

24.2
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ENGINEERING DATA TRANSMITTAL

Page 1 of 1
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1	RPP-5490	N/A	0	TEST REPORT FOR ACCEPTANCE	SQ	1	1	1
				TEST PROCEDURE FOR PUMPING				
				INSTRUMENTATION AND				
				CONTROL SKID "N"				

16. KEY					
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(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature
1	1	Design Authority	W. F. ZUROFF	1/26/00	57-24				
1	1	Design Agent	B. R. JOHNS	1/26/00	57-24				
1	1	Cog. Eng.	B. R. JOHNS	1/26/00	57-24				
1	1	Cog. Mgr.	M. R. KOCH	1/26/00					
1	1	QA	J. J. VOLKMAN	2/2/00	57-34				
1	1	Safety	F. A. ZAK	1/31/00					
		Env.	N/A						

18. <i>B.R. Johns</i> B. R. JOHNS Signature of EDT Originator Date: 1/26/00		19. <i>M.R. Koch</i> M. R. KOCH Authorized Representative for Receiving Organization Date: 1/26/00		20. <i>W.F. Zuroff</i> W. F. ZUROFF Design Authority/Cognizant Manager Date: 1/26/00		21. DOE APPROVAL (if required) Ctrl No. N/A <input type="radio"/> Approved <input type="radio"/> Approved w/comments <input type="radio"/> Disapproved w/comments	
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TEST REPORT FOR ACCEPTANCE TEST PROCEDURE FOR PUMPING INSTRUMENTATION AND CONTROL SKID "N"

M. R. KOCH

CH2MHILL HANFORD GROUP, INC.

Richland, WA 99352

U.S. Department of Energy Contract DE-AC06-96RL13200

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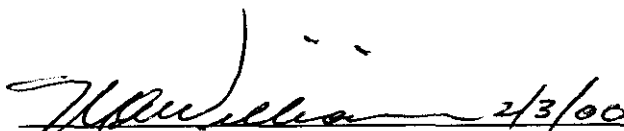
Key Words: PICS, SALT WELL, SKID, INTERIM STABILIZATION, TESTING

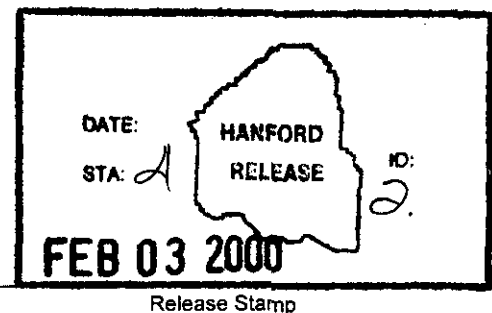
Abstract:

This is a Test Report for Acceptance Test Procedure (ATP) RPP-5489. This test report provides the results of the inspection and testing of the new Pumping Instrumentation and Control (PIC) skid designed as "N". The ATP was successfully completed. A copy of the completed ATP is in the Appendix of this document.

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Release Approval Date 2/3/00



Approved For Public Release

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

1.0 INTRODUCTION

This test report provides the results from the performance of Acceptance Test Procedure (ATP) RPP-5489, for Pumping Instrumentation and Control (PIC) skid "N". The ATP verifies the proper construction of the PIC skid "N" by Site Fabrication Services along with proper programming of the Programmable Logic Controller (PLC) by engineering. New PIC skid "N" will be used for the pumping of tank U-109. 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 Control 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. Exception 1 is an editorial change that corrected two alarm numbers and is only recorded on the exception log, but not on an exception record sheet. Exceptions 2 and 3 are recorded on exception records and were reviewed, resolved and signed off as closed for this ATP.

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 relief-valves 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-5489, REVISION 0, *ACCEPTANCE TEST PROCEURE FOR PUMPING AND INSTRUMENTATION CONTROL SKIDS*, Lockheed Martin Hanford Corporation, Richland, Washington.

2H9904137, Site Fabrication Services work package.

7.0 APPENDIX

Copy of ATP, RPP-5490, Revision 0 (Partial, includes only the ATP pages where data was recorded.

NEC Inspection Report

Pressure Vessel Inspection Report

4.0 PREREQUISITES


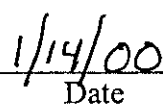
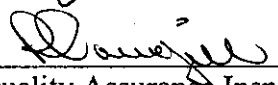
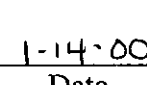
4.1 DRAWING VERIFICATION

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:


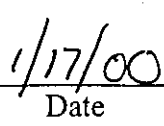
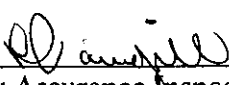
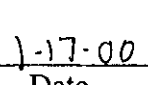
- 4.1.1 Wire terminations and wiring labels on drawings H-14-103784, sheets 7 through 12 and H-14-103787, sheet 5.
- 4.1.2 Panel board arrangement on drawing H-14-103790.
- 4.1.3 Flow diagrams on drawings H-14-103784, sheet 5 and H-14-103789.

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

	
Engineer Signature	Date
	
Quality Assurance Inspector Signature	Date

4.2 REDLINE INCORPORATION

- 4.2.1 ~~BR~~ Ensure the relines identified on the construction drawings in the fabrication work package are incorporated on the final drawings for skid "N" 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.

	
Engineer Signature	Date
	
Quality Assurance Inspector Signature	Date

QC INSPECTION RECORD

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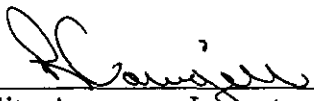
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4.3 PRESSURE VESSEL INSPECTION

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 section 5.6.)

Report #'s: TANK TPI-WT-144 & TPI-WT-145

 1-13-00
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.

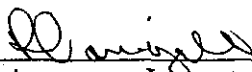
 1/17/00
Engineer Signature Date

4.4 NATIONAL ELECTRICAL CODE (NEC) INSPECTION

- 4.3.1 An NEC inspection shall be performed to verify compliance to NFPA 70, latest version.
- 4.3.2 Areas in particular to be inspected are the 480vac and 120vac wiring and grounding.
- 4.3.3 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 and the NEC report received. (This needs to be completed prior to the section 5.0 functional checks.) Report # 8153 sticker

8168 Report Bly

 1-17-00
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.

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

Calibration No. 817-45-08-068 Exp. Date 3-22-00 QA RL

Calibration No. _____ Exp. Date _____ QA _____

Calibration No. _____ Exp. Date _____ QA _____

4.4.2 Transmation current (milliamp) simulator or equivalent

Calibration No. ~~812-35-40-006~~ Exp. Date ~~10/25/00~~ QA ~~RL~~ RL 1/17/00

Calibration No. 817-13-20-031 Exp. Date 3/31/00 QA RL

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

Calibration No. 817-35-40-053 Exp. Date 2/12/00 QA RL

Calibration No. _____ Exp. Date _____ QA _____

4.4.3 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. 812-35-40-006 Exp. Date 10/25/00 QA RL

Calibration No. _____ Exp. Date _____ QA _____

Calibration No. _____ Exp. Date _____ QA _____

4.4.4 Megaohm meter, at least 500vac range.

Calibration No. 817-45-45-012 Exp. Date 9-17-00 QA RL

4.4.5 ☒ 480vac, 3 phase, 30-ampere power supply for PIC skid.

4.4.6 ☒ Selector switches (3 each) with at least one NO and one NC contact.

4.4.7 ☒ Proximity switches (for simulating LS-1 and LS-2), 2 each.

4.4.8 ☒ Leak detector probes (2 each) not required to be green tagged.

4.4.9 ☒ Heat gun to warm thermocouple probes.

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- 4.4.10 ☒ A thermocouple simulator for testing the thermocouples for the pump and jumper..
- 4.4.11 ☒ Buckets or pans for water for leak detector test and catching water from DIP tubes and relief valves.
- 4.4.12 ☒ Water supply and hose to fill water tank.

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4.6 PRESTART CONDITIONS

- 4.5.1 BEG 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.
- 4.5.2 BEG Ensure the PIC skid is grounded in preparation for ATP testing.
- 4.5.3 BEG Ensure the following PIC skid valves in the WFIE cabinet are OPEN prior to starting this ATP.

BEG SALW-V-6035N (EQUALIZING) ✓
BEG SALW-V-6036N (EQUALIZING) ✓

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

Air Compressor Cabinet

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

Water Cabinet

✓ SALW-V-6027N ✓
~~SALW-V-6028N~~ Delete
✓ SALW-V-6029N ✓ BEG
✓ SALW-V-6030N ✓
✓ SALW-V-6031N ✓
✓ SALW-V-6032N ✓
✓ SALW-V-6037N ✓
✓ SALW-V-6052N ✓

WFIE Cabinet

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

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

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

BAG SALW-DS-6002N
BAG SALW-DS-6004N

BAG SALW-DS-6003N
BAG SALW-DS-6005N

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

BAG Breaker "MAIN"
✓ Breaker 1
✓ Breaker 3
✓ Breaker 5
✓ Breaker 7
✓ Breaker 9
✓ Breaker 11
✓ Breaker 13

✓ Breaker 2
✓ Breaker 4
✓ Breaker 6
✓ Breaker 8
✓ Breaker 10
✓ Breaker 12
✓ Breaker 14

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

✓ FA
✓ FD

✓ FB
✓ LD

✓ FC
✓ HT

- 4.5.6 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.

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

- 4.5.8 BAG 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-6002N). Check all three phases and ground.

✓ (RED) ✓ (YELLOW) ✓ (BLUE) ✓ (GND)

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

✓ (RED) ✓ (YELLOW OR BLUE) ✓ (GND)

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

✓ (RED) ✓ (YELLOW) ✓ (BLUE) ✓ (GND)

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

✓ (RED) ✓ (YELLOW) ✓ (BLUE) ✓ (GND)

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

✓ Continuity through the transformer primary.

QC INSPECTION RECORD

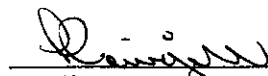
5.1.6 Line side of the main breaker in panel board (SALW-DP-6001N) through the secondary of transformer (SALW-XFMR-6001N). Check between the two phases and between each phase and neutral going to the transformer secondary.

- ☒ 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-6001N) 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. *BEG 1/14/00*



Quality Assurance Inspector Signature

1-14-00

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-6002N 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-6002N) to ground and phase to phase. (Ensure switches SALW-DS-6003N, SALW-DS-6004N and SALW-DS-6005N 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-6003N) 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 ☒ Ensure all the heaters, lights and air conditioner are disconnected or unplugged from the 120vac circuits. *Need to disconnect Instr Encl. light at TB 13. BRJ*

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5.2.10 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 ∞
CKT #3 to GND ∞
CKT #5 to GND ∞
CKT #7 to GND ∞
CKT #9 to GND ∞
CKT #11 to GND ∞
CKT #13 to GND ∞

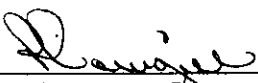
CKT #2 to GND ∞
CKT #4 to GND ∞
CKT #6 to GND ∞
CKT #8 to GND ∞
CKT #10 to GND ∞
CKT #12 to GND ∞
CKT #14 to GND ∞

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

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

5.2.13 ☒ Reconnect any wires disconnected in step 5.2.9 above. (Unplugged items do not have to be plugged back in.) CKT 5 at TR 13 BA

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


Quality Assurance Inspector Signature

1-14-00
Date

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

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

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

5.3.4 BAJ 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 BAJ Turn ON the power source to the skid.

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

492 vac, A-B 495 A-C 497 B-C

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

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

495 vac

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

492 vac, A-B 495 vac, A-C 496 B-C

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

492 vac, A-B 495 vac, A-C 496 B-C

QC INSPECTION RECORD

- 5.3.11 ~~BA~~ Remove the dead front on the panel board (SALW-DP-6001N) for access to the main breaker for a voltage measurement.
- 5.3.12 ~~BA~~ Close the transformer disconnect switch (SALW-DS-6003N).
- 5.3.13 ~~BA~~ Check for 240vac +/-20vac on the line side of the main breaker. Record the voltage reading.
248 vac
- 5.3.14 ~~BA~~ Open the transformer disconnect switch (SALW-DS-6003N).
- 5.3.15 ~~BA~~ Replace the dead front on the panel board (SALW-DP-6001N).
- 5.3.16 ~~BA~~ Close the transformer disconnect switch (SALW-DS-6003N).
- 5.3.17 ~~BA~~ Close the 100 ampere main breaker in the panel board (SALW-DP-6001N).
- 5.3.18 ~~BA~~ 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	✓
2	FGM HT BOX	0	124	✓
3	TB10, INSTR ENCL	0	124	✓
4	RCPT, AIR COMPR	0	124	✓
5	TB13, INSTR ENCL	0	124	✓
6	TB, INTRINSIC PNL	0	124	✓
7	RCPT, WFIE CAB.	0	124	✓
8	RCPT, WATER CAB.	0	124	✓
9	OUTSIDE RCPT	0	124	✓
10	FGM HT BOX	0	124	✓
11	FGM JUNCTION BOX	0	124	✓
12	RCPT, INSTR ENCL	0	124	✓
13	FGM JUNCTION BOX	0	124	✓
14	FGM JUNCTION BOX	0	124	✓

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- 5.3.19 BA Ensure fuses FA, FB, FC, FD, LD, and HT are installed in the fuseholders in the Instrument Enclosure.
- 5.3.20 BA Close breakers 3 and 5 in the distribution panel (SALW-DP-6001N).
- 5.3.21 BA Ensure 120vac +/-10vac on the line side at the following fuseholder load side points.

FA 124 vac; FB 124 vac; FC 124 vac;
FD 124 vac; LD 124 vac; HT 124 vac.

- 5.3.22 BA Ensure 24vdc +/-2vdc at each 24volt power supply.

First power supply 23.8 ; Second power supply 23.8.

- 5.3.23 BA Close breaker 6 in the distribution panel (SALW-DP-6001N).

- 5.3.24 BA Ensure 32vdc +/-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 BA Open breakers 3, 5 and 6 in the panel board (SALW-DP-6001N).

- 5.3.26 BA Open the 100 ampere main breaker in the panel board (SALW-DP-6001N).

- 5.3.27 BA Open the transformer disconnect switch (SALW-DS-6003N).

- 5.3.28 BA Open the main disconnect switch (SALW-DS-6002N).

- 5.3.29 Voltage checks completed and readings within tolerance.

[Signature] 1-14-00
Quality Assurance Inspector Signature Date

QC INSPECTION RECORD

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-6004N	AIR COMPR. CABINET	✓
SALW-WFT-6002N	WFIE CABINET	✓
SALW-LT-6003N	WATER CABINET	✓
SALW-SGT-6001N	WFIE CABINET	✓
SALW-CONV-6001N	WFIE CABINET	✓
SALW-FQIT-6001N	INSTRUMENT ENCL.	✓
SALW-PI-6006N	AIR COMPR. CABINET	✓
SALW-PI-6007N	AIR COMPR. CABINET	✓
SALW-PI-6008N	WATER CABINET	✓
SALW-PI-6001N	WFIE CABINET	✓
SALW-PI-6002N	WFIE CABINET	✓
SALW-PI-6003N	WFIE CABINET	✓
SALW-PI-6004N	WFIE CABINET	✓
SALW-PI-6005N	WFIE CABINET	✓
SALW-PI-6011N	INSTRUMENT ENCL.	✓
SALW-PI-6012N	INSTRUMENT ENCL.	✓

Calibrations completed. Work package nos. 2W-99-1776 to 1781

BR Johns
Engineer Signature

1/25/00
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 document RPP-5492.

PLC/DTAM programmed.

BR Johns
Engineer Signature

1/14/00
Date

QC INSPECTION RECORD

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

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

☒ SALW-DS-6002N
☒ SALW-DS-6003N
☒ SALW-DS-6004N
☒ SALW-DS-6005N

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

<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 BRY ACKNOWLEDGE any initial skid alarms.

5.6.5 BRY OPEN valves SALW-V-6034N, SALW-V-6050N, and SALW-V-6051N in the Air compressor cabinet.

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

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

5.6.8 BRY 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 BA BLEED off air by slowly opening valve SALW-V-6043N until the compressor restarts and note the restart pressure as read on gauge SALW-PI-6006N. CLOSE valve SALW-V-6043N when the compressor restarts. RECORD the restart pressure reading: 61 psig.
- 5.6.10 BA 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-6025N located in the air compressor cabinet.
- 5.6.14 ✓ SLOWLY OPEN valve SALW-V-6027N located near the water tank.
- 5.6.15 ✓ SLOWLY OPEN valve SALW-V-6052N located near the water tank
- 5.6.16 BA ADJUST pressure regulator valve SALW-PCV-6006N to 30psi (+/- 3psi) as indicated by pressure gauge SALW-PI-6008N on the outside of the water cabinet. 29 PSIG
- 5.6.17 BA ACTUATE the lever on relief valve SALW-PRV-6004N 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 BA ENSURE the relief valve SALW-PRV-6004N seats properly when the lever is released.
- 5.6.19 BA ACTUATE the lever on relief valve SALW-PRV-6005N 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 BA ENSURE the relief valve SALW-PRV-6005N 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 BA SLOWLY OPEN valves SALW-V-6051N located inside the air compressor cabinet and SALW-V-6026N located on the outside of the air compressor cabinet.
- 5.6.23 BA SLOWLY OPEN valve SALW-V-6001N located in the WFIE cabinet. (NOTE: SALW-PRV-6002N may open if pressure through SALW-PCV-6001N is too high.)

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- 5.6.24 ~~BAJ~~ ADJUST pressure control valve SALW-PCV-6001N in the WFIE cabinet to 20psi (+/-2.5psi) as indicated by the pressure gauge located on the face of the valve.
- 5.6.25 ~~BAJ~~ SLOWLY OPEN valve SALW-V-6004N located in the WFIE cabinet.
- 5.6.26 ~~BAJ~~ SLOWLY OPEN valve SALW-V-6003N located in the WFIE cabinet.
- 5.6.27 ~~BAJ~~ SLOWLY OPEN valve SALW-V-6005N located in the WFIE cabinet.
- 5.6.28 ~~BAJ~~ SLOWLY OPEN valve SALW-V-6006N located in the WFIE cabinet.
- 5.6.29 ~~BAJ~~ SLOWLY OPEN valve SALW-V-6007N located in the WFIE cabinet.
- 5.6.30 ~~BAJ~~ SLOWLY OPEN valve SALW-V-6020N located in the WFIE cabinet.
- 5.6.31 ~~BAJ~~ SLOWLY OPEN valve SALW-V-6021N located in the WFIE cabinet.
- 5.6.32 ~~BAJ~~ SLOWLY OPEN valve SALW-V-6019N located in the WFIE cabinet.
- 5.6.33 ADJUST the air flow through the diptubes by performing the following steps.
- 5.6.34 ~~BAJ~~ ADJUST flow to dip tube to 1.5 CFH (+/-0.5 CFH) as indicated by SALW-FIV-6002N.
- 5.6.35 ~~BAJ~~ ADJUST flow to dip tube to 1.5 CFH (+/-0.5 CFH) as indicated by SALW-FIV-6003N.
- 5.6.36 ~~BAJ~~ ADJUST flow to dip tube to 1.5 CFH (+/-0.5 CFH) as indicated by SALW-FIV-6004N.
- 5.6.37 ~~BAJ~~ ENSURE air flow from pressure regulator SALW-PCV-6007N by slowly opening valve SALW-V-6044N in the air compressor cabinet and then reclose the valve.
- 5.6.38 ~~BAJ~~ ENSURE air flow from pressure regulator SALW-PCV-6008N by slowly opening valve SALW-V-6048N in the air compressor cabinet and then reclose the valve.
- 5.6.39 ~~BAJ~~ ENSURE air flow from the SALW-V-6042N port at the air compressor cabinet by slowly opening valve SALW-V-6046N in the air compressor cabinet and then reclose the valve.

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²⁰⁴
5.6.40 ENSURE air flow from the drain line by slowly opening valves SALW-V-6047N and SALW-V-6046N 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 1/17/00
Engineer Signature Date

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

[Signature] 1-17-00
Quality Assurance Inspector Signature Date

QC INSPECTION RECORD

5.7 SKID WATER DRIP SYSTEM

5.7.1 ~~BAY~~ PROVIDE a container to capture water expelled from the dip tubes and the pressure relief valve SALW-PRV-6001N 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:

~~BAY~~ SALW-V-6016N

~~BAY~~ SALW-V-6013N

~~BAY~~ SALW-V-6008N

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

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

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

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

5.7.6 VALVE OUT the dip tube drip system by SLOWLY CLOSING or ENSURING CLOSED the following valves located in the WFIE cabinet.

✓ SALW-V-6015N

✓ SALW-V-6014N

✓ SALW-V-6008N

✓ SALW-V-6013N

✓ SALW-V-6019N

✓ SALW-V-6021N

✓ SALW-V-6020N

✓ SALW-V-6007N

✓ SALW-V-6006N

✓ SALW-V-6005N

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5.7.7 Engineer to ENSURE section 5.7 is completed and sign below.

B. Johns 1/17/00
Engineer Signature Date

5.7.8 Quality Assurance Inspector to VERIFY that section 5.7 is complete and sign below.

D. [Signature] 1-17-00
Quality Assurance Inspector Signature Date

QC INSPECTION RECORD

5.8 INPUT SIGNALS TO THE PLC AND DTAM

- 5.8.1 BA ENSURE the two leak detector probes are connected to the skid at the Instrument Enclosure.
- 5.8.2 BA ENSURE a normally closed switch is connected to "FGM" and "CKT5H-A" on terminal board TB4 in the Instrument Enclosure.
- 5.8.3 BA ENSURE a normally closed switch is connected to "DIL-F" and "CKT5H-A" on terminal board TB4 in the Instrument Enclosure.
- 5.8.4 BA ENSURE a normally closed switch is connected in parallel to the "RECIRC-1" and "RECIRC-2" wires on the Intrinsic safe terminal block in the Intrinsic Safe panel.
- 5.8.5 BA 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.
- 5.8.6 BA ENSURE the DIP switches for the Pepperl-Fuch module in the Intrinsic Safe panel are set to the correct positions per H-14-103784, sheet 7.

WATER TANK LEVEL TRANSMITTER

- 5.8.7 BA ENSURE valve SALW-V-6029N located in the water tank cabinet is CLOSED.
- 5.8.8 BA ENSURE valve SALW-V-6031N located in the water cabinet is CLOSED.
- 5.8.9 BA 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-6003N.
- 5.8.10 BA ENSURE the LOW PRESSURE vent/test port of level transmitter SALW-LT-6003N is OPEN to atmosphere.
- 5.8.11 BA ADJUST the test manometer connected to SALW-LT-6003N to a pressure of 31" water gauge (+/-1"). Record reading 32.00

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5.8.12 ~~BA~~ RECORD the water tank level reading on the DTAM. 32.1 31"
(+/-2")

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

5.8.14 ~~BA~~ VERY SLOWLY DECREASE the test manometer pressure until the "PIC WATER LEVEL LOW" (alarm 9) occurs on the DTAM. (This alarm should occur between 11.75" to 12.75" water gauge.)

5.8.15 ~~BA~~ ACKNOWLEDGE the alarm at the DTAM.

5.8.16 ~~BA~~ RECORD the manometer pressure and the DTAM water level readings.
Pressure on manometer 12.08 Water Level on DTAM 12.1

5.8.17 ~~BA~~ SLOWLY INCREASE the manometer pressure until the alarm clears on the DTAM. (This should occur at approximately 15.5" water gauge.)

5.8.18 ~~BA~~ RECORD the manometer pressure and the DTAM water level readings.
Pressure on manometer 15.44 Water Level on DTAM 15.5

5.8.19 ~~BA~~ ENSURE the "PIC Water" alarm indicates "norm".

5.8.20 ~~BA~~ REMOVE the test manometer from the SALW-LT-6003N high pressure vent/test port and reinstall the vent plugs on both the high and low sides.

5.8.21 ~~BA~~ OPEN valve SALW-V-6029N located in the Water Cabinet.

5.8.22 ~~BA~~ OPEN valve SALW-V-6031N located in the Water Cabinet.

5.8.23 ~~BA~~ ENSURE "Water Tank" reading on the DTAM shows a value in inches.
Record the reading 30.2"

WEIGHT FACTOR TEST

5.8.24 ~~BA~~ 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.

5.8.25 ~~BA~~ ENSURE SALW-V-6001N is CLOSED.

5.8.26 ~~BA~~ ENSURE SALW-V-6005N is OPEN.

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- 5.8.27 BA ENSURE SALW-V-6006N is OPEN.
- 5.8.28 BA ENSURE adjustment valves on SALW-FIV-6002N, SALW-FIV-6003N and SALW-FIV-6004N are CLOSED.
- 5.8.29 BA ENSURE SALW-WFT-6002N EQUALIZING valve located on the SALW-V-6036N 3-Valve manifold in the WFIE cabinet is CLOSED.
- 5.8.30 BA ENSURE the LOW and HIGH side isolation valves located on the SALW-V-6036N 3-Valve manifold in the WFIE cabinet are OPEN.
- 5.8.31 BA SET the test manometer to 125" (+/-1") water gauge. Record the manometer reading. 125.0
- 5.8.32 BA RECORD the "WFT" reading on the DTAM. The reading is to be 125" (+/-5"). 125.8
- 5.8.33 BA BLEED off the pressure on the test manometer. Leave connected for testing the specific gravity transmitter.
- 5.8.34 BA CLOSE SALW-V-6006N.
- 5.8.35 BA OPEN SALW-WFT-6002N equalizing valve located on SALW-V-6036N 3-Valve manifold in the WFIE cabinet.
- 5.8.36 BA CLOSE the LOW and HIGH side isolation valves located on the SALW-V-6036N 3-Valve manifold in the WFIE cabinet.

SPECIFIC GRAVITY TRANSMITTER

- 5.8.37 BA ENSURE SALW-V-6007N is OPEN.
- 5.8.38 BA ENSURE SALW-V-6005N is OPEN.
- 5.8.39 BA ENSURE the LOW and HIGH side isolation valves located on SALW-V-6035N 3-Valve manifold in the WFIE cabinet are OPEN.
- 5.8.40 BA ENSURE the specific gravity transmitter equalizing valve located on the SALW-V-6035N 3-Valve manifold located in the WFIE cabinet is CLOSED.
- 5.8.41 BA SET the test manometer to 5" water gauge (+/- 0.3").
5.21

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- 5.8.42 ~~BR~~ RECORD the "SGT" reading on the DTAM. Reading to be 5" +/- 0.35". 5.20
- 5.8.43 ~~BR~~ BLEED off pressure on the manometer.
- 5.8.44 ~~BR~~ ENSURE "SGT LOW" alarm occurs (alarm 13).
- 5.8.45 ~~BR~~ ACKNOWLEDGE the alarm.
- 5.8.46 ~~BR~~ DISCONNECT the test manometer.
- 5.8.47 ~~BR~~ CLOSE SALW-V-6007N.
- 5.8.48 ~~BR~~ CLOSE SALW-V-6005N.
- 5.8.49 ~~BR~~ OPEN SALW-SGT-6001N equalizing valve located on SALW-V-6035N 3-Valve manifold in the WFIE cabinet.
- 5.8.50 ~~BR~~ CLOSE the LOW side and HIGH side isolation valves located on SALW-V-6035N 3-Valve manifold in the WFIE cabinet.

FLOW METER SIGNAL CHECK

- 5.8.51 ~~N/A~~ IF necessary, ENSURE a brain terminal is connected to flow converter SALW-FQIT-6001N located in the Instrument Enclosure. *Use switches on front face BR*
- 5.8.52 ~~BR~~ SIMULATE a flow signal of 4.0gpm (50% span) with the hand-held brain terminal or from the flow converter face switches.
- 5.8.53 ~~BR~~ 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 4.00 DTAM (PMP FLOW) 4.00
- 5.8.54 ~~BR~~ RESTORE the flow converter, SALW-FQIT-6001N to its original configuration.

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SUCTION AND DISCHARGE PRESSURE SIGNAL

- 5.8.55 BA 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."
- 5.8.56 BA SET the current source to approximately 4mA and record the suction pressure reading on SALW-PI-6012N. Reading to be approximately zero.
0 psi
- 5.8.57 BA SET the current source to approximately 20mA and record the suction pressure reading on SALW-PI-6012N. Reading to be approximately 100psi.
100.0 psi
- 5.8.58 BA DISCONNECT the current source.
- 5.8.59 BA 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.
- 5.8.60 BA SET the current source to approximately 4mA and record the discharge pressures on SALW-PI-6011N and on the DTAM. Readings should be approximately zero.
SALW-PI-6011N .1 psi DTAM (PMP DISC) 0 psi
- 5.8.61 BA SET the current source to approximately 20mA and record the discharge pressures on SALW-PI-6011N and on the DTAM. Readings should be approximately 300psi.
SALW-PI-6011N 299.8 psi DTAM (PMP DISC) 299 psi
- 5.8.62 BA DISCONNECT the current source.

PIT FLAMMABLE GAS MONITOR ANALOG SIGNAL TO PLC

- 5.8.63 BA ENSURE a current source is connected to terminal board TB1 in the Instrument Enclosure, points FGM 0(+) and FGM 0(-)
- 5.8.64 BA SET the current source to approximately 4mA.

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- 5.8.65 ~~BA~~ RECORD the "FGM" percent reading from the DTAM. Reading is to be approximately zero. 0 %
- 5.8.66 ~~BA~~ SET the current source to approximately 10mA.
- 5.8.67 ~~BA~~ RECORD the "FGM" percent reading from the DTAM. Reading is to be approximately 11%. 11.3 %
- 5.8.68 ~~BA~~ SET the current source to approximately 20mA.
- 5.8.69 ~~BA~~ RECORD the "FGM" percent reading from the DTAM. Reading is to be approximately 30%. 30.0 %
- 5.8.70 ~~BA~~ DISCONNECT the current source.

DOME SPACE FLAMMABLE GAS MONITOR ANALOG SIGNAL TO PLC

- 5.8.71 ~~BA~~ ENSURE a current source is connected to terminal board TB1 in the Instrument Enclosure, points FGM 1(+) and FGM 1(-)
- 5.8.72 ~~BA~~ SET the current source to approximately 4mA.
- 5.8.73 ~~BA~~ RECORD the "FGM" percent reading from the DTAM. Reading is to be approximately zero. 0 %
- 5.8.74 ~~BA~~ SET the current source to approximately 10mA.
- 5.8.75 ~~BA~~ RECORD the "FGM" percent reading from the DTAM. Reading is to be approximately 11%. 11.3 %
- 5.8.76 ~~BA~~ SET the current source to approximately 20mA.
- 5.8.77 ~~BA~~ RECORD the "FGM" percent reading from the DTAM. Reading is to be approximately 30%. 30.0 %
- 5.8.78 ~~BA~~ DISCONNECT the current source.

THERMOCOUPLE INPUTS TO THE PLC

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

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- 5.8.81 BA CONTINUE to warm the thermocouple until "PLC Enclosure HI" (alarm 10) occurs. This will be approximately 130 degrees F.
- 5.8.82 BA ACKNOWLEDGE the alarm.
- 5.8.83 BA ENSURE "PLC CAB temp" on the DTAM shows a temperature DECREASE after the heat source is removed from the SALW-TE-6004N thermocouple.
- 5.8.84 BA ENSURE the "PLC temp" alarm returns to "norm" when the temperature decreases below 125 degrees F.
- 5.8.85 BA WARM thermocouple SALW-TE-6003N located in the Air Compressor Cabinet.
- 5.8.86 BA ENSURE the "COMPRS temp" on the DTAM displays a temperature change.
- 5.8.87 BA CONTINUE to warm the thermocouple until "Air Compressor Temp HI" (alarm 11) occurs. This will be approximately 130 degrees F.
- 5.8.88 BA ACKNOWLEDGE the alarm.
- 5.8.89 BA ENSURE "COMPRS temp" on the DTAM shows a temperature DECREASE after the heat source is removed from the SALW-TE-6003N thermocouple.
- 5.8.90 BA ENSURE the "CMPRSR temp" alarm returns to "norm" when the temperature decreases below 125 degrees F.
- 5.8.91 BA COOL the thermocouple probe in the WFIE cabinet with such as ice water or cool air spray. Temperature needs to drop below 35 degrees F.
- 5.8.92 BA ENSURE alarm ^{50 Exception 1 BA} 30, "WFIE CAB Temp Low" occurs at the DTAM.
- 5.8.93 BA WARM or ALLOW to warm the thermocouple probe in the WFIE cabinet and ENSURE the "WFIE CAB Temp" alarm is "norm".
- 5.8.94 BA COOL the thermocouple probe in the Water cabinet with such as ice water or cool air spray. Temperature needs to drop below 35 degrees F.
- 5.8.95 BA ENSURE alarm ^{49 Exception 1 BA} 25, "WATER CAB Temp Low" occurs at the DTAM.
- 5.8.96 BA WARM or ALLOW to warm the thermocouple probe in the Water cabinet and ENSURE the "WATER CAB Temp" alarm is "norm".

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- 5.8.97 BA CONNECT a temperature simulator to the intrinsic side of the top thermocouple module (MTL 3081) in the Intrinsic Safe panel.
- 5.8.98 BA SET the temperature simulator to approximately 140 degrees F.
- 5.8.99 BA ENSURE the "PUMP temp" reads approximately 140 degree at the DTAM.
- 5.8.100 BA ENSURE the "Jmp Htr" is ON at the DTAM.
- 5.8.101 BA DECREASE the temperature simulator to approximately 39 degrees or lower until alarm 8 "Pump/Jumper Temp Trouble" alarms on the DTAM.
- 5.8.102 BA ACKNOWLEDGE the alarm.
- 5.8.103 BA DISCONNECT the temperature simulator.
- Exception 2 → 5.8.104 BA BA CONNECT a temperature simulator to the intrinsic side of the second thermocouple module (MTL 3081) in the Intrinsic Safe panel.
- 5.8.105 BA SET the temperature simulator to approximately 140 degrees F.
- 5.8.106 BA BA ENSURE the "JMPER TEMP" reads approximately 140 degree at the DTAM. 142 BA
- 5.8.107 BA BA ENSURE the "Jmp Htr" is ON at the DTAM.
- 5.8.108 BA BA ENSURE the switch installed on TB4 between points "FGM" and "CKT5H-A" is in the CLOSED position.
- 5.8.109 BA ENSURE approximately 120vac between HT-1 and CKT3-N at TB12. 120vac BA
- 5.8.110 BA WHILE MONITORING the voltage at TB12, INCREASE the temperature to 206 degrees F or higher until the voltage at TB12 goes to approximately zero. 208 on DTAM
- 5.8.111 BA WHILE MONITORING the voltage at TB12, decrease the temperature to 104 degrees F or lower until the voltage at TB12 goes to approximately 120vac. 192°F on simulator
- 5.8.112 BA OPEN the switch on TB4 that is across "FGM" and "CKT5H-A".
- 5.8.113 BA ENSURE the voltage at TB12 goes to approximately zero.
- 5.8.114 BA CLOSE the switch on TB4 that is across "FGM" and "CKT5H-A".

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5.8.115 BAJ ENSURE the voltage at TB12 returns to approximately 120vac.

5.8.116 BAJ TURN OFF the heat trace from the DTAM.

5.8.117 BAJ ENSURE the voltage at TB12 goes to approximately zero.

5.8.118 BAJ TURN ON the heat trace from the DTAM.

5.8.119 BAJ ENSURE the voltage at TB12 returns to approximately 120vac.

5.8.120 BAJ INCREASE the temperature simulator to approximately 226 degrees or higher until alarm 8 "Pump/Jumper Temp Trouble" alarms on the DTAM.

5.8.121 BAJ ACKNOWLEDGE the alarm.

5.8.122 BAJ DISCONNECT the temperature simulator.

5.8.123 N/A ENSURE the "JMPR HT" alarm returns to "norm" on the DTAM. *exception*

5.8.124 Engineer to Ensure section 5.8 is completed and sign below.

BE Johns
Engineer Signature

1/25/00
Date

5.8.125 Quality Assurance Inspector to Verify that section 5.8 is complete and sign below.

D. Amey
Quality Assurance Inspector Signature

1-25-00
Date

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5.9 JET PUMP INTERLOCK CIRCUITS

- 5.9.1 ~~BAJ~~ ENSURE the two leak detector probes, LS-1 and LS-2 proximity switches, the FGM switch at TB4, Dilution switch at TB4, and the Recirc switch at the Intrinsic Safe panel are in place as per steps 5.8.1 to 5.8.7.
- 5.9.2 ~~BAJ~~ 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 ~~BAJ~~ CONNECT the laptop computer to the PLC to set forces and observe logic when required.

RECIRCULATION FLUSH PRESSURE SIGNAL TO PLC

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

Delete Exception 40
BAJ

- 5.9.5 ~~BAJ~~ ENSURE the green light on the Instrument Enclosure and on the Jet Pump motor starter are ON.

- 5.9.6 ~~BAJ~~ APPLY software forces to allow the jet pump to start. (Engineering will apply the forces from the laptop computer connected to the PLC.)

- 5.9.7 ~~BAJ~~ TURN the selector switch on the Jet Pump Motor Starter to ON.

- 5.9.8 ~~BAJ~~ 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.

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- 5.9.9 ~~BAJ~~ 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. 12.12 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.

- 5.9.10 ~~BAJ~~ ^{BAJ} DECREASE the current source to approximately 4mA.

- 5.9.11 ~~BAJ~~ ^{BAJ} ENSURE the "Recirc Press" alarm at the DTAM returns to "norm".

- 5.9.12 ~~BAJ~~ ^{BAJ} ENSURE address N20:32/6 clears as observed on the laptop.

- 5.9.13 ~~BAJ~~ ^{BAJ} DECREASE the current source to zero.

- 5.9.14 ~~BAJ~~ ^{BAJ} ENSURE alarm 14, "RFPT SIGNAL LOSS ALARM" occurs.

- 5.9.15 ~~BAJ~~ ^{BAJ} ACKNOWLEDGE the alarm.

- 5.9.16 ~~BAJ~~ ^{BAJ} ENSURE address N20:32/7 is actuated as observed on the laptop.

- 5.9.17 ~~BAJ~~ ^{BAJ} INCREASE the current source to approximately 6mA.

- 5.9.18 ~~BAJ~~ ^{BAJ} ENSURE the "RFPT SIGNAL" alarm returns to "norm" on the DTAM.

- 5.9.19 ~~BAJ~~ ^{BAJ} ENSURE address N20:32/7 clears as observed on the laptop.

JUMPER FLUSH PRESSURE SIGNAL TO PLC

- 5.9.20 ~~BAJ~~ ^{BAJ} 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.

- 5.9.21 ~~BAJ~~ ^{BAJ} ENSURE the green light on the Instrument Enclosure and on the Jet Pump motor starter are ON.

QC INSPECTION RECORD

- 5.9.22 BAJ APPLY software forces to allow the jet pump to start. (Engineering will apply the forces from the laptop computer connected to the PLC.)
- 5.9.23 BAJ 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.
- 5.9.24 BAJ ENSURE address N20:32/2 is clear as observed on the laptop.
- 5.9.25 BAJ 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.)
- ☒ Record current reading on current source. 12.05 mA
 - ☒ Alarm 12 occurs, "JET PUMP SHUTDOWN".
 - ☒ Alarm 3 occurs, "Flush Pressure HI".
 - ☒ Blue light at the Instrument Enclosure is ON.
 - ☒ Red lights at the motor starter and Instrument Enclosure are OFF.
 - ☒ Green lights at the motor starter and Instrument Enclosure are ON.
 - ☒ The "PS2 FL PR" is approximately 15psi. 15.1 psi
 - ☒ The horn sounded and the strobe light flashed upon pump shutdown.
 - ☒ Ensure address N20:32/5 is actuated as observed on the laptop.
- 5.9.26 BAJ DECREASE the current source to approximately 4mA.
- 5.9.27 BAJ ENSURE the "Flush Press" alarm at the DTAM returns to "norm".
- 5.9.28 BAJ ENSURE the blue light at the Instrument Enclosure turns OFF.
- 5.9.29 BAJ ENSURE address N20:32/5 clears as observed on the laptop.
- 5.9.30 BAJ DECREASE the current source to zero.
- 5.9.31 BAJ ENSURE alarm 16, "JFPT SIGNAL LOSS ALARM" occurs.
- 5.9.32 BAJ ACKNOWLEDGE the alarm.
- 5.9.33 BAJ ENSURE address N20:32/8 actuates as observed on the laptop.
- 5.9.34 BAJ INCREASE the current source to approximately 6mA.
- 5.9.35 BAJ ENSURE the "JFPT SIGNAL" alarm returns to "norm" on the DTAM.
- 5.9.36 BAJ ENSURE address N20:32/8 clears as observed on the laptop.

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TRANSFER PRESSURE INTERLOCK INPUT

- 5.9.37 BAJ 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.
- 5.9.38 BAJ ENSURE the laptop computer is connected to the PLC and is "on-line".
- 5.9.31 BAJ ENSURE the green light on the Instrument Enclosure and on the Jet Pump motor starter are ON.
- 5.9.32 BAJ APPLY software forces to allow the jet pump to start. (Engineering will apply the forces from the laptop computer connected to the PLC.)
- 5.9.33 BAJ 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.
- 5.9.34 BAJ 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.
- 5.9.35 BAJ ENSURE the amber light on the Instrument Enclosure turns ON immediately after the timer starts.
- 5.9.36 BAJ ENSURE after 30 seconds, the following occurs: (Acknowledge alarms as necessary to view all the alarms.)
- ☒ "XFR Pressure LOW" (alarm 1) occurs at the DTAM.
 - ☒ "JET PUMP SHUTDOWN" (alarm 12) occurs at the DTAM.
 - ☒ Red lights at the motor starter and Instrument Enclosure are OFF.
 - ☒ Green lights at the motor starter and Instrument Enclosure are ON.
 - ☒ The horn sounded and the strobe light flashed upon pump shutdown.
- 5.9.37 BAJ INCREASE the current source to approximately 6mA to clear the low pressure alarm.
- 5.9.38 BAJ ENSURE the "XFR Pressure" alarm is "norm" on the DTAM.
- 5.9.39 BAJ START the pump from the DTAM.
- 5.9.40 BAJ 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.

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5.9.41 BAJ ENSURE after a 3 second delay, the following occurs: (Acknowledge alarms as necessary to view all the alarms.)

- ☒ "XFR Pressure HIGH" (alarm 2) occurs at the DTAM.
- ☒ "JET PUMP SHUTDOWN" (alarm 12) occurs at the DTAM.
- ☒ Red lights at the motor starter and Instrument Enclosure are OFF.
- ☒ Green lights at the motor starter and Instrument Enclosure are ON.
- ☒ The horn sounded and the strobe light flashed upon pump shutdown.

5.9.42 BAJ DECREASE the current source to approximately 6mA.

5.9.43 BAJ ENSURE the "XFR Pressure" alarm indicates "norm" on the DTAM.

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

5.9.44 BAJ START the pump from the DTAM.

5.9.45 BAJ REMOVE the metal from the front face of LS-1.

5.9.46 BAJ ENSURE the following occurs immediately: (Acknowledge alarms as necessary to view all the alarms.)

- ☒ "JR-1 Position NON-PROCESS" (alarm 5) occurs at the DTAM.
- ☒ "JET PUMP SHUTDOWN" (alarm 12) occurs at the DTAM.
- ☒ Red lights at the motor starter and Instrument Enclosure are OFF.
- ☒ Green lights at the motor starter and Instrument Enclosure are ON.
- ☒ The horn sounded and the strobe light flashed upon pump shutdown.
- ☒ Address N20:32/0 on ladder 5 is actuated as observed on the laptop.

5.9.47 BAJ REMOVE the metal from the front face of LS-2.

5.9.48 BAJ ENSURE the "JR-1" still indicates "NON-PROCESS" at the DTAM.

5.9.49 BAJ ENSURE address N20:32/1 is actuated on ladder 5 as observed on the laptop.

5.9.50 BAJ REPLACE the metal in front of LS-1 and LS-2.

5.9.51 BAJ 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.

FLAMMABLE GAS MONITOR INTERLOCK INPUT

5.9.52 BAJ START the pump from the DTAM.

5.9.53 BAJ OPEN the FGM switch at TB4.

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5.9.54 BA ENSURE the following occurs immediately: (Acknowledge alarms as necessary to view the alarms.)

- ☒ "FLAMMABLE GAS HIGH" (alarm 22) occurs at the DTAM.
- ☒ "JET PUMP SHUTDOWN" (alarm 12) occurs at the DTAM.
- ☒ Red lights at the motor starter and Instrument Enclosure are OFF.
- ☒ Green lights at the motor starter and Instrument Enclosure are ON.
- ☒ The horn sounded and the strobe light flashed upon pump shutdown.

5.9.55 BA CLOSE the FGM switch at TB4.

5.9.56 BA ENSURE the "FGM" alarm indicates "norm" at the DTAM.

5.9.57 BA START the pump from the DTAM.

5.9.58 BA OPEN the dilution switch at TB4 in the Instrument Enclosure.

5.9.58 BA ENSURE the following occurs after a 5-minute delay: (Acknowledge alarms as necessary to view the alarms.)

- ☒ "DILUTION TANK NO FLOW" (alarm 35) occurs at the DTAM.
- ☒ "JET PUMP SHUTDOWN" (alarm 12) occurs at the DTAM.
- ☒ Red lights at the motor starter and Instrument Enclosure are OFF.
- ☒ Green lights at the motor starter and Instrument Enclosure are ON.
- ☒ The horn sounded and the strobe light flashed upon pump shutdown.

5.9.59 BA CLOSE the dilution switch.

5.9.60 BA ENSURE the "Dilution tk" alarm indicates "norm" on the DTAM.

RECIRCULATION LOW FLOW

5.9.61 BA START the pump from the DTAM.

5.9.62 BA OPEN the Recirculation switch at the Intrinsic Safe panel.

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

- ☒ "Recirculation Failure" (alarm 21) occurs at the DTAM.
- ☒ "JET PUMP SHUTDOWN" (alarm 12) occurs at the DTAM.
- ☒ Red lights at the motor starter and Instrument Enclosure are OFF.
- ☒ Green lights at the motor starter and Instrument Enclosure are ON.
- ☒ The horn sounded and the strobe light flashed upon pump shutdown.

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5.9.64 BA CLOSE the Recirculation switch.

5.9.65 BA ENSURE the "Recirc Loop" alarm indicates "norm" at the DTAM.

LEAK DETECTION INTERLOCK

5.9.66 BA ENSURE there is a water supply and bucket available to actuate the leak detector probes.

5.9.67 BA START the pump from the DTAM.

5.9.68 BA PLACE the primary leak detector probe in a bucket of water.

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

- ☒ "PUMP PIT LEAK" (alarm 6) occurs at the DTAM.
- ☒ "JET PUMP SHUTDOWN" (alarm 12) occurs at the DTAM.
- ☒ Red lights at the motor starter and Instrument Enclosure are OFF.
- ☒ Green lights at the motor starter and Instrument Enclosure are ON.
- ☒ The horn sounded and the strobe light flashed upon pump shutdown.
- ☒ Ensure address N20:32/3 in ladder 5 actuates as observed on the laptop.

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

5.9.71 BA ENSURE the "Pump Pit" leak alarm returns to "norm".

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

5.9.73 BA START the pump from the DTAM.

5.9.74 BA DISCONNECT one of the "SD" wires going to the primary leak detector probe.

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

- ☒ "PUMP PIT LEAK TROUBLE" (alarm 7) occurs at the DTAM.
- ☒ "JET PUMP SHUTDOWN" (alarm 12) occurs at the DTAM.
- ☒ Red lights at the motor starter and Instrument Enclosure are OFF.
- ☒ Green lights at the motor starter and Instrument Enclosure are ON.
- ☒ The horn sounded and the strobe light flashed upon pump shutdown.
- ☒ Ensure address N20:32/3 actuates as observed on the laptop.

5.9.76 BA RECONNECT the "SD" wire.

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5.9.77 ~~BAJ~~ ENSURE the "Pump Pit" trouble alarm indicates "norm" on the DTAM.

5.9.78 ~~BAJ~~ ENSURE address N20:32/3 clears as observed on the laptop.

5.9.79 ~~BAJ~~ START the pump from the DTAM.

5.9.80 ~~BAJ~~ PLACE the leak detector 1 probe in a bucket of water.

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

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

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

✓ Red lights at the motor starter and Instrument Enclosure are OFF.

✓ Green lights at the motor starter and Instrument Enclosure are ON.

✓ The horn sounded and the strobe light flashed upon pump shutdown.

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

5.9.82 ~~BAJ~~ REMOVE the leak detector probe from the bucket and allow the water to drain off.

5.9.83 ~~BAJ~~ ENSURE the "Leak 1" alarm returns to "norm".

5.9.84 ~~BAJ~~ ENSURE address N20:32/4 clears as observed on the laptop.

5.9.85 ~~BAJ~~ START the pump from the DTAM.

5.9.86 ~~BAJ~~ DISCONNECT one of the "SD" wires going to the leak detector 1 probe.

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

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

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

✓ Red lights at the motor starter and Instrument Enclosure are OFF.

✓ Green lights at the motor starter and Instrument Enclosure are ON.

✓ The horn sounded and the strobe light flashed upon pump shutdown.

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

5.9.88 ~~BAJ~~ RECONNECT the "SD" wire.

QC INSPECTION RECORD

- 5.9.89 BAJ ENSURE the "Leak 1 ck" alarm indicates "norm" on the DTAM.
- 5.9.90 BAJ ENSURE address N20:32/4 clears as observed on the laptop.
- 5.9.91 BAJ DISCONNECT the current sources from the PXPT, RFPT and JFPT termination points.
- 5.9.92 BAJ DISCONNECT the test switches from the FGM, Dilution and Recirculation termination points.
- 5.9.93 BAJ DISCONNECT the proximity switches from the Intrinsic Safe panel.
- 5.9.94 BAJ REMOVE the laptop computer from the PLC.
- 5.9.95 BAJ DISCONNECT the leak detector probes from the Instrument Enclosure.
- 5.9.96 Engineer to ENSURE section 5.9 is completed and sign below.

BR Johns
Engineer Signature

1/18/00
Date

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

D. [Signature]
Quality Assurance Inspector Signature

1-18-00
Date

QC INSPECTION RECORD

5.10 HEATERS, AIR CONDITIONER AND LIGHTS

- 5.10.1 ~~BA~~ TURN the heater ON in the air compressor cabinet. Set the thermostat high enough to allow the unit to operate.
- 5.10.2 ~~BA~~ RESET the thermostat to approximately 40 degrees F to allow the heat to turn OFF. Then unplug the heater.
- 5.10.3 ~~BA~~ TURN the fan thermostat switch to allow the fan in the air compressor cabinet to run.
- 5.10.4 ~~BA~~ RESET the fan switch to approximately 90 degrees F to allow the fan to turn OFF.
- 5.10.5 ~~BA~~ TURN the heater ON in the WFIE cabinet. Set the thermostat high enough to allow the unit to operate.
- 5.10.6 ~~BA~~ RESET the thermostat to approximately 40 degrees F to allow the heat to turn OFF. Then unplug the heater.
- 5.10.7 ~~BA~~ TURN the heater ON in the Water cabinet. Set the thermostat high enough to allow the unit to operate.
- 5.10.8 ~~BA~~ RESET the thermostat to approximately 40 degrees F to allow the heat to turn OFF.
- 5.10.9 ~~BA~~ TURN the heater ON in the Instrument Enclosure. Set the thermostat high enough to allow the unit to operate.
- 5.10.10 ~~BA~~ RESET the thermostat to approximately 40 degrees F to allow the heat to turn OFF. Then unplug the heater.
- 5.10.11 ~~BA~~ TURN the heater ON in the Locker. Set the thermostat high enough to allow the unit to operate.
- 5.10.12 ~~BA~~ RESET the thermostat to approximately 40 degrees F to allow the heat to turn OFF. Then unplug the heater.
- 5.10.13 ~~BA~~ 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 ~~BA~~ 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 by ENSURE the light in the WFIE cabinet operates.

5.10.16 by ENSURE the light in the Instrument Enclosure operates.

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

BE Johns 1/18/00
Engineer Signature Date

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

D. [Signature] 1-18-00
Quality Assurance Inspector Signature Date

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ACCEPTANCE TEST PROCEDURE

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ACCEPTANCE TEST PROCEDURE LOG		
Name	Date	Comment
BR Johns	1/14/00	step 4.5.4 Valve SALW-V-6028N deleted. Valve removed from system.
BR Johns	1/14/00	5.2.9. Wire CKT5H needs to be disconnected at TB13 for Instr. Encl. Light.
BR Johns	1/17/00	step 5.6.17 Relief valve has seal. step 5.6.19 Relief valve has seal.
BR Johns	1/17/00	Skipping steps 5.6.17 to 5.6.20 for now
BR Johns	1/17/00	Talked to John Elsen and John Densley on relief valve seals. Seals will <u>not</u> break when handle is raised. Can go ahead with relief valve test in steps 5.6.17 → 5.6.20.
BR Johns	1/17/00	Section 5.6. Need to fix plug on water tank. Small leak.
BR Johns	1/17/00	stopped at 5.8.109. Need to restart at step 5.8.104. since thermocouple simulator was disconnected.
BR Johns	1/18/00	on step 5.9.5. Wire in motor starter from fuse to terminal block was missing.
BR Johns	1/18/00	step 5.9.16. Found N20132/7 reset on alarm acknowledge. Fixed program after talking to Tuan Nguyen to use alarm address not latching address.
BR Johns	1/25/00	Performed prestarts steps 4.5.3 through 4.5.5 (except for fuses which were left closed)
—	—	This is to prepare skid for shipping. Replaced power plug with correct plug for field.

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Delete
wine
problem
found in
motor
starter.
BRJ.

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ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.8.104	ATP Exception Log Number 2
Description of Exception: CGM interlocks need to be forced out to perform temperature interlock check.	
Resolution of Exception: The software program was written for future CGM installation. In order to check the temperature interlock on the heat trace, the CGM hi alarm and CGM fault interlocks must be forced so the PLC sees a normal CGM input. Add to step 5.8.104 to connect laptop and force inputs I:8.2 and I:8.4. All forces are removed per ATP step 5.9.94	
Date of Resolution:	1/18/00
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	TJ Volkman
Design Authority:	J S Zuniga 1-18-00
RESOLUTION COMPLETED: (date)	1/25/00
Quality Assurance:	TJ Volkman
Cognizant Engineer:	BR Johns

D.P.
1/18/00

QC INSPECTION RECORD

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.8.123	ATP Exception Log Number 3
Description of Exception: "Impr HT" did not go to 'norm'. (alarm 8)	
Resolution of Exception: Delete step 5.8.123. The alarm will remain in 'trouble' due to no input to the pump thermocouple probe. This causes 'HT' alarm 8 to trip due to temperature below 40°F. This was checked in steps 5.8.101 and 5.8.102.	
Date of Resolution:	1/18/00
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	[Signature]
Design Authority:	H. J. Zurell 1/18/00
RESOLUTION COMPLETED: (date)	1/25/00
Quality Assurance:	[Signature]
Cognizant Engineer:	BR Johns

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:

BR Johns
Cognizant Engineer (Signature)

BR Johns
(Print Name)

1/26/00
Date

TJ Volkman
Quality Assurance (Signature)

TJ VOLKMAN
(Print Name)

1/26/00
Date

QC INSPECTION RECORD

All personnel who will be performing, initialing and signing the procedure shall enter their printed name, signature and initials below.

[illegible]

QC INSPECTION RECORD

PRE-JOB BRIEF SIGNATURE PAGE

PRINT NAME	SIGNATURE
DK DE FORD	D. DeFord
M HERRON	M. Herron
BC Ferguson	BC Ferguson
Ron Cowan	Ron Cowan
BR Johns	BR Johns
JR Harris	JR Harris

QC INSPECTION RECORD

NEC INSPECTION REPORT

REVISION 0
ORIGINAL

Project/W.O. No. 2H-00-04137/F	Building No. 277 West	Code Edition NEC, 1999 Edition	Report No. 8168
Inspection Requested By Bruce Johns	Phone 373-3429	Inspector Bresina WL	Phone 376-5265
			Page 1 of 1

Item Inspected: Pumping instrument control skid "N" for tank U 109, Salt Well Pumping per work pkg.
2H-00-04137/F

Condition Found: ☒ Acceptable ☐ Unacceptable (see description below)

Inspector Signature: WL Bresina <i>WL Bresina</i>	Original Inspection Date Jan. 11, 2000	Closure Date Jan. 11, 2000
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	Description of NEC Violation	Cause Code	Days to Correct	Violation Corrected	Date
1					
2					
3					
4					
5					
6					
7					

Electrical service will be discontinued for the equipment or facility identified if violations are not corrected within time allowed by the "Days to Correct" column. "Days to Correct" starts with the original inspection date. For concerns regarding this, call the Chief Electrical Engineer at 376-6347.

UNFIRED PRESSURE VESSEL - REPORT OF INSPECTION (Form NB-7) REVISION 0
THE HARTFORD STEAM BOILER INSPECTION AND INSURANCE COMPANY, HARTFORD, CT

TPI WO NO: 2W-99- _____ (1 Hrs)

1	Date Inspected 1/11/2000	Cert Exp 01/2002	Cert. Posted <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Owner No TK-6001N	Jurisdiction No TPI-WT-145	National Board / Other NB- 105861
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 HILL HANFORD, INC.			User Location: 200-W TANK FARMS		Specific Location: SALT WELL SKID-N
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 <input checked="" type="checkbox"/> Receiver <input type="checkbox"/> Process		Heat <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-6005N 3/4in, 158 CFM	How Tested: NEW
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 N.					

Per Facility Work Package: 2H-00-04137/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. Vessel is galvanized and not subject to internal corrosion.

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

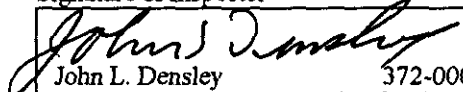
9	REQUIREMENTS/RECOMMENDATIONS: The following items are to be corrected:
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1. None this inspection

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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TPI-WT-145.doc

UNFIRED PRESSURE VESSEL - REPORT OF INSPECTION (Form NB-7) REVISION 0 THE HARTFORD STEAM BOILER INSPECTION AND INSURANCE COMPANY, HARTFORD, CT

TPI WO NO: 2W- 00- New (1 Hrs)

1	Date Inspected 1/11/2000	Cert Exp 01/2002	Cert. Posted <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Owner No TK-6002N	Jurisdiction No TPI-WT-144	National Board / Other NB- 65943L
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 FARM		Specific Location: SALT WELL SKID -N
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 Heat <input checked="" type="checkbox"/> Receiver <input type="checkbox"/> Process <input type="checkbox"/> Exchange <input type="checkbox"/> Other				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-6004N	How Tested: NEW
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 N					

Per Facility Work Package: 2H-00-04137/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 gauge: Installed & Proper Bottom drain: Installed & Suitable

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

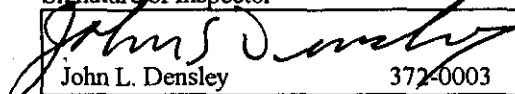
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I hereby Certify this is a true report of my inspection

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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