms*

5.12.14 **REMOVE** any jumpers or forces **NOT** required for the next section.

5.12.15 Test Director **VERIFY** that Section 5.12 is **COMPLETE** by **SIGNING** below

*Rob Hanks*  
Test Director Signature

10-13-00  
Date

5.12.16 Quality Assurance Inspector **VERIFY** that Section 5.12 is **COMPLETE** by **SIGNING** below.

*M. Waggoner*  
Quality Assurance Inspector Signature

10-13-00  
Date

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**5.13 Software Documentation**

5.13.1 , **REQUEST** Engineering to PRINT out a Ladder Logic and Alarm Table for the PIC Skid AND ATTACH to this procedure



5.13.2 Test Director **VERIFY** that Section 5.13 is COMPLETE by **SIGNING** below

*[Signature]*  
Test Director Signature

10/12/00  
Date

5.13.3 Quality Assurance Inspector **VERIFY** that Section 5.13 is COMPLETE by **SIGNING** below.

*[Signature]*  
Quality Assurance Inspector Signature

10-16-00  
Date

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5.14.1

VALVES	OPEN (•)
SALW-V-6018* located in the bottom right of SALW-PNL-6002* (WFIE Cabinet)	
SALW-V-6016* located in the middle of SALW- NL-6002* (WFIE Cabinet)	
SALW-V-6056* located in SALW-PNL-6002* (WFIE cabinet)	
SALW-V-6160* (as applicable) located in the Drip Control Box	
SALW-V-6162* located in the Drip Control Box	
SALW-V-6164* located in the Drip Control Box	

**CAUTION**

Relief valve (SALW-PRV-6001\*) will actuate and relieve pressure at 25 psig.

5.14.3 **CAREFULLY ADJUST** Pressure Regulator SALW-PCV-6005\*, located in the bottom of SALW-PNL-6002\* (WFIE Cabinet) to 20 psig (18 to 22 psig) as **INDICATED** by SALW-PI-6001\* located in the middle of SALW-PNL-6002\* (WFIE Cabinet).



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**Operational Test Procedure Exception Record**

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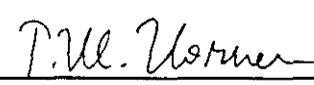
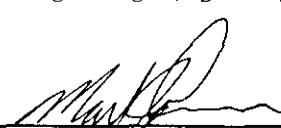
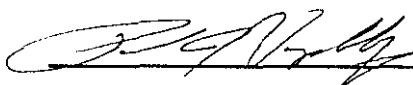
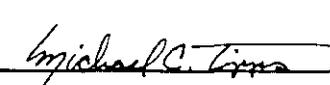
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<b>Resolution of Exception:</b>	
<b>Resolution of Exception:</b>	
<b>Date of Resolution:</b>	
<b>Test Director signature:</b>	
<b>Cognizant Engineer signature:</b>	
<b>Quality Assurance signature:</b>	
<b>Tank Farm Operations signature:</b>	

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**Operational Test Procedure Acceptance Record**

This Operational Test Procedure has been completed and the results, including red-line changes, exceptions, and exception resolutions, have been reviewed for compliance with the intent of the Purpose (Section 1.0). The test results are accepted by the undersigned:

	W.F. ZUPOFF	Wfz 10/16/00 10/16/00
Cognizant Engineer (Signature)	(Print Name)	Date
	T M HORNER	10/16/00
Engineering Manager (Signature)	(Print Name)	Date
	Mark Johnson	10-16-00
Tank Farm Operations (Signature)	(Print Name)	Date
	PAUL J VOPALENSKY	10/18/00
Safety (Signature)	(Print Name)	Date
	MICHAEL C. TIAPS	10-16-00
Quality Assurance (Signature)	(Print Name)	Date
	Mark Johnson	10-16-00
Test Director (Signature)	(Print Name)	Date

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