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ENGINEERING DATA TRANSMITTAL

Page 1 of 1
1. EDT 624921

2. To: (Receiving Organization) DISTRIBUTION		3. From: (Originating Organization) INTERIM STABILIZATION		4. Related EDT No.: N/A	
5. Proj./Prog./Dept./Div.: INTERIM STABILIZATION		6. Design Authority/Design Agent/Cog. Engr.: W. F. ZUROFF		7. Purchase Order No.: N/A	
8. Originator Remarks: ATTACHED IS AN ACCEPTANCE TEST REPORT (ATR) FOR THE NEW PUMPING INSTRUMENTATION AND CONTROL (PIC) SKID "Q" FABRICATED BY SITE FABRICATION SERVICES.				9. Equip./Component No.: N/A	
				10. System/Bldg./Facility: 241-A	
				12. Major Assm. Dwg. No.: N/A	
				13. Permit/Permit Application No.: N/A	
11. Receiver Remarks: NONE		11A. Design Baseline Document? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		14. Required Response Date: 05/04/2000	

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	RPP-5802	N/A	0	TEST REPORT FOR ACCEPTANCE	N/A	1	1	1
				TEST PROCEDURE FOR PUMPING				
				INSTRUMENTATION AND				
				CONTROL SKID "Q"				

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

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)											
(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
1		Design Authority	W. F. ZUROFF	5/4/00	5724						
1		Design Agent	B. R. JOHNS	5/4/00	5724						
1		Cog. Eng.	B. R. JOHNS	5/4/00	57-24						
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		QA	N/A								
		Safety	N/A								
		Env.	N/A								

18. <i>BR Johns</i> B. R. JOHNS Signature of EDT Originator Date: 5/4/00		19. <i>M.R. Koch</i> M. R. KOCH Authorized Representative for Receiving Organization Date: 5/4/00		20. <i>W.F. Zuroff</i> W. F. ZUROFF Design Authority/Cognizant Manager Date: 5/9/00		21. DOE APPROVAL (if required) Ctrl No. N/A <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments	
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TEST REPORT FOR ACCEPTANCE TEST PROCEDURE FOR PUMPING INSTRUMENTATION AND CONTROL SKID "Q"

M. R. KOCH

CH2MHILL HANFORD GROUP, INC

Richland, WA 99352

U.S. Department of Energy Contract DE-AC06-99RL14047

EDT/ECN: 624921

UC:

Cost Center: 74D00

Charge Code: 103361

B&R Code: EW3120071

Total Pages: 60

Key Words: PICS, SALT WELL, SKID, INTERIM STABILIZATION

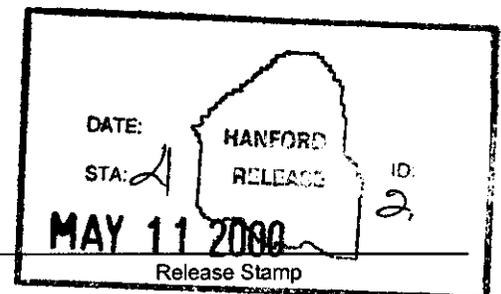
Abstract:

This Acceptance Test Report (ATR) provides the test results for the inspection and testing of the new Pumping Instrumentation and Control (PIC) skid designed as "Q". The ATR summarizes the results and provides a copy of the ATP and inspections in the Appendix.

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Release Approval _____
Date 5/11/00



Approved For Public Release

TEST REPORT FOR ACCEPTANCE TEST PROCEDURE FOR PUMPING INSTRUMENTATION AND CONTROL SKID "Q"

1.0 INTRODUCTION

This test report provides the results from the performance of Acceptance Test Procedure (ATP) RPP-5801, revision 1, for Pumping Instrumentation and Control (PIC) skid "Q". The ATP verifies the proper construction of the PIC skid "Q" by Site Fabrication Services along with proper programming of the Programmable Logic Controller (PLC) by engineering. New PIC skid "Q" will be used for the pumping tank AX-101. A copy of the actual test results is in the Appendix of this document.

2.0 DESCRIPTION OF TEST

The test was performed at the Site Fabrication Services location. The ATP ensured the PIC skid was assembled and functioned as per the design drawings. Inputs to the skid were simulated to ensure proper equipment connections and wiring.

The ATP document provided detailed instructions for each test step and spaces for recording the data and signoffs. A copy of the test results including exceptions is in the Appendix.

3.0 TEST METHOD AND TEST EQUIPMENT

The ATP detailed the test methods and the test equipment to be used for testing. Test equipment identification and calibration dates are recorded on the ATP data sheets. Quality Assurance Inspectors and Engineering witnessed the performance of the ATP.

4.0 TEST RESULTS

The ATP was successfully completed. Discrepancies in the test procedure were listed as exceptions. All the exceptions identified became part of the ATP and are in the Appendix along with the ATP results. Exceptions during the ATP were the result of the CGM being installed on the skid at the Fabrication shop; software program change for motor high temperature alarms and interlock; and the AX-101 leak detector probe connecting to the primary leak detector relays on the skid rather than using the AX farm leak detection system.

A National Electrical Code (NEC) inspection was performed as part of the ATP. The NEC inspector accepted the electrical power portion of the skid and placed a blue acceptance sticker on the distribution panel. A Pressure Vessel inspector checked the water and air compressor tanks along with the associated relief valves. The installation of these tanks was acceptable. The safety relief-valves on the air and water tanks were functional checked as part of the ATP. Copies of the NEC and Pressure Vessel inspection reports are in the Appendix of this document.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The PIC skid is found to be ready for field operation. All exceptions were resolved. An Operational Test Procedure (OTP) will be performed after the skid is set up for field configuration.

6.0 REFERENCES

RPP-5801, REVISION 1, *ACCEPTANCE TEST PROCEURE FOR PUMPING AND INSTRUMENTATION CONTROL SKIDS*, CH2MHILL Hanford Group, Inc, Richland, Washington.

2H0004326, Site Fabrication Services work package.

7.0 APPENDIX

Copy of ATP, RPP-5801, Revision 1 (Partial, includes only the ATP pages where data was recorded.

NEC Inspection Report

Pressure Vessel Inspection Report

4.0 PREREQUISITES

4.1 DRAWING VERIFICATION

A check of the constructed skid is to be compared to either the redlined drawings or the final unreleased skid drawings. Engineering and Quality Assurance shall verify the accuracy of the essential and support drawings. Engineering shall determine a resolution for all discrepancies by either correcting the drawings or changing the equipment.

The following drawings shall be walked down for verification of proper construction of the skid:

- 4.1.1 Wire terminations and wiring labels on drawings H-14-103798, sheets 7 through 12 and H-14-103801, sheet 5.
- 4.1.2 Panel board arrangement on drawing H-14-103804.
- 4.1.3 Flow diagram on drawing H-14-103803.

Drawing verification completed. (Final drawing release is not required to continue with this ATP.)

<u>BR Johns</u>	<u>4/27/00</u>
Engineer Signature	Date
<u>Dawyer</u>	<u>4-27-00</u>
Quality Assurance Inspector Signature	Date

4.2 REDLINE INCORPORATION

- 4.2.1 See Ensure the relines identified on the construction drawings in the fabrication work package are incorporated on the final drawings for skid "Q" prior to the drawings being released. NOTE: Redlines must meet the intent of the markups and may not be exactly the same in order to meet drafting standards or for clarity.
- 4.2.2 Engineer to verify the redline incorporation is completed by signing below.

<u>BR Johns</u>	<u>4/27/00</u>
Engineer Signature	Date
<u>Dawyer</u>	<u>4-27-00</u>
Quality Assurance Inspector Signature	Date

QC INSPECTION RECORD

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~~REVISION 1~~

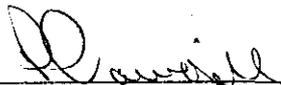
4.3 PRESSURE VESSEL INSPECTION

A pressure vessel inspection by a third party inspector is required for the air compressor receiver tank and relief valves located in the air compressor cabinet and the water tank and relief valves located in the water cabinet. The inspection is to verify that the equipment meets National Codes for pressure vessels. An outside-certified inspector shall perform this inspection. (This inspection shall be completed prior to testing the air compressor and water systems.)

Pressure vessel inspection report received. (The ATP can continue before the report is received, but must be received prior to performing sections 5.6 and 5.7.)

Report #'s: (Inspection #'s on tanks)

TPI-WT-148 + 149

 4-24-00
Quality Assurance Inspector Signature Date

Information has been supplied to the PMS database to add relief valve inspection for the air compressor and water tanks. Completion of the database update will be tracked by the Acceptance for Beneficial Use documentation. WT-06597, WT-06598

 4/25/00
Engineer Signature Date

4.4 NATIONAL ELECTRICAL CODE (NEC) INSPECTION

- 4.4.1 An NEC inspection shall be performed to verify compliance to NFPA 70, latest version.
- 4.4.2 Areas in particular to be inspected are the 480vac and 120vac wiring and grounding.
- 4.4.3 An NEC inspection sticker is to be placed on the inside or the outside of the panel board door upon the NEC inspector's acceptance of the electrical portion of the skid.

The NEC inspection sticker is placed on the panel board door. (This needs to be completed prior to the section 5.0 functional checks.) Report # (from sticker) 7118

 4-24-00
Quality Assurance Inspector Signature Date

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4.5 SUPPLIES

The following supplies are required for this ATP.

NOTE: Test sections may commence prior to assembly of all the test equipment. Engineer and/or PIC are to ensure test equipment is available prior to the start of each section.

4.5.1 Volt/ohm meter (VOM): Portable, 0-600vac

Calibration No. 814-45-08-010 Exp. Date 10-26-00 QA RL

Calibration No. _____ Exp. Date _____ QA _____

Calibration No. _____ Exp. Date _____ QA _____

4.5.2 Transmation current (milliamp) simulator or equivalent

Calibration No. 817-13-20-016 Exp. Date 10/19/00 QA RL

Calibration No. 817-13-20-024 Exp. Date 10/13/00 QA RL

Calibration No. _____ Exp. Date _____ QA _____

Calibration No. _____ Exp. Date _____ QA _____

Calibration No. _____ Exp. Date _____ QA _____

4.5.3 Manometer capable of a minimum of 5 inches water gauge to a maximum of 125 inches water gauge for this ATP and a read-out of variable test pressure.

Calibration No. 840-33-40-008 Exp. Date 11-16-00 QA RL

Calibration No. 817-35-40-052 Exp. Date 1/27/01 QA RL

Calibration No. _____ Exp. Date _____ QA _____

Temp Simulator Cal. No. 817-13-55-028 Exp. 7/22/00 QC RL

4.5.4 Megaohm meter, at least 500vac range 817-13-55-030 Exp 6/3/00 QC RL

Calibration No. 81-45-45-001 Exp. Date 9/16/00 QA RL

- 4.5.5 480vac, 3 phase, 30-ampere power supply for PIC skid.
- 4.5.6 Selector switches (4 each) with at least one NO and one NC contact.
- 4.5.7 Proximity switches (for simulating LS-1 and LS-2), 2 each.
- 4.5.8 Leak detector probes (2 each) not required to be green tagged.
- 4.5.9 Heat gun to warm thermocouple probes.

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- 4.5.10 Two thermocouple simulators for testing the thermocouples for the pump and jumper.
- 4.5.11 Buckets or pans for water for leak detector test and catching water from DIP tubes and relief valves.
- 4.5.12 Water supply and hose to fill water tank.
- 4.5.13 Ice water or cold air spray to cool thermocouple probes.

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WORK ORDER

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4.6 PRESTART CONDITIONS

- 4.6.1 Fill the water tank at least one-third to half full of water. Operate the appropriate valves in the water cabinet to accomplish this task.
- 4.6.2 Ensure the PIC skid is grounded in preparation for ATP testing.
- 4.6.3 Ensure the following PIC skid valves in the WFIE cabinet are OPEN prior to starting this ATP.

- SALW-V-6035Q (EQUALIZING)
- SALW-V-6036Q (EQUALIZING)

- 4.6.4 Ensure the following PIC skid valves are CLOSED prior to starting this ATP.

Air Compressor Cabinet

- SALW-V-6025Q
- SALW-V-6026Q
- SALW-V-6034Q
- SALW-V-6043Q
- SALW-V-6044Q
- SALW-V-6046Q
- SALW-V-6047Q
- SALW-V-6048Q
- SALW-V-6049Q
- SALW-V-6050Q
- SALW-V-6051Q
- SALW-V-6053Q

Water Cabinet

- SALW-V-6027Q
 - SALW-V-6029Q
 - SALW-V-6030Q
 - SALW-V-6031Q
 - SALW-V-6032Q
 - SALW-V-6037Q
 - SALW-V-6052Q
 - SALW-V-6054Q
 - SALW-V-6055Q
- See exception #1

WFIE Cabinet

- SALW-V-6001Q
- SALW-V-6002Q
- SALW-V-6003Q
- SALW-V-6004Q
- SALW-V-6005Q
- SALW-V-6006Q
- SALW-V-6007Q
- SALW-V-6008Q
- SALW-V-6011Q
- SALW-V-6012Q
- SALW-V-6013Q
- SALW-V-6014Q

- SALW-V-6015Q
- SALW-V-6016Q
- SALW-V-6017Q
- SALW-V-6018Q
- SALW-V-6019Q
- SALW-V-6020Q
- SALW-V-6021Q
- SALW-V-6035Q (LOW)
- SALW-V-6035Q (HIGH)
- SALW-V-6036Q (LOW)
- SALW-V-6036Q (HIGH)
- SALW-V-6056Q

See exception #1

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4.6.5 Ensure the following PIC skid circuit disconnects, breakers and fuses are OPEN or OFF prior to starting this ATP.

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

(The following breakers are located in distribution panel SALW-DP-6001Q.)

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

(The following fuses are located in the Instrument Enclosure.)

<input checked="" type="checkbox"/> FA	<input checked="" type="checkbox"/> FB	<input checked="" type="checkbox"/> FC
<input checked="" type="checkbox"/> FD	<input checked="" type="checkbox"/> LD	<input checked="" type="checkbox"/> HT

4.6.6 Check for loose electrical connections at the following locations:

- Terminal boards in the Instrument Enclosure.
- Motor starters and disconnect switches.
- Terminal board in junction box inside the WFIE cabinet.
- Terminal board in heat trace splice box outside WFIE cabinet.
- Terminal board in junction box for FGM outside WFIE cabinet.
- Distribution panel board.

4.6.7 Ensure desiccant and filters are installed in the air compressor dryer and filters prior to performing sections 5.6 and 5.7.

4.6.8 A pre-job safety meeting shall be held prior to performing section 5.0.

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5.0 PROCEDURE

5.1 CONTINUITY CHECKS

Continuity checks shall be performed with a calibrated VOM. Perform the checks as identified below. Readings are to be less than 1 ohm. Record ohm readings on the line(s) provided. Out of tolerance readings must be corrected and rechecked prior to going to the next section. NOTE: NEC inspection must be completed prior to proceeding with this section.

- 5.1.1 480vac main power plug to the line side of the main disconnect switch (SALW-DS-6002Q). Check all three phases and ground.

(RED) (YELLOW) (BLUE) (GND)

- 5.1.2 Load side of main disconnect switch (SALW-DS-6002Q) to the line side of transformer disconnect switch (SALW-DS-6003Q). Check the two phases used and ground.

(RED) (YELLOW OR BLUE) (GND)

- 5.1.3 Load side of main disconnect switch (SALW-DS-6002Q) to the line side of the jet pump motor starter (SALW-DS-6005Q). Check all three phases and ground.

(RED) (YELLOW) (BLUE) (GND)

- 5.1.4 Load side of main disconnect switch (SALW-DS-6002Q) to the line side of the air compressor motor starter (SALW-DS-6004Q). Check all three phases and ground.

(RED) (YELLOW) (BLUE) (GND)

- 5.1.5 Load side of the transformer disconnect switch (SALW-DS-6003Q) through the primary of the transformer (SALW-XFMR-6001Q). Check between the two phase wires going to the transformer.

Continuity through the transformer primary.

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5.1.6 Line side of the main breaker in panel board (SALW-DP-6001Q) through the secondary of transformer (SALW-XFMR-6001Q). Check between the two phases and between each phase and neutral going to the transformer secondary.

Phase A to phase C, continuity through transformer secondary.

Phase A to neutral, continuity through transformer secondary.

Phase C to neutral, continuity through transformer secondary.

5.1.7 Load side of breakers in distribution panel (SALW-DP-6001Q) to terminal point identified.

Circuit 3 to TB10 in Instrument Enclosure (CKT3-H, CKT3-N)

Circuit 5 to TB13 in Instrument Enclosure (CKT5H, CKT5N)

Circuit 12 to Air Conditioner/Heater receptacle in Instrument Enclosure

Circuit 6 to safe side terminal block in Intrinsic Safe panel

Circuit 1 to terminal block in FGM power junction box

Circuit 11 to terminal block in FGM power junction box

Circuit 13 to terminal block in FGM power junction box

Circuit 14 to terminal block in FGM power junction box

Circuit 2 to terminal block in FGM heat trace splice box

Circuit 10 to terminal block in FGM heat trace splice box

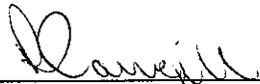
Circuit 4 to receptacle in air compressor cabinet

Circuit 7 to receptacles in WFIE cabinet

Circuit 8 to receptacle in water cabinet

Circuit 9 to outside receptacle below panel board

5.1.8 Section 5.1 completed and all recorded readings within tolerance.



Quality Assurance Inspector Signature

4-27-00
Date

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5.2 MEGGERING OF POWER WIRES

The power wires shall be checked for resistance to ground and phase to phase. A 500-volt megger shall be used for this check. Minimum acceptable readings are greater than 1000 megaohm or infinity. Test the circuits listed below. Record readings on the lines provided. Out of tolerance readings must be corrected and rechecked prior to going to the next section.

- 5.2.1 Each of the three phases at the pins of the power plug to ground and phase to phase. (Ensure main disconnect SALW-DS-6002Q is OPEN.)

A-GND ∞ ; B-GND ∞ ; C-GND ∞ ; A-B ∞ ; A-C ∞ ;
B-C ∞

- 5.2.2 Each of the three phases at the load side of the main disconnect switch (SALW-DS-6002Q) to ground and phase to phase. (Ensure switches SALW-DS-6003Q, SALW-DS-6004Q and SALW-DS-6005Q are OPEN.)

A-GND ∞ ; B-GND ∞ ; C-GND ∞ ; A-B ∞ ; A-C ∞ ;
B-C ∞

- 5.2.3 Each of the two phases on the load side of the transformer disconnect switch (SALW-DS-6003Q) to ground.

A-GND ∞ ; B-GND ∞

- 5.2.4 Each of the three phases on the load side of the air compressor motor to ground.

A-GND ∞ ; B-GND ∞ ; C-GND ∞

- 5.2.5 Disconnect the neutral at the distribution panel from ground.

- 5.2.6 Each of the two phases and neutral to ground at the distribution panel.

A-GND ∞ ; B-GND ∞ ; NEUTRAL-GND ∞

- 5.2.7 Reconnect the neutral back to ground at the distribution panel.

- 5.2.8 Disconnect the circuit 6 wire at the safe side terminal block in the Intrinsic Safe panel.

- 5.2.9 Disconnect the circuit 5 wire at TB13 for the Instrument Enclosure light.

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5.2.10 Ensure all the heaters, lights and air conditioner are disconnected or unplugged from the 120vac circuits. Ensure the fan thermostat switch in the air compressor cabinet is set high enough for the switch contacts to be open.

5.2.11 Megger each of the 14 circuits from the load side of the breaker or from the wire disconnected at the load side of the breaker to ground in the distribution panel.

NOTE: Disconnect each wire from the load side of the breaker on all the ground fault breakers prior to performing the megger check. This will prevent damage to the ground fault circuitry in the breaker. Reconnect the wire after meggering.

CKT #1 to GND	<input checked="" type="checkbox"/>	CKT #2 to GND	<input checked="" type="checkbox"/>
CKT #3 to GND	<input checked="" type="checkbox"/>	CKT #4 to GND	<input checked="" type="checkbox"/>
CKT #5 to GND	<input checked="" type="checkbox"/>	CKT #6 to GND	<input checked="" type="checkbox"/>
CKT #7 to GND	<input checked="" type="checkbox"/>	CKT #8 to GND	<input checked="" type="checkbox"/>
CKT #9 to GND	<input checked="" type="checkbox"/>	CKT #10 to GND	<input checked="" type="checkbox"/>
CKT #11 to GND	<input checked="" type="checkbox"/>	CKT #12 to GND	<input checked="" type="checkbox"/>
CKT #13 to GND	<input checked="" type="checkbox"/>	CKT #14 to GND	<input checked="" type="checkbox"/>

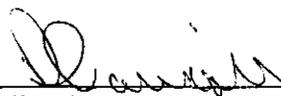
5.2.12 Ensure the load-side wire at each breaker where disconnected is reconnected.

5.2.13 Reconnect the circuit 6 wire to the safe side terminal block in the Intrinsic safe panel.

5.2.14 Reconnect the circuit 5 wire at TB13 for the Instrument Enclosure light.

5.2.15 Reconnect any wires disconnected in step 5.2.10 above. (Unplugged items do not have to be plugged back in.) *None disconnected. BRF*

5.2.16 Section 5.2 completed and all recorded readings are within tolerance.


Quality Assurance Inspector Signature

4-27-00
Date

QC INSPECTION RECORD

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5.3 ELECTRICAL POWER CHECKS

The voltage checks are to verify proper voltages throughout the skid at specific termination points. Voltages checked are 480vac, 3 phase; 120vac, single phase; 24vdc; and 32vdc. Out of tolerance readings must be corrected when found before going to the next step in this section.

5.3.1 Ensure that all electrical connections are completed. Wires lifted during meggering checks are to be reconnected.

5.3.2 Ensure all switches and breakers are open and the six fuses in the Instrument Enclosure are open.

5.3.3 Ensure all the fuses are installed in the two safety switches (SALW-DS-6002Q and SALW-DS-6003Q) and motor starters (SALW-DS-6004Q and SALW-DS-6005Q) including the control transformer fuses.

5.3.4 Connect the main power plug on the skid to a three phase, 480vac power source. Source is to be protected by no greater than a 30 ampere over current protection device.

5.3.5 Turn ON the power source to the skid.

5.3.6 Ensure 480vac +/-20vac on the line side of the main disconnect switch (SALW-DS-6002Q). Record the voltage readings.

494 vac, A-B 499 A-C 500 B-C
501

5.3.7 Close the main disconnect switch (SALW-DS-6002Q).

5.3.8 Ensure 480vac +/-20vac on the line side of the transformer disconnect switch (SALW-DS-6003Q). Record the voltage readings.

498 vac

5.3.9 Ensure 480vac +/-20vac on the line side of the air compressor motor starter (SALW-DS-6004Q). Record the voltage readings.

494 vac, A-B 499 vac, A-C 500 B-C

5.3.10 Ensure 480vac +/-20vac on the line side of the pump motor starter (SALW-DS-6005Q). Record the voltage readings.

488 vac, A-B 497 vac, A-C 500 B-C

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- 5.3.11 Ensure the dead front on the panel board (SALW-DP-6001Q) is removed for access to the main breaker for a voltage measurement.
- 5.3.12 Close the transformer disconnect switch (SALW-DS-6003Q).
- 5.3.13 Check for 240vac +/-20vac on the line side of the main breaker. Record the voltage reading.
249 vac
- 5.3.14 Open the transformer disconnect switch (SALW-DS-6003Q).
- 5.3.15 Replace the dead front on the panel board (SALW-DP-6001Q).
- 5.3.16 Close the transformer disconnect switch (SALW-DS-6003Q).
- 5.3.17 Close the 100 ampere main breaker in the panel board (SALW-DP-6001Q).
- 5.3.18 Check the voltages for the circuits at the locations designated. Record the voltages in the space provided.

CKT #	Check voltage at	Bkr Open voltage (appr. 0vac)	Bkr Closed voltage (120 +/-10vac)	Open Bkr
1	FGM JUNCTION BOX	0	124.5	<input checked="" type="checkbox"/>
2	FGM HT BOX	0	124.5	<input checked="" type="checkbox"/>
3	TB10, INSTR ENCL	0	124.5	<input checked="" type="checkbox"/>
4	RCPT, AIR COMPR	0	124.6	<input checked="" type="checkbox"/>
5	TB13, INSTR ENCL	0	124.5	<input checked="" type="checkbox"/>
6	TB, INTRINSIC PNL	0	124.5	<input checked="" type="checkbox"/>
7	RCPT, WFIE CAB.	0	124.5	<input checked="" type="checkbox"/>
8	RCPT, WATER CAB.	0	124.1	<input checked="" type="checkbox"/>
9	OUTSIDE RCPT	0	124.4	<input checked="" type="checkbox"/>
10	FGM HT BOX	0	124.5	<input checked="" type="checkbox"/>
11	FGM JUNCTION BOX	0	124.5	<input checked="" type="checkbox"/>
12	RCPT, INSTR ENCL	0	124.1	<input checked="" type="checkbox"/>
13	FGM JUNCTION BOX	0	124.5	<input checked="" type="checkbox"/>
14	FGM JUNCTION BOX	0	124.5	<input checked="" type="checkbox"/>

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- 5.3.19 Ensure fuses FA, FB, FC, FD, LD, and HT are installed in the fuseholders and the fuse switches are closed in the Instrument Enclosure.
- 5.3.20 Close breakers 3 and 5 in the distribution panel (SALW-DP-6001Q).
- 5.3.21 Ensure 120vac +/-10vac on the load side at the following fuseholders.
FA 124.5 vac; FB 124.5 vac; FC 124.3 vac;
FD 124.0 vac; (LD) 124.7 vac; (HT) 124.5 vac.
- 5.3.22 Ensure 24vdc +/-2vdc at the 24volt power supply.
25.05 vdc.
- 5.3.23 Close breaker 6 in the distribution panel (SALW-DP-6001Q).
- 5.3.24 Ensure 32vdc +0/-4vdc at the output of the 3991 power supply in the Intrinsic safe panel (terminals 3 and 4). NOTE: Low voltage reading may indicate the 240/120vac input power switch on the side of the 3991 supply is in the wrong position.) 32.7 VDC
- 5.3.25 Open breakers 3, 5 and 6 in the panel board (SALW-DP-6001Q).
- 5.3.26 Open the 100 ampere main breaker in the panel board (SALW-DP-6001Q).
- 5.3.27 Open the transformer disconnect switch (SALW-DS-6003Q).
- 5.3.28 Open the main disconnect switch (SALW-DS-6002Q).
- 5.3.29 Voltage checks completed and readings within tolerance.

[Signature] _____ 4-27-00
Quality Assurance Inspector Signature Date

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5.4 CALIBRATIONS

Instrumentation equipment on the skid requires calibration prior to the functional testing. Engineering will verify the calibration completion by checking for current calibration stickers on the equipment and checking off the completed calibrations in the table below.

INSTRUMENT	LOCATION	CAL. STICKER ON
SALW-PS-6004Q	AIR COMPR. CABINET	✓
SALW-WFT-6002Q	WFIE CABINET	✓
SALW-LT-6003Q	WATER CABINET	✓
SALW-SGT-6001Q	WFIE CABINET	✓
SALW-CONV-6001Q	WFIE CABINET	✓
SALW-FQIT-6001Q	INSTRUMENT ENCL.	✓
SALW-PI-6006Q	AIR COMPR. CABINET	✓
SALW-PI-6007Q	AIR COMPR. CABINET	✓
SALW-PI-6008Q	WATER CABINET	✓
SALW-PI-6001Q	WFIE CABINET	✓
SALW-PI-6002Q	WFIE CABINET	✓
SALW-PI-6003Q	WFIE CABINET	✓
SALW-PI-6004Q	WFIE CABINET	✓
SALW-PI-6005Q	WFIE CABINET	✓
SALW-PI-6011Q	INSTRUMENT ENCL.	✓
SALW-PI-6012Q	INSTRUMENT ENCL.	✓

Calibrations completed. Work package nos. WS-00-0442

BR Johns
 Engineer Signature

4/26/00
 Date

5.5 PLC/DTAM PROGRAMMING

This section is where the programs for the PLC and DTAM will be entered into the equipment. Power will be required (circuit 5) at the Instrument enclosure to power up the PLC and DTAM and for the GFCI receptacle. Engineering will program the equipment from a laptop computer. Final software programs shall be documented as required by HNF-5034. This documentation is not part of this ATP, but will be documented after the OTP in a software report document.

PLC/DTAM programmed.

BR Johns
 Engineer Signature

4/25/00
 Date

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5.6 SKID ELECTRICAL AND PROCESS AIR POWER-UP

NOTE: The pressure vessel inspection report must be received prior to proceeding with this section. Refer to section 4.3. Ensure desiccant is in the air dryer and the filters installed.

5.6.1 Ensure the skid is connected to the 480vac power source and grounded before proceeding with this functional test.

5.6.2 Energize or ensure energized the PIC skid by CLOSING the following disconnect switches in the order listed below.

- SALW-DS-6002Q
- SALW-DS-6003Q
- SALW-DS-6004Q
- SALW-DS-6005Q

5.6.3 Energize or ensure energized the breakers in the panel board (SALW-DP-6001Q).

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

5.6.4 ACKNOWLEDGE any initial skid alarms.

5.6.5 OPEN valves SALW-V-6034Q, SALW-V-6050Q, and SALW-V-6053Q in the Air compressor cabinet.

5.6.6 START the air compressor by positioning the positioning the switch on SALW-DS-6004Q to the ON position.

5.6.7 Ensure the air compressor starts and builds up pressure and shuts off at 86 to 94 psig as indicated by pressure gauge SALW-PI-6006Q. RECORD the shut off pressure: 90 psig.

5.6.8 CHECK the tubing in the air compressor cabinet using a soap and water test to visually identify any air leaks. Repair as necessary. Deenergize the compressor motor and bleed off air as necessary to make repairs.

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- 5.6.9 BLEED off air by slowly opening valve SALW-V-6043Q until the compressor restarts and note the restart pressure as read on gauge SALW-PI-6006Q. CLOSE valve SALW-V-6043Q when the compressor restarts. RECORD the restart pressure reading: 60 psig.
- 5.6.10 ENSURE the compressor restarts between 58 to 62 psig.
- 5.6.11 Valve in air to the PIC skid water tank by performing the following steps.
- 5.6.12 Check for air leaks as each of the remaining steps in this section are performed.
- 5.6.13 SLOWLY OPEN valve SALW-V-6025Q located in the air compressor cabinet.
- 5.6.14 SLOWLY OPEN valve SALW-V-6027Q located near the water tank.
- 5.6.15 SLOWLY OPEN valve SALW-V-6052Q located near the water tank
- 5.6.16 ADJUST pressure regulator valve SALW-PCV-6006Q to 30psi (+/- 3psi) as indicated by pressure gauge SALW-PI-6008Q on the outside of the water cabinet. 31 psi
- 5.6.17 ACTUATE the lever on relief valve SALW-PRV-6004Q on the top of the air compressor tank and hold open approximately 5 seconds. (Air system is to be at full pressure of approximately 90psi.)
- 5.6.18 ENSURE the relief valve SALW-PRV-6004Q seats properly when the lever is released.
- 5.6.19 ACTUATE the lever on relief valve SALW-PRV-6005Q on the top of the water tank and hold open approximately 5 seconds. (Water system air pressure is to be at full pressure of approximately 30psi.)
- 5.6.20 ENSURE the relief valve SALW-PRV-6005Q seats properly when the lever is released.
- 5.6.21 VALVE IN air to the WFIE cabinet by performing the following steps.
- 5.6.22 SLOWLY OPEN valves SALW-V-6051Q located inside the air compressor cabinet and SALW-V-6026Q located on the outside of the air compressor cabinet.
- 5.6.23 SLOWLY OPEN valve SALW-V-6001Q located in the WFIE cabinet. (NOTE: SALW-PRV-6002Q may open if pressure through SALW-PCV-6001Q is too high.)

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- 5.6.24 ADJUST pressure control valve SALW-PCV-6001Q in the WFIE cabinet to 20psi (+/-2.5psi) as indicated by the pressure gauge located on the face of the valve.
- 5.6.25 SLOWLY OPEN valve SALW-V-6004Q located in the WFIE cabinet.
- 5.6.26 SLOWLY OPEN valve SALW-V-6003Q located in the WFIE cabinet.
- 5.6.27 SLOWLY OPEN valve SALW-V-6005Q located in the WFIE cabinet.
- 5.6.28 SLOWLY OPEN valve SALW-V-6006Q located in the WFIE cabinet.
- 5.6.29 SLOWLY OPEN valve SALW-V-6007Q located in the WFIE cabinet.
- 5.6.30 SLOWLY OPEN valve SALW-V-6020Q located in the WFIE cabinet.
- 5.6.31 SLOWLY OPEN valve SALW-V-6021Q located in the WFIE cabinet.
- 5.6.32 SLOWLY OPEN valve SALW-V-6019Q located in the WFIE cabinet.
- 5.6.33 ADJUST the air flow through the diptubes by performing the following steps.

NOTE: Ensure the DIP tubes are not capped on the outside of the WFIE cabinet when performing steps 5.6.34 through 5.6.36.

- 5.6.34 ADJUST flow to dip tube to 1.5 CFH (+/-0.5 CFH) as indicated by SALW-FIV-6002Q.
- 5.6.35 ADJUST flow to dip tube to 1.5 CFH (+/-0.5 CFH) as indicated by SALW-FIV-6003Q.
- 5.6.36 ADJUST flow to dip tube to 1.5 CFH (+/-0.5 CFH) as indicated by SALW-FIV-6004Q.
- 5.6.37 ENSURE air flow from pressure regulator SALW-PCV-6007Q by slowly opening valve SALW-V-6044Q in the air compressor cabinet and then reclose the valve.
- 5.6.38 ENSURE air flow from pressure regulator SALW-PCV-6008Q by slowly opening valve SALW-V-6048Q in the air compressor cabinet and then reclose the valve.
- 5.6.39 ENSURE air flow from the SALW-V-6042Q port at the air compressor cabinet by slowly opening valve SALW-V-6046Q in the air compressor cabinet and then reclose the valve.

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5.6.40 ENSURE air flow from the drain line by slowly opening valves SALW-V-6047Q and SALW-V-6046Q in the air compressor cabinet and then reclose the two valves.

5.6.41 Engineer to ENSURE section 5.6 is completed and sign below.

BR Johns 4/27/00
Engineer Signature Date

5.6.42 Quality Assurance Inspector to VERIFY that section 5.6 is complete and sign below.

[Signature] 4-27-00
Quality Assurance Inspector Signature Date

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5.7 SKID WATER DRIP SYSTEM

5.7.1 PROVIDE a container to capture water expelled from the dip tubes and the pressure relief valve SALW-PRV-6001Q on the outside of the WFIE cabinet.

5.7.2 ACTUATE the Dip Tube Drip system by SLOWLY OPENING the following valves in the WFIE cabinet:

- SALW-V-6016Q
- SALW-V-6013Q
- SALW-V-6008Q

CAUTION: Relief valve SALW-PRV-6001Q will actuate and relieve pressure at 25psig.

5.7.3 SLOWLY OPEN SALW-V-6018Q WHILE CAREFULLY ADJUSTING Pressure Regulator SALW-PCV-6005Q located in the WFIE cabinet to 20psig (+/-2psig) as indicated on gauge SALW-PI-6001Q in the WFIE cabinet. 20 psig

5.7.4 ADJUST valve SALW-V-6014Q to allow approximately 2 drops/second as indicated by sight glass SALW-FG-6001Q.

5.7.5 ADJUST valve SALW-V-6015Q to allow approximately 2 drops/second as indicated by sight glass SALW-FG-6002Q.

5.7.6 VALVE OUT the dip tube drip system by SLOWLY CLOSING or ENSURING CLOSED the following valves located in the WFIE cabinet. *Open valve SALW-V-6056Q very slightly to verify water flow from the "WATER SUPPLY & REMOTE DRIP CONTROL" part CLOSE valve when water flow is observed. See exception #2.*

- SALW-V-6015Q
- SALW-V-6014Q
- SALW-V-6008Q
- SALW-V-6013Q
- SALW-V-6019Q
- SALW-V-6021Q
- SALW-V-6020Q
- SALW-V-6007Q
- SALW-V-6006Q
- SALW-V-6005Q

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5.8 INPUT SIGNALS TO THE PLC AND DTAM

- 5.8.1 ENSURE the two leak detector probes are connected to the skid at the Instrument Enclosure.
- 5.8.2 ENSURE a normally closed switch is connected to "CGM-AX" and "CKT5H-A" on terminal board TB4 in the Instrument Enclosure.
- 5.8.3 ENSURE a normally closed switch is connected to "CGM-F" and "CKT5H-A" on terminal board TB4 in the Instrument Enclosure.
- 5.8.4 ENSURE a normally closed switch is connected to "DIL-F" and "CKT5H-A" on terminal board TB4 in the Instrument Enclosure.
- 5.8.5 *See exception 2 on pg 42* N/A ENSURE a normally closed switch is connected to "AX101" and "CKT5H-A" on terminal board TB4 in the Instrument Enclosure.
- 5.8.6 ENSURE two proximity switches are connected to the intrinsic safe terminal block in the Intrinsic Safe panel. Connect a normally closed proximity switch temporarily labeled as LS-1 to "LS-1(+)" and "LS-1(-)" and a normally open proximity switch temporarily labeled as LS-2 to "LS-2(+)" and "LS-2(-)". ACTUATE the proximity switches by placing metal in front the switch faces.
- 5.8.7 ENSURE the DIP switches for the Pepperl-Fuch module in the Intrinsic Safe panel are set to the correct positions per H-14-103791, sheet 7.

WATER TANK LEVEL TRANSMITTER

- 5.8.8 ENSURE valve SALW-V-6029Q located in the water tank cabinet is CLOSED.
- 5.8.9 ENSURE valve SALW-V-6031Q located in the water cabinet is CLOSED.
- 5.8.10 CONNECT a test manometer pressure source that can output at least 62" water gauge to the HIGH PRESSURE vent/test port of level transmitter SALW-LT-6003Q.
- 5.8.11 ENSURE the LOW PRESSURE vent/test port of level transmitter SALW-LT-6003Q is OPEN to atmosphere.
- 5.8.12 ADJUST the test manometer connected to SALW-LT-6003Q to a pressure of 31" water gauge (+/-1"). Record reading 31.6

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5.8.13 RECORD the water tank level reading on the DTAM. 31.6 31"
(+/-2")

5.8.14 The next step will cause a low water level alarm on the DTAM.

5.8.15 VERY SLOWLY DECREASE the test manometer pressure until the "PIC WATER LEVEL LOW" (alarm 9) occurs on the DTAM. (This alarm should occur at 12.25" +/-0.5" water gauge.)

5.8.16 ACKNOWLEDGE the alarm at the DTAM.

5.8.17 RECORD the manometer pressure and the DTAM water level readings.

Pressure on manometer 12.19 Water Level on DTAM 12.2

5.8.18 SLOWLY INCREASE the manometer pressure until the alarm clears on the DTAM. (This should occur at 15.5" +/-0.5" water gauge.)

5.8.19 RECORD the manometer pressure and the DTAM water level readings.

Pressure on manometer 15.63 Water Level on DTAM 15.6

5.8.20 ENSURE the "PIC Water" alarm indicates "norm".

5.8.21 REMOVE the test manometer from the SALW-LT-6003Q high pressure vent/test port and reinstall the vent plugs on both the high and low sides.

5.8.22 OPEN valve SALW-V-6029Q located in the Water Cabinet.

5.8.23 OPEN valve SALW-V-6031Q located in the Water Cabinet.

5.8.24 ENSURE "Water Tank" reading on the DTAM shows a value in inches.

Record the reading 26.7

WEIGHT FACTOR TEST

5.8.25 CONNECT a test manometer pressure source that can output at least 125" water gauge to the HIGH PRESSURE dip tube on the side of the WFIE Cabinet.

5.8.26 ENSURE SALW-V-6001Q is CLOSED.

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- 5.8.27 ENSURE SALW-V-6005Q is OPEN.
- 5.8.28 ENSURE SALW-V-6006Q is OPEN.
- 5.8.29 ENSURE adjustment valves on SALW-FIV-6002Q, SALW-FIV-6003Q and SALW-FIV-6004Q are CLOSED.
- 5.8.30 ENSURE the LOW and HIGH side isolation valves located on the SALW-V-6036Q 3-Valve manifold in the WFIE cabinet are OPEN.
- 5.8.31 ENSURE SALW-WFT-6002Q EQUALIZING valve located on the SALW-V-6036Q 3-Valve manifold in the WFIE cabinet is CLOSED.
- 5.8.32 SET the test manometer to 125" (+/-1") water gauge. Record the manometer reading. 125.35
- 5.8.33 RECORD the "WFT" reading on the DTAM. The reading is to be 125" (+/- 5"). 125.3
- 5.8.34 BLEED off the pressure on the test manometer. Leave connected for testing the specific gravity transmitter.
- 5.8.35 CLOSE SALW-V-6006Q.
- 5.8.36 OPEN SALW-WFT-6002Q equalizing valve located on SALW-V-6036Q 3-Valve manifold in the WFIE cabinet.
- 5.8.37 CLOSE the LOW and HIGH side isolation valves located on the SALW-V-6036Q 3-Valve manifold in the WFIE cabinet.

SPECIFIC GRAVITY TRANSMITTER

- 5.8.38 ENSURE SALW-V-6007Q is OPEN.
- 5.8.39 ENSURE SALW-V-6005Q is OPEN.
- 5.8.40 ENSURE the LOW and HIGH side isolation valves located on SALW-V-6035Q 3-Valve manifold in the WFIE cabinet are OPEN.
- 5.8.41 ENSURE the specific gravity transmitter equalizing valve located on the SALW-V-6035Q 3-Valve manifold located in the WFIE cabinet is CLOSED.
- 5.8.42 SET the test manometer to 5" water gauge (+/- 0.3"). 5.03

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- 5.8.43 RECORD the "SGT" reading on the DTAM. Reading to be 5" +/- 0.35". 5.04
- 5.8.44 BLEED off pressure on the manometer.
- 5.8.45 ENSURE "SGT LOW" alarm occurs (alarm 13).
- 5.8.46 ACKNOWLEDGE the alarm.
- 5.8.47 DISCONNECT the test manometer.
- 5.8.48 CLOSE SALW-V-6007Q.
- 5.8.49 CLOSE SALW-V-6005Q.
- 5.8.50 CLOSE the LOW side and HIGH side isolation valves located on SALW-V-6035Q 3-Valve manifold in the WFIE cabinet.
- 5.8.51 OPEN SALW-SGT-6001Q EQUALIZING valve located on SALW-V-6035Q 3-Valve manifold in the WFIE cabinet.

FLOW METER SIGNAL CHECK

- 5.8.52 Prepare the flow converter SALW-FQIT-6001Q located in the Instrument Enclosure to simulate a flow either using the buttons on the front face or using a "brain terminal".
- 5.8.53 SIMULATE a flow signal of 4.0gpm (50% span) with the hand-held brain terminal or from the flow converter face switches.
- 5.8.54 RECORD the flow readings on the front of the flow converter and on the DTAM (PMP FLOW). Readings to be 4.0 +/- 0.4 gpm.
- Flow converter 4.06 DTAM (PMP FLOW) 4.058
- 5.8.55 RESTORE the flow converter, SALW-FQIT-6001Q to its original configuration.

SUCTION AND DISCHARGE PRESSURE SIGNAL

5.8.56 ENSURE a current source is connected to PSPT+ and PSPT- on the intrinsic side terminal board in the Intrinsic Safe panel. Set the source to "transmitter simulate."

5.8.57 SET the current source to approximately 4mA and record the suction pressure reading on SALW-PI-6012Q. Reading to be approximately zero.

0.1 psi

5.8.58 SET the current source to approximately 20mA and record the suction pressure reading on SALW-PI-6012Q. Reading to be approximately 100psi.

100.1 psi

5.8.59 DISCONNECT the current source.

5.8.60 ENSURE a current source is connected to PDPT+ and PDPT- at the intrinsic side terminal board in the Intrinsic Safe panel. Set the source to transmitter simulate.

5.8.61 SET the current source to approximately 4mA and record the discharge pressures on SALW-PI-6011Q and on the DTAM. Readings should be approximately zero.

SALW-PI-6011Q 0.1 psi DTAM (PMP DISC) 0 psi

5.8.62 SET the current source to approximately 20mA and record the discharge pressures on SALW-PI-6011Q and on the DTAM. Readings should be approximately 300psi.

SALW-PI-6011Q 300.1 psi DTAM (PMP DISC) 300 psi

5.8.63 DISCONNECT the current source.

COMBUSTIBLE GAS MONITOR ANALOG SIGNAL TO PLC

5.8.64 ENSURE a current source is connected to terminal board TB1 in the Instrument Enclosure, points CGM 0(+) and 24VDC COM.

5.8.65 SET the current source to approximately 4mA.

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- 5.8.66 RECORD the "CGM" percent reading from the DTAM. Reading is to be approximately zero. .0 %
- 5.8.67 SET the current source to approximately 12mA.
- 5.8.68 RECORD the "CGM" percent reading from the DTAM. Reading is to be approximately 50%. 50.0 %
- 5.8.69 SET the current source to approximately 20mA.
- 5.8.70 RECORD the "CGM" percent reading from the DTAM. Reading is to be approximately 100%. 99.9 %
- 5.8.71 DISCONNECT the current source.

DOMESPACE FLAMMABLE GAS MONITOR ANALOG SIGNAL TO PLC

- 5.8.72 ENSURE a current source is connected to terminal board TB1 in the Instrument Enclosure, points FGM 1(+) and FGM 1(-)
- 5.8.73 SET the current source to approximately 4mA.
- 5.8.74 RECORD the "FGM" percent reading from the DTAM. Reading is to be approximately zero. .0 %
- 5.8.75 SET the current source to approximately 12mA.
- 5.8.76 RECORD the "FGM" percent reading from the DTAM. Reading is to be approximately 50%. 50.0 %
- 5.8.77 SET the current source to approximately 20mA.
- 5.8.78 RECORD the "FGM" percent reading from the DTAM. Reading is to be approximately 100%. 100.0 %
- 5.8.79 DISCONNECT the current source.

THERMOCOUPLE INPUTS TO THE PLC

- 5.8.80 WARM thermocouple SALW-TE-6004Q located in the Instrument Enclosure.
- 5.8.81 ENSURE the "PLC CAB temp" on the DTAM displays a temperature change.

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- 5.8.82 CONTINUE to warm the thermocouple until "PLC Enclosure HI" (alarm 10) occurs. This will be approximately 130 degrees F.
- 5.8.83 ACKNOWLEDGE the alarm.
- 5.8.84 ENSURE "PLC CAB temp" on the DTAM shows a temperature DECREASE after the heat source is removed from the SALW-TE-6004Q thermocouple.
- 5.8.85 ENSURE the "PLC temp" alarm returns to "norm" when the temperature decreases below 125 degrees F.
- 5.8.86 WARM thermocouple SALW-TE-6003Q located in the Air Compressor Cabinet.
- 5.8.87 ENSURE the "COMPRS temp" on the DTAM displays a temperature change.
- 5.8.88 CONTINUE to warm the thermocouple until "Air Compressor Temp HI" (alarm 11) occurs. This will be approximately 130 degrees F.
- 5.8.89 ACKNOWLEDGE the alarm.
- 5.8.90 ENSURE "COMPRS temp" on the DTAM shows a temperature DECREASE after the heat source is removed from the SALW-TE-6003Q thermocouple.
- 5.8.91 ENSURE the "CMPRS temp" alarm returns to "norm" when the temperature decreases below 125 degrees F.
- 5.8.92 COOL the thermocouple probe in the WFIE cabinet using ice water or cool air spray. Temperature needs to drop below 35 degrees F.
- 5.8.93 ENSURE alarm 50, "WFIE CAB Temp Low" occurs at the DTAM.
- 5.8.94 WARM or ALLOW to warm the thermocouple probe in the WFIE cabinet and ENSURE the "WFIE CAB Temp" alarm is "norm" when the temperature goes above 40 degrees F.
- 5.8.95 COOL the thermocouple probe in the Water cabinet using ice water or cool air spray. Temperature needs to drop below 35 degrees F.
- 5.8.96 ENSURE alarm 49, "WATER CAB Temp Low" occurs at the DTAM.

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- 5.8.97 WARM or ALLOW to warm the thermocouple probe in the Water cabinet and ENSURE the "WATER CAB Temp" alarm is "norm" when the temperature goes above 40 degrees F.
- 5.8.98 CONNECT two temperature simulators to the intrinsic side of the two thermocouple modules (MTL 3081) in the Intrinsic Safe panel.
- 5.8.99 SET the motor temperature alarm setpoints at the DTAM to 125 degrees F for the high and 135 degrees F for the high high. NOTE: The security code is 11 for the restricted screen for entry.
- 5.8.100 SET both temperature simulators to approximately 120 degrees F.
- 5.8.101 ENSURE the "PUMP temp" and the "JMPER TEMP" each read approximately 120 degree at the DTAM. 122 (Pump) 121 (Jumper)
- 5.8.102 ENSURE the "Jmp Htr" is ON at the DTAM.
- 5.8.103 DECREASE the temperature simulator on the top module to approximately 39 degrees or lower until alarm 8 "Pump/Jumper Temp Trouble" alarms on the DTAM.
- 5.8.104 ACKNOWLEDGE the alarm.
- 5.8.105 ENSURE the "PUMP TEMP" reads approximately 39 degree at the DTAM. 39
- 5.8.106 INCREASE the temperature simulator on the top module to approximately 120 degrees. 123
- 5.8.107 ENSURE the "JMPR HT" alarm on the DTAM reads "norm".
- 5.8.108 ENSURE the "Jmp Htr" is ON at the DTAM.
- 5.8.109 ENSURE the switches installed on TB4 between points "CGM-AX" and "CKT5H-A"; and "CGM-F" and "CKT5H-A" are in the CLOSED position.
- 5.8.110 ENSURE approximately 120vac between HT-1 and CKT3-N at TB12. 124 vac
- 5.8.111 WHILE MONITORING the voltage at TB12, INCREASE the temperature on the second module to 206 degrees F or higher until the voltage at TB12 goes to approximately zero. DTAM temp. 207

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- 5.8.112 WHILE MONITORING the voltage at TB12, decrease the temperature on the second module to 194 degrees F or lower until the voltage at TB12 goes to approximately 120vac. DTAM temp. 194
- 5.8.113 OPEN the switch on TB4 that is across "CGM-AX" and "CKT5H-A".
- 5.8.114 ENSURE alarm "25" occurs and ACKNOWLEDGE.
- 5.8.115 ENSURE the voltage at TB12 goes to approximately zero.
- 5.8.116 CLOSE the switch on TB4 that is across "CGM-AX" and "CKT5H-A".
- 5.8.117 ENSURE the voltage at TB12 returns to approximately 120vac.
- 5.8.118 OPEN the switch on TB4 that is across "CGM-F" and "CKT5H-A".
- 5.8.119 ENSURE alarm "31" occurs and ACKNOWLEDGE.
- 5.8.120 ENSURE the voltage at TB12 goes to approximately zero.
- 5.8.121 CLOSE the switch on TB4 that is across "CGM-F" and "CKT5H-A".
- 5.8.122 ENSURE the voltage at TB12 returns to approximately 120vac.
- 5.8.123 TURN OFF the heat trace from the DTAM.
- 5.8.124 ENSURE the voltage at TB12 goes to approximately zero.
- 5.8.125 TURN ON the heat trace from the DTAM.
- 5.8.126 ENSURE the voltage at TB12 returns to approximately 120vac.
- 5.8.127 INCREASE the temperature simulator on the second module to approximately 226 degrees or higher until alarm 8 "Pump/Jumper Temp Trouble" alarms on the DTAM.
- 5.8.128 ACKNOWLEDGE the alarm.
- 5.8.129 DECREASE the temperature simulator on the second module to less than 225 degrees.
- 5.8.130 ENSURE the "JMPR HT" alarm 8 returns to "norm" on the DTAM.
- 5.8.131 REMOVE the temperature simulator from the bottom module, but leave the top temperature simulator connected for the interlock checks in section 5.9.

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5.9 JET PUMP INTERLOCK CIRCUITS

5.9.1 ENSURE the LS-1 and LS-2 proximity switches at the Intrinsic safe panel; the two leak detector probes; the two CGM, the Dilution, and the AX101 switches at TB4 in the Instrument Enclosure are in place as per steps 5.8.1 to 5.8.6.

See exception 4 Bay

5.9.2 IF POSSIBLE, CONNECT three current sources to the following points. One to JFPT+ and JFPT- in the Intrinsic Safe panel at the intrinsic terminal board; one to RFPT+ and RFPT- in the Instrument Enclosure at TB2; and one to PXPT+ and PXPT- at the intrinsic terminal board in the Intrinsic safe panel. Set the current sources to "transmitter simulate" and at 6mA. NOTE: If three current sources are not available, then software forces will be used during this section to bypass the inputs not being tested.

5.9.3 SET the temperature simulator at the Intrinsic Safe panel to 120 degrees F.

5.9.4 ENSURE the temperature setpoint for the motor-bearing temperature high-alarm is set to ¹³⁰130 degrees F. and the high-high-alarm is set to ¹³⁵135 degrees F. *See exception #3*

5.9.5 CONNECT the laptop computer to the PLC to set forces and observe logic when required.

5.9.6 RECORD the reading of the Hourmeter on the front of the Instrument Enclosure. .2

RECIRCULATION FLUSH PRESSURE SIGNAL TO PLC

5.9.7 ENSURE a current source is connected to points RFPT+ and RFPT- in the Instrument Enclosure at TB2 and is set to approximately 6mA.

5.9.8 ENSURE the green light on the Instrument Enclosure and on the Jet Pump motor starter are ON.

5.9.9 APPLY software forces to allow the jet pump to start. (Engineering will apply the forces from the laptop computer connected to the PLC. Normally this will be the COMM Failure and Leak Station 1 interlocks. These can be forced out by setting the timers to a high set value such as 7200 seconds with the laptop on-line. If the timers need to be reset to start counting, this is done by turning the key switch on the PLC from "RUN" to "PROGRAM" and then back to "RUN".)

5.9.10 TURN the selector switch on the Jet Pump Motor Starter to ON.

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5.9.11 START the jet pump from the DTAM and OBSERVE that the red lights at the Instrument Enclosure and motor starter come ON and the green lights at both locations turn OFF.

5.9.12 SLOWLY INCREASE the current source output to approximately 12.5mA or until the pump shuts down after a 3 second delay. OBSERVE the following: (Acknowledge the alarms as necessary to observe all the alarms.) NOTE: The horn sound can be adjusted by turning the set screw on the front of the horn for sound level as directed by the engineer or PIC.

- Record current reading on current source. 12.15 mA
- The strobe light flashes and the horn sounds.
- Alarm 12 occurs, "JET PUMP SHUTDOWN".
- Alarm 39 occurs, "RECIRC FLUSH PRESS HI".
- Red lights at the motor starter and Instrument Enclosure are OFF.
- Green lights at the motor starter and Instrument Enclosure are ON.
- The "RECR FL PR" is approximately 15psi. 15.3 psi
- Ensure addresses N20:32/2 and N20:32/6 are actuated as observed on the laptop computer in ladder 5.

5.9.13 DECREASE the current source to approximately 4mA.

5.9.14 ENSURE the "Recirc Press" alarm at the DTAM returns to "norm".

5.9.15 ENSURE address N20:32/6 clears as observed on the laptop.

5.9.16 START the jet pump from the DTAM and OBSERVE that the red lights at the Instrument Enclosure and motor starter come ON and the green lights at both locations turn OFF.

5.9.17 DECREASE the current source to zero.

5.9.18 ENSURE the jet pump shuts down.

5.9.19 ENSURE alarm 14, "RFPT SIGNAL LOSS ALARM" occurs.

5.9.20 ACKNOWLEDGE the alarm.

5.9.21 ENSURE address N20:32/7 is actuated as observed on the laptop.

5.9.22 INCREASE the current source to approximately 6mA.

5.9.23 ENSURE the "RFPT SIGNAL" alarm returns to "norm" on the DTAM.

5.9.24 ENSURE address N20:32/7 clears as observed on the laptop.

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JUMPER FLUSH PRESSURE SIGNAL TO PLC

- 5.9.25 ENSURE a current source is connected to points JFPT+ and JFPT- in the Intrinsic Safe panel intrinsic terminal board and is set to approximately 6mA.
- 5.9.26 ENSURE the green light on the Instrument Enclosure and on the Jet Pump motor starter are ON.
- 5.9.27 APPLY software forces as necessary to allow the jet pump to start. (Engineering will apply the forces from the laptop computer connected to the PLC.)
- 5.9.28 START the jet pump from the DTAM and OBSERVE that the red lights at the Instrument Enclosure and motor starter come ON and the green lights at both locations turn OFF.
- 5.9.29 ENSURE address N20:32/2 is clear as observed on the laptop.
- 5.9.30 SLOWLY INCREASE the current source output to approximately 12.5mA or until the pump shuts down after a 3 second delay. OBSERVE the following: (Acknowledge the alarms as necessary to observe all the alarms.)
- The jet pump shuts down.
 - Record current reading on current source. 12.3 mA
 - Alarm 3 occurs, "Flush Pressure HI".
 - Alarm 12 occurs, "JET PUMP SHUTDOWN".
 - Blue light at the Instrument Enclosure is ON.
 - The "PS2 FL PR" is approximately 15psi. 15.6 psi
 - Ensure address N20:32/5 is actuated as observed on the laptop.
- 5.9.31 DECREASE the current source to approximately 4mA.
- 5.9.32 ENSURE the "Flush Press" alarm at the DTAM returns to "norm".
- 5.9.33 ENSURE the blue light at the Instrument Enclosure turns OFF.
- 5.9.34 ENSURE address N20:32/5 clears as observed on the laptop.
- 5.9.35 START the jet pump from the DTAM and OBSERVE that the red lights at the Instrument Enclosure and motor starter come ON and the green lights at both locations turn OFF.
- 5.9.36 DECREASE the current source to zero.
- 5.9.37 ENSURE the jet pump shuts down.

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- 5.9.38 ENSURE alarm 16, "JFPT SIGNAL LOSS ALARM" occurs.
- 5.9.39 ACKNOWLEDGE the alarm.
- 5.9.40 ENSURE address N20:32/8 actuates as observed on the laptop.
- 5.9.41 INCREASE the current source to approximately 6mA.
- 5.9.42 ENSURE the "JFPT SIGNAL" alarm returns to "norm" on the DTAM.
- 5.9.43 ENSURE address N20:32/8 clears as observed on the laptop.

TRANSFER PRESSURE INTERLOCK INPUT

- 5.9.44 ENSURE a current source is connected to points PXPT+ and PXPT- in the Intrinsic Safe panel intrinsic terminal board and is set to approximately 6mA.
- 5.9.45 ENSURE the laptop computer is connected to the PLC and is "on-line".
- 5.9.46 ENSURE the green light on the Instrument Enclosure and on the Jet Pump motor starter are ON.
- 5.9.47 APPLY software forces to allow the jet pump to start. (Engineering will apply the forces from the laptop computer connected to the PLC.)
- 5.9.48 START the jet pump from the DTAM and OBSERVE that the red lights at the Instrument Enclosure and motor starter come ON and the green lights at both locations turn OFF.
- 5.9.49 DECREASE the current source to approximately 4.8mA or until Timer 4.1 on the ladder logic of the PLC (rung 0 of ladder 5) starts timing.
- 5.9.50 ENSURE the amber light on the Instrument Enclosure turns ON immediately after the timer starts.
- 5.9.51 ENSURE after 30 seconds, the following occurs: (Acknowledge alarms as necessary to view all the alarms.)
 - The jet pump shuts down.
 - "XFR Pressure LOW" (alarm 1) occurs at the DTAM.
 - "JET PUMP SHUTDOWN" (alarm 12) occurs at the DTAM.
- 5.9.52 INCREASE the current source to approximately 6mA to clear the low pressure alarm.

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- 5.9.53 ENSURE the "XFR Pressure" alarm is "norm" on the DTAM.
- 5.9.54 START the pump from the DTAM.
- 5.9.55 INCREASE the current source to approximately 11.5mA or until Timer 4.2 on rung 2 of ladder 5 starts timing as observed on the laptop computer.
- 5.9.56 ENSURE after a 3 second delay, the following occurs: (Acknowledge alarms as necessary to view all the alarms.)
- The jet pump shuts down.
 - "XFR Pressure HIGH" (alarm 2) occurs at the DTAM.
 - "JET PUMP SHUTDOWN" (alarm12) occurs at the DTAM.
- 5.9.57 DECREASE the current source to approximately 6mA.
- 5.9.58 ENSURE the "XFR Pressure" alarm indicates "norm" on the DTAM.

JR-1 VALVE POSITION INPUT (LS-1 AND LS-2)

- 5.9.59 START the pump from the DTAM.
- 5.9.60 REMOVE the metal from the front face of LS-1.
- 5.9.61 ENSURE the following occurs immediately: (Acknowledge alarms as necessary to view all the alarms.)
- The jet pump shuts down.
 - "JR-1 Position NON-PROCESS" (alarm 5) occurs at the DTAM.
 - "JET PUMP SHUTDOWN" (alarm12) occurs at the DTAM.
 - Address N20:32/0 on ladder 5 is actuated as observed on the laptop.
- 5.9.62 REMOVE the metal form the front face of LS-2.
- 5.9.63 ENSURE the "JR-1" still indicates "NON-PROCESS" at the DTAM.
- 5.9.64 ENSURE address N20:32/1 is actuated on ladder 5 as observed on the laptop.
- 5.9.65 REPLACE the metal in front of LS-1 and LS-2.
- 5.9.66 ENSURE the "JR-1" indicates "norm" on the DTAM and addresses N20:32/0 and N20:32/1 are clear on ladder 5 as observed on the laptop.

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COMBUSTIBLE GAS MONITOR INTERLOCK INPUTS

- 5.9.67 START the pump from the DTAM.
- 5.9.68 OPEN the CGM-AX switch at TB4.
- 5.9.69 ENSURE the following occurs immediately: (Acknowledge alarms as necessary to view the alarms.)
- The jet pump shuts down.
 - "JET PUMP SHUTDOWN" (alarm12) occurs at the DTAM.
 - "HIGH LFL ON CGM" (alarm 25) occurs at the DTAM.
- 5.9.70 CLOSE the CGM-AX switch at TB4.
- 5.9.71 ENSURE the "HI LFL CGM" alarm indicates "norm" at the DTAM.
- 5.9.72 START the pump from the DTAM.
- 5.9.73 OPEN the CGM-F switch at TB4.
- 5.9.74 ENSURE the following occurs after a 3-second delay: (Acknowledge alarms as necessary to view the alarms.)
- The jet pump shuts down.
 - "JET PUMP SHUTDOWN" (alarm12) occurs at the DTAM.
 - "CGM TROUBLE" (alarm 31) occurs at the DTAM.
- 5.9.75 CLOSE the CGM-F switch at TB4.
- 5.9.76 ENSURE the "CGM TROUBLE" alarm indicates "norm" at the DTAM.
- 5.9.77 START the pump from the DTAM.
- 5.9.78 OPEN the dilution switch at TB4 in the Instrument Enclosure.
- 5.9.79 ENSURE the following occurs after a 5-minute delay: (Acknowledge alarms as necessary to view the alarms.)
- The jet pump shuts down.
 - "JET PUMP SHUTDOWN" (alarm12) occurs at the DTAM.
 - "DILUTION TANK NO FLOW" (alarm 35) occurs at the DTAM.
- 5.9.80 CLOSE the dilution switch.

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5.9.81 ENSURE the "Dilution tk" alarm indicates "norm" on the DTAM.

MOTOR HIGH TEMPERATURE

5.9.82 START the pump from the DTAM.

5.9.83 INCREASE the temperature on the temperature simulator to approximately 126 degrees F or greater until alarm 58, "MOTOR TEMP HIGH" actuates.

5.9.84 INCREASE the temperature on the temperature simulator to approximately 136 degrees F or greater until the following occurs:

The jet pump shuts down.

"JET PUMP SHUTDOWN" (alarm 12) occurs at the DTAM.

"Motor Temp Hi Shutdown" (alarm 59) occurs at the DTAM.

5.9.85 DECREASE the temperature simulator to approximately 125 degrees F or lower until alarm "PMP HIHI TEMP" indicates "norm" at the DTAM.

5.9.86 ENSURE the "PMP HI TEMP" alarm indicates "norm" at the DTAM.

~~AX-101 LEAK DETECTION CIRCUIT~~

~~5.9.87 _____ START the pump from the DTAM.~~

~~5.9.88 _____ OPEN the AX101 switch in the Instrument Enclosure.~~

~~5.9.89 _____ ENSURE the following occurs after a 3-second delay: (Acknowledge alarms as necessary to view the alarms.)~~

~~_____ The jet pump shuts down.~~

~~_____ "JET PUMP SHUTDOWN" (alarm 12) occurs at the DTAM.~~

~~_____ "AX-101 LEAK DETECTOR LEAK OR TROUBLE" (alarm 33) occurs at the DTAM.~~

~~5.9.90 _____ RECLOSE the AX101 switch at the Instrument Enclosure.~~

~~5.9.91 _____ ENSURE the "AX101 LK/TB" alarm indicates "norm" at the DTAM.~~

*Delete
see exception #4*

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LEAK DETECTION INTERLOCK

- 5.9.92 ENSURE there is a water supply and bucket available to actuate the leak detector probes.
- 5.9.93 START the pump from the DTAM.
- 5.9.94 PLACE the primary leak detector probe in a bucket of water.
- 5.9.95 ENSURE the following occurs after a 3-second delay: (Acknowledge alarms as necessary to view the alarms.)
- The jet pump shuts down.
 - "PUMP PIT LEAK" (alarm 6) occurs at the DTAM.
 - "JET PUMP SHUTDOWN" (alarm 12) occurs at the DTAM.
 - The red light for the "Primary" leak detector is ON at the Instrument Enclosure.
 - Ensure address N20:32/3 in ladder 5 actuates as observed on the laptop.
- 5.9.96 REMOVE the leak detector probe from the bucket and allow the water to drain off.
- 5.9.97 ENSURE the "Pump Pit" leak alarm returns to "norm".
- 5.9.98 ENSURE the red light for the "Primary" leak detector is OFF.
- 5.9.99 ENSURE address N20:32/3 clears as observed on the laptop.
- 5.9.100 START the pump from the DTAM.
- 5.9.101 DISCONNECT one of the "SD" wires going to the primary leak detector probe.
- 5.9.102 ENSURE the following occurs after a 3-second delay: (Acknowledge alarms as necessary to view the alarms.)
- The jet pump shuts down.
 - "PUMP PIT LEAK TROUBLE" (alarm 7) occurs at the DTAM.
 - "JET PUMP SHUTDOWN" (alarm 12) occurs at the DTAM.
 - The red light for the "Primary" leak detector at the Instrument Enclosure is ON.
 - Ensure address N20:32/3 actuates as observed on the laptop.
- 5.9.103 RECONNECT the "SD" wire.

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5.9.104 ENSURE the "Pump Pit" trouble alarm indicates "norm" on the DTAM.

5.9.105 ENSURE the red light for the "Primary" leak detector is OFF.

5.9.106 ENSURE address N20:32/3 clears as observed on the laptop.

5.9.107 START the pump from the DTAM.

5.9.108 PLACE the leak detector 1 probe in a bucket of water.

5.9.109 ENSURE the following occurs after a 3-second delay: (Acknowledge alarms as necessary to view the alarms.)

The jet pump shuts down.

"JET PUMP SHUTDOWN" (alarm 12) occurs at the DTAM.

"LEAK DETECTOR NO 1 LEAK DETECTED" (alarm 18) occurs at the DTAM.

The red light for "Leak Detector 1" at the Instrument Enclosure is ON.

Ensure address N20:32/4 actuates in ladder 5 as observed on the laptop.

5.9.110 REMOVE the leak detector probe from the bucket and allow the water to drain off.

5.9.111 ENSURE the "Leak 1" alarm returns to "norm".

5.9.112 ENSURE the red light for "Leak Detector 1" is OFF.

5.9.113 ENSURE address N20:32/4 clears as observed on the laptop.

5.9.114 START the pump from the DTAM.

5.9.115 DISCONNECT one of the "SD" wires going to the leak detector 1 probe.

5.9.116 ENSURE the following occurs after a 3-second delay: (Acknowledge alarms as necessary to view the alarms.)

The jet pump shuts down.

"JET PUMP SHUTDOWN" (alarm 12) occurs at the DTAM.

"LEAK DETECTOR NO 1 TROUBLE" (alarm 19) occurs at the DTAM.

The red light for "Leak Detector 1" at the Instrument Enclosure is ON.

Ensure address N20:32/4 actuates as observed by the laptop.

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- 5.9.117 RECONNECT the "SD" wire.
- 5.9.118 ENSURE the "Leak 1 ck" alarm indicates "norm" on the DTAM.
- 5.9.119 ENSURE the red light for "Leak Detector 1" is OFF.
- 5.9.120 ENSURE address N20:32/4 clears as observed on the laptop.
- 5.9.121 RECORD the hourmeter reading. 16
- 5.9.122 VERIFY by comparing the readings in steps 5.9.6 and 5.9.108 that the hourmeter is recording time.
- 5.9.123 TURN OFF breakers 3, 5 and 6 in the distribution panel.
- 5.9.124 DISCONNECT the current sources from the PXPT, RFPT and JFPT termination points.
- 5.9.125 DISCONNECT the test switches from the CGM, FGM, Dilution and AX101 termination points.
- 5.9.126 DISCONNECT the proximity switches from the Intrinsic Safe panel.
- 5.9.127 REMOVE the software forces and disconnect the laptop computer from the PLC.
- 5.9.128 DISCONNECT the leak detector probes from the Instrument Enclosure.
- 5.9.129 TURN ON breakers 3, 5 and 6 at the distribution panel.
- 5.9.130 Engineer to ENSURE section 5.9 is completed and sign below.

BR Johns 5/1/00
Engineer Signature Date

- 5.9.131 Quality Assurance Inspector to VERIFY that section 5.9 is completed and sign below.

[Signature] 5-1-00
Quality Assurance Inspector Signature Date

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5.10 HEATERS, AIR CONDITIONER AND LIGHTS

- 5.10.1 TURN the heater ON in the air compressor cabinet. Set the thermostat high enough to allow the unit to operate.
- 5.10.2 RESET the thermostat to approximately 40 degrees F to allow the heat to turn OFF. Then unplug the heater.
- 5.10.3 TURN the fan thermostat switch to allow the fan in the air compressor cabinet to run.
- 5.10.4 RESET the fan switch to approximately 90 degrees F to allow the fan to turn OFF.
- 5.10.5 TURN the heater ON in the WFIE cabinet. Set the thermostat high enough to allow the unit to operate.
- 5.10.6 RESET the thermostat to approximately 40 degrees F to allow the heat to turn OFF. Then unplug the heater.
- 5.10.7 TURN the heater ON in the Water cabinet. Set the thermostat high enough to allow the unit to operate.
- 5.10.8 RESET the thermostat to near the "LO" setting to allow the heat to turn OFF. Then unplug the heater.
- 5.10.9 TURN the heater ON in the Instrument Enclosure. Set the thermostat high enough to allow the unit to operate.
- 5.10.10 RESET the thermostat to approximately 40 degrees F to allow the heat to turn OFF. Then unplug the heater.
- 5.10.11 N/A TURN the heater ON in the Locker. Set the thermostat high enough to allow the unit to operate.
- 5.10.12 N/A RESET the thermostat to approximately 40 degrees F to allow the heat to turn OFF. Then unplug the heater.
- 5.10.13 TURN ON the air conditioner in the Instrument Enclosure. If necessary, remove the front grill on the unit and adjust the temperature setting to get the unit to operate.
- 5.10.14 RESET the temperature setting on the air conditioner to between 90 to 95 degrees F. Remove the grill and filter on the front of the air conditioner for access to the adjustment. Then unplug the air conditioner.

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5.10.15 ENSURE the light in the WFIE cabinet operates.

5.10.16 ENSURE the light in the Instrument Enclosure operates.

5.10.17 Engineer to ENSURE that section 5.10 is completed and sign below.

BR Johns 4/27/00
Engineer Signature Date

5.10.18 Quality Assurance Inspector to VERIFY that section 5.10 is completed and sign below.

D. [Signature] 4-27-00
Quality Assurance Inspector Signature Date

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5.11 SKID PREPARATION FOR SHIPPING

5.11.1. Ensure the following PIC skid circuit disconnects, breakers and fuses are OPEN or OFF.

SALW-DS-6002Q
 SALW-DS-6003Q
 SALW-DS-6004Q
 SALW-DS-6005Q

The breakers below are located in the distribution panel SALW-DP-6001Q:

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

5.11.2. Disconnect the power plug from the 480vac power source.

5.11.3. Bleed the air pressure off the air system by OPENING the following valves:

SALW-V-6043Q
 SALW-V-6046Q
 SALW-V-6047Q
 SALW-V-6037Q

NOTE: After the air system has bled down, proceed with the following valve positioning.

5.11.4. Ensure the following PIC skid valves in the WFIE cabinet are OPEN.

SALW-V-6035Q (EQUALIZING)
 SALW-V-6036Q (EQUALIZING)

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ACCEPTANCE TEST PROCEDURE

This page may be reproduced as necessary

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ACCEPTANCE TEST PROCEDURE LOG		
Name	Date	Comment
BR Johns	4/27/00	Started section 5 of ATP. AT start of section 5.6 noted fault on PLC Cleared fault with laptop.
—	—	Steps 5.8.50 and 5.8.51 should be reversed.
BR Johns	4/27/00	Step 5.8.98. record temp simulator calcs. Completed section 5.8 except for 5.8.52 to 5.8.55. BAJ
—	—	
BR Johns	4/27/00	Step 5.10.11 and 5.10.12, locker not on skid. Removed for CGM equipment.
—	—	Completed section 5.10. BAJ 4/27/00
BR Johns	5/1/00	Step 5.9.83 Alarm clears when jet pump shuts down. Same for step 5.9.81. BRJ
—	—	Had to add ack. registers for alarms 58 and 59. in DTA nt program.
—	—	Remove laptop before turning off breakers at step 5.9.123 so to verify force removal. BRJ

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ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 4.6.4	ATP Exception Log Number 1
Description of Exception: Three valves missing from list of valves to be closed.	
Resolution of Exception: Add valves "SALW-V-6054Q" and "SALW-V-6055Q" to the water cabinet list and "SALW-V-6056Q" to the WFIE cabinet list. These valves are for the CGM (installed under ECN 624860) and the remote drip tube control under ECN 659157.	
Date of Resolution:	4/17/00
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	J. VERDERBEN John Verderben
Design Authority:	[Signature]
RESOLUTION COMPLETED: (date)	5/1/00
Quality Assurance:	[Signature]
Cognizant Engineer:	BR Johns

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ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.7.5	ATP Exception Log Number 2
Description of Exception: Need to verify water flow from remote water supply port.	
Resolution of Exception: After step 5.7.5 add the flow following check: Open valve SALW-V-6056 Q very slightly to verify water flow from the remote water supply port. Close the valve when water flow is observed.	
Date of Resolution:	4/17/00
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	J. VERDERSEN John Uell
Design Authority:	[Signature]
RESOLUTION COMPLETED: (date)	4/27/00
Quality Assurance:	[Signature]
Cognizant Engineer:	BR Johns

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ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number:	5.9.4	ATP Exception Log Number	3
Description of Exception:	Correct temperature setpoints to correspond with step 5.8.99.		
Resolution of Exception:	Reword step 5.9.4 as follows: "Ensure the temperature setpoints for the motor-bearing temperature high-alarm is set to 125 degrees F and the high-high-alarm is set to 135 degrees F.		
Date of Resolution:	4/17/00		
Cognizant Engineer signature:	BR Johns		
Quality Assurance signature:	J. VERDEGEN [Signature]		
Design Authority:	[Signature]		
RESOLUTION COMPLETED: (date)	5/1/00		
Quality Assurance:	[Signature]		
Cognizant Engineer:	BR Johns		

WORK ORDER

QC
INSPECTION RECORD

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ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number:	5.9.87-5.9.91	ATP Exception Log Number	4
Description of Exception:	The AX-101 leak detection circuit check not applicable.		
Resolution of Exception:	Delete steps 5.9.82 through 5.9.91. The AX-101 pit leak detector probes will be connected to the primary leak detector relays rather than using the farm leak detector system. Steps 5.9.92 through 5.9.106 check the primary leak detection circuit.		
Date of Resolution:	4/17/00		
Cognizant Engineer signature:	BR Johns		
Quality Assurance signature:	J. VERDERSEN John Valle		
Design Authority:	[Signature]		
RESOLUTION COMPLETED: (date)	5/1/00		
Quality Assurance:	[Signature]		
Cognizant Engineer:	BR Johns		

QC
INSPECTION RECORD

WORK ORDER 2H0004326F

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~~RPP-5801~~
~~REVISION 1~~

ACCEPTANCE TEST PROCEDURE ACCEPTANCE RECORD

This Acceptance 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:

<u>BR Johns</u> Cognizant Engineer (Signature)	<u>Bruce R Johns</u> (Print Name)	<u>5/1/00</u> Date
<u>[Signature]</u> Quality Assurance (Signature)	<u>Ron Cowgill</u> (Print Name)	<u>5-1-00</u> Date

QC INSPECTION RECORD

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APPENDIX
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UNFIRED PRESSURE VESSEL - REPORT OF INSPECTION (Form NB-7)
THE HARTFORD STEAM BOILER INSPECTION AND INSURANCE COMPANY, HARTFORD, CT

TPI WO NO: 2W-00-New (2 Hrs)

1	Date Inspected 3/28/2000	Cert Exp 01/2002	Cert. Posted <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Owner No TK-6002Q	Jurisdiction No TPI-WT-148	National Board / Other NB-65947L
2	Owner: DEPARTMENT OF ENERGY (RL)		Owner Address: HANFORD, RICHLAND, WA 99352		Kind of Inspection <input type="checkbox"/> Int'l <input checked="" type="checkbox"/> Ext.	Certificate Inspection <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
3	User Name: (CH2M) CH2M HANFORD, INC			User Location: 200-W TANK FARMS		Specific Location: SALT WELL SKID -Q
4	Type <input checked="" type="checkbox"/> AIR TANK <input type="checkbox"/> WATER TANK <input type="checkbox"/> Other			Year Built 1999	Manufacture: BRUNNER ENG	
5	Use: Storage <input type="checkbox"/> Receiver <input checked="" type="checkbox"/> Heat <input type="checkbox"/> Process <input type="checkbox"/> Exchange <input type="checkbox"/> Other <input type="checkbox"/>			Size: 14" X 20"	Inspection opening size: 2" PLUGS	
	5a. Pressure Gauge Tested <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			5b. Hydro Test: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
6	Pressure Allowed (MAWP) This Inspection: 200 PSIG		Safety-Relief Valve: Stamped PSI: 125		Valve: SALW-PRV-6004Q 1/2in, 296 CFM	How Tested: Bench Test
7	Certificate may be issued? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (If No, explain fully under conditions)					
	7a. INSPECTION STATUS: <input checked="" type="checkbox"/> Passed <input type="checkbox"/> Failed <input type="checkbox"/> Passed with Discrepancy <input type="checkbox"/> Reinspect					
	7b. VESSEL STATUS: <input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input checked="" type="checkbox"/> New <input type="checkbox"/> Exempt <input type="checkbox"/> Removed					
8	CONDITIONS: Small Horizontal Air Accumulator for Salt Well Support Skid Q					

Per Facility Work Package: 2H-00-4326/F Lock & Tag: NO Confined Space: NO

Inspected at 277-W Fabrication Shop during final assembly. Scheduled to be located at Tank Farms

8a: Internal Inspection not done or required this inspection..

Original Thickness: Shell = 0.106 Heads = 0.094

8b: External Inspection shows no dents, damage, leakage, corrosion or excess vibration.

Pressure guage: Installed & Proper Bottom drain: Installed & Suitable

Safety-Relief Valve Seal was intact with no evidence of damage or tampering

Valve was test bench tested per work package instruction and ORP-6-DCD-350 prior to installation.

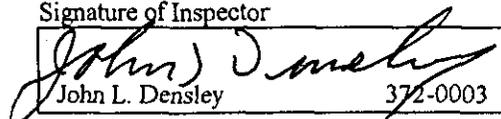
9	REQUIREMENTS/RECOMMENDATIONS: The following items are to be corrected:
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1. None this inspection

10	Name of Facility Contact to whom requirements were explained: Bruce Johns Tel: 373-3429 S7-24 Copies to: David Saueressig Tel: 373-0183 S7-20, Mike Koch Tel: 373-2699 S7-24
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I hereby Certify this is a true report of my inspection

Signature of Inspector

 John L. Densley	372-0003	Commission No NB- 8032W	Employed By: The Hartford Steam Boiler Inspection and Insurance Co.
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RPP-5802, REV 0
APPENDIX

UNFIRED PRESSURE VESSEL - REPORT OF INSPECTION (Form NB-7)
THE HARTFORD STEAM BOILER INSPECTION AND INSURANCE COMPANY, HARTFORD, CT Page A56 of A56

TPI WO NO: 2W-99- New (2 Hrs)

1	Date Inspected 3/28/2000	Cert Exp 02/2002	Cert. Posted <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Owner No TK-6001Q	Jurisdiction No TPI-WT-149	National Board / Other NB-109141
2	Owner: DEPARTMENT OF ENERGY (RL)		Owner Address: HANFORD, RICHLAND, WA 99352		Kind of Inspection Certificate Inspection <input type="checkbox"/> Int'l <input checked="" type="checkbox"/> Ext. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
3	User Name: (CH2M) CH2M HILL HANFORD, INC.			User Location: 200-W TANK FARMS		Specific Location: SALT WELL SKID-Q
4	Type <input type="checkbox"/> AIR TANK <input checked="" type="checkbox"/> WATER TANK <input type="checkbox"/> Other			Year Built 1998	Manufacture: STOYSTOWN	
5	Use: Storage Heat <input checked="" type="checkbox"/> Receiver <input type="checkbox"/> Process <input type="checkbox"/> Exchange <input type="checkbox"/> Other			Size: 20" X 60"	Inspection opening size: 2in PLUGS	
	Pressure Gauge Tested <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			Hydro Test: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
6	Pressure Allowed (MAWP) This Inspection: 125 PSIG		Safety-Relief Valve: Stamped PSI: 60		Valve: SALW-PRV-6005Q How Tested: 3/4in, 158 CFM Bench Test	
7	Certificate may be issued? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (If No, explain fully under conditions)					
	7a. INSPECTION STATUS: <input checked="" type="checkbox"/> Passed <input type="checkbox"/> Failed <input type="checkbox"/> Passed with Discrepancy <input type="checkbox"/> Reinspect					
	7b. VESSEL STATUS: <input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input checked="" type="checkbox"/> New <input type="checkbox"/> Exempt <input type="checkbox"/> Removed					
8	CONDITIONS: Vertical Water Accumulator for Salt Well Support Skid Q.					

Per Facility Work Package: 2H-00-4326/F Lock & Tag: NA Confined Space: NO

Inspected at 277-W Fabrication Shop during final assembly. Scheduled to be located at Tank Farms

8a: Internal Inspection not done or required this inspection. Vessel is galvanized and not subject to internal corrosion.
Original Thickness: Shell = 0.097 Heads = 0.094

8b: External Inspection shows no dents, damage, leakage, corrosion or excess vibrations.
Pressure gauge: Installed & Proper Bottom drain: Installed & Suitable
Safety-Relief Valve Seals were intact with no evidence of damage or tampering
Valve was bench tested per work package instruction and ORP-6-PCD-350 prior to installation.

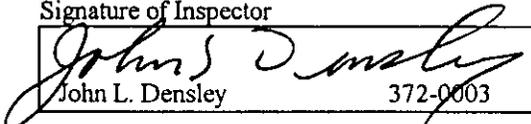
9	REQUIREMENTS/RECOMMENDATIONS: The following items are to be corrected:
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1. None this inspection

10	Name of Facility Contact to whom requirements were explained: Bruce Johns Tel: 373-3429 S7-24 Copies to: David Saueressig Tel: 373-0183 S7-20, Mike Koch Tel: 373-2699 S7-24
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I hereby Certify this is a true report of my inspection

Signature of Inspector

 John L. Densley	372-0003	Commission No NB- 8032W	Employed By: The Hartford Steam Boiler Inspection and Insurance Co.
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