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ENGINEERING DATA TRANSMITTAL

Page 1 of 1

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1	1	Design Agent B. R. JOHNS	<i>[Signature]</i>	9/14/99	57-24						
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1	1	Cog. Mgr. M. R. KOCH	<i>[Signature]</i>	9-16-99							
1	1	QA T. J. VOLKMAN	<i>[Signature]</i>	9/21/99							
1	1	Safety C. D. JACKSON	<i>[Signature]</i>	9/14/99							
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TEST REPORT FOR ACCEPTANCE TEST PROCEDURE FOR PUMPING AND INSTRUMENTATION CONTROL SKID "K"

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Abstract:

This is a Test Report for Acceptance Test Procedure (ATP) HNF-4276. This test report provides the results of the inspection and testing of the new Pumping and Instrumentation Control (PIC) skid designed as "K". The ATP was successfully completed. A copy of the completed ATP is in the Appendix of this document.

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

1.0 INTRODUCTION

This test report provides the results from the performance of Acceptance Test Procedure (ATP) HNF-4276, for Pumping and Instrumentation Control (PIC) skid "K". The ATP verifies the proper construction of the PIC skid "K" by Site Fabrication Services along with proper programming of the Programmable Logic Controller (PLC) and the Operations Control Station (OCS) computer by engineering. New PIC skid "K" will be used for the pumping of tank U-103. A copy of the actual test results is in the Appendix.

2.0 DESCRIPTION OF TEST

The test was divided into two parts. Part I of the testing was performed at the Site Fabrication Services location. Part II was performed at the Interim Stabilization maintenance shop.

Part I of 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.

Part II of the ATP ensured the software programs and the interfaces to the equipment outside the PIC skid were correct. The PIC skid was connected to the jet pump, jumper and flush line assemblies. A Flammable Gas Monitor (FGM) and leak detector probes were connected to the PIC skid to ensure proper functioning of these items. Dilution tank connections were simulated since the tank and the controls were not available. The U-farm computer was connected to the PLC to ensure proper communication between the two devices.

The ATP document provided detailed instructions for each test step and space for recording the data and signoffs. A copy of all 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. All exceptions 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. A copy 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 in the field.

6.0 REFERENCES

HNF-4276, REVISION 0-A, *ACCEPTANCE TEST PROCEURE FOR PUMPING AND INSTRUMENTATION CONTROL SKIDS*, Lockheed Martin Hanford Corporation, Richland, Washington.

2H9903385, Site Fabrication Services work package.

WS-99-0474, Interim Stabilization work package.

7.0 APPENDIX

Copy of ATP, HNF-4276, revision 0-A.

NEC Inspection Report

Pressure Vessel Inspection Report

4.0 PREREQUISITES

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

4.1 DRAWING VERIFICATION

A check of the constructed skid is to be compared to either the red-lined drawings or the final unreleased skid drawings. Engineering and Quality Control 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 areas on the drawings are to be verified.

- Wire terminations and labeling, H-14-103530, sheets 7 through 12, H-14-103533, sheet 5.
- Panel board arrangement, H-14-103536
- Correctness of flow diagram logic, H-14-103535 and H-14-103530, sheet 5.

Drawing verification completed and how all discrepancies will be resolved. * (Final drawing release is not required to continue with the ATP.)

* See exception 1 on Exception Log (page 224)

B.R. Johns
Cognizant Engineer

7/31/99
Date

* Kon Wilby 7/21/99

Quality Control

Date

QC IN

CORO

4.2 THIRD PARTY INSPECTION

A third party inspection is required for the air compressor, the air receiver tank and relief valves located in the air compressor cabinet. The inspection is to verify that the equipment meets National Codes for pressure vessels. This inspection will be performed by an outside certified inspector. (This needs to be completed prior to checking the air compressor and water systems.)

Third party inspection report received. (The ATP can continue before the report is received, but must be received prior to performing sections 5.6.)

K. W. [Signature] REF. TPI-WT-135, 136 7/21/99
Quality Control Date

4.3 NATIONAL ELECTRICAL CODE (NEC) INSPECTION

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

The NEC inspection performed and an NEC inspection sticker has been placed on the panel board door. (This needs to be completed prior to the Section 5 functional checks.)

K. W. [Signature] REF. REPORT 5931 7/21/99
Quality Control Date

4.4 SUPPLIES

4.4.1 The following supplies shall be available at the work place:

- Volt/ohm meter (VOM): Portable, 0-600 volts ac, $\pm 2\%$ accuracy.

Calibration No. 819-45-08-018 Expiration Date 11/7/99 QC JE 7.26.99

- Transmation current (milliamp) simulator or equivalent

Calibration No. 812-13-20-013 Expiration Date 10/99 QC KW 8/4/99

- Manometer - minimum range 0-500" water gauge. Must have a read out of variable test pressure.

QC INSPECTION RECORD
Calibration No. 820-35-40-004 Expiration Date 7/7/00 QC KW 8/9/99

HNF-4277
REVISION 0

- Manometer - minimum range 0-62" water gauge. Must have a read out of variable test pressure. ** Part II testing → 820-35-40-004 7/7/00 QC KW 9/8/99*
Calibration No. 820-35-40-004 Expiration Date 7/7/00 QC KW 9/8/99
** 819-35-40-001 4/7/00 KW 9/8/99*
- Jumper Test Assembly PI-2 (suction) pressure gauge (for Part II)
817-35-40-038 10-2-99
Calibration No. 820-35-40-004 Expiration Date 7/7/00 QC KW 9/8/99
819-35-40-001 4/7/00 KW 9/8/99
- Jumper Test Assembly PI-1 (discharge) pressure gauge (for Part II)
Calibration No. 817-35-40-042 Expiration Date 1-5-00 QC KW 9/6/99
- Saltwell Jet pump Jumper (see H-14-100725 Sheet 18) (for Part II)
- Rotameter or Flowmeter with an accuracy of 0.05 gpm, a range at least of 0 to 4 gpm (for Part II) *0.10 8/28/99*
- Jumper Test Assembly (for Part II)
- 480V 3 Phase Power Source
- Controlotron 995T Control and Display Unit
- Selector switch (2 each) with one NO and one NC contact

NOTE -Test sections may commence prior to assembly of all test equipment.
Engineer is responsible to assure all equipment necessary for a given section is available.

Exception 5 (Added megohm)

4.4.2 The following conditions must be met prior to the performance of the test section indicated:

4.4.2.1 The Jet Pump Jumper and Jumper assembly have been placed on the pump recirculation apparatus prior to performing Part II.

4.4.2.2 The Pumping and Instrumentation Control Skid water tank and run-in tank have been adequately filled for testing prior to performing section 5.6.

4.4.2.3 The Jet Pump Jumper **AND** Jumper Assembly have been electrically **AND** pneumatically connected to the Pumping and Instrumentation Control Skid prior to performing Part II. Reference H-14-103071. *see exception 2/15/23.*

QC INSPECTION RECORD

HNF-4277
REVISION 0

4.4.2.4 A pre-job safety meeting has been held before performing each section of this procedure. 7/26/99 *BAJ* 9-6-99 *mwj*

4.4.2.5 The Pumping and Instrumentation Control Skid has been grounded in preparation for shop testing.

4.4.2.6 Test gauges **AND** rotameter have been installed in correct locations as indicated by the Engineer prior to performing sections requiring test gauges and rotameter.

4.4.2.7 Ensure the following Pumping and Instrumentation Control Skid Valves are OPEN prior to starting this ATP.

✓✓ SALW-V-6035K (equalizing) ✓ SALW-V-6036K (equaling)

4.4.2.8 **ENSURE** the following Pumping and Instrumentation Control Skid valves are CLOSED prior to starting this Acceptance Test Procedure:

✓ ✓ <u>SALW-V-6034K</u>	✓ ✓ <u>SALW-V-6026K</u>	✓ ✓ <u>SALW-V-6001K</u>
✓ ✓ <u>SALW-V-6004K</u>	✓ ✓ <u>SALW-V-6002K</u>	✓ ✓ <u>SALW-V-6003K</u>
✓ ✓ <u>SALW-V-6021K</u>	✓ ✓ <u>SALW-V-6020K</u>	✓ ✓ <u>SALW-V-6036K (hi)</u>
✓ ✓ <u>SALW-V-6036K (low)</u>	✓ ✓ <u>SALW-V-6035K (hi)</u>	✓ ✓ <u>SALW-V-6025K</u>
✓ ✓ <u>SALW-V-6035K (low)</u>	✓ ✓ <u>SALW-V-6019K</u>	✓ ✓ <u>SALW-V-6029K</u>
✓ ✓ <u>SALW-V-6027K</u>	✓ ✓ <u>SALW-V-6028K</u>	✓ ✓ <u>SALW-V-6032K</u>
✓ ✓ <u>SALW-V-6031K</u>	✓ ✓ <u>SALW-V-6030K</u>	✓ ✓ <u>SALW-V-6016K</u>
✓ ✓ <u>SALW-V-6018K</u>	✓ ✓ <u>SALW-V-6017K</u>	✓ ✓ <u>SALW-V-6013K</u>
✓ ✓ <u>SALW-V-6015K</u>	✓ ✓ <u>SALW-V-6014K</u>	✓ ✓ <u>SALW-V-6012K</u>
✓ ✓ <u>SALW-V-6008K</u>	✓ ✓ <u>SALW-V-6011K</u>	✓ ✓ <u>SALW-V-6005K</u>
✓ ✓ <u>SALW-V-6006K</u>	✓ ✓ <u>SALW-V-6007K</u>	✓ ✓ <u>SALW-V-6037K</u>
✓ ✓ <u>SALW-V-6044K</u>	✓ ✓ <u>SALW-V-6046K</u>	✓ ✓ <u>SALW-V-6047K</u>
✓ ✓ <u>SALW-V-6048K</u>	✓ ✓ <u>SALW-V-6049K</u>	✓ ✓ <u>SALW-V-6043K</u>

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QC INSPECTION RECORD

HNF-4277
REVISION 0

- 4.4.2.9 **ENSURE** the following Pumping and Instrumentation Control Skid circuit disconnects and breakers are OPEN (OFF) prior to starting this Acceptance Test Procedure. Refer to H-2-85327, Sheet 7 for circuit breakers.

✓ ✓ SALW-DS-6002K ✓ ✓ SALW-DS-6003K ✓ ✓ SALW-DS-6004K
✓ ✓ SALW-DS-6005K

NOTE - The following breakers are located in SALW-DP-6001K.

✓ <u>✓</u> Breaker "MAIN"	✓ <u>✓</u> Breaker 2
✓ <u>✓</u> Breaker 1	✓ <u>✓</u> Breaker 4
✓ <u>✓</u> Breaker 3	✓ <u>✓</u> Breaker 6
✓ <u>✓</u> Breaker 5	✓ <u>✓</u> Breaker 8
✓ <u>✓</u> Breaker 7	✓ <u>✓</u> Breaker 10
✓ <u>✓</u> Breaker 9	✓ <u>✓</u> Breaker 12
✓ <u>✓</u> Breaker 11	✓ <u>✓</u> Breaker 14
✓ <u>✓</u> Breaker 13	

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- 4.4.2.10 All personnel initialing or signing this procedure must also enter signature/initials on the PROCEDURE PERFORMER SIGNATURE SHEET on the last page of this document.

QC INSPECTION RECORD

PART I

5.0 PROCEDURE

NOTE - All personnel performing this procedure, who will be initialing and signing the procedure, shall enter their printed name, signature and initials on the PROCEDURE PERFORMER SIGNATURE SHEET.

NOTE: Verify Prerequisites completed for Part I.

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 readings on the line provided. Out of tolerance readings must be corrected and retested before going to the next section.

5.1.1 Crouse-Hinds plug to line side of main disconnect switch (SALW-DS-6002K). Check all three phases and ground wire. Red .5 Ω Yellow .5 Ω Blue .4 Ω Gnd .4 Ω ☒ BRJ

5.1.2 Load side of main disconnect switch (SALW-DS-6002K) to line side of transformer disconnect switch (SALW-DS-6003K). Red .3 Ω Yellow .3 Ω Blue .3 Ω Gnd .3 Ω ☒ BRJ

5.1.3 Load side of main disconnect switch (SALW-DS-6002K) to line side of jet pump motor starter (SALW-DS-6005K). Red .3 Ω Yellow .3 Ω Blue .3 Ω Gnd .3 Ω ☒ BRJ

5.1.4 Load side of main disconnect switch (SALW-DS-6002K) to line side of air compressor motor starter (SALW-DS-6004K). Red .3 Ω Yellow .4 Ω Blue .4 Ω Gnd .4 Ω ☒ BRJ

5.1.5 Load side of transformer disconnect switch (SALW-DS-6003K) to primary side of transformer. .5 Ω Through transformer primary coil. Open between load side and ground. ☒ See except. 3 BR

5.1.6 Secondary side of transformer to panel board (SALW-DP-6001K) main breaker. .4 Ω through transformer secondary. Removed Neutral. Open between phase and neutral to ground. ☒ See exception 4 BR

5.1.7 Circuit #3 in panel board to TB10 in the instrument enclosure (SALW-PNL-6005K). .8 ☒ BRJ

5.1.8 Circuit #5 in panel board to TB13 in the instrument enclosure (SALW-PNL-6005K). .8 ☒ BRJ

5.1.9 Circuit #12 in panel board to TB13 in the instrument enclosure (SALW-PNL-6005K). .6 ☒ BRJ

5.1.10 Circuit #6 in panel board to safe side TB in the intrinsic safe panel (SALW-PNL-6006K). .7 ☒ BRJ

QC INSPECTION RECORD

5.1.11 Circuit #1 in panel board to TB in the FGM power junction box.

.8 Ω

☒ *BAJ*

5.1.12 Circuit #11 in panel board to TB in the FGM power junction box.

.8 Ω

☒ *BAJ*

5.1.13 Circuit #13 in panel board to TB in the FGM power junction box.

.8 Ω

☒ *BAJ*

5.1.14 Circuit #14 in panel board to TB in the FGM power junction box.

.7 Ω

☒ *BAJ*

5.1.15 Circuit #10 in panel board to TB in the FGM heat trace splice box.

.7 Ω

☒ *BAJ*

5.1.16 Circuit #2 in panel board to TB in the FGM heat trace splice box.

.4 Ω

☒ *BAJ*

5.1.17 Circuit #7 in panel board to receptacles in the WFIE cabinet (SALW-PNL-6002K).

.4 Ω

☒ *BAJ*

5.1.18 Circuit #9 in panel board to receptacle below panel board.

.4 Ω

☒ *BAJ*

5.1.19 Circuit #4 in panel board to air compressor cabinet (SALW-PNL-6001K).

.4 Ω

☒ *BAJ*

5.1.20 Circuit #8 in panel board to water cabinet (SALW-PNL-6003K).

.4 Ω

☒ *BAJ*

Section 5.1 completed and all readings within tolerance.

PJ Clement

Quality Control

(REF. EXCEPTIONS #3 & #4)

7.26.99

Date

QC INSPECTION RECORD

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 1 megohm. Test the circuits listed below. Record readings on the lines provided. Out of tolerance readings must be corrected and retested before going to the next section. *Exception 5 (Added megohm)*

5.2.1 Each of the three phases on the main power plug to ground and phase to phase. (Main disconnect switch (SALW-DS-6002K) is opened.)

A-GND 100M B-GND 1M C-GND 1M A-B 1M A-C 1M B-C 1M

☒ *BAJ*

5.2.2 Each of the three phases on the load side of the main disconnect switch (SALW-DS-6002K) to ground and phase to phase. (The transformer disconnect switch (SALW-DS-6003K) and the two motor starters (SALW-DS-6004K) (SALW-DS-6005K) are opened.)

A-GND α B-GND 1700M C-GND α A-B 1700M A-C α B-C α

☒ *BAJ*

5.2.3 Each of the two phases on the load side of the transformer disconnect switch (SALW-DS-6003K) to ground. *Exception #6*

A-GND α B-GND α A-B N/A

☒ *See Exception BAJ*

5.2.4 Each of the two hot wires on the line side of the 100 ampere main breaker in the panel board (SALW-DP-6001K) to ground. (The 100 ampere main breaker to be opened.)

A-GND 100M B-GND α A-B N/A *Exception 6* Neutral (disconnected) to gnd. α

☒ *See Exception BAJ*

5.2.5 Each of the three phases on the load side of the air compressor motor starter (SALW-DS-6004K) to ground. *Exception 7*

A-GND α B-GND 1800M C-GND α A-B N/A A-C N/A B-C N/A

☒ *See Exception BAJ*

5.2.6 Each of the 14 circuits in the panel board to ground on the line side of each breaker. The breakers are to be opened and the hot wire disconnected from the ground fault type breakers and receptacles (This is to prevent damage to the ground fault sensor in the breakers.). Disconnect all loads on each circuit by removing a downstream fuse or lift the hot wire. 1-GND α 2-GND α 3-GND α 4-GND α 5-GND α 6-GND α 7-GND α 8-GND α 9-GND α 10-GND α 11-GND α 12-GND α 13-GND α 14-GND α

☒ *See Exception BAJ*

5.2.7 Reconnect all wires and reinstall fuses.

☒ *BAJ*

Section 5.2 completed and all readings within tolerance.

PJ Chumley 7.26.99
Quality Control (REF. EXCEPTIONS #5, #6, #7, #8) Date

QC INSPECTION RECORD

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; and 24vdc. Out of tolerance readings must be corrected when found before going to the next step in this section.

5.3.1 Visually verify that all electrical connections are completed. Wires lifted during the megger checks are to be reconnected.

5.3.2 Open all switches and breakers and pull the ^{six} ~~four~~ fuses in the instrument cabinet (SALW-PNL-6005K).

5.3.3 Visually verify that all the fuses are in the two safety switches (SALW-DS-6002K) (SALW-DS-6003K) and motor starters (SALW-DS-6004K) (SALW-DS-6005K) including the control transformers.

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

5.3.5 Turn ON the power source to the skid.

5.3.6 Verify 480vac on the line side of the main disconnect switch (SALW-DS-6002K). Record the voltage. $\frac{480}{484} \frac{A-B}{A-C} \frac{480vac + 10vac/-20vac.}{484 B-C}$

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

5.3.8 Check for 480vac +10vac/-20vac at the following three locations (entries 5.3.9, 5.3.10 and 5.3.11). Record voltage reading on the line provided.

5.3.9 Line side of the transformer disconnect switch (SALW-DS-6002K).

484 vac

5.3.10 Line side of the pump motor starter (SALW-DS-6005K).

$\frac{A-B}{480} \frac{A-C}{483} \frac{483}{B-C}$

5.3.11 Line side of the air compressor motor starter (SALW-DS-6004K).

480, 483, 483 vac
~~A-B A-C B-C~~

5.3.12 Remove the dead front on the panel board (SALW-DP-6001K) for access to the main breaker for a voltage measurement.

QC INSPECTION RECORD

HNF-4277
REVISION 0

- 5.3.13 Close the transformer disconnect switch (SALW-DS-6003K). ☒ BAJ
- 5.3.14 Check for 240vac +10/-20 at the line side of the main breaker. Record voltage. 242 vac ☒ BAJ
- 5.3.15 Open the transformer disconnect switch (SALW-DS-6003K). ☒ BAJ
- 5.3.16 Replace the dead front on the panel board (SALW-DP-6001K). ☒ BAJ
- 5.3.17 Close the transformer disconnect switch (SALW-DS-6003K). ☒ BAJ
- 5.3.18 Close the 100 ampere main breaker in the panel board (SALW-DP-6001K). ☒ BAJ
- 5.3.19 Check for 120vac +/-10vac at the following locations (entries 5.3.20 through 5.3.45). Record the voltage reading on the line provided. ☒ BAJ
- 5.3.20 Close breaker #1. Measure voltage at the terminal board in the FGM junction box on the outside of the WFIE cabinet (SALW-PNL-6002K). 121 vac ☒ BAJ
- 5.3.21 Open breaker #1. Measure zero voltage at the terminal board in the FGM junction box on the outside of the WFIE cabinet (SALW-PNL-6002K). 0 vac ☒ BAJ
- 5.3.22 Close breaker #2. Measure voltage at the terminal board in the FGM splice box on the outside of the WFIE cabinet (SALW-PNL-6002K). 121 vac ☒ BAJ
- 5.3.23 Open breaker #2. Measure zero voltage at the terminal board in the FGM splice box on the outside of the WFIE cabinet (SALW-PNL-6002K). 0 vac ☒ BAJ
- 5.3.24 Close breaker #10. Measure voltage at the terminal board in the FGM splice box on the outside of the WFIE cabinet (SALW-PNL-6002K). 121 vac ☒ BAJ
- 5.3.25 Open breaker #10. Measure zero voltage at the terminal board in the FGM splice box on the outside of the WFIE cabinet (SALW-PNL-6002K). 0 vac ☒ BAJ
- 5.3.26 Close breaker #11. Measure voltage at the terminal board in the FGM junction box on the outside of the WFIE cabinet (SALW-PNL-6002K). 121 vac ☒ BAJ

QC INSPECTION RECORD

HNF-4277
REVISION 0

5.3.27 Open breaker #11. Measure zero voltage at the terminal board in the FGM junction box on the outside of the WFIE cabinet (SALW-PNL-6002K). 0 vac ☒ BRJ

5.3.28 Close breaker #13. Measure voltage at the terminal board in the FGM junction box on the outside of the WFIE cabinet (SALW-PNL-6002K). 121 vac ☒ BRJ

5.3.29 Open breaker #13. Measure zero voltage at the terminal board in the FGM junction box on the outside of the WFIE cabinet (SALW-PNL-6002K). 0 vac ☒ BRJ

5.3.30 Close breaker #14. Measure voltage at the terminal board in the FGM junction box on the outside of the WFIE cabinet (SALW-PNL-6002K). 121 vac ☒ BRJ

5.3.31 Open breaker #14. Measure zero voltage at the terminal board in the FGM junction box on the outside of the WFIE cabinet (SALW-PNL-6002K). 0 vac ☒ BRJ

5.3.32 Close breaker #3. Measure voltage at the terminal board TB10 in the instrument cabinet (SALW-PNL-6005K). 121 vac ☒ BRJ

5.3.33 Open breaker #3. Measure zero voltage at the terminal board TB10 in the instrument cabinet (SALW-PNL-6005K). 0 vac ☒ BRJ

5.3.34 Close breaker #5. Measure voltage at the terminal board TB13 in the instrument cabinet (SALW-PNL-6005K). 121 vac ☒ BRJ

5.3.35 Open breaker #5. Measure zero voltage at the terminal board TB13 in the instrument cabinet (SALW-PNL-6005K). 0 vac ☒ BRJ

5.3.36 Close breaker #12. Measure voltage at the terminal board in the instrument cabinet (SALW-PNL-6005K). 121 vac ☒ BRJ

5.3.37 Open breaker #12. Measure zero voltage at the terminal board in the instrument cabinet (SALW-PNL-6005K). 0 vac ☒ BRJ

5.3.38 Close breaker #4. Measure voltage at the receptacle in the instrument air cabinet (SALW-PNL-6001K). 121 vac ☒ BRJ

5.3.39 Open breaker #4. Measure zero voltage at the receptacle in the instrument air cabinet (SALW-PNL-6001K). 0 vac ☒ BRJ

5.3.40 Close breaker #6. Measure voltage at the terminal board in the intrinsic safe panel (SALW-PNL-6006K). 121 vac ☒ BRJ

QC INSPECTION RECORD

HNF-4277
REVISION 0

5.3.41 Open breaker #6. Measure zero voltage at the terminal board in the intrinsic safe panel (SALW-PNL-6006K). 0 vac ☒ *BRJ*

5.3.42 Close breaker #7. Measure voltage at the receptacle in the WFIE cabinet (SALW-PNL-6002K). 121 vac ☒ *BRJ*

5.3.43 Open breaker #7. Measure zero voltage at the receptacle in the WFIE cabinet (SALW-PNL-6002K). 0 vac ☒ *BRJ*

5.3.44 Close breaker #8. Measure voltage at the receptacle in the water cabinet (SALW-PNL-6003K). 120 vac ☒ *BRJ*

5.3.45 Open breaker #8. Measure zero voltage at the receptacle in the water cabinet (SALW-PNL-6003K). 0 vac ☒ *BRJ*
Exception 10 Check 24vdc supply outputs (see below)

5.3.46 Open the 100 ampere main breaker in the panel board (SALW-DP-6001K). ☒ *BRJ*

5.3.47 Open the transformer disconnect switch (SALW-DS-6003K). ☒ *BRJ*

5.3.48 Open the main disconnect switch (SALW-DS-6002K). ☒ *BRJ*

Voltage checks completed satisfactorily.

PJ Claudon (REF. EXCEPTIONS #9 & #10) 7.26.99
Quality Control 10 Date

Exception 10 24vdc check.

Verify steps 5.3.1 to 5.3.5 ✓ BRJ

Do steps 5.3.17 and 5.3.18 ✓ BRJ

Do step 5.3.34 ✓ BRJ

Install Fuses FD & FC ✓ BRJ

Check for 120vac ± 10vac at 24 volt power supplies. 120.2

Check for 24vdc ± 2vdc at 24 volt power supplies. 24.19

Open fuses FD and FC ✓ BRJ

Open ckt 5 ✓ BRJ

Do steps 5.3.46 and 5.3.47 and 5.3.48 ✓ BRJ 7/26/99

QC INSPECTION RECORD

RE 7.26.99

5.4 CALIBRATIONS

Instrumentation equipment on the skid requires calibration prior to the functional testing. Lockheed Martin procedures will be used for this calibration. The table below identifies the equipment requiring calibration and the procedure for performing the calibration.

INSTRUMENT	LOCATION	PROCEDURE
SALW-PS-6004K	INSTRU. AIR CAB.	6-PCD-508
SALW-WFT-6002K	WFIE CABINET	6-PCD-361
SALW-LT-6003K	WATER CABINET	6-PCD-361
SALW-SGT-6001K	WFIE CABINET	6-PCD-361
SALW-CONV-6001K	WFIE CABINET	6-TF-365
SALW-FQIT-6001K	INSTRUMENT CAB.	Data sheet & Vendor Man.*
SALW-PI-6006K	AIR COMPR. CABINET	6-TF-509
SALW-PI-6001K	WFIE CABINET	6-TF-509
SALW-PI-6005K	WFIE CABINET	6-TF-509
SALW-PI-6002K	WFIE CABINET	6-TF-509
SALW-PI-6003K	WFIE CABINET	6-TF-509
SALW-PI-6004K	WFIE CABINET	6-TF-509
SALW-PI-6007K	AIR COMPR. CABINET	6-TF-509
SALW-FI-6001K	WATER CABINET	VENDOR MANUAL*
SALW-PI-6008K	WATER CABINET	6-TF-509

Calibrations completed. * will be done under Part II. BRJ 8/10/99

BRJ
Engineer

8/10/99

Date

5.5 PLC PROGRAMMING

This section is where the program for the PLC will be entered into the SLC 500 and the DTAM programmed. Power will be required at the instrument cabinet to power up the PLC and the receptacle (provides power for the laptop computer). Lockheed Martin Interim Stabilization engineering will perform the programming of the PLC. The final software programs shall be documented as required by HNF-3828, section 3.4. This documentation is not part of this ATP, but will be tracked by the Acceptance for Beneficial Use (ABU) document.

PLC programmed.

BRJ
Engineer

8/9/99

Date

QC INSPECTION RECORD

5.6 PUMPING AND INSTRUMENTATION CONTROL SKID ELECTRICAL AND PROCESS AIR POWER-UP

5.6.1 **ENSURE** the skid and remote equipment are connected before proceeding with the functional testing.

5.6.2 **ENERGIZE** the Pumping and Instrumentation Control Skid by **CLOSING** the following DISCONNECT SWITCHES in the order found below:

DISCONNECT SWITCH	ENERGIZED (✓)
SALW-DS-6002K	✓ ✓ ✓ ✓ ✓
SALW-DS-6003K	✓ ✓ ✓ ✓
SALW-DS-6004K	✓ ✓ ✓ ✓
SALW-DS-6005K	✓ ✓ ✓ ✓

QC INSPECTION RECORD

**HNF-4277
REVISION 0**

NOTE - The following circuit breakers are located in SALW-DP-6001K "SALW SKID DIST PNL".

5.6.3 **ENERGIZE** the Pumping and Instrumentation Control Skid by **CLOSING** the following Circuit Breakers in the order found below:

DISCONNECT SWITCH	ENERGIZED (✓)
"MAIN"	✓✓✓✓✓
7, (WEIGHT FACTOR INSTRUMENT ENCLOSURE RECEPTACLES)	✓✓✓✓✓
3, (LEAK DETECTION/HEAT TRACE)	✓✓✓✓✓
8, (WATER TANK CABINET HEATER)	✓✓✓✓✓
5, (INSTRUMENT ENCLOSURE [PLC])	✓✓✓✓✓
4, (AIR COMPRESSOR CABINET HEATER & RECEPTACLE)	✓✓✓✓✓
9, (RECEPTACLE)	✓✓✓✓✓
11, (FGM AND HEATER)	✓✓✓✓✓
6, (INTRINSICALLY SAFE PANEL)	✓✓✓✓✓
12, (INSTRUMENT CABINET HTR & A/C)	✓✓✓✓✓
13, (FGM HEAT TRACE POWER)	✓✓✓✓✓
14, (FGM HEAT TRACE POWER)	✓✓✓✓✓
1, (FGM AND HEATER)	✓✓✓✓✓
2, (FGM HEAT TRACE IA LINE)	✓✓✓✓✓
10, (HEAT TRACE FOR DIPTUBES AND IA LINE)	✓✓✓✓✓

NO INSPECTION RECORD

5.6.4 **ACKNOWLEDGE** any initial skid or FGM alarms.

5.6.5 **OPEN** valve SALW-V-6034K (located in the Air COMP Cabinet).

5.6.6 **START** air compressor SALW-CMP-6001K "SALW SKID IA COMP" by **POSITIONING** switch on the SALW-DS-6004K to the ON position.

5.6.7 **VERIFY** that Air Compressor starts and builds up pressure **AND** shuts off at 86 to 94 psig, as indicated by pressure gauge SALW-PI-6006K (AIR DRYER INLET PRESS).

9251G BR/John 8/10/99 9-8-99

Engineer Signature Date

5.6.8 **CHECK** the tubing in the instrument air 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.

5.6.9 **BLEED** off air by slowly opening valve SALW-V-6047K until the compressor restarts, then close valve.

43 800
Exception #11

5.6.10 **VERIFY** the air compressor restarts upon low pressure of 58 to 62 psig.

5.6.11 **VALVE** in air to the Pumping and Instrumentation Control Skid Water Tank by **SLOWLY PERFORMING** the following (Refer to H-14-103535 Sheet 1):

5.6.10 **CHECK** for air leaks as each remaining step in this section is performed. Make repairs as necessary. Deenergize compressor motor and bleed off air pressure if necessary to make the repairs.

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

5.6.12 **SLOWLY OPEN** valve SALW-V-6027K (located near the water tank).

5.6.13 **SLOWLY OPEN** valve SALW-V-6028K (located near the water tank).

QC INSPECTION RECORD

5.6.14 **ADJUST** Pressure Regulator Valve SALW-PCV-6006K to 30 psi ($\pm$ 3 psig) as indicated by pressure gauge SALW-PI-6008K (WTR TK PRESS).

5.6.15 **VALVE IN** air to SALW-PNL-6002K (WFIE Cabinet) by **PERFORMING** the following (Refer to H-14-103535 Sheet 1):

5.6.16 **SLOWLY OPEN** valve SALW-V-6026K (located in the Air Compressor Cabinet).

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

5.6.18 **ADJUST** pressure control valve SALW-PCV-6001K in SALW-PNL-6002K (WFIE Cabinet) to 20 psi ($\pm$ 2.5 psi) as indicated by the pressure gauge located on the face of the valve.

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

5.6.20 **SLOWLY OPEN** valve SALW-V-6003K, located in the middle of SALW-PNL-6002K (WFIE Cabinet).

CAUTION: The next three steps cause air to flow from ports on outside of WFIE cabinet.

5.6.21 **SLOWLY OPEN** valve SALW-V-6005K, located in the bottom left of SALW-PNL-6002K (WFIE Cabinet).

5.6.22 **SLOWLY OPEN** valve SALW-V-6006K, located in the bottom left of SALW-PNL-6002K (WFIE Cabinet).

5.6.23 **SLOWLY OPEN** valve SALW-V-6007K, located in the bottom left of SALW-PNL-6002K (WFIE Cabinet).

5.6.24 **SLOWLY OPEN** valve SALW-V-6020K, located in the middle left of SALW-PNL-6002K (WFIE Cabinet).

QC INSPECTION RECORD

5.6.25 **SLOWLY OPEN** valve SALW-V-6021K, located in the middle left of SALW-PNL-6002K (WFIE Cabinet).

9-8-99
MWJ
☒

5.6.26 **SLOWLY OPEN** valve SALW-V-6019K, located in the middle left of SALW-PNL-6002K (WFIE Cabinet).

9-8-99
MWJ
☒

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

5.6.28 **ADJUST** flow to dip tubes to 1.5 CFH ($\pm$ 0.5 CFH) as indicated by SALW-FIV-6002K.

1.5 BR Johns 8/10/99 MWJ 9-8-99
Flow Engineer Signature Date

5.6.30 **ADJUST** flow to dip tubes to 1.5 CFH ($\pm$ 0.5 CFH) as indicated by SALW-FIV-6003K.

1.5 BR Johns 8/10/99 MWJ 9-8-99
Flow Engineer Signature Date

5.6.31 **ADJUST** flow to dip tubes to 1.5 CFH ($\pm$ 0.5 CFH) as indicated by SALW-FIV-6004K.

1.5 BR Johns 8/10/99 MWJ 9-8-99
Flow Engineer Signature Date

5.6.32 **ENSURE** flows obtained in steps ^{above BAY} are all within 0.25 cfh of each other.

0 BR 0 BR 0 BR
Diff. 29 & 30 Diff. 29 & 31 Diff. 30 & 31

9-8-99
MWJ
☒ BR

5.6.33 **VALVE IN** SALW-WFT-6002K **AND** SALW-SGT-6001K by **PERFORMING** the following:

9-8-99
MWJ
☒

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

9-8-99
MWJ
☒

5.6.35 **ENSURE** SALW-WFT-6002K **EQUALIZING** valve on valve manifold SALW-V-6036K in cabinet SALW-PNL-6002K (WFIE Cabinet) is **CLOSED**.

9-8-99
MWJ
☒

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

MJD
7-8-99 ☒

5.6.37 **ENSURE** SALW-SGT-6001K equalizing valve on valve manifold SALW-V-6035K in cabinet SALW-PNL-6002K (WFIE Cabinet) is CLOSED.

MJD
7-8-99 ☒

5.6.38 **CONFIRM** that a signal is present between SALW-PNL-6002K (WFIE Cabinet) Instruments and the Programmable Logic Controller by **PERFORMING** the following:

5.6.39 **VERIFY** Weight Factor is approximately 0.0" (± 0.5 ") Water Gauge as indicated by Data Table Access Module. If DTAM displays "<<<<" indicating less than zero, verify continuity between the transmitter and the Programmable Logic Controller and proceed with the test.

0.2 BRF
BR Johns
Engineer Signature
8/10/99
Date
MJD
7-8-99

5.6.40 **VERIFY** Specific Gravity is approximately 0.0" (± 0.5 ") Water Gauge as indicated by Data Table Access Module. If DTAM displays "<<<<" indicating less than zero, verify continuity between the transmitter and the Programmable Logic Controller and proceed with the test.

.01 BRF
BR Johns
Engineer Signature
8/10/99
Date
MJD
7-8-99

5.6.41 **OPEN** valve SALW-V-6035K. (Equalizing) BRF

☒

5.6.42 **CLOSE** valves SALW-V-6035K HI and LO.

☒

5.6.43 **OPEN** valve SALW-V-6036K. (Equalizing) BRF

☒

5.6.44 **CLOSE** valves SALW-V-6036K HI and LO.

☒

5.6.45 **CLOSE** valves SALW-V-6019K, SALW-V-6021K and SALW-V-6020K.

☒

5.6.46 **VERIFY** all air leaks repaired.

☒

BR Johns
Engineer Signature
8/10/99
Date

QC INSPECTION RECORD

HNF-4277
REVISION 0

5.6.47 Engineer **VERIFY** that section 5.6 is complete by **SIGNING** below.

B. R. Johns 8/10/99
Engineer Signature Date

5.6.48 Quality Control Inspector **VERIFY** that section 5.6 is complete by signing below.

K. R. [Signature] 8/10/99
Quality Control Inspector Signature Date

QC INSPECTION RECORD

5.7 PUMPING AND INSTRUMENTATION CONTROL SKID WATER DRIP SYSTEM

5.7.1 ATTACH temporary portable hose from diptube outlet to high and medium diptubes from the bottom of the weight factor enclosure, (from valves SALW-V-6005K and SALW-V-6007K). IF need. Bucket used to catch water. Beg 8/10/99

- ROUTE the flexible hose to a suitable drain AND SECURE.

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

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

CAUTION

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

5.7.3 CAREFULLY ADJUST Pressure Regulator SALW-PCV-6005K, located in the bottom of SALW-PNL-6002K (WFIE Cabinet) to 20 psig (± 2 psig) as indicated by SALW-PI-6001K in the middle of SALW-PNL-6002K (WFIE Cabinet).

5.7.4 ADJUST valve SALW-V-6014K to allow APPROXIMATELY 2 drops/second as indicated by sight glass SALW-FG-6001K (± 1 drop/second).

5.7.5 ADJUST valve SALW-V-6015K to allow APPROXIMATELY 2 drops/second as indicated by sight glass SALW-FG-6002K (± 1 drop/second).

GO INSPECTION RECORD

**HNF-4277
REVISION 0**

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

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

- 5.7.7 *Ensure Brg* **OPEN** equalizing valve SALW-V-6035. ☒
- 5.7.8 *Ensure Brg* **CLOSE** HI and LO isolation valves on SALW-V-6035. ☒
- 5.7.9 *Ensure Brg* **OPEN** equalizing valve SALW-V-6036. ☒
- 5.7.10 *Ensure Brg* **CLOSE** HI and LO isolation valves on SALW-V-6036. ☒
- 5.7.11 *Ensure Brg* **CLOSE** the following valves in the order listed: SALW-V-6019, SALW-V-6021, SALW-V-6020, SALW-V-6007, SALW-V-6006, and SALW-V-6005. ☒

5.7.12 **SLOWLY** open valve SALW-V-6044K in the SALW-PNL-6002K (Air Compressor Cabinet) ☒ *MW*

5.7.13 **ADJUST** pressure regulator SALW-PCV-6007K outside SALW-PNL-6002K (Air Compressor Cabinet) to 75 +/- 10 psig. ☒ *MW*

5.7.14 **CLOSE** valve SALW-V-6044K in the SALW-PNL-6002K (Air Compressor Cabinet). ☒ *MW*

5.7.15 **SLOWLY** open valve SALW-V-6048K in the SALW-PNL-6002K (Air Compressor Cabinet). ☒ *MW*

5.7.16 **ADJUST** pressure regulator SALW-PCV-6008K outside SALW-PNL-6002K (Air Compressor Cabinet) to 75 +/- 10 psig. ☒ *MW*

QC INSPECTION RECORD

will be performed in Part II when FGMI is connected Brg Except 12

5.7.17 **CLOSE** valve SALW-V-6048K in the SALW-PNL-6002K (Air Compressor Cabinet).

5.7.18 **SLOWLY** crack open valve SALW-V-6046K in the SALW-PNL-6002K (Air Compressor Cabinet) to **VERIFY** air flow at the fitting for the AOV. Then close valve SALW-V-6046K. *beg*

5.7.19 **SLOWLY** crack open valve SALW-V-6047K (with SALW-V-6046K still cracked open) in the SALW-PNL-6002K (Air Compressor Cabinet) to **VERIFY** air flow at the drain line 127

5.7.20 **CLOSE** valve SALW-V-6047K in the SALW-PNL-6002K (Air Compressor Cabinet).

5.7.21 **SLOWLY** crack open valve SALW-V-6043K in the SALW-PNL-6002K (Air Compressor Cabinet) to **VERIFY** air flow at the tank drain line.

5.7.22 **CLOSE** valve SALW-V-6043K in the SALW-PNL-6002K (Air Compressor Cabinet).

5.7.23 Engineer **VERIFY** that section 5.7 is complete by **SIGNING** below.

** Exception 12 for steps 5.7.13 to 5.7.17. To be performed in part II.*

BR Johns

Engineer Signature

8/10/99

Date

5.7.24 Quality Control Inspector **VERIFY** that section 5.7 is complete by signing below.

** K. Galt*

Quality Control Inspector Signature

8/16/99

Date

QC INSPECTION RECORD

5.8 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION ANALOG INPUT SIGNALS

Water Tank Level Transmitter

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

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

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

5.8.4 **CONNECT** 0-62" test Manometer ^{vacuum} ~~pressure~~ source to the ^{BAY} ~~HIGH~~ ^{LOW} ~~PRESSURE~~ vent/test port of the level transmitter SALW-LT-6003K. ☒

Exception 13
5.8.5 **VERIFY** the ^{HIGH BAY} ~~LOW~~ ^{HIGH} ~~PRESSURE~~ vent/test port of the level transmitter SALW-LT-6003K is OPEN to atmosphere. ☒

5.8.6 **ADJUST** the test Manometer on the SALW-LT-6003K to a ^{vacuum} ~~pressure~~ of 31" Water Gauge ($\pm 1"$). ☒

5.8.7 **RECORD** the following:(screen 20 on DTAM)

DATA TABLE ACCESS MODULE WATER TANK LEVEL (RANGE: 28.5 TO 33.5 Inches)
31.1

NOTE - In the next step, the alarm should annunciate between 11.75" and 12.75" Water Gauge.

5.8.8 **VERY SLOWLY DECREASE** the Level Transmitter test Manometer pressure **UNTIL** the Data Table Access Module "PIC WATER LOW" alarm (alarm 9, screen 109) annunciates. ☒

QC INSPECTION RECORD

5.8.9 **ACKNOWLEDGE** the Water Tank Low Level alarm at the Data Table Access Module.

5.8.10 **OBSERVE** the Data Table Access Module **AND RECORD** the water tank level readings below(screen 20 on DTAM)

DATA TABLE ACCESS MODULE WATER TANK LEVEL (RANGE 11.75 to 12.75 Inches Water Gauge)
12.2

5.8.11 **SLOWLY INCREASE** the Level Transmitter test Manometer pressure to 15.5" Water Gauge.

5.8.12 **OBSERVE** the Data Table Access Module **AND RECORD** the water tank level readings below:(screen 20 on DTAM)

DATA TABLE ACCESS MODULE WATER TANK LEVEL (RANGE 14.5 to 16.5 inches)
15.5

Exception 13
low BRG

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

5.8.16 **RESTORE** the Water Tank Level Transmitter SALW-LT-6003K by **PERFORMING** the following:

5.8.17 **OPEN** valve SALW-V-6029K, located in the bottom of SALW-PNL-6003K (WATER TANK ENCL).

QC INSPECTION RECORD

5.8.18 **OPEN** valve SALW-V-6031K, located in the bottom of SALW-PNL-6003K (WATER TANK ENCL).

WEIGHT FACTOR TEST

5.8.19 **VERIFY** that NO Programmable Logic Controller input signals are FORCED and that the forcing function is DISABLED.

5.8.20 **CONNECT** the 0-500" Water Gauge test Manometer pressure source to the HIGH PRESSURE dip tube on the side of the "WFIE Cabinet."

5.8.21 **ENSURE** SALW-V-6001K is CLOSED.

5.8.22 **ENSURE** SALW-V-6005K is OPEN.

5.8.23 **ENSURE** SALW-V-6006K is OPEN.

5.8.24 **ENSURE** adjustment valves on SALW-FIV-6002K, SALW-FIV-6003K, SALW-FIV-6004K are CLOSED.

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

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

5.8.27 **SET** the test Manometer to 125" Water Gauge.

QC INSPECTION RECORD

5.8.28 **OBSERVE** Data Table Access Module(screen 24) **AND RECORD** the Weight Factor on the table below.

DATA TABLE ACCESS MODULE WEIGHT FACTOR READING (RANGE 120 to 130 inches)
125.3

5.8.29 **BLEED** off pressure from the manometer.

5.8.30 **DISCONNECT** the 0-500" test Manometer pressure source.

5.8.31 **CLOSE** SALW-V-6006K.

5.8.32 **OPEN** SALW-WFT-6002K equalizing valve, located on SALW-V-6036K 3-Valve Manifold in cabinet SALW-PNL-6002K (WFIE Cabinet).

5.8.33 **CLOSE** the LOW side and HIGH side isolation valves, located on SALW-V-6036K 3-Valve Manifold in cabinet SALW-PNL-6002K (WFIE Cabinet).

SPECIFIC GRAVITY TEST

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

5.8.34 **CONNECT** the 0-50" Water Gauge test Manometer pressure source to the HIGH PRESSURE dip tube.

5.8.35 **ENSURE** SALW-V-6007K is OPEN.

5.8.36 **ENSURE** SALW-V-6005K is OPEN.

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

QC INSPECTION RECORD

5.8.38 **CLOSE** the Specific Gravity Transmitter equalizing valve located on SALW-V-6035K in cabinet SALW-PNL-6002K (WFIE Cabinet).

5.8.39 **SET** the test Manometer to 5" Water Gauge ($\pm .3$ ").

5.8.40 **OBSERVE** Data Table Access Module(screen 24) **AND RECORD** the Specific Gravity reading on the table below.

DATA TABLE ACCESS MODULE SPECIFIC GRAVITY READING (RANGE 4.65 to 5.35 inches)
4.9

Exception 14 Bly Remove manometer from High Pressure DIP tube, Bleed pressure off first. Open Equalizing valve SALW-V-6035k
FLOW METER TEST Close Low and High side valves on SALW-V-6035k.

Exception 15 Bly 5.8.41 IF necessary to configure the flowmeter, **UNPLUG** the power cord to the SALW-FQIT-6001K (SUPERNATANT FLOW XMIT), located in cabinet SALW-PNL-6005K (Instrument Cabinet).

Did Do Bly 8/11/99 5.8.42 **ENSURE** SALW-FQIT-6001K is powered and configured for simulated flow signals.

5.8.43 **SIMULATE** a flow signal of 2.0 gpm (50% span) with the hand held calibrator, or from flowmeter face plate.

5.8.44 **VERIFY** the SALW-FQIT-6001K transmitter is operating properly by **RECORDING** the following:(screen 24 on DTAM)

DATA TABLE ACCESS MODULE SUPERNATANT FLOW (RANGE: 1.8 TO 2.2 GPM)	SUPERNATANT FLOW XMIT SUPERNATANT FLOW (RANGE: 1.8 TO 2.2 GPM)
2.00	2.000

QC INSPECTION RECORD

Delete Exception 13
Did do BR
BA 6/19/99
5.8.45 **RESTORE** the SALW-FQIT-6001K (SUPERNATANT FLOW TRANSMITTER) to its original configuration.

SUCTION AND DISCHARGE PRESSURE SIGNAL

5.8.46 **CONNECT** a current source to PSPT+ and PSPT- at the intrinsic side terminal board in the Intrinsic Safe panel.

5.8.47 **SET** the current to 4mA and record the suction pressure on SALW-PI-6012K in the table below. Reading is to be approximately zero.

5.8.48 **SET** the current source to 20mA and record the suction pressure in the table below. Reading is to be greater than zero.

5.8.49 **DISCONNECT** the current source.

5.8.50 **CONNECT** a current source to PDPT+ and PDPT- at the intrinsic side terminal board in the Intrinsic Safe panel.

5.8.51 **SET** the current to 4mA and record the discharge pressures on SALW-PI-6011K and on the DTAM in the table below. Readings are to be approximately zero.

5.8.52 **SET** the current source to 20mA and record the discharge pressures in the table below. Readings are to be greater than zero.

5.8.53 **DISCONNECT** the current source.

QC INSPECTION RECORD

5.8.54 **RECORD** the following pressures on the table below:(screen 26 on DTAM)

SALW-PI-6012K JET PUMP SUCTION PRESSURE		DTAM DISCHARGE PRESSURE	SALW-PI-6011K JET PUMP DISCHARGE PRESSURE	
0.1	At 4mA	0	0.4	At 4mA
100.1	At 20mA	300	300.2	At 20mA

PIT FLAMMABLE GAS MONITOR ANALOG SIGNAL TO PLC

5.8.55 **CONNECT** a current source to terminal board TB1 in the PICS Instrument Enclosure, points FGM 0(+) and FGM 0(-).

5.8.56 **SET** current source to 4 mA ($\pm .25$ mA).

5.8.57 **RECORD** the Data Table Access Module Flammable Gas DISPLAY on the "Pit FGM Input/Output Table" below.

5.8.58 **SET** current source to 10 mA ($\pm .25$ mA).

5.8.59 **RECORD** the Data Table Access Module Flammable Gas display on the "Pit FGM Input/Output Table" below.

5.8.60 **SET** current source to 20 mA ($\pm .25$ mA).

QC INSPECTION RECORD

5.8.61 **RECORD** the Data Table Access Module Flammable Gas display on the "Pit FGM Input/Output Table" below.(screen 28 on DTAM)

Pit FGM Input/Output Table	
Input (mA)	Output (as displayed on Data Table Access Module)
4	.0
10	11.3
20	30.0

5.8.62 **DISCONNECT** the current source.

DOME SPACE FLAMMABLE GAS MONITOR ANALOG SIGNAL TO PLC

5.8.63 **CONNECT** a current source to terminal board TB1 in the PICS Instrument Enclosure, points FGM 1(+) and FGM 1(-).

5.8.64 **SET** current source to 4 mA ($\pm .25$ mA).

5.8.64 **RECORD** the Data Table Access Module Flammable Gas DISPLAY on the "Dome Space FGM Input/Output Table" below.

5.8.65 **SET** current source to 10 mA ($\pm .25$ mA).

5.8.66 **RECORD** the Data Table Access Module Flammable Gas display on the "Dome Space FGM Input/Output Table" below.

5.8.67 **SET** current source to 20 mA ($\pm .25$ mA).

5.8.68 **RECORD** the Data Table Access Module Flammable Gas display on the "Dome Space FGM Input/Output Table" below.(screen 28 on DTAM)

QC INSPECTION RECORD

Dome Space FGM Input/Output Table	
Input (mA)	Output (as displayed on Data Table Access Module)
4	.0
10	11.3
20	30.0

5.8.69 **DISCONNECT** the current source.

THERMOCOUPLE INPUTS TO PLC

5.8.70 **WARM** thermocouple SALW-TE-6004K, located in the Instrument Enclosure.

5.8.71 **VERIFY** Data Table Access Module(screen 25)displays a changed temperature.

BR Johns
Engineer Signature

8/11/99
Date

5.8.72 **ALLOW** SALW-TE-6004K to return to ambient temperature.

5.8.73 **WARM** thermocouple SALW-TE-6003K, located in SALW-PNL-6001K
INSTRUMENT AIR ENCLOSURE.

1 BR 8/11/99

5.8.74 **VERIFY** Data Table Access Module(screen 25) displays a changed temperature.

BR Johns
Engineer Signature

8/11/99
Date

5.8.75 **ALLOW** SALW-TE-6003K to return to ambient temperature.

QC INSPECTION RECORD

HNF-4277
REVISION 0

5.8.76 **CONNECT** a thermocouple probe to the intrinsic side of top thermocouple module (MTL 3081) in the Intrinsic Safe Panel. (This will simulate pump temperature.)

5.8.77 **WARM** the connected thermocouple probe.

5.8.78 **VERIFY** Data Table Access Module (screen 25) displays a changed temperature.

BR Johns
Engineer Signature

8/11/99
Date

5.8.79 **ALLOW** the connected probe to return to ambient temperature.

5.8.80 **CONNECT** a thermocouple probe to the second thermocouple module in the Intrinsic Safe panel. (This will simulate jumper temperature.)

5.8.81 **WARM** the thermocouple probe.

5.8.82 **VERIFY** Data Table Access Module (screen 25) displays a changed temperature

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8/11/99
Date

5.8.83 **ALLOW** SALW-TE-6002K to return to ambient temperature.

RECIRCULATION FLUSH PRESSURE SIGNAL TO PLC

5.8.84 **CONNECT** a current source to points RFPT+ and RFPT- at the intrinsic side terminal board in the Intrinsic Safe panel.

5.8.85 **SET** the current source to 20mA.

5.8.86 **VERIFY** an alarm on the DTAM for High Recirc. Flush Pressure (alarm # screen 139) and strobe flashes.

39 8/8/10/99

5.8.87 **ACKNOWLEDGE** alarm.

5.8.88 **SET** the current source to 4mA.

QC INSPECTION RECORD

5.8.89 **VERIFY** the High Recirc. Flush Pressure alarm clears on the DTAM.

5.8.90 **DISCONNECT** the current source.

JUMPER FLUSH PRESSURE SIGNAL TO PLC

5.8.91 **CONNECT** a current source to points JFPT+ and JFPT- at the intrinsic side terminal board in the Intrinsic Safe panel.

5.8.92 **SET** the current source to 12.5mA.

5.8.93 **VERIFY** an alarm on the DTAM for High Flush Pressure(alarm 3, screen 103) and strobe flashes and the BLUE light on the instrument panel is ON.

5.8.94 **ACKNOWLEDGE** alarm.

5.8.95 **SET** the current source to 4mA.

5.8.96 **VERIFY** the High Flush Pressure alarm clears on the DTAM and the BLUE light turns OFF.

5.8.97 **DISCONNECT** the current source.

5.8.98 Engineer **VERIFY** that section 5.8 is complete by **SIGNING** below.

** See exceptions 13 and 14. BRF*

B.R. Johns
Engineer Signature

8/13/99
Date

5.8.99 Quality Control Inspector **VERIFY** that section 5.8 is complete by signing below.

** [Signature]*
Quality Control Inspector Signature

8/16/99
Date

5.13

QC INSPECTION RECORD

5.9 VERIFY DATA TABLE ACCESS MODULE DISCRETE SIGNAL INPUTS.

VALVE POSITION (LS-2) INPUT

5.9.1 **CONNECT** a normally closed switch across the LS-2+ and LS-2- and a normally open switch across the LS-1+ AND LS-1- points on the intrinsic safe terminal board in the Intrinsic Safe panel.

5.9.2 **VERIFY** the JR-1 valve indicates "norm" at the Data Table Access Module(screen 42).

5.9.3 **CLOSE** the LS-1 switch installed in the above step.

5.9.4 **VERIFY** the JR-1 valve indicates "NON-PROCESS" at the Data Table Access Module.

5.9.5 **OPEN** the LS-2 switch.

5.9.6 **VERIFY** the JR-1 valve still indicates "NON-PROCESS" at the Data Table Access Module.

5.9.7 **CLOSE** the LS-2 switch and **OPEN** the LS-1 switch.

5.9.8 **VERIFY** the JR-1 valve indicates " norm" at the Data Table Access Module.

5.9.9 **REMOVE** the switches.

LOW PRESSURE INTERLOCK (PS-1) INPUT

5.9.10 **CONNECT** a normally closed switch across points PS-1-NO and PS-1-1(H) at the intrinsic safe terminal board in the Intrinsic Safe panel and a normally open switch across MR-1 and 120vac COM in the pump motor starter.

5.9.11 **VERIFY** the GREEN light on the instrument panel is ON.

5.9.12 **CLOSE** the MR-1 switch.

QC INSPECTION RECORD

5.9.13 **VERIFY** the RED light on the instrument panel is ON and the GREEN light is OFF.

5.9.14 **OPEN** the PS-1 switch.

5.9.15 **VERIFY** that the amber light on the instrument panel turns ON ^{immediately} ~~30 seconds~~ after the switch is opened and a "XFR Pressure LOW" alarm (alarm 1, screen 101) occurs at the DTAM. _{after 30 seconds delay.}

Exception
16

5.9.16 **ACKNOWLEDGE** alarms at Data Table Access Module.

5.9.17 **CLOSE** the PS-1 switch to clear the alarm and turn OFF amber light.

5.9.18 **REMOVE** the two switches.

HIGH PRESSURE INTERLOCK (PS-1-1) INPUT

5.9.19 **CONNECT** a normally closed switch at points PS-1-NC and PS-1-1(H) at the intrinsic safe terminal board in the Intrinsic Safe panel.

5.9.20 **OPEN** the switch across the PS-1-1 points.

5.9.21 **VERIFY** a "XFR Pressure HIGH" alarm (alarm 2, screen 102) at the DTAM after a 3 second delay.

5.9.22 **ACKNOWLEDGE** the alarm.

5.9.23 **DISCONNECT** the switch.

RECIRCULATION FLOWMETER TEST INPUT

5.9.24 **PLACE** a force (rung 5:28) on the motor permissive if necessary to ensure a true logic.

Exception
17
Move
to part II

5.9.25 **ENSURE** the Controlotron in the Water Cabinet is programmed.

5 steps
5.9.24
to
5.9.34

5.9.26 **CONFIGURE** SALW-FI-6001K (PMP RECIRC FLOW) to receive signals from a control and display unit.

QC INSPECTION RECORD

5.9.27 **CONFIGURE** the control and display unit to simulate flow signals using the Installation, Diagnostics, Test/Control Mode, AN CAL function.

☒ EML

5.9.28 **APPLY** power to the Controlotron.

☒ EML

5.9.29 **SIMULATE** a flow signal of 0.6 gpm with the control and display unit.

☒ EML

5.9.30 **VERIFY** no "RECIRCULATION FAILURE" alarm (alarm 21, screen 121).

☒ EML

5.9.31 **SIMULATE** a flow signal of 0.4 gpm with the control and display unit.

☒ EML

5.9.32 **VERIFY** Jet Pump recirculation line low flow alarm K21, "RECIRCULATION FAILURE" annunciates at the Data Table Access Module after a 30 seconds delay.

☒ EML

5.9.33 **RESTORE** SALW-FI-6001K to its original configuration.

☒ EML

5.9.34 **REMOVE** any forces on the software logic.

☒ EML

DILUTION TANK LOW LEVEL INPUT

5.9.35 **PLACE** a normally closed switch across terminal points DIL-L and CKT5H-A on terminal board TB4 in the Instrument Cabinet.

☒

5.9.36 **VERIFY** no dilution tank low level alarm on the DTAM (alarm 35, screen 135).

☒

5.9.37 **OPEN** the switch at TB4.

☒

5.9.38 **VERIFY** a dilution tank low level alarm on the DTAM.

☒

5.9.39 **ACKNOWLEDGE** the alarm.

☒

5.9.40 **CLOSE** the switch.

☒

QC INSPECTION RECORD

5.9.41 **VERIFY** alarm clears.

5.9.42 **DISCONNECT** the switch.

FLAMMABLE GAS MONITOR INPUT

5.9.43 **CONNECT** a normally closed switch to points FGM and CKT5H-A on terminal board TB 4 in the instrument cabinet.

5.9.44 **VERIFY** no FGM interlock alarm on the DTAM (alarm 22, screen 122).

5.9.45 **OPEN** the switch.

5.9.46 **VERIFY** an FGM alarm on the DTAM.

5.9.47 **ACKNOWLEDGE** the alarm.

5.9.48 **CLOSE** the switch.

5.9.49 **VERIFY** the FGM alarm clears.

5.9.50 **LEAVE** the switch connected for the Heat Trace check.

HEAT TRACE CONTROL FOR PUMP AND JUMPER

5.9.51 **VERIFY** that heat trace relays HT-1 and HT-2 are deenergized by checking for zero voltage across points 2 and 7 at each relay.

5.9.52 **VERIFY** zero voltage at TB12 between HT-1 and CKT3-N.

5.9.53 **FORCE** software to actuate relays HT-1 and HT-2.

5.9.54 **CHECK** for 120vac at TB-12, points HT-1 and CKT3-N.

5.9.55 **OPEN** the FGM switch.

QC INSPECTION RECORD

HNF-4277
REVISION 0

5.9.56 **VERIFY** 0vac at TB-12, points HT-1 and CKT3-N.

5.9.57 **REMOVE** the software forces.

5.9.58 **REMOVE** the switch.

5.9.59 Engineer **VERIFY** that section 5.9 is complete by **SIGNING** below.

** see exceptions 16 and 17. BRJ*

BRJ
Engineer Signature

8/13/99
Date

5.9.60 Quality Control Inspector **VERIFY** that section 5.9 is complete by signing below.

** Ken L. Smith*

Quality Control Inspector Signature

8/16/99
Date

QC INSPECTION RECORD

5.10 CHECK HEATERS AND AIR CONDITIONER

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 unit to turn OFF.

5.10.3 **TURN** the fan thermostat switch low to allow the fan in the air compressor cabinet to run.

5.10.4 **RESET** the fan switch to approximately 90 degrees.

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 heater to turn OFF.

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 approximately 40 degrees F to allow the heater to turn OFF.

5.10.9 **TURN** the heater ON in the Instrument cabinet. 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 heater to turn OFF.

5.10.11 **TURN ON** the air conditioner in the Instrument cabinet. If necessary, remove the front grill on the unit and adjust the temperature setting lower to get the unit to operate.

5.10.12 **RESET** the temperature setting to approximately 90 to 95 degrees.

QC INSPECTION RECORD

HNF-4277
REVISION 0

5.10.13 Engineer **VERIFY** that section 5.10 is complete by **SIGNING** below.

B. R. Johns
Engineer Signature

8/12/99
Date

5.10.14 Quality Control Inspector **VERIFY** that section 5.10 is complete by signing below.

K. W. Hays
Quality Control Inspector Signature

8/12/99
Date

QC INSPECTION RECORD

HNF-4277
REVISION 0

5.11 LEAK DETECTION INTERLOCK CHECK (Complete Leak Detector CGI Forms during this section.)

5.11.1 Set up two buckets for leak detector testing.

- NOTE
- A supply of water needs to be available to pour into the buckets during testing.
 - Pump operation will be simulated during the remainder of the ATP.

WARNING

Energized circuits and leads are contained inside the cabinet. Observe appropriate electrical. Comply with WHC-CM-1-10, WKS-15, ELECTRICAL WORK SAFETY to avoid personnel electrical shock hazards.

5.11.2 **PERFORM** or **VERIFY** performed the CGI dedication for the leak detector relays per HNF-4275 and WTF-1-17 and WTF-30-15.

☒ MW

5.11.3 **CONNECT** a leak detector probe to the primary leak detector terminals at TB11 in the Instrument Cabinet, points SD-1A, SD-1B, SA-1A, and SA-1B.

☒ MW

5.11.4 **VERIFY** no primary leak detector alarms at the DTAM (alarms 6 and 7, screens 106 and 107).

☒ MW

5.11.5 **PLACE** the leak detector assembly in a bucket of water.

☒ MW

5.11.6 **VERIFY** a leak detector leak and trouble alarm for the primary leak detector is received at the DTAM (alarm 6) after a 3 second delay.

☒ MW

5.11.7 **ACKNOWLEDGE** the Leak Detector Alarm at the Data Table Access Module.

☒ MW

5.11.8 **REMOVE** the leak detector assembly from the bucket and allow the water to drain off the assembly into the bucket.

QC INSPECTION RECORD

HNF-4277
REVISION 0

5.11.9 **VERIFY** the leak detector alarms clear at the DTAM.

5.11.10 **DISCONNECT** one of the "SD" wires going to the probe.

5.11.11 **VERIFY** trouble alarm 7 occurs.

5.11.12 **ACKNOWLEDGE** the alarm.

5.11.13 ~~**DISCONNECT** the probe.~~ *Reconnect wire, verify trouble alarm clears.*

5.11.14 **CONNECT** a leak detector probe to leak detector #2 terminals at TB11 in the Instrument Cabinet, points SD-2A, SD-2B, SA-2A, and SA-2B. *1 BRJ 8/11/99*

5.11.15 **VERIFY** no leak detector #2 alarms at the DTAM (alarms 18 and 19, screens 118 and 119). *1 BRJ 9/11/99*

5.11.16 **PLACE** the leak detector assembly in a bucket of water.

5.11.17 **VERIFY** a leak detector leak and trouble alarm for leak detector #1 is received at the DTAM.

5.11.18 **ACKNOWLEDGE** the Leak Detector Alarm at the Data Table Access Module.

5.11.19 **REMOVE** the leak detector assembly from the bucket and allow the water to drain off the assembly into the bucket.

5.11.20 **VERIFY** the leak detector alarms clear at the DTAM.

5.11.21 **DISCONNECT** one of the "SD" wires going to the probe.

5.11.22 **VERIFY** trouble alarm 19 occurs.

5.11.23 **ACKNOWLEDGE** the alarm.

QC INSPECTION RECORD

5.11.24 ~~DISCONNECT~~ the probe. *Reconnect wire. Verify alarm clears.*

5.11.25 ~~DISCONNECT~~ the leak detector assembly form TB11. *N/A*

5.11.26 Engineer **VERIFY** that section 5.11 is complete by **SIGNING** below.

See exception 28
BLG

Engineer Signature

9/11/99

Date

5.11.27 Quality Control Inspector **VERIFY** that section 5.11 is complete by signing below.

KW
8-12-99
KW

Quality Control Inspector Signature Date

KW
9/11/99

Date

Exception # 28
11/11/95
19

QC INSPECTION RECORD

5.12 PLC OUTPUTS

JET PUMP START AND DILUTION OUTPUTS

5.12.1 **CONNECT** a voltmeter across terminals MS-1 and 120vac COM at the terminal block in the jet pump motor starter and across terminals DIL-P and 120N at TB4 in the Instrument Cabinet.

5.12.2 **FORCE** software for an output (rung 7:0) on O:11/2 (address N60:31/2).
301

5.12.3 **VERIFY** 120vac on both voltmeters.

5.12.4 **REMOVE** the software force and **VERIFY** zero volts on both voltmeters.

5.12.5 **DISCONNECT** the voltmeters.

STROBE, BUZZER AND LIGHT OUTPUTS

5.12.6 **USE** software forces to verify the strobe, buzzer on pump shut down.

5.12.7 **PLACE** a force at subroutine 18, rung 11 to turn ON the strobe and buzzer.

5.12.8 **ACKNOWLEDGE** the alarms.

5.12.9 **REMOVE** the software force.

5.12.10 **SECURE** the skid per sections 4.4.2.7, 4.4.2.8 and 4.4.2.9 for moving to the maintenance shop. *Bleed off air pressure on compressor*

Excavator
20. tank and water tank.
BEJ
5.12.11 Engineer **VERIFY** that section 5.12 is complete by **SIGNING** below.

BR Johns
Engineer Signature

8/12/99
Date

5.12.12 Quality Control Inspector **VERIFY** that section 5.12 is complete by signing below.

* *Ken Walther*
Quality Control Inspector Signature

8/16/99
Date

PART II

NOTE: This part of the ATP will be performed when the PIC skid is in the Interim Stabilization maintenance shop. Verify prerequisites are completed before proceeding, which includes connection of the jumper and pump assembly. A computer is set up and connected to the skid to simulate the OCS for "U" farm. Perform the following for Part II set up.

SKID AND PUMP SET UP:

- Set up skid "K" and connect to pump, jumper and recirculation assembly including all the wiring to the switches and transducers. Test gauges are to be installed on the jumper assembly for suction and discharge pressure verification. Actual piping, tubing or wiring to be used in the field need not be used for the hookups if not available. Reference H-14-103530 for connections to the skid.
- Provide an FGM for skid "K" and connect just the air line and interlock wiring. Actual tubing and wiring to be used in the field need not be used for this test set up if not available.
- Connect two leak detector probes to the skid. If the actual leak detector probes to be used in the field are not available, then any similar type probes can be used.
- Connect the computer to the skid PLC for the Operator Control Station (OCS).

Exception #22 Finish section 5.4 for Control room. Check section 5.5 for programming. Section 5.6.1 to 5.6.6 and 5.6.11 to 5.6.40. Bkg Per test director. Bkg
5.13 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION ANALOG INPUT SIGNALS

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

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

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

5.13.4 CONNECT 0-50" test Manometer pressure source to the HIGH PRESSURE vent/test port of the level transmitter SALW-LT-6003K.

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

5.13.6 ADJUST the test Manometer on the SALW-LT-6003K to a pressure of 31" Water Gauge ($\pm 1"$).

**HNF-4277
REVISION 0**

5.13.7 **RECORD** the following:

OPERATOR CONTROL STATION WATER TANK LEVEL (RANGE: 28.5 TO 33.5 Inches)	DATA TABLE ACCESS MODULE WATER TANK LEVEL (RANGE: 28.5 TO 33.5 Inches)
31.2 inches	31.1 inches

NOTE - Alarm should annunciate between 11.75" and 12.75" Water Gauge.

5.13.8 **VERY SLOWLY DECREASE** the Level Transmitter test Manometer pressure **UNTIL** the Data Table Access Module "PIC WATER LOW" alarm (alarm 9) annunciates.

7-8-99
HND

5.13.9 **VERIFY** that the Water Tank Low Level alarm is displayed at the Operator Control Station.

7-8-99
HND

5.13.10 **ACKNOWLEDGE** the Water Tank Low Level alarm at the Operator Control Station and at the Data Table Access Module.

8-8-99
HND

5.13.11 **OBSERVE** the Operator Control Station and Data Table Access Module **AND RECORD** the water tank level readings below:

OPERATOR CONTROL STATION WATER TANK LEVEL (RANGE 11.75 to 12.75 inches Water Gauge)	DATA TABLE ACCESS MODULE WATER TANK LEVEL (RANGE 11.75 to 12.75 inches Water Gauge)
12.1 inches	12.1 inches

5.13.12 **SLOWLY INCREASE** the Level Transmitter test Manometer pressure to 15.5" Water Gauge.

8-8-99
HND

5.13.13 **OBSERVE** the Operator Control Station and Data Table Access Module **AND RECORD** the water tank level readings below:

KW 9/8/99

**HNF-4277
REVISION 0**

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

5.13.14 **VERIFY** that the Water Tank Low Level alarm **CLEARs** at the Operator Control Station.

mwj

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

mwj

5.13.16 **RESTORE** the Water Tank Level Transmitter SALW-LT-6003K by **PERFORMING** the following:

5.13.17 **OPEN** valve SALW-V-6029K, located in the bottom of SALW-PNL-6003K (WATER TANK ENCL).

mwj

5.13.18 **OPEN** valve SALW-V-6031K, located in the bottom of SALW-PNL-6003K (WATER TANK ENCL).

mwj

WEIGHT FACTOR TEST

5.13.19 **VERIFY** that NO Programmable Logic Controller input signals are **FORCED** and that the forcing function is **DISABLED**.

*(minimum range) 820
9/8/99*

mwj

5.13.20 **CONNECT** the 0-500" Water Gauge test Manometer pressure source to the HIGH PRESSURE dip tube on the side of the "WFIE Cabinet".

mwj

5.13.21 **ENSURE** SALW-V-6001K is **CLOSED**.

mwj

5.13.22 **ENSURE** SALW-V-6005K is **OPEN**.

mwj

5.13.23 **ENSURE** SALW-V-6006K is OPEN.

mw

5.13.24 **ENSURE** adjustment valves on SALW-FIV-6002K, SALW-FIV-6003K, SALW-FIV-6004K are CLOSED.

mw

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

mw

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

mw

5.13.27 **SET** the test Manometer to 125" Water Gauge.

mw

5.13.28 **OBSERVE** Operator Control Station and Data Table Access Module **AND RECORD** the Weight Factor on the table below.

OPERATOR CONTROL STATION WEIGHT FACTOR READING (RANGE 120 to 130 inches)	DATA TABLE ACCESS MODULE WEIGHT FACTOR READING (RANGE 120 to 130 inches)
<i>125.4 inches</i>	<i>125.4 inches</i>

5.13.29 **BLEED** off pressure from the manometer.

mw

5.13.30 **DISCONNECT** the 0-500" test Manometer pressure source.

mw

5.13.31 **CLOSE** SALW-V-6006K.

mw

5.13.32 **OPEN** SALW-WFT-6002K equalizing valve, located on SALW-V-6036K 3-Valve Manifold in cabinet SALW-PNL-6002K (WFIE Cabinet).

mw

5.13.33 **CLOSE** the LOW side and HIGH side isolation valves, located on SALW-V-6036K 3-Valve Manifold in cabinet SALW-PNL-6002K (WFIE Cabinet).

mw

STOPPED
K 9/18/99

DISCHARGE PRESSURE TEST

Exception
23
Bdy
9/18/99

5.13.34 **ENSURE** Pump recirculation apparatus is filled with water **AND** configured to circulate water through the saltwell Jet Pump jumper.

MD

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

MD

5.13.36 At the discretion of the Engineer, **INSTALL** temporary interlock jumpers, **OR** **INITIATE** a software force on pump permissive interlocks for equipment not installed or out of service.

MD

5.13.37 **USING** the Data Table Access Module, **START** the Jet Pump.

MD

5.13.38 **RECORD** the following pressures on the table below:

SALW-PI-6012K JET PUMP SUCTION PRESSURE	TEST GAUGE PI-1	DTAM DISCHARGE PRESSURE	SALW-PI-6011K JET PUMP DISCHARGE PRESSURE	TEST GAUGE PI-2
44.9 psi	45.0 psi	77 psi	80.2 psi	80.3 psi

5.13.39 Using the Data Table Access Module, **STOP** the Jet Pump.

MD

THERMOCOUPLE TEST

5.13.68 **WARM** thermocouple SALW-TE-6004K, located in the Instrument Enclosure.

MD

5.13.69 **VERIFY** Data Table Access Module and Operator Control Station display a changed temperature (Operator Control Station and Data Table Access Module should match $\pm 2^\circ$ F).

BR Johns 9/18/99
Engineer Signature

Date

5.13.70 **ALLOW** SALW-TE-6004K to return to ambient temperature.

5.13.71 **WARM** thermocouple SALW-TE-6003K, located in SALW-PNL-6001K INSTRUMENT AIR ENCLOSURE.

1 BRY 9/8/99

5.13.72 **VERIFY** Data Table Access Module and Operator Control Station **DISPLAY** a changed temperature. (Operator Control Station and Data Table Access Module should match $\pm 2^{\circ}$ F).

Engineer Signature

9/8/99
Date

5.13.73 **ALLOW** SALW-TE-6003K to return to ambient temperature.

1 BRY 9/8/99

5.13.74 **WARM** thermocouple SALW-TE-6001K, located on the Jet Pump.

2 BRY 9/8/99

5.13.75 **VERIFY** Data Table Access Module and Operator Control Station **DISPLAY** a changed temperature. (Operator Control Station and Data Table Access Module should match $\pm 2^{\circ}$ F).

Engineer Signature

9/8/99
Date

5.13.76 **ALLOW** SALW-TE-6001K to return to ambient temperature.

2 BRY 9/8/99

5.13.77 **WARM** thermocouple SALW-TE-6002K (Jet Pump over temperature thermocouple located on the saltwell Jet Pump jumper).

3 BRY 9/8/99

5.13.78 **VERIFY** Data Table Access Module and Operator Control Station **DISPLAY** a changed temperature (Operator Control Station and Data Table Access Module should match $\pm 2^{\circ}$ F).

Engineer Signature

9/8/99
Date

5.13.79 **ALLOW** SALW-TE-6002K to return to ambient temperature.

3 BRY 9/8/99

HNF-4277
REVISION 0

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

5.13.81 Engineer VERIFY that section 5.13 is complete by SIGNING below.

BR Johns ^{see exception 23} 9/8/99
Engineer Signature Date

5.13.82 Quality Assurance Inspector VERIFY that section 5.13 is complete by signing below.

* Ker Wilkins 9/8/99
Quality Assurance Inspector Signature Date

* SEE EXCEPTION # 23
Kw 9/8/99

HNF-4277
REVISION 0

**5.14 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DISCRETE SIGNAL INPUTS**

Connect the lap top computer to the PLC to monitor the logic as necessary.

VALVE POSITION TEST

5.14.1 **ENSURE** the JR-1 valve is in the **PROCESS** position.

5.14.2 **VERIFY** the JR-1 valve indicates "norm" at the Data Table Access Module **AND** "PROCESS" position at the Operator Control Station.

NOTE: The DIP switches on the Pepperl-Fuchs module in the Intrinsic Safe panel may require changing to get the "norm" indication.

5.14.3 **PLACE** the JR-1 valve in the **FLUSH** position.

5.14.4 **VERIFY** the JR-1 valve indicates "NON-PROCESS" at the Data Table Access Module **AND** "FLUSH" position at the Operator Control Station.

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

5.14.6 **VERIFY** the JR-1 valve indicates "NON-PROCESS" at the Data Table Access Module **AND** "PRIME" position at the Operator Control Station.

FLUSH LINE PRESSURE TEST

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

5.14.8 **VERIFY** a water supply is connected to the jumper flush hose.

5.14.9 **ENSURE** Pump recirculation apparatus is filled with water **AND** configured to circulate water through the saltwell Jet Pump jumper.

5.14.10 At the discretion of the Engineer, **ENSURE** temporary interlock jumpers, **OR** software forces have been installed on pump permissive interlocks for equipment not installed or out of service.

5.14.11 **USING** the Data Table Access Module, **START** the Jet Pump.

HNF-4277
REVISION 0

5.14.12 **VERIFY** the Jet Pump **OPERATION** at the Operator Control Station.

5.14.13 **ACTUATE** pressure transducer SALW-PT-6014K (old name "PS-2") by **PRESSURIZING** the flush line with water.

5.14.14 **VERIFY** the Jet Pump **IMMEDIATELY** shuts down at the Data Table Access Module and Operator Control Station.

5.14.15 **VERIFY** flush line high pressure alarm *3, "Flush Pressure HI" annunciates at the Data Table Access Module and Operator Control Station.

5.14.16 **SHUT OFF** the water supply to the flush line.

5.14.17 **CYCLE** the JR-1 valve to **CLEAR** the flush line high pressure alarm.

5.14.18 **REMOVE** wire to pressure transducer to verify that a loss of signal alarm occurs (alarm 16). *on the DTAM. BRG 9/8/99*

5.14.19 **ACKNOWLEDGE** the alarm.

5.14.20 **RECONNECT** the wire.

LOW PRESSURE INTERLOCK

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

5.14.22 **ENSURE** ALL alarms have been acknowledged at Data Table Access Module and Operator Control Station.

5.14.23 **ENSURE** the pump is **NOT** primed.

5.14.24 **ENSURE** the Diaphragm Operated Valve is **CLOSED**.

5.14.25 **USING** the Data Table Access Module, **START** the Jet Pump.

HNF-4277
REVISION 0

5.14.26 **VERIFY** the Jet Pump shuts down in approximately thirty (30) seconds (± 5 seconds).

BR

5.14.27 **VERIFY** transfer line low pressure alarm #1 "XFR Pressure LOW" annunciates at the Data Table Access Module and Operator Control Station.

BR

5.14.28 **ACKNOWLEDGE** alarms at Data Table Access Module and Operator Control Station.

BR

NOTE - This test section is performed with jet pump jumper and pump physically mated in the shop on the run-in stand.

HIGH PRESSURE INTERLOCK

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

BR

5.14.30 **IF** a water ram will be used, using skill of the craft **CONNECT** a water ram to the jet pump jumper **AND SLOWLY PRESSURIZE** the pump and jumper to 140 psi using water.

N/A BR

5.14.28 **IF** pump will develop 140 psi, **START** jet pump with JR-2, BYPASS valve and DOV closed.

BR

5.14.29 **VERIFY** that the "XFR Pressure HIGH" alarms at Data Table Access Module (Alarm #2) and Operator Control Station when pressure reaches 140 psi (± 10 psi).

144 psi. BR

BR

5.14.30 **ACKNOWLEDGE** alarms at Data Table Access Module and Operator Control Station.

BR

RECIRCULATION FLOWMETER TEST

NOTE: Perform steps 5.9.25 to 5.9.34 in conjunction with the following steps. Step 5.9.24 can be N/A since the Controlotron is connected to the recirc line.

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

BR

5.14.32 **ENSURE** Pump recirculation apparatus is filled with water **AND** configured to circulate water through the saltwell Jet Pump jumper.

BR

HNF-4277
REVISION 0

5.14.33 **CONFIGURE** SALW-FI-6001K (PMP RECIRC FLOW) to receive signals from a control and display unit.

82/

5.14.34 **CONFIGURE** the control and display unit to simulate flow signals using the Installation, Diagnostics, Test/Control Mode, AN CAL function.

82/

5.14.35 **SIMULATE** a flow signal of 0.6 gpm with the control and display unit.

82/

5.14.36 At the discretion of the Engineer, **ENSURE** temporary interlock jumpers **OR** software forces have been installed on pump permissive interlocks for equipment not installed or out of service.

82/

5.14.37 **USING** the Data Table Access Module, **START** the Jet Pump.

82/

5.14.38 **VERIFY** the Jet Pump OPERATION at the Operator Control Station.

82/

5.14.39 **SIMULATE** a flow signal of 0.4 gpm with the control and display unit.

82/

5.14.40 **VERIFY** the Jet Pump shuts down (after 30 $\pm$ 5 sec.) at the Data Table Access Module and Operator Control Station.

82/

5.14.41 **VERIFY** Jet Pump recirculation line low flow alarm *21, "RECIRCULATION FAILURE" annunciates at the Data Table Access Module and Operator Control Station.

82/

Exception
27
82/

Ack. alarm.

5.14.42 **RESTORE** SALW-FI-6001K to its original configuration.

82/

5.14.43 **CYCLE** the JR-1 valve to **CLEAR** the Jet Pump recirculation line low flow alarm.

1/1/

RECIRCULATION FLUSH LINE PRESSURE TEST

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

5.14.45 **VERIFY** a water supply is connected to the recirculation flush line.

5.14.46 **ENSURE** Pump recirculation apparatus is filled with water **AND** configured to circulate water through the saltwell Jet Pump jumper.

5.14.47 At the discretion of the Engineer, **ENSURE** temporary interlock jumpers **OR** software forces have been installed on pump permissive interlocks for equipment not installed or out of service.

5.14.48 **USING** the Data Table Access Module, **START** the Jet Pump.

5.14.49 **VERIFY** the Jet Pump **OPERATION** at the Operator Control Station.

5.14.50 **ACTUATE** pressure transducer SALW-PT-6013K (RECIRC FLUSH PRESS) by **PRESSURIZING** the recirculation flush line with water.

5.14.51 **VERIFY** the Jet Pump **IMMEDIATELY** shuts down at the Data Table Access Module and Operator Control Station.

*Exception 2.4
Bel
12/99*
Add Alarm Ack. step BRJ
Move step 5.14.57 to here BRJ

5.14.52 **VERIFY** recirculation flush line high pressure alarm *39, "RECIRC FLUSH PRSS HI" annunciates at the Data Table Access Module and Operator Control Station.

5.14.53 **SHUT OFF** the water supply to the recirculation flush line.

5.14.54 **CYCLE** the JR-1 valve to **CLEAR** the recirculation flush line high pressure alarm.

REVISION 0

100

Clear

* See exceptions 24 and 27

9/10/99
Date

Kathleen 9/10/99

* Kw 9/10/99 EXT 27,27.

HNF-4277
REVISION 0

**5.15 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
MONITOR/ALARM FUNCTIONS**

5.15.1 At the discretion of the Engineer, **ENSURE** temporary interlock jumpers, **OR** software forces are in place for uninstalled equipment.

mwj

5.15.2 **SET** the test manometer on the specific gravity transmitter to 13" Water Gauge.

mwj

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

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

5.15.4 **ENSURE** Pump recirculation apparatus is filled with water **AND** configured to circulate water through the saltwell Jet Pump.

mwj

5.15.5 **START** the Jet Pump using the Data Table Access Module, **AND PLACE** the system in automatic.

mwj

5.15.6 **VERIFY** the DIAPHRAGM OPERATED VALVE moves OPEN.

mwj

5.15.7 **OBSERVE** the Operator Control Station and Data Table Access Module **AND RECORD** the specific gravity readings below:

OPERATOR CONTROL STATION SPECIFIC GRAVITY READING (RANGE 12.6 to 13.4 inches)	DATA TABLE ACCESS MODULE SPECIFIC GRAVITY READING (RANGE 12.65 to 13.35 inches)
13.1 inches	13.12 inches

**HNF-4277
REVISION 0**

5.15.8 **VERY SLOWLY DECREASE** the test manometer pressure until the Data Table Access Module "SGT LOW" alarm (alarm *13) annunciates.

NOTE, - SALW-PI-6005K pressure is to be recorded in the table below when DOV position indicates fully closed.

5.15.9 **VERIFY AND ACKNOWLEDGE** the Specific Gravity Low Alarm (Saltwell LOW Level) at the Data Table Access Module and Operator Control Station.

5.15.10 **RECORD** the following:

PARAMETER	READING
OPERATOR CONTROL STATION SPECIFIC GRAVITY (RANGE 3 to 4)	3.5
DATA TABLE ACCESS MODULE SPECIFIC GRAVITY (RANGE 3 to 4)	3.47
SPECIFIC GRAVITY MANOMETER READING (RANGE 3 to 4 inches Water Gauge)	3.39
DOV POSITION (% OPEN) [RANGE - FULLY CLOSED]	0%
SALW-PI-6005K PRESSURE (RANGE 2 to 4 psig)	0 psi ^{3 psi Before} ^{Alarm m'd 7-7-99}

*Exempt
25
BRI
9/8/99*

5.15.11 **VERY SLOWLY INCREASE** the test manometer pressure to 10 inches Water Gauge.

5.15.12 **OBSERVE** the Operator Control Station and Data Table Access Module **AND RECORD** the specific gravity readings below:

OPERATOR CONTROL STATION SPECIFIC GRAVITY READING (RANGE 9 to 11 inches)	DATA TABLE ACCESS MODULE SPECIFIC GRAVITY READING (RANGE 9 to 11 inches)
10.0	10.11

HNF-4277
REVISION 0

5.15.13 **VERIFY** that the Specific Gravity Low Alarm **CLEARs** at the Operator Control Station and at the Data Table Access Module.

5.15.14 **VERIFY** the Diaphragm Operated Valve moves OPEN.

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

5.15.16 **SHUT OFF** the jet pump using the Data Table Access Module.

5.15.17 Engineer **VERIFY** that section 5.15 is complete by **SIGNING** below.

See exception 25.

BR Johnson
Engineer Signature

7/9/99
Date

5.15.18 Quality Assurance Inspector **VERIFY** that section 5.15 is complete by signing below.

** K. W. Thompson* *9/9/99*
Quality Assurance Inspector Signature Date

** SEE EXCEPTION # 25*
KW 9/9/99

5.16 REMOTE SETPOINT CHANGE USING THE OPERATOR CONTROL STATION

5.16.1 **PLACE** the saltwell jumper JR-1 valve in the PROCESS position.

mmj
mmj

5.16.2 **ENSURE** pump recirculation apparatus is filled with water **AND** configured to circulate water through the saltwell Jet Pump.

mmj

5.16.3 **START** the Jet Pump using the Data Table Access Module.

mmj

5.16.4 **SET** the "DOV" Specific Gravity setpoint to 8 inches at the Operator Control Station.

mmj

5.16.5 **VERIFY** that the "DOV" Specific Gravity setpoint is 8 inches at the Data Table Access Module **AND** the Operator Control Station.

BR Johnson
Engineer Signature

9/9/99
Date

5.16.6 **SET** the "DOV" Specific Gravity setpoint to 6 inches at the Data Table Access Module.

mmj

5.16.7 **VERIFY** that the "DOV" Specific Gravity setpoint is 6 inches at the Operator Control Station.

BR Johnson
Engineer Signature

9/9/99
Date

5.16.8 **USING** Data Table Access Module, **STOP** the Jet Pump.

mmj

5.16.9 Engineer **VERIFY** that section 5.16 is complete by **SIGNING** below.

see exception #26
BR Johnson
Engineer Signature

9/9/99
Date

5.16.10 Quality Assurance Inspector **VERIFY** that section 5.16 is complete by signing below.

K. V. [Signature]
Quality Assurance Inspector Signature Date

exception #26

HNF-4277
REVISION 0

5.17 DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION

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

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

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

DATA TABLE ACCESS MODULE (AUTOMATIC)

5.17.1 **ENSURE** the Saltwell Pump and Jumper Assembly, **AND** the Pumping and Instrumentation Control Skid are configured for AUTOMATIC Diaphragm Operated Valve level control by **PERFORMING** the following: [initials]

5.17.2 **SET** the test manometer on the Specific Gravity Transmitter to a pressure of 0" Water Gauge. [initials]

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

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

[initials]

5.17.3 **PLACE** the saltwell jumper JR-1 valve in the PROCESS position. [initials]

5.17.4 At the discretion of the Engineer, **ENSURE** temporary interlock jumpers, OR software forces have been installed on pump permissive interlocks for equipment not installed or out of service. [initials]

**HNF-4277
REVISION 0**

5.17.5 **ENSURE** that only alarms "JET PUMP SHUTDOWN" (Alarm 12) and "SGT LOW" (Alarm 13) on the Data Table Access Module are displayed.

5.17.6 **ENSURE** pump recirculation apparatus is filled with water **AND CONFIGURED** to circulate water through the saltwell Jet Pump.

5.17.7 **START** the Jet Pump using the Data Table Access Module.

5.17.8 **SET** DIAPHRAGM OPERATED VALVE Specific Gravity Controller to AUTO with setpoint of seven (7) inches **USING** the Data Table Access Module.

5.17.9 **SET** the test manometer to a pressure of 14" Water Gauge.

5.17.10 **VERIFY** that the Diaphragm Operated Valve moves to a more OPEN position.

5.17.11 **SET** the test manometer to a pressure of 6" Water Gauge.

5.17.12 **VERIFY** that the Diaphragm Operated Valve moves to a more CLOSED position.

DATA TABLE ACCESS MODULE (MANUAL)

5.17.13 **VERIFY** that the MANUAL CONTROL of the Diaphragm Operated Valve is operational by **PERFORMING** the following steps:

5.17.14 **SET** the test manometer on the Specific Gravity Transmitter to a pressure of 15" ($\pm$ 1") Water Gauge.

5.17.16 **SET** "DOV" Specific Gravity Controller to MANUAL CONTROL **USING** the Data Table Access Module.

5.17.17 **SET** the Diaphragm Operated Valve to 0% Open **USING** the manual control on the Data Table Access Module.

HNF-4277
REVISION 0

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

5.17.18 RECORD the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE - FULLY CLOSED (0 - 10% on needle graduations)]	SALW-PI-6005K PRESSURE (RANGE 2 to 4 psig)
0%	3 psi

5.17.19 SET the Diaphragm Operated Valve to 25% OPEN USING the manual control on the Data Table Access Module.

5.17.20 RECORD the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE: 15% to 35%]	SALW-PI-6005K PRESSURE (RANGE: 5 to 7 psig)
25%	6 psi

5.17.21 SET the Diaphragm Operated Valve to 75% OPEN USING the manual control on the Data Table Access Module.

5.17.22 RECORD the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE: 65% to 85%]	SALW-PI-6005K PRESSURE (RANGE: 11 to 13 psig)
75%	11.5 psi

HNF-4277
REVISION 0

5.17.23 **SET** the Diaphragm Operated Valve to 100% OPEN using the manual control on the Data Table Access Module.

5.17.24 **RECORD** the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE: 90% to 110%]	SALW-PI-6005K PRESSURE RANGE: 14 to 16 psig
100 %	14.5 psi

5.17.25 **VERY SLOWLY DECREASE** the test manometer pressure while **OBSERVING** the Diaphragm Operated Valve.

5.17.26 **VERIFY** that the Diaphragm Operated Valve remains FULLY OPEN while the test manometer is DECREASED until the "SGT LOW" alarm (Data Table Access Module alarm K13) annunciates.

5.17.27 **VERIFY** that the Diaphragm Operated Valve IMMEDIATELY CLOSES when the "SGT LOW" alarm (Data Table Access Module alarm K13) annunciates.

5.17.28 **SHUT DOWN** the Jet Pump with the DTAM AND **ACKNOWLEDGE** the shutdown alarms.

OPERATOR CONTROL STATION (AUTO)

5.17.29 **ENSURE** the Saltwell Pump and Jumper Assembly AND Pumping and Instrumentation Control Skid are **CONFIGURED** for AUTOMATIC Diaphragm Operated Valve level control by **PERFORMING** the following:

5.17.30 **SET** the test manometer to a pressure of 0" Water Gauge.

HNF-4277
REVISION 0

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

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

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

mmj

5.17.33 At the discretion of the Engineer, **ENSURE** temporary interlock jumpers, OR software forces have been installed on pump permissive interlocks for equipment not installed or out of service.

mmj

5.17.34 **ENSURE** that only alarms "~~JET PUMP~~ SHUTDOWN" and "SGT LOW" are displayed on the Operator Control Station.

mmj

5.17.35 **ENSURE** pump recirculation apparatus is filled with water **AND CONFIGURED** to circulate water through the saltwell Jet Pump.

mmj

5.17.36 **START** the Jet Pump **USING** the Data Table Access Module.

mmj

5.17.37 **SET** the Specific Gravity Controller to AUTO with setpoint of 7.0 inches **USING** the Operator Control Station.

mmj

5.17.38 **SET** the test manometer to a pressure of 14" Water Gauge (± 1 ").

mmj

5.17.39 **VERIFY** that the Diaphragm Operated Valve moves to a more OPEN position.

mmj

5.17.40 **SET** the test manometer to a pressure of 6" Water Gauge.

mmj

5.17.41 **VERIFY** that the Diaphragm Operated Valve moves to a more CLOSED position.

HNF-4277
REVISION 0

5.17.42 **VERIFY** that the **MANUAL CONTROL** of the Diaphragm Operated Valve is operational by **PERFORMING** the following steps:

5.17.43 **SET** the test manometer to a pressure of 15" Water Gauge ($\pm 1"$).

5.17.44 **SET** the "DOV" Specific Gravity Controller to **MANUAL CONTROL** **USING** the Operator Control Station.

5.17.45 **SET** the Diaphragm Operated Valve to 0% Open **USING** the manual control on the Operator Control Station.

5.17.46 **RECORD** the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE - FULLY CLOSED (0-10% OPEN)]	SALW-PI-6005K PRESSURE (RANGE 2 to 4 psig)
0%	3.5 psi

5.17.47 **SET** the Diaphragm Operated Valve to ~~25%~~ ^{30% BOLD} OPEN using the manual control on the Operator Control Station.

5.17.48 **RECORD** the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE: 15% to 35%]	SALW-PI-6005K PRESSURE (RANGE: 5 to 7 psig)
25%	7 psi

5.17.49 **SET** the Diaphragm Operated Valve to ~~75%~~ ^{80% BOLD} OPEN using the manual control on the Operator Control Station.

5.17.50 **RECORD** the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE: 65% to 85%]	SALW-PI-6005K PRESSURE (RANGE: 11 to 13 psig)
75%	12.75 psi

5.17.51 **SET** the Diaphragm Operated Valve to 100% OPEN using the manual control on the Operator Control Station.

mw

5.17.52 **RECORD** the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE: 90% to 110%]	SALW-PI-6005K PRESSURE RANGE: 14 to 16 psig
100%	15 psi

5.17.53 **VERY SLOWLY DECREASE** the test manometer pressure while **OBSERVING** the Diaphragm Operated Valve.

mw

5.17.54 **VERIFY** that the Diaphragm Operated Valve remains **FULLY OPEN** while the test manometer is **DECREASED UNTIL** the Operator Control Station "SGT LOW" annunciates.

mw

5.17.55 **VERIFY** that the Diaphragm Operated Valve **IMMEDIATELY CLOSES** when the Operator Control Station "SGT LOW" annunciates.

mw

5.17.56 **SHUTDOWN** the Jet Pump with the Operator Control Station.

Bay

5.17.57 **VERIFY** the Jet Pump **SHUT DOWN** at the Operator Control Station.

Bay

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

5.17

5.17.59 Engineer **VERIFY** that section 5.17 is complete by **SIGNING** below.

BE Johns
Engineer Signature

9/10/99
Date

5.17.60 Quality Assurance Inspector **VERIFY** that section 5.17 is complete by signing below.

K. W. Walters
Quality Assurance Inspector Signature Date

9/10/99

5.18 JET PUMP FLOWMETER OPERATION

NOTE: The CGI dedication will be performed for the flow meter and flow head during this section of the ATP. Completion of this section will verify flow meter accuracy as required for CGI dedication. *QC Hold point on J7 signed and verified 9/10/99*

5.18.1 **ENSURE** that the Saltwell Jumper Flow Element is communicating properly with the FQIT SALW-FQIT-6001K (SUPERNATANT FLOW XMIT) and Data Table Access Module by **PERFORMING** the following:

5.18.2 **PLACE** the saltwell jumper JR-1 valve in the PROCESS position.

5.18.3 **ENSURE** Pump recirculation apparatus is filled with water **AND** configured to circulate water through the saltwell Jet Pump.

5.18.4 **ENSURE** the 0 - 50 inch test manometer is still attached to the high pressure dip tube **AND** set to 15" Water Gauge (± 1 ").

5.18.5 **ENSURE** a rotameter has been installed in series with the jumper flow element.

5.18.6 **ENSURE** that both the Data Table Access Module and Operator Control Station are configured for MANUAL CONTROL.

5.18.7 At the discretion of the Engineer, **ENSURE** temporary interlock jumpers, OR software forces are in place for uninstalled equipment.

5.18.8 **SET** the Diaphragm Operated Valve to 0% OPEN using the manual control on the Data Table Access Module.

5.18.9 **ADJUST** Jet Pump Jumper Valve JR-2 as directed by the Engineer to achieve the required flow rates in the following steps.

5.18.10 **START** the Jet Pump using the Data Table Access Module.

5.18.11 **VERIFY** the start of the Jet Pump at the Operator Control Station.

**HNF-4277
REVISION 0**

5.18.12 **RECORD** initial readings, and the time reading were taken.

DATA TABLE ACCESS MODULE TOTALIZER (Gallons)	FQIT TOTALIZER GALLONS	TIME
1,73	1.73	2:36 PM

1.28
7788 gals BQY
5.18.13 **SET** the Diaphragm Operated Valve Controller to **MANUAL AND ADJUST** Controller at the Data Table Access Module to obtain a flowrate of APPROXIMATELY 1.0 GPM (± 0.05 gpm) through the jumper.

1.29
301 gals BQY 2:51

5.18.14 **RECORD** the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITIO N (% OPEN)	TEST ROTAMETE R FLOWRATE (GPM)	(INSTR) FQIT FLOWRA TE (GPM)	DTAM FLOWRA TE (GPM)	OCS FLOWRA TE (GPM)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
45	45	about 35	1.2	1.14	1.145	1.147 1.147 BQY	7785	297

5.18.15 **VERIFY** that Test Rotameter flowrate, FQIT SALW-FQIT-6001K flowrate, Data Table Access Module flowrate, **AND** Operator Control Station flowrate are within ± 0.1 gpm.

BQY
Engineer Signature

7/10/99
Date

5.18.16 **SUBTRACT** totalizer **INITIAL** reading for Data Table Access Module from the current totalizer reading for Data Table Access Module.

RECORD result: 5 gallons

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

RECORD result: 4 gallons

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

**HNF-4277
REVISION 0**

5.18.19 **ADJUST** the Diaphragm Operated Valve Controller to obtain a flowrate of APPROXIMATELY 2.5 GPM (± 0.125 gpm) through the jumper.

5.18.20 **RECORD** the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITIO N (% OPEN)	TEST ROTAMETE R FLOWRATE (GPM)	(INSTR) FQIT FLOWRA TE (GPM)	DTAM FLOWRA TE (GPM)	OCS FLOWRA TE (GPM)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
85	85	50	2.65	2.68	2.70	2.698	7802	315

5.18.21 **VERIFY** that Test Rotameter flowrate, FQIT SALW-FQIT-6001K flowrate, Data Table Access Module flowrate, **AND** Operator Control Station flowrate are within ± 0.25 gpm.

5.18.22 **SUBTRACT** totalizer **INITIAL** reading for Data Table Access Module from the current totalizer reading for Data Table Access Module.

RECORD result: 14 gallons

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

RECORD result: 14 gallons

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

5.18.25 **ADJUST** the Diaphragm Operated Valve Controller to obtain a flowrate of APPROXIMATELY 3.0 GPM (± 0.15 gpm) through the jumper.

**HNF-4277
REVISION 0**

5.18.26 **RECORD** the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITIO N (% OPEN)	TEST ROTAMETE R FLOWRATE (GPM)	(INSTR) FQIT FLOWRA TE (GPM)	DTAM FLOWRA TE (GPM)	OCS FLOWRA TE (GPM)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
85	85	50	3.15	3.20	3.21	3.20	7810	323

5.18.27 **VERIFY** that Test Rotameter flowrate, FQIT SALW-FQIT-6001K flowrate, Data Table Access Module flowrate, **AND** Operator Control Station flowrate are within ± 0.3 gpm .

B. Johns
Engineer Signature

9/10/99
Date

5.18.28 **SUBTRACT** totalizer **INITIAL** reading for Data Table Access Module from the current totalizer reading for Data Table Access Module.

RECORD result: 22 gallons

BRJ

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

RECORD result: 22 gallons

BRJ

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

BRJ

5.18.31 **CLOSE** the Diaphragm Operated Valve (to 0%) using the manual Diaphragm Operated Valve control.

BRJ

5.18.32 **VERIFY** JR-2 is **CLOSED**.

BRJ

**HNF-4277
REVISION 0**

5.18.33 **RECORD** the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITIO N (% OPEN)	TEST ROTAMETE R FLOWRATE (GPM)	(INSTR) FQIT FLOWRA TE (GPM)	DTAM FLOWRA TE (GPM)	OCS FLOWRA TE (GPM)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
0	0	0	0	0	0	0	7817	330

5.18.34 **VERIFY** that Test Rotameter flowrate, FQIT SALW-FQIT-6001K flowrate, Data Table Access Module flowrate, **AND** Operator Control Station flowrate all indicate 0.0 gpm (± 0.1 gpm).

BRL/ps
Engineer Signature

9/10/99
Date

5.18.35 **SUBTRACT** totalizer **INITIAL** reading for Data Table Access Module from the current totalizer reading for Data Table Access Module.

RECORD result: 29 gallons

SA

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

RECORD result: 29 gallons

SA

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

SA

5.18.38 **USING** the Data Table Access Module, **STOP** the Jet Pump.

SA

5.18.39 **REMOVE** the test manometer.

SA

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

NOTE - All three valves are located on the Specific Gravity Transmitter three valve manifold SALW-V-6035K.

5.18.41 **OPEN** the equalization valve for the Specific Gravity Transmitter.

SA

HNF-4277
REVISION 0

5.18.42 **CLOSE** the two (2) isolation valves.

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

5.18.44 Engineer **VERIFY** that section 5.18 is complete by **SIGNING** below.

Engineer Signature

9/10/99
Date

5.18.45 Quality Assurance Inspector **VERIFY** that section 5.18 is complete by signing below.

Quality Assurance Inspector Signature

9/10/99
Date

5.19 JET PUMP VALVING INTERLOCK FOR THE JET PUMP

5.19.1 **ENSURE** Pump recirculation apparatus is filled with water **AND** configured to circulate water through the saltwell Jet Pump.

MW

5.19.2 **ENSURE** all alarms have been acknowledged at the Data Table Access Module and Operator Control Station.

MW

5.19.3 At the discretion of the Engineer, **ENSURE** temporary interlock jumpers, **OR** software forces have been installed on pump permissive interlocks for equipment not installed or out of service.

MW

5.19.4 **USING** the Data Table Access Module, **START** the Jet Pump.

MW

5.19.5 **VERIFY** Jet Pump operation at the Operator Control Station.

MW

5.19.6 **PLACE** the JR-1 Valve, on the Jet Pump jumper, in the FLUSH position.

MW

5.19.7 **VERIFY** the following:

- Jet Pump **IMMEDIATELY** shuts down.

MW

- "JR-1 NON-PROCESS" is displayed at Data Table Access Module **AND** ~~"NOT PROCESS"~~ is displayed operator control Station.

BKJ
09/14/99
"FLUSH"

MW

- "Jet Pump SHUTDOWN" is displayed at Data Table Access Module and Operator Control Station.

MW

NOTE - "Flush Pressure HI" may be received.

5.19.8 **VERIFY** the Jet Pump can not be re-started with the JR-1 valve in the FLUSH position.

MW

HNF-4277
REVISION 0

5.19.9 **PLACE** the JR-1 Valve in the **PROCESS** position.

MW

5.19.10 **ENSURE** all alarms have been acknowledged at the Data Table Access Module and Operator Control Station.

MW

5.19.11 **RESTART** the Jet Pump using the Data Table Access Module.

MW

5.19.12 **VERIFY** Jet Pump operation at the Operator Control Station.

MW

5.19.13 **PLACE** the JR-1 Valve in the **PRIME** position.

MW

5.19.14 **VERIFY** the following:

- Jet Pump **IMMEDIATELY** shuts down.
- "JR-1 NON-PROCESS" is displayed at Data Table Access Module **AND** Operator Control Station (ALARM K5).
- "Jet Pump SHUTDOWN" is displayed at Data Table Access Module and Operator Control Station (ALARM K12).

MW

MW

MW

NOTE - "FLUSH Pressure HI" may be received. *Clean High Flush pressure prior to performing. 5.19.15. BRG 7/10/99*

5.19.15 **VERIFY** the Jet Pump can not be re-started with the JR-1 valve in the **PRIME** position.

MW

5.19.16 **ENSURE** all alarms have been acknowledged at the Data Table Access Module and Operator Control Station.

MW

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

MW

HNF-4277
REVISION 0

5.19.18 Engineer **VERIFY** that section 5.19 is complete by **SIGNING** below.

BR Johns
Engineer Signature

9/10/99
Date

5.19.19 Quality Assurance Inspector **VERIFY** that section 5.19 is complete by signing below.

K W Hays
Quality Assurance Inspector Signature

9/10/99
Date

HNF-4277
REVISION 0

5.20 OPERATOR CONTROL STATION JET PUMP SHUTDOWN TEST

5.20.1 **PLACE** the Jet Pump JR-1 valve in the PROCESS position.

mnj

5.20.2 **ENSURE** Pump recirculation apparatus is filled with water **AND** configured to circulate water through the saltwell Jet Pump.

mnj

5.20.3 **ENSURE** no interlocks are present that will prevent pump operation.

- At the discretion of the Engineer, jumper or force interlocks if necessary.

mnj

5.20.4 Using the Data Table Access Module, **START** the Jet Pump.

mnj

5.20.5 **VERIFY** Jet Pump operation at the Operator Control Station.

mnj

5.20.6 Using the Operator Control Station, **SHUT DOWN** the Jet Pump.

mnj

5.20.7 **VERIFY** the ~~JET PUMP SHUTDOWN~~ alarm at the Operator Control Station.

Rel 9/11/99

mnj

5.20.8 Engineer **VERIFY** that section 5.20 is complete by **SIGNING** below.

BR Johns
Engineer Signature

9/11/99
Date

5.20.9 Quality Assurance Inspector **VERIFY** that section 5.20 is complete by signing below.

K. W. [Signature] *9/11/99*
Quality Assurance Inspector Signature Date

HNF-4277
REVISION 0

5.21 LEAK DETECTION INTERLOCK CHECK

NOTE: Perform section 5.11 simultaneously with this section. N/A step 5.11.2 since the CGI's are completed.

5.21.1 Set up two buckets for leak detector testing.

- NOTE**
- A supply of water **needs** to be available to pour into the buckets during testing.
 - Pump operation will **be** simulated during the remainder of the ATP.
 - There are two leak **detection** circuits on the skid. Each circuit will be tested separately as the **primary** and leak detector 1.

5.21.2 **IF REQUIRED, ENSURE** the Pump Instrument and Control Skid is configured and ready to receive leak detector signal.

5.21.3 **MONITOR** the status of the Pump Starter to **VERIFY** pump status.

5.21.4 **ENSURE** no interlocks are present that will prevent pump operation.

- At the discretion of the Engineer, force or jumper unused interlocks.

5.21.5 Using Data Table Access Module, **START** the Jet Pump.

- NOTE**
- Programmer **may** need to force limit switches and pressure switches to **simulate recirculate** flow.

WARNING

Energized circuits and leads are contained inside the cabinet. Observe appropriate electrical. Comply with WHC-CM-1-10, WKS-15, ELECTRICAL WORK SAFETY to avoid personnel electrical shock hazards.

PRIMARY LEAK DETECTOR:

5.21.6 **TEST** leak detector by emerging probe, as required. **VERIFY** and **ACKNOWLEDGE** the following:

- IMMEDIATE Jet Pump shutdown.
- "JET PUMP SHUTDOWN" is annunciating at the Data Table Access Module (ALARM #12).
- A Leak Detection Alarm is annunciating at the Data Table Access Module.

5.21.7 **ACKNOWLEDGE** the Leak Detector Alarm at the Data Table Access Module and OCS.

5.21.8 **VERIFY** that the Jet Pump **CAN NOT** be re-started at the Data Table Access Module when the alarm is ACTIVE.

5.21.9 **RETURN** the leak detector to a condition of operation by **PERFORMING** the following:

- **REMOVE** the probe from the bucket.
- **VERIFY** the Leak Detection Alarm at the Data Table Access Module and OCS resets.

HNF-4277
REVISION 0

LEAK DETECTOR 2¹ *BY*

Repeat step 5.21.2 to 5.21.5 BY

5.21.10 TEST leak detector by emerging probe, as required. **VERIFY** and **ACKNOWLEDGE** the following:

- IMMEDIATE Jet Pump shutdown.
- "JET PUMP SHUTDOWN" is annunciating at the Data Table Access Module (ALARM #12).
- A Leak Detection Alarm is annunciating at the Data Table Access Module.

mw

5.21.11 **ACKNOWLEDGE** the Leak Detector Alarm at the Data Table Access Module and OCS.

mw

5.21.12 **VERIFY** that the Jet Pump **CAN NOT** be re-started at the Data Table Access Module when the alarm is ACTIVE.

mw

5.21.13 **RETURN** the leak detector to a condition of operation by **PERFORMING** the following:

- **REMOVE** the probe from the bucket.
- **VERIFY** the Leak Detection Alarm at the Data Table Access Module and OCS resets.

mw

INTERLOCK TEST

NOTE - It is the intent of this section to test all transfer system and FGM interlocks not previously tested in the leak detector section. Included would be dilution tank low level alarms and FGM alarms not previously tested.

5.21.14 The table below identifies the interlocks to be tested.

RELAY/DEVICE DESIGNATION	JET PUMP SHUTDOWN (✓)	ALARM MESSAGE RECEIVED
1) FGM interlock	✓	DTAM Alarm 12 Jet Pump Shutdown
	✓	Alarm 22 Flammable Gas High OCS Fgm Hi, Jet Pump Shutdown
2) Dilution tank low level	✓	DTAM Alarm 35 Dilution Tank Water Level Low
	✓	Alarm 12 Jet Pump Shutdown OCS Dilut Lvl Low Shutdown

WARNING

Energized circuits and leads are contained inside the cabinet. Observe appropriate electrical. Comply with WHC-CM-1-10, WKS-15, ELECTRICAL WORK SAFETY to avoid personnel electrical shock hazards.

5.21.15 For each relay listed in the Table above, **PERFORM** the following:

5.21.16 Using the Data Table Access Module, **START** the Jet Pump, AND **OBSERVE** that the pump run light is ON.

5.21.17 **DEACTIVATE** the relay to simulate an alarm condition.

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

5.21.24 **VERIFY** Data Table Access Module and Operator Control Station display "JET PUMP SHUTDOWN" AND an interlock message.

HNF-4277
REVISION 0

5.21.25 **RECORD** a check mark in the Table if Jet Pump shutdown occurs.

5.21.26 **RECORD** the interlock alarm messages received at Data Table Access Module and Operator Control Station in the Table.

5.21.27 **VERIFY** that the Jet Pump **CAN NOT** be re-started at the Data Table Access Module when the alarm is **ACTIVE**.

5.21.28 **RESTORE** the circuit (remove simulated alarm condition).

5.21.29 **ACKNOWLEDGE** the alarms at Data Table Access Module and Operator Control Station.

5.21.30 **REMOVE** any jumpers or forces.

5.21.31 **ATTACH** a copy of the PLC and DTAM programs to this ATP.

5.21.32 **SECURE** the skid per sections 4.4.2.7, 4.4.2.8 and 4.4.2.9 for moving the skid to the field.

5.21.33 Engineer **VERIFY** that section 5.21 is complete by **SIGNING** below.

[Signature]
Engineer Signature

9-11-99
Date

5.21.33 Quality Assurance Inspector **VERIFY** that section 5.21 is complete by signing below.

[Signature] 9-11-99
Quality Assurance Inspector Signature Date

QC VERIFIED 5.21 ALL BUT 5.21.33
(4.4.2.9). Kw 9/11/99

ACCEPTANCE TEST PROCEDURE

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PAGE 1 of 1

ACCEPTANCE TEST PROCEDURE LOG		
Name	Date	Comment
BR Johns	7/26/99	Step 5.2.6 List specifically in future ATP's all the items to be disconnected including heaters, air conditioners, and PS panel power. BRJ
—	—	—
BR Johns	7/26/99	Completed sections 5.1 to 5.3 of the ATP. Need Inst. Tech to do cal's next. BRJ
BR Johns	8/10/99	Cal's completed. Will do Flow meters (Admag and Controlotron) under part II.
BR Johns	8/10/99	Completed section 5.4 to 5.7. Completed section 5.8 up to flow meter. BRJ
BR Johns	8/12/99	Completed ATP through 5.12 with exceptions. BRJ
BR Johns	9/6/99	Corrected typo on page 9 of 100, Rotometer accuracy is 0.1 not 0.05 gpm. BRJ
BR Johns	9/8/99	Added "minimum range" to clarify step 5.13.4.
BR Johns	9/8/99	Added "minimum range" to clarify step 5.13.20
BRJ	9/10/99	Powered down skid to change PS-1 pressure switch.
BR Johns	9/11/99	Found air leak on air dryer. Fitter reseated top part.
BR Johns	9/13/99	During the performance of sections 5.18 to the end, it was noted that the Controlotron Flow meter registered a Flow reading on the digital display.
—	—	—
—	—	—

QC INSPECTION RECORD

ACCEPTANCE TEST PROCEDURE EXCEPTION LOG

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PAGE 1 of 3

ACCEPTANCE TEST PROCEDURE EXCEPTION LOG		
Number	Date	Description
1	7/21/99	Section 4.1 Drwg. Verification H-14-103530 sht 7: Drafting to fix wire labels per redline markups. Fix JFPT+3- locations, and terminal location. H-14-103530 sht 8: Drafting to fix shld location on TB1; 24VDC label TB2; CKT3H-B label TB5, and gnd wire arrangement TB6 per redline markups. H-14-103530 sht 9: Need labels for HT-1 and HT-2. Drafting to fix HT-3 wire label per redline markup. H-14-103530, sht 11. Drafting to fix wire run to indicators; ground location on FQIT-600k; and add labels to indicators per redline markups. H-14-103533, sht 5: Drafting to add wire numbers and colors to Heat Trace box per redline markup. H-14-103535, sht 1. Drafting to add Dryer Drain valve and panel labels per redline markups. Add field labels for temperature probes and header. H-14-103530, sht 5. Drafting to add parts to instrument panel and level in instrument panel and water cabinet per redline markups. BR Johns 7/21/99
1	7/21/99	Step 4.4.2.8 Added valve SALW-V-6043k which was omitted from the valve list.
3	7/26/99	Step 5.1.5 Continuity was measured at load side of transformer through primary coil since access to transformer wires was not practical.
4	7/26/99	Step 5.1.6 Continuity was measured at panel board through secondary coil of transformer since access to secondary wires was not practical. Neutral was lifted to verify no short to ground of the two hot wires and neutral wire.

QC INSPECTION RECORD

ACCEPTANCE TEST PROCEDURE EXCEPTION LOG

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PAGE 2 of 3

ACCEPTANCE TEST PROCEDURE EXCEPTION LOG		
Number	Date	Description
5	7/26/99	Step 4.4.1. Added megohm to list of equipment. cal No. 681-45-45-001 8/6/99 cal due date.
6	7/26/99	Steps 5.2.3 & 5.2.4 Can not megger A and B phases between each other since connected to transformer.
7	7/26/99	Step 5.2.5 Can not megger phase to phase with motor connected.
8	7/26/99	Step 5.2.6 In first sentence, change "line" to "load" side.
9	7/26/99	Step 5.3.2 Change "four" to "six" for number of fuses in Inst. End.
10	7/26/99	Added 24vdc power supply check after step 5.3.45.
11	8/10/99	5.6.9. Corrected valve number should be 6043k not 6047.
12	8/10/99	5.7.13 to 5.7.17. Step can not be performed until FGM connected. Will be performed in Part II.
—	—	—
13	8/10/99	Steps 5.8.4 to 5.8.6 - Changed to use vacuum on low side.
14	8/10/99	Step 5.8.40. Added removed of manometer and resetting valves on SGT.
15	8/10/99	Flow meter test 5.8.41 to 5.8.45. Moving to Part II.
16	8/11/99	Amber light illuminates immediately.
17	8/11/99	Recirc Flow to be moved to Part II

Delete
Did do
8/11/99

QC INSPECTION RECORD

ACCEPTANCE TEST PROCEDURE EXCEPTION LOG

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PAGE 3 of 3

ACCEPTANCE TEST PROCEDURE EXCEPTION LOG		
Number	Date	Description
18	8/11/99	steps 5.9.1 to 5.9.7 Switch positions worked opposite as listed.
19	8/12/99	Section 5.11 not performed. Move to Part II.
20	8/12/99	step 5.12.10. Added instructions to bleed off air pressure.
21	8/30/99	Step 4.4.2.3. Add drawing to H-14-100542 Sht 4 and any ECN's. and drawing H-14-103530 Shts 7 and 8, 9, 11 and 13.
—	—	—
22	9/6/99	Part II, Skid and pump set up. Finish calibration of SALW-FI-6001K in section 5.4. check programming
—	—	in section 5.5. Performing section 5.6.1 to 5.6.6 and 5.6.11 to 5.6.40.
23	9/8/99	step 5.13.34. PS-1 switch failed.
24	9/8/99	step 5.14.51 Need alarm ack step.
25	9/9/99	step 5.15.10. SALW-V-6005K goes to zero after alarm occurs.
26	9/9/99	step 5.16.1 Remove manometer from SGT.
27	9/10/99	step 5.14.41 Need to ack alarms. Delete step 5.14.43.
28	9/11/99	steps 5.11.13, 5.11.24, 5.11.25 Need to verify trouble alarm clears.

QC INSPECTION RECORD

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 4.1	ATP Exception Log Number 1
Description of Exception: See details in exception log for item 1.	
Resolution of Exception: Update drawings identified in item 1 and add labels identified in item 1. BQ Drawing changes are to match field wiring (alternative wire routing) and drawing improvements to make drawing information clearer. BQ.	
Date of Resolution: 7/21/99	7/21/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	[Signature]
Design Authority:	[Signature]
RESOLUTION COMPLETED: (date)	8/16/99
Quality Control:	[Signature] 8/16/99
Cognizant Engineer:	BR Johns

QC INSPECTION RECORD

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 4.4.2.8	ATP Exception Log Number 2
Description of Exception: Valve SALW-V-6043K was missing from valve list.	
Resolution of Exception: Added valve SALW-V-6043K to list of valves to be closed. This valve is the air compressor tank drain valve.	
Date of Resolution:	7/26/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	7/27/99
Design Authority:	7/27/99
RESOLUTION COMPLETED: (date)	7.26.99
Quality Control:	8.16.99
Cognizant Engineer:	BR Johns

QC INSPECTION RECORD

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.1.5	ATP Exception Log Number 3
Description of Exception: Clarification of step to measure continuity of primary side wires to 10kva transformer.	
Resolution of Exception: Measure continuity for the transformer primary side wires by measuring between the two phases at the line side of the transformer disconnect switch. This will check continuity through the wires, and connections and transformer primary coil.	
Date of Resolution:	7/26/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	7/27/99
Design Authority:	X. J. Zuercher 7/27/99
RESOLUTION COMPLETED: (date)	7.26.99
Quality Control:	PJ Clements 8.16.99
Cognizant Engineer:	BR Johns

QC INSPECTION RECORD

PAGE A91

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.1.6	ATP Exception Log Number 4
Description of Exception: Clarification of step to measure continuity of secondary side wires between the 10kva transformer and panelboard	
Resolution of Exception: Measure continuity at the panelboard by measuring between the two wires at the panelboard bus. This will check continuity through the two wires going to the transformer secondary, connections and transformer secondary coil. Lift the neutral lead and verify no short to ground between the hot leads and ground.	
Date of Resolution:	7/26/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	W. J. Volkman 7/27/99
Design Authority:	J. F. Zurch 7/27/99
RESOLUTION COMPLETED: (date)	7.26.99
Quality Control:	P. J. Clumond 8.16.99
Cognizant Engineer:	BR Johns

QC INSPECTION RECORD
PAGE A92

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 4.4.1	ATP Exception Log Number 5
Description of Exception: Megohm meter not called out on equipment list.	
Resolution of Exception: Added megohm meter to equipment list. Record calibration no. and expiration date of calibration.	
Cal. no. 681-45-45-001 Expiration 8/6/99	
Date of Resolution:	7/26/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	7/27/99
Design Authority:	7/27/99
RESOLUTION COMPLETED: (date)	7-26-99
Quality Control:	8/16/99
Cognizant Engineer:	BR Johns

QC INSPECTION RECORD
PAGE A93

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.2.3 + 5.2.4	ATP Exception Log Number 6
Description of Exception: Can not megger the A and B phases between each other since connected to the transformer.	
Resolution of Exception: Delete the megger check to going between phases A and B since it will be a short due to connection to transformer. It is not practical to untape and break connections at transformer. There is no value added by performing this step.	
Date of Resolution:	7/26/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	79 Vlkwa 7/27/99
Design Authority:	RJZurM 7/27/99
RESOLUTION COMPLETED: (date)	7-26-99
Quality Control:	PJ Chumond 8-16-99
Cognizant Engineer:	BR Johns

QC INSPECTION RECORD

PAGE A94

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.2.5	ATP Exception Log Number 7
Description of Exception: Can not megger between phases with motor connected.	
Resolution of Exception: Delete this portion of the step. Meggering between phases when connected to the motor is a short. It is not practical and no value added by untaping and breaking connections to perform this part of the step. Megger check between phases and ground is sufficient.	
Date of Resolution:	7/26/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	W. Volkman 7/27/99
Design Authority:	JS Zwick 7/27/99
RESOLUTION COMPLETED: (date)	7.26.99
Quality Control:	PS Clements 8.16.99
Cognizant Engineer:	BR Johns

QC INSPECTION RECORD

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5. 2. 6	ATP Exception Log Number 8
Description of Exception: Incorrect word in first sentence. "Line" should be "load."	
Resolution of Exception: Change the word "line" to "load" since the "line side" is the bus bar in the panel. The "load" side was intended as the point to check from.	
Date of Resolution:	7/26/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	W. Blum 7/27/99
Design Authority:	A. J. Zumbly 7/27/99
RESOLUTION COMPLETED: (date)	7.26.99
Quality Control:	RJ Clements 8.16.99
Cognizant Engineer:	BR Johns

QC INSPECTION RECORD
PAGE A96

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.3.2	ATP Exception Log Number 9
Description of Exception: Incorrect number of fuses called out. Should be "six" instead of "four".	
Resolution of Exception: Changed "four" to "six" for number of fuses to be opened. This includes the two fuses for the heat trace and leak detection.	
Date of Resolution:	7/26/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	7/22/99
Design Authority:	X. F. Zull 7/27/99
RESOLUTION COMPLETED: (date)	7.26.99
Quality Control:	PJ Blumending 8.16.99
Cognizant Engineer:	BR Johns

QC INSPECTION RECORD

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.3.45	ATP Exception Log Number 10
Description of Exception: Check 24vdc power supplies.	
Resolution of Exception: Added steps to check the input voltage to the 24vdc power supplies of 120Vac $\pm$ 10vac; check the output voltage of the power supplies of 24Vdc $\pm$ 2vdc. This ensure proper power to the instruments needing 24 vdc.	
Date of Resolution:	7/26/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	M. McKenna 7/27/99
Design Authority:	R. E. J. 7/27/99
RESOLUTION COMPLETED: (date)	7.26.99
Quality Control:	PJ Clumuck 8.16.99
Cognizant Engineer:	BR Johns

QC INSPECTION RECORD

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.6.9	ATP Exception Log Number 11
Description of Exception: Valve SALW-V-6047K not correct.	
Resolution of Exception: Change valve to SALW-V-6043K. Valve SALW-V-6047K not valved into system at this point. Can only use SALW-V-6043K to bleed air off system.	
Date of Resolution:	8/10/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	TJ VOLKMAN 8/13/99
Design Authority:	H. Smith
RESOLUTION COMPLETED: (date)	8/16/99
Quality Control:	K. [Signature] 8/16/99
Cognizant Engineer:	BR Johns 8/13/99

QC INSPECTION RECORD

PAGE A99

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.7.13 to 5.7.17	ATP Exception Log Number 12
Description of Exception: Unable to perform steps 5.7.13 to 5.7.17 due to FGM's not connected. There is no resistance to air flow to allow pressure control valve adjustment.	
Resolution of Exception: These steps 5.7.13 to 5.7.17 will be performed during part II when an FGM can be connected to provide resistance to the air flow.	
Date of Resolution:	8/10/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	TJ VOLKMAN 8/13/99
Design Authority:	W. Smith
RESOLUTION COMPLETED: (date)	9/11/99
Quality Control:	K. Walby 9/11/99
Cognizant Engineer:	BR Johns

QC INSPECTION RECORD
PAGE A100

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.8.4 to 5.8.6 and 5.8.13	ATP Exception Log Number 13
Description of Exception: Unable to connect manometer to high side pressure port.	
Resolution of Exception: Connect manometer to low side port, open high side to atmosphere. Place vacuum on low side to create pressure on high side. Manometer is calibrated for vacuum. See attached calibration report. Vacuum pressure required for this test was 62" of water max or 2.24 PSI. Vacuum cal on last page of report.	
Date of Resolution: 8/12/99	BR Johns
Cognizant Engineer signature:	
Quality Assurance signature:	TJ VOLISMAN 8/13/99
Design Authority:	8/13/99
RESOLUTION COMPLETED: (date)	8/16/99
Quality Control:	8/16/99
Cognizant Engineer:	BR Johns 8/13/99

QC INSPECTION RECORD

New S50036 ✓

HANFORD STANDARDS LABORATORY CALIBRATION REPORT

CUSTODIAN/ADDRESS HALL JC S7-20		STANDARDS CODE NUMBER 820-35-40-004			NEW ☒ MODIFY ☐		REFERENCE NUMBER 420371	
INSTRUMENT PRESSURE INDICATOR DRUCK DPI610 0-300 PSIG		SERIAL NUMBER 6100987903		PROPERTY NUMBER N/A	RECALL STATUS 1 ACTIVE 2 NONRECALL 3 SUSPENDED 1 4 DELETED 5 PM 6 NONDATA M&TE	ORGANIZATION CODE 79400		WORK ORDER 103371
		ROOM N/A	BUILDING 2703E	SERVICE DEPARTMENT 5	RECALL CYCLE 360		TOLERANCE HISTORY	
SENDER J HALL 3-8488		COMMENTS				RUSH? ☒	CO ID 7	SD TH
INSTRUMENT SPECIFICATIONS Standard(s) used in calibration traceable to National Institute of Standards and Technology or nationally recognized standards. EXPIRATION DATE _____						TOLERANCE AS RECEIVED 1 IN 2 OUT 3 NA 4 FAILED		
						NO CHARGE: TRAINING HOURS _____ ACTUAL CAL HRS _____ OTHER HOURS _____ ENG/ADMIN HOURS _____		
						BILLED: STD CAL HOURS 2.2 REPAIR HOURS _____ MATERIALS _____		
						TOTAL CHARGE = (\$ 200 x SUM OF HOURS) + MATERIALS DATE CALIBRATED 7-7-99 DATE DUE 7-7-00		
REMARKS						AMBIENT TEMPERATURE - 68°F		
PROCEDURE NUMBER								

PAGE A102

QC INSPECTION RECORD

HNF-4277
REVISION 0

820-35-40-004

420371

Date: March 31, 1999
TO: HSL Customers, File
From: J.R. Emery, Mgr., HSL
Subject: HSL Calibration Reports

On June 18, 1998, the performance of M&TE calibrations by the HSL was suspended. On that same date, off-site calibration facilities began the calibration of HSL customer M&TE via Purchase Order or Contract Requisition.

When returned to the site after calibration, the M&TE is accompanied by a vendor calibration certification. The vendor certification includes pertinent information relating to each respective calibration. This includes the following: traceability, compliance to ANSI/NCSL Z540-1-1994 or other national calibration or quality standards, calibration ratio, as-found and as-left data (as applicable), range(s), tolerance(s), date calibrated, calibration frequency, date due for recalibration, person performing the calibration, out-of-tolerance data and limiting conditions of use (as applicable), and any other information relative to the calibration.

When the vendor certification is received, the HSL attaches an HSL Calibration Report to the vendor documentation. The HSL Calibration Report primarily serves as the device for updating the HSL SLIC Database for future recall of the M&TE for calibration.

As of this date, the following information will be annotated on the HSL Calibration Report: vendor compliance to 4:1 calibration ratio, M&TE status (Active, Suspended, Rejected, etc.), date of the calibration, date M&TE is due for recalibration, tolerance as received, calibration history (up to the last four calibrations), and the signature, date and stamp of the HSL engineer who performed the review. All other information relative to the calibration is contained in the vendor's certification. All pages of the completed report will be paginated.

A copy of this letter will be incorporated into each HSL Calibration Report.

PAGE A103

Page 2 of 5

QC INSPECTION RECORD

WORK ORDER 2 H 99 03385 F

PAGE 245 OF

#2

820-35-40-004

420371

Belhaven

Applied Technologies

Customer

Dyncorp PO# 3914

Certificate of Calibration

Tag 820-35-40-004 Model DPI610 Manufacturer Druck

Instrument Pressure Indicator Serial No 6100987903

Calibration traceable to the National Institute of Standards and Technology in accordance with ANSI- Z540.1 has been accomplished on the above-named instrument by comparison with standards maintained by Belhaven. The accuracy and stability of all standards maintained by Belhaven are traceable to national standards maintained by the National Institute of Standards and Technology in Washington, D.C. and Boulder, Colorado.

Temperature at Calibration: 68F

Accuracy of Instrument See Report

Calibrated Range: See Report

Calibration Report No. BEL99-620

Date Due: 7/7/2000

Test Equipment

Paroscientific Pressure Standard S/N 224

Prema Multi-Function Meter S/N10012

Calibrated by: *J. Caruso*

Certified by: *J. Caruso 7-7-99*

Quality Assurance Manager

QC INSPECTION RECORD
ORIGINAL

PAGE A104

WORK ORDER 2 H 9903385 F

PAGE 246

OK 160 H03 7.1 96
P. 385 17.2

HNF-4277
REVISION 0

820-35-40-004
Belhaven

420371

Applied Technologies Inc.

415 N. Quay, Kennewick, WA 99336 Voice (509) 735-9446 - Fax (509) 735-3733

Druck Pressure Indicator (DPI 610) Calibration Form

Calibration Report Number: BEL99-620

Client: Dyncorp
Purchase Order Number: 3914
Tag ID Number: 820-35-40-004
Serial Number: 6100987903
Test Equipment Used: Paroscientific Pressure Standard, S/N: 224
Prema Multi-Function Meter, S/N: 10012

Voltage Input Calibration (0-50 VDC): (Accuracy = +/- 0.05% RDG +/- 0.004% FS)

Applied Voltage (V)	Lower Limit (V)	As found (V)	As Left (V)	Upper Limit (V)
10.0000	9.993	9.999	9.999	10.007
19.9995	19.988	19.996	19.996	20.010
29.9996	29.982	29.995	29.995	30.016
39.9997	39.977	39.994	39.994	40.021
49.9998	49.972	49.992	49.992	50.026

Voltage Output Calibration: (Accuracy = 24 V +/- 5%, 10 V +/- 0.1%)

Output Voltage (V)	Lower Limit (V)	As found (V)	As Left (V)	Upper Limit (V)
10	9.99	9.9912	9.9912	10.01
24	22.80	24.0035	24.0035	25.20

Current Input Calibration (0-55 mA): (Accuracy = +/- 0.05% RDG +/- 0.004% FS)

Applied Current (mA)	Lower Limit (mA)	As found (mA)	As Left (mA)	Upper Limit (mA)
11.0018	10.994	11.000	11.000	11.009
22.0010	21.987	22.000	22.000	22.014
33.0009	32.982	33.000	33.000	33.019
44.0008	43.976	44.000	44.000	44.025
55.0011	54.971	55.001	55.001	55.030

Pressure Calibration: (Accuracy = +/- 0.025% FS)

Applied Pressure (PSI)	Lower Limit (PSI)	As found (PSI)	As Left (PSI)	Upper Limit (PSI)
59.9995	59.92	60.03	60.03	60.07
119.9968	119.92	120.02	120.02	120.07
180.0244	179.94	180.08	180.08	180.09
240.0162	239.94	240.06	240.06	240.09
299.0876	299.01	299.14	299.14	299.16

NOTE: The other two pressure scales and linearity error should automatically be within specification according to the factory user manual KA049 Issue 7, pg. 13.

QC INSPECTION RECORD

ORIGINAL

PAGE A105

WORK ORDER 2H9903385F

PAGE 247 OF 247

P. 408

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HNF-4277
REVISION 0

820-35-40-004

420371

Belhaven.

Applied Technologies Inc.

415 N. Quay, Kennewick, WA 99336 Voice (509) 735-9446 - Fax (509) 735-3733

Vacuum Calibration: (Accuracy = +/- 0.025% FS)

Applied Pressure (PSI)	Lower Limit (PSI)	As found (PSI)	As Left (PSI)	Upper Limit (PSI)
-2.0444	-1.969	-2.05	-2.05	-2.119
-3.9915	-3.916	-4.00	-4.00	-4.066
-6.0505	-5.975	-6.03	-6.03	-6.125
-8.0085	-7.933	-8.00	-8.00	-8.083
-10.0385	-9.963	-10.04	-10.04	-10.113

Calibration Performed By:

Jeff Cadick

J. Cadick

7-7-99

ORIGINAL

QC INSPECTION RECORD

PAGE A106

WORK ORDER 2H9903385F

PAGE 248 OF

0529

(150
1101)

7-27-99

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5, 8, 40	ATP Exception Log Number 14
Description of Exception: Steps to remove test manometer and reset valves are missing.	
Resolution of Exception: Added steps to: Bleed pressure off manometer; disconnect manometer from High Side DIP tube port; open equalizing valve SALW-V-6035K; close High and Low side valves SALW-V-6035K.	
Date of Resolution:	8/10/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	W. Volkmann 8/12/99
Design Authority:	R. L. Smith 8/11/99
RESOLUTION COMPLETED: (date)	8/16/99
Quality Control:	K. [Signature] 8/16/99
Cognizant Engineer:	BR Johns 8/13/99

QC INSPECTION RECORD

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.9.15	ATP Exception Log Number 16
Description of Exception: Amber light came ON immediately. Alarm only was 30 second delay.	
Resolution of Exception: Corrected step to read that amber light comes ON immediately. Rechecked software logic and compared to other skid logic and the amber light logic is correct. Only the alarm has the 30 second delay.	
Date of Resolution:	8/12/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	TJ Volkmann 8/13/99
Design Authority:	X J Smith 8/12/99
RESOLUTION COMPLETED: (date)	8/16/99
Quality Control:	K. [Signature] 8/16/99
Cognizant Engineer:	BR Johns 8/13/99

QC INSPECTION RECORD

PAGE A108

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.9.24 to 5.9.34	ATP Exception Log Number 17
Description of Exception: Recirculation Flowmeter test not performed.	
Resolution of Exception: Moving this test to Part II to be performed when information on the flow transducer is available along with the flush line.	
Date of Resolution:	8/12/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	T.J. VOLKMAN 8/12/99
Design Authority:	8/13/99
RESOLUTION COMPLETED: (date)	9/11/99
Quality Control:	9/11/99
Cognizant Engineer:	BR Johns

QC INSPECTION RECORD

PAGE A109

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: Section 5.11	ATP Exception Log Number 19
Description of Exception: Leak detection not performed.	
Resolution of Exception: Leak detection CGI was performed under procedure HNF-4275, and was completed and witnessed by QC. This section 5.11 will now be performed during Part II when the skid is set up in a field condition mode.	
Date of Resolution:	8/12/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	TS Volkman 8/13/99
Design Authority:	R. F. Zuerch 8/13/99
RESOLUTION COMPLETED: (date)	9/11/99
Quality Control:	K Wilby 9/11/99
Cognizant Engineer:	BR Johns

QC INSPECTION RECORD

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.12.10	ATP Exception Log Number 20
Description of Exception: Added instructions to bleed air pressure off air compressor tank and water tank.	
Resolution of Exception: Vent valve on the water tank, SALW-V-6037K is to be opened to bleed pressure off the water tank. Drain valve: SALW-V-6043K is to be opened to bleed pressure off of the air compressor tank. This is done to put the skid in a safe mode for transporting.	
Date of Resolution:	8/12/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	TJ Vetterman 8/12/99 K. Vetterman
Design Authority:	R. L. Gurnik 8/12/99
RESOLUTION COMPLETED: (date)	8/16/99
Quality Control:	K. Vetterman 8/16/99
Cognizant Engineer:	BR Johns 8/13/99

QC INSPECTION RECORD

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: <i>Part II Skip and Pump step setup.</i>	ATP Exception Log Number <i>22</i>
Description of Exception: <i>Need steps to power up and setup valving to start ATP</i>	
Resolution of Exception: <i>Add another bullet to the "Skid and Pump Set Up" to perform steps 5.6.1 through 5.6.6 and steps 5.6.11 through 5.6.40 as part of prereqs. for part II of ATP. The stopping points during these steps shall be at the discretion of the test director and/or PIC.</i>	
Date of Resolution:	<i>9/8/99</i>
Cognizant Engineer signature:	<i>BR Johns</i>
Quality Assurance signature:	<i>W. Volkmann 9/9/99</i>
Design Authority:	<i>J. Szabo 9/9/99</i>
RESOLUTION COMPLETED: (date)	<i>9/10/99</i>
Quality Assurance:	<i>K. W. [unclear] 9/11/99</i>
Cognizant Engineer:	<i>BR Johns</i>

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.13.34	ATP Exception Log Number 23
Description of Exception: PS-1 pressure switch not functioning properly. Low pressure switch closed when should be open. High pressure tripping at 120psig instead of 140 psig.	
Resolution of Exception: Recalibrate or replace and calibrate replacement pressure switch. Step 5.13.36 allows software forces at discretion of engineer. Force out pressure switch inputs to allow pump to start. ^{Give DRG} Set caution to operators to shutdown pump if pressure gets to 130psig, for pump protection. ^{If testing is to continue.} Steps 5.14.21 to 5.19.30 check pressure switch functioning.	
Date of Resolution:	9/8/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	TJ Wickman 9/9/99
Design Authority:	9/9/99
RESOLUTION COMPLETED: (date)	9/10/99 Replaced switch per US-99-00474
Quality Assurance:	9/11/99
Cognizant Engineer:	BR Johns

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.14.51	ATP Exception Log Number 24
Description of Exception: Need alarm acknowledge step to see alarm 39. The alarm 39 window is preceded by the alarm 12 window for pump shutdown.	
Resolution of Exception: Add step immediately after step 5.14.51 to acknowledge alarms. This will allow window 39 alarm to be seen during the acknowledging process.	
Date of Resolution:	9/8/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	T. Volkman 9/9/99
Design Authority:	St. John 9/9/99
RESOLUTION COMPLETED: (date)	9/10/99
Quality Assurance:	K. Volkman 9/11/99
Cognizant Engineer:	BR Johns

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.15.10	ATP Exception Log Number 25
Description of Exception: SALW-PI-6005k goes to zero after alarm occurs. On second time through, SALW-PI-6005k read 3 psig just immediately to the alarm trip.	
Resolution of Exception: After discussion with the design authority, Bill Zuroff, The gauge needs to be read at the instance the trip occurs in order to see the 2 to 4 psig reading required. (Note: future ATP's may need to clarify this step to note the pressure on SALW-PI-6005* immediately as the trip occurs.)	
Date of Resolution:	9/9/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	Kor W. Young 9/13/99
Design Authority:	Bill Zuroff 9/13/99
RESOLUTION COMPLETED: (date)	9/13/99
Quality Assurance:	Kor W. Young 9/14/99
Cognizant Engineer:	BR Johns

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.16.1	ATP Exception Log Number 26
Description of Exception: Need to remove test manometer from specific gravity transmitter prior to starting section 5.16.	
Resolution of Exception: Added step prior to step 5.16.1 to remove manometer from specific gravity transmitter.	
Date of Resolution:	9/9/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	K. Williams 9/13/99
Design Authority:	R. Smith 9/13/99
RESOLUTION COMPLETED: (date)	9/13/99
Quality Assurance:	K. Williams 9/14/99
Cognizant Engineer:	BR Johns

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.14.41, 43	ATP Exception Log Number 27
Description of Exception: Need step to ack alarm after 5.14.41. Step 5.14.43 not required. Alarm clears after ack, and system is restored to its original configuration in step 5.14.42	
Resolution of Exception: Add step after 5.14.41 to ack. alarms; pump shutdown and recir loop failure. Delete step 5.14.43. It is not required. Alarm cleared in step 5.14.42	
Date of Resolution:	9/10/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	<i>[Signature]</i> 9/10/99
Design Authority:	<i>[Signature]</i> 9/13/99
RESOLUTION COMPLETED: (date)	9/13/99
Quality Assurance:	<i>[Signature]</i> 9/14/99
Cognizant Engineer:	BR Johns

ACCEPTANCE TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

ATP step number: 5.11.13 5.11.24, 5.11.25	ATP Exception Log Number 28
Description of Exception: Need to verify trouble alarm clears on each leak detector probe.	
Resolution of Exception: Since section 5.11 is being performed during Part II, leak detector probes do not need to be disconnected. Changed steps 5.11.13 and 5.11.24 to "Reconnect wire and verify trouble alarm clears." N/A step 5.11.25 to disconnect probes.	
Date of Resolution:	9/11/99
Cognizant Engineer signature:	BR Johns
Quality Assurance signature:	K. W. [Signature] 9/13/99 9/11/99
Design Authority:	A. [Signature] 9/13/99
RESOLUTION COMPLETED: (date)	9/13/99
Quality Assurance:	K. W. [Signature] 9/14/99
Cognizant Engineer:	BR Johns

PROCEDURE PERFORMER SIGNATURE SHEET

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

<u>NAME (PRINT)</u>	<u>SIGNATURE</u>	<u>INITIALS</u>
P.J. ELMENDORF	PJ Elmendorf	PJE
B.D. FOREMAN	BF Foreman	BF
D. GARR	D Garr	DG
JR Harris	JR Harris	JRH
BR Johns	BR Johns	BRJ
K. Wilcougss, u	K. Wilcougss	KW
B. HUCKMAN	B Huckman	BH
MD Johnson	MD Johnson	MDJ
M R KOCH	M R Koch	MRK

QC INSPECTION RECORD

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>	<u>Bruce R Johns</u>	<u>9/13/99</u>
Cognizant Engineer (Signature)	(Print Name)	Date
<u>Ken Willoughby</u>	<u>Ken Willoughby</u>	<u>9/14/99</u>
Quality Control (Signature)	(Print Name)	Date

QC INSPECTION RECORD

NEC INSPECTION REPORT

Project/W.O. No. 2H-99-03385/F	Building No. 277-W	Code Edition NEC, 1999 Edition	Report No. 5931		
Inspection Requested By Bruce Johns	Phone 373-3429	Inspector Wallace DO	Phone 372-2290	Page 1 of 1	
Item Inspected: Inspection of the Skid "K" fabricated per Sketch K-A, K-C, and work package 2H-99-03385/F. Disc. SALW-DS-6002K (30 A fuses), Disc. SALW-DS-6003K (20A fuses), 10 KVA single phase Transformer SALW-XFMR-6001K, 120/240 volt Panel SALW-DP-6001K (100A main) circuits 1-14 (all 15A except cir #12 - 20A), Disc SALW-DS-6004K (6A fuses), 2HP motor SALW-CMP-6001K, Disc SALW-DS-6005K (7A fuses), Instrument Cabinet SALW-PNL-6005K and Intrinsically Safe Panel SALW-PNL-6006K.					
Condition Found: ☒ Acceptable ☐ Unacceptable (see description below)					
Inspector Signature: DO Wallace		Original Inspection Date Jun. 23, 1999		Closure Date Jun. 23, 1999	
	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)
THE HARTFORD STEAM BOILER INSPECTION AND INSURANCE COMPANY, HARTFORD, CT

TPI WO NO: WT-99- _____ (1 Hrs)

1	Date Inspected 6/22/1999	Cert Exp 06/2001	Cert. Posted ☒ Yes ☐ No	Owner No SKID-K	Jurisdiction No TPI-WT-135	National Board / Other NB-37811L
2	Owner: DEPARTMENT OF ENERGY (RL)		Owner Address: HANFORD, RICHLAND, WA 99352		Kind of Inspection ☐ Int'l ☒ Ext	Certificate Inspection ☒ Yes ☐ No
3	User Name: (LMHC) LOCKHEED MARTIN HANFORD CORP.			User Location: 200-W Will be at: U FARM		Specific Location: SALT WELL U-103
4	Type ☒ AIR TANK ☐ WATER TANK ☐ Other				Year Built 1998	Manufacture: BRUNNER ENG
5	Use: Storage Heat ☒ Receiver ☐ Process ☐ Exchange ☐ Other				Size: 14" X 20"	Inspection opening size: 2" PLUGS
Pressure Gauge Tested ☐ Yes ☒ No					Hydro Test: ☐ Yes ☒ No	
6	Pressure Allowed (MAWP) This Inspection: 200 PSIG		Safety-Relief Valve: Stamped PSI: 125		Valve: SALW-PRV-6004K 1/2", 269 CFM	How Tested: NEW
7	Certificate may be issued? ☒ Yes ☐ No (If No, explain fully under conditions)					
7a. INSPECTION STATUS: ☒ Passed ☐ Failed ☐ Passed with Discrepancy ☐ Reinspect						
7b. VESSEL STATUS: ☒ Active ☐ Inactive ☒ New ☐ Exempt ☐ Removed						
8	CONDITIONS: Small Horizontal Air Accumulator for salt well support skid K.					

Inspected at 277-W Fabrication Shop during final assembly. Scheduled to be located at Tank U-103.

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

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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UNFIRED PRESSURE VESSEL - REPORT OF INSPECTION (Form NB-7)

THE HARTFORD STEAM BOILER INSPECTION AND INSURANCE COMPANY, HARTFORD, CT

TPI WO NO: WT-99- _____ (1 Hrs)

1	Date Inspected 6/22/1999	Cert Exp 06/2001	Cert. Posted ☒ Yes ☐ No	Owner No SKID-K	Jurisdiction No TPI-WT-136	National Board / Other NB-105860
2	Owner: DEPARTMENT OF ENERGY (RL)		Owner Address: HANFORD, RICHLAND, WA 99352		Kind of Inspection ☐ Int'l ☒ Ext	Certificate Inspection ☒ Yes ☐ No
3	User Name: (LMHC) LOCKHEED MARTIN HANFORD CORP.			User Location: 200-W Will be at: U FARM		Specific Location: SALT WELL U-103
4	Type ☐ AIR TANK ☒ WATER TANK ☐ Other				Year Built 1998	Manufacture: STOYSTOWN
5	Use: Storage Heat ☒ Receiver ☐ Process ☐ Exchange ☐ Other				Size: 20" X 60"	Inspection opening size: 2" PLUGS
Pressure Gauge Tested ☐ Yes ☒ No					Hydro Test: ☐ Yes ☒ No	
6	Pressure Allowed (MAWP) This Inspection: 125 PSIG		Safety-Relief Valve: Stamped PSI: 60		Valve: SALW-PRV-6005K 1/2in, 158 CFM	How Tested: NEW
7	Certificate may be issued? ☒ Yes ☐ No (If No, explain fully under conditions)					
7a. INSPECTION STATUS: ☒ Passed ☐ Failed ☐ Passed with Discrepancy ☐ Reinspect						
7b. VESSEL STATUS: ☒ Active ☐ Inactive ☒ New ☐ Exempt ☐ Removed						
8	CONDITIONS: Vertical Water Accumulator for salt well support skid K.					

Inspected at 277-W Fabrication Shop during final assembly. Scheduled to be located at Tank U-103.

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

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:
---	--

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- 8032WEmployed By: The Hartford Steam Boiler
Inspection and Insurance Co.

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