

JUL 22 1997
 67
 34

ENGINEERING DATA TRANSMITTAL

| | | |
|--|---|---|
| 2. To: (Receiving Organization) Distribution | 3. From: (Originating Organization) Cross Site Transfer System | 4. Related EDT No.: 617923 |
| 5. Proj./Prog./Dept./Div.: W-058 | 6. Cog. Engr.: K. A. Colosi | 7. Purchase Order No.: N/A |
| 8. Originator Remarks: This Acceptance Test Procedure is being submitted for the test review boards approval. | | 9. Equip./Component No.: N/A |
| 11. Receiver Remarks: | | 10. System/Bldg./Facility: N/A |
| | | 12. Major Assm. Dwg. No.: N/A |
| | | 13. Permit/Permit Application No.: N/A |
| | | 14. Required Response Date: ASAP |

| 15. DATA TRANSMITTED | | | | | (F) | (G) | (H) | (I) |
|----------------------|-------------------------------|---------------|--------------|--|--------------|------------------------|------------------------|----------------------|
| (A) Item No. | (B) Document/Drawing No. | (C) Sheet No. | (D) Rev. No. | (E) Title or Description of Data Transmitted | Impact Level | Reason for Transmittal | Originator Disposition | Receiver Disposition |
| 1 | HNF KL WMC-SD-W058-ATP-005 | — | 0 | Acceptance Test for Water Flush System Instrumentaion. | SQ | 1 | 1 | 1 |
| | | | | | | | | |
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| 16. KEY | | | | | |
|------------------------------|---|--|--|--|--|
| Impact Level (F) | | Reason for Transmittal (G) | | Disposition (H) & (I) | |
| 1, 2, 3, or 4 (see MRP 5.43) | 1. Approval 2. Release 3. Information | 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required) | 1. Approved 2. Approved w/comment 3. Disapproved w/comment | 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged | |

| 17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures) | | | | | | | | | | | |
|--|-------|---|--|--|--|--|--|--|--|--------|-------|
| (G) | (H) | (J) Name (K) Signature (L) Date (M) MSIN | | | | (J) Name (K) Signature (L) Date (M) MSIN | | | | (G) | (H) |
| Reason | Disp. | | | | | | | | | Reason | Disp. |
| 1 | 2 | Cog. Eng. K. A. Colosi R3-25 <i>K.A. Colosi 6/9/97</i> | | | | | | | | | |
| 1 | 2 | Cog. Mgr. G. L. Parsons R3-17 <i>G.L. Parsons 6/10/97</i> | | | | | | | | | |
| 1 | 2 | QA L. R. Hall R3-47 <i>L.R. Hall 6/11/97</i> | | | | | | | | | |
| 1 | 2 | Safety O. M. Jaka R3-08 <i>O.M. Jaka 6/13/97</i> | | | | | | | | | |
| 1 | 2 | X-fer Cog. M. J. Sutey T4-08 <i>M.J. Sutey 6/10/97</i> | | | | | | | | | |
| 1 | 2 | Startup M. D. Gerken R3-25 <i>M.D. Gerken 6/9/97</i> | | | | | | | | | |
| 1 | 2 | Ops. D. R. Nunamaker T4-08 <i>D.R. Nunamaker 6/9/97</i> | | | | | | | | | |

| | | | |
|---|---|---|--|
| 18. K. A. Colosi <i>K.A. Colosi 6/9/97</i> Signature of EDT Originator | 19. K. A. Colosi <i>K.A. Colosi 6/9/97</i> Authorized Representative Date for Receiving Organization | 20. G. L. Parsons <i>G.L. Parsons 6/16/97</i> Cognizant/Project Engineer's Manager | 21. DOE APPROVAL (if required) Ltr. No. <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments |
|---|---|---|--|

Acceptance test procedure for water flush system instrumentation

M. A. Friedrich
Flour Daniel Northwest, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

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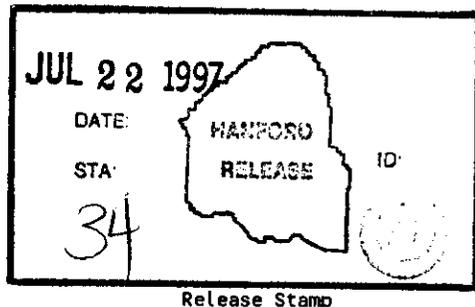
Key Words: ATP, instrumentation, SY Tank farm, water flush system

Abstract: This report documents the steps required to accept the water flush system instrumentation at the SY Tank Farm.

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Release Approval JUL 22 1997
Date



Approved for Public Release

ACCEPTANCE TEST PROCEDURE HNF-SD-W058-ATP-005

TEST TITLE Water Flush System Instrumentation

LOCATION SY Tank Farm

PROJECT NUMBER W-058 WORK ORDER _____

PROJECT TITLE Replacement of Cross-Site Transfer System

Prepared By
Fluor Daniel Northwest
Richland, Washington

PROCEDURE APPROVAL

Fluor Daniel Northwest (FDNW)

| | | | |
|--|-----------------------|---|------------------------|
| <u>Mark A Friedlich</u> Author | <u>6-3-97</u> Date | <u>Robert B Hoffmann</u> Technical Documents | <u>6-3-97</u> Date |
| <u>C. J. Inman</u> Checker | <u>6/3/97</u> Date | <u>NA</u> Safety | _____ Date |
| <u>NA</u> Environmental | _____ Date | <u>Larry R. Hall</u> Quality Engineering | <u>6-11-97</u> Date |
| <u>[Signature]</u> Project Management | <u>6/4/97</u> Date | | |

Lockheed Martin Hanford Company (LMHC)

| | | | |
|---|------------------------|--|------------------------|
| <u>MT Parsons</u> Projects Department <u>NWC</u> | <u>6-11-97</u> Date | <u>Larry R. Hall (FDNW)</u> Quality Assurance | <u>6-11-97</u> Date |
| <u>W. B. Wilson</u> Safety | <u>6/13/97</u> Date | <u>[Signature]</u> Operations | <u>6-16-97</u> Date |

EXECUTION AND TEST APPROVAL

EXECUTED BY

| | | | |
|-------------------------------------|---------------|-------------------------------------|---------------|
| _____ Test Director/Organization | _____ Date | _____ Test Operator/Organization | _____ Date |
| _____ Recorder/Organization | _____ Date | | |

WITNESSES

| | | | |
|-------------------------------|---------------|-------------------------------|---------------|
| _____ Witness/Organization | _____ Date | _____ Title III Inspector | _____ Date |
| _____ Witness/Organization | _____ Date | _____ Witness/Organization | _____ Date |

A-E APPROVAL

Fluor Daniel Northwest (FDNW)

Without exceptions _____ With exceptions resolved _____ With exceptions outstanding _____

| | | | |
|--------------------------------|---------------|--------------------------|---------------|
| _____ Acceptance Inspection | _____ Date | _____ Design Engineer | _____ Date |
| _____ Project Manager | _____ Date | | |

TEST APPROVAL AND ACCEPTANCE

Lockheed Martin Hanford Company (LMHC)

Without exceptions _____ With exceptions resolved _____ With exceptions outstanding _____

| | | | |
|------------------------------|---------------|----------------------------|---------------|
| _____ Projects Department | _____ Date | _____ Quality Assurance | _____ Date |
| _____ Safety | _____ Date | _____ Operations | _____ Date |

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NOTE: At completion of test, enter pages added during performance of test to this Table of Contents.

1 PURPOSE

This Acceptance Test Procedure (ATP) has been prepared to demonstrate that the Water Flush System Instrumentation function as required by project criteria and HNF-SD-W058-SUP-002.

2 REFERENCES

2.1 DRAWINGS

| | |
|-------------------------|--|
| H-2-822350 Sh 1, Rev. 0 | Piping Plan Flush System |
| H-2-822409 Sh 1, Rev. 1 | P&ID Water Flush System |
| H-2-822430 Sh 1, Rev. 0 | Elec/Inst Location/Termination Diagram PCU-1 |
| H-2-822502 Sh 1, Rev. 0 | Electrical Elementary Diagrams Flush System |
| H-2-822502 Sh 3, Rev. 0 | Electrical Elementary Diagrams Flush System |

2.2 SPECIFICATIONS

| | |
|-----------------|----------------------------|
| W-058-C5 Rev. 0 | Construction Specification |
|-----------------|----------------------------|

2.3 VENDOR INFORMATION

Indeeco Drawing No. L870AB

2.4 OTHER DOCUMENTS

| | |
|-------------------------------|---|
| HNF-SD-W058-SUP-002 IS 10S | Project W-058 Startup Test Plan Lock and Tag Program |
|-------------------------------|---|

3 RESPONSIBILITIES

3.1 GENERAL

Each company or organization participating in this ATP will designate personnel to assume the responsibilities and duties as defined herein for their respective roles. The designees shall become familiar with this ATP and the systems involved to the extent that they can perform their assigned duties.

3.2 NHC PROJECT ENGINEER

- 3.2.1 Designates a Test Director.
- 3.2.2 Coordinates testing with the SY Tank Farm Manager.
- 3.2.3 Acts as liaison between the participants in acceptance testing.
- 3.2.4 Distributes the approved testing schedule before start of testing.
- 3.2.5 Schedules and conducts a pretest kickoff meeting with test participants when necessary.
- 3.2.6 Notifies the persons supporting the test 2 days before the start of testing.
- 3.2.7 Schedules a dry run when necessary.

- 3.2.8 Notifies concerned parties when a change is made in the testing schedule.
- 3.2.9 Signs Execution and Test Approval page when test is approved and accepted.
- 3.2.10 Takes necessary action to clear exceptions to the test.
- 3.2.11 Signs Exception Form when exception has been resolved.
- 3.2.12 Provides a distribution list for the approved and accepted ATP(ATR).

3.3 TEST DIRECTOR

- 3.3.1 Coordinates and directs acceptance testing.
- 3.3.2 Confirms that field testing and inspection of the system or portion of the system to be tested has been completed.
- 3.3.3 Stops any test which, in his or her judgment, may cause damage to the system until the problem has been resolved.
- 3.3.4 After verifying there is no adverse impact, may alter the sequence in which systems or subsystems are tested.
- 3.3.5 Ensures that required environmental conditions are maintained.
- 3.3.6 If a test is to be suspended for a period of time, ensures that the system is left in a safe mode.
- 3.3.7 Before restarting suspended test, re verifies the test prerequisites.
- 3.3.8 Initiates ECNs to document required changes to the ATP.
- 3.3.9 Reviews recorded data, discrepancies, and exceptions.
- 3.3.10 Obtains information or changes necessary to clear or resolve objections during the performance of the test.
- 3.3.11 Signs Execution and Test Approval page when test has been performed.
- 3.3.12 Signs Exception Form when exception has been resolved.
- 3.3.13 Obtains required signatures on the ATP Master prior to reproduction and distribution.

3.4 WITNESSES (Provided by Participating Organizations. One witness shall be a Title III acceptance inspector.)

- 3.4.1 Witness the tests.
- 3.4.2 Review results of testing.
- 3.4.3 Assist the Test Director when requested.
- 3.4.4 Sign Execution and Test Approval page when test has been performed.

- 3.4.5 Sign Exception Form when exception has been resolved.
- 3.5 RECORDER (Provided by FDNW)
 - 3.5.1 Prepares a Field copy from the ATP Master.
 - 3.5.2 Records names of all designated personnel on Field copy of ATP prior to start of testing.
 - 3.5.3 Records test instrument identification numbers and calibration expiration dates, as required.
 - 3.5.4 Initials and dates every test step on the Field copy as it is completed next to the step number or on a data sheet, when provided. Records test data. On data sheets where there is not room for both the initial and date, date may be entered at bottom of column.
 - 3.5.5 Records objections and exceptions on an Exception form and fills out exception log. Uses additional Exception forms as needed. Notifies the Test Director at time the objection is made.
 - 3.5.6 Signs Execution and Test Approval page when test has been performed.
 - 3.5.7 After test is finished, assigns alpha numeric page numbers to added data sheets and Exception forms. Records page numbers in the Table of Contents.
 - 3.5.8 Transfers Field copy entries for each step to the Master in ink or type, signs, and dates. Transmits the completed Master to the Test Director for approval signature routing. Transmits the Field copy to Construction Document Control for inclusion in the official project file.
 - 3.5.9 Signs Exception Form when exception has been resolved and transmits to Test Director. Fills out Test Exception Log.
- 3.6 TEST OPERATOR
 - 3.6.1 Performs test under direction of the Test Director.
 - 3.6.2 Provides labor, equipment, and test instruments required for performing tests which have not been designated as being provided by others.
 - 3.6.3 Requests in writing from the Test Director those services, materials, or equipment that have been designated as being supplied by others.
 - 3.6.4 Confirms that all equipment required for performing test will be available at the start of testing.
 - 3.6.5 Signs the Execution and Test Approval page.
- 3.7 A-E ACCEPTANCE INSPECTION, DESIGN ENGINEER, AND PROJECT MANAGER
 - 3.7.1 Evaluate results.
 - 3.7.2 Sign for A-E Approval on Execution and Test Approval page.

4 CHANGE CONTROL

Test procedure editorial changes required during testing may be accommodated as exceptions in the released ATP and Test Report, if the changes cannot affect operating facility safety, function, or performance and will not compromise or influence test data. Requirement changes, changes to acceptance criteria, or changes to Danger, Caution, or Special Precautions, or other safety or environmental instructions must be processed on ECNs in accordance with company procedures, and if a need for change is discovered in the course of running the test, the test shall be stopped until the ECN is approved. However, this does not prevent the running of another portion of the test unaffected by the change.

5 EXECUTION

5.1 OCCUPATIONAL SAFETY AND HEALTH

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

5.2 PERFORMANCE

5.2.1 Conduct testing in accordance with Procedure CON 3.5 (Performance and Recording of Acceptance Test Procedures).

5.2.2 Perform test following the steps and requirements of this procedure.

6 EXCEPTIONS

6.1 GENERAL

Exceptions to the required test results are sequentially numbered and recorded on individual Exception forms. This enables case-by-case resolution and approval of each exception.

Errors/exceptions in the ATP itself shall NOT be processed as test exceptions (see Section 4 CHANGE CONTROL).

6.2 RECORDING

6.2.1 Number each exception sequentially as it occurs and record it on an Exception Form (KEH-428), sample appended.

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

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

6.3 RETEST/RESOLUTION

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

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

6.3.2 When action taken does not involve an acceptable retest, strike out the Retest Execution and Acceptance section of the Exception Form.

6.4 APPROVAL AND ACCEPTANCE

The customer provides final approval and acceptance of exceptions by checking one of the following on Exception Form:

6.4.1 Retest Approved and Accepted: Applicable when Retest Execution and Acceptance section is completed.

6.4.2 Exception Accepted-As-Is: Requires detailed explanation.

6.4.3 Other: Requires detailed explanation.

The customer signs and dates the Exception Form and obtains other customer internal approvals, if required.

6.5 DISTRIBUTION

A copy of the approved Exception Form is distributed to each participant. The signed original is attached to the ATP Master.

7 PREREQUISITES, EQUIPMENT/INSTRUMENTS, ABBREVIATIONS, AND ANNUNCIATORS

7.1 PREREQUISITES

The following conditions shall exist at start of testing for that portion of the system being tested.

7.1.1 Systems have been inspected for compliance with construction documents. All construction acceptance testing associated with these systems has been completed, reviewed and approved.

7.1.2 Reference documents (including this ATP) have been verified for correct revision number and outstanding ECNs.

7.1.3 A Prejob Safety Analysis has been prepared and a Prejob Safety Meeting has been conducted.

7.1.4 Field and test instruments have a valid calibration stamp attached. Test instrument identification numbers and calibration expiration dates have been recorded in Para 7.2.

7.1.5 Methods of water disposal have been approved by Facilities Management.

7.1.6 120 Volt AC power is available.

- 7.1.7 Voice communications are available between the SY Tank Farm and the 278-WA control room.
- 7.1.8 Ice is available.
- 7.1.9 PCU has power and operating software is running.
- 7.1.10 OIM has power and operating software is running.

7.2 EQUIPMENT/INSTRUMENTS

Supplied by Test Operator unless otherwise noted.

- 7.2.1 Process Instrument Calibrator (PIC): Output 4-20 mA, 0-5 V; input 4-20 mA, 0-5 V; accuracy \pm 0.01 mA, 0.1 V.

Manufacturer _____ Model No. _____ Serial No. _____

Calibration Date _____ Expiration Date _____

- 7.2.2 Thermocouple simulator, Type J, 0 °F to 500 °F range, 5 percent accuracy, with leads.

Manufacturer _____ Model No. _____ Serial No. _____

Calibration Date _____ Expiration Date _____

- 7.2.3 Digital Multimeter (DMM): 4 1/2 digit or better, 0.5 percent accuracy.

Manufacturer _____ Model No. _____ Serial No. _____

Calibration Date _____ Expiration Date _____

- 7.2.4 Container: To hold water for thermocouple tests. 4 inches deep.

- 7.2.5 Graduated container with cubic centimeter intervals.

- 7.2.6 Volume container that exceeds 5 gallons.

7.3 ABBREVIATIONS

- DMM Digital Multimeter
- ECN Engineering Change Notice
- OIM Operator Interface Machine (located in the 278-WA control room)
- PCU Process Control Unit

8 PREPARATION

8.1 PERFORM FOLLOWING STEPS BEFORE BEGINNING TESTS.

8.1.1 Verify all prerequisites of Para 7.1 have been met.

NOTE: Keep appropriate personnel informed as to test status.

END OF SECTION 8

9 FLUSH SYSTEM INSTRUMENTATION TEST

This test will demonstrate the integrity of the instruments associated with the flush system.

NOTE: All steps are performed at switchgear SWG-E-001, located in the 252-S Building, unless otherwise noted (Reference Drawings H-2-822430 Sh 1 and H-2-822502 Sh 1).

9.1 TANK TK-302-C LEVEL CONTROL

NOTE: All steps are performed at Tank TK-302-C unless otherwise noted (For location see Drawing H-2-822350 Sh 1).

- _____ 9.1.1 Verify circuit breaker MCP is open. Lock and tag flush pump circuit breaker open.
- _____ 9.1.2 Disconnect motor leads P3100A-T1, P3100A-T2, and P3100A-T3 from flush pump P-3100A contacts 1, 2, and 3 at motor starter.
- NOTE: Wires disconnected during test shall be re-connected after tank TK-302-C level and pump P-3100 control tests.
- _____ 9.1.3 Close circuit breaker MCP. Remove lock and tag from flush pump circuit breaker and close breaker.
- CAUTION: The following steps involve possible exposure to energized circuits.
- _____ 9.1.4 From level transmitter LIT-302C-1, disconnect wire LIT-302C1(+) and connect to positive terminal of PIC.
- _____ 9.1.5 Disconnect wire LIT-302C1(-) and connect to negative terminal of PIC.
- _____ 9.1.6 Set PIC output to 12 mA.
- _____ 9.1.7 Verify at OIM that LI-302C-1 reads 10 ± 0.5 ft.
- _____ 9.1.8 Verify at OIM that LAL is not activated.
- _____ 9.1.9 From OIM start pump P-3100A.
- _____ 9.1.10 Verify green motor status light is OFF.
- _____ 9.1.11 Verify red motor status light is ON.
- _____ 9.1.12 Set PIC output to 4 mA.
- _____ 9.1.13 Verify at OIM that LI-302C-1 reads 0 ± 0.5 ft.
- _____ 9.1.14 Verify at OIM that LAL is activated.
- _____ 9.1.15 Verify green light is ON.
- _____ 9.1.16 Verify red light is OFF.
- _____ 9.1.17 Set PIC output to 20 mA.

- _____ 9.1.18 Verify at OIM that LI-302C-1 reads 20 ± 0.5 ft.
- 9.2 FLUSH PUMP P-3100A CONTROL
- _____ 9.2.1 Depress local pump start pushbutton HS-P3100A1.
- _____ 9.2.2 Verify green light is OFF.
- _____ 9.2.3 Verify red light is ON.
- _____ 9.2.4 Depress local pump stop pushbutton HS-P3100A1.
- _____ 9.2.5 Verify green light is ON.
- _____ 9.2.6 Verify red light is OFF.
- _____ 9.2.7 From OIM start pump P-3100A.
- _____ 9.2.8 Verify green light is OFF.
- _____ 9.2.9 Verify red light is ON.
- _____ 9.2.10 From OIM stop pump P-3100A.
- _____ 9.2.11 Verify green light is on.
- _____ 9.2.12 Verify red light is off.
- _____ 9.2.13 Disconnect PIC and reconnect wires LIT-302C1(+) and LIT-302C1(-) to level transmitter LIT-302C-1.
- _____ 9.2.14 Open circuit breaker MCP. Lock and tag flush pump circuit breaker open.
- _____ 9.2.15 Reconnect motor leads P3100A-T1, P3100A-T2, and P3100A-T3 to flush pump P-3100A.
- _____ 9.2.16 Remove lock and tag from flush pump circuit breaker and close breaker.
- 9.3 TANK TK-302-C TEMPERATURE TE-302C-1
- NOTE: All steps are performed at Tank TK-302-C unless otherwise noted (For location see Drawing H-2-822350 Sh 1).
- _____ 9.3.1 Verify at OIM that TI-302C-1 reads ambient temperature.
- _____ 9.3.2 Remove temperature sensor TE-302C-1 from tank TK-302-C and place in ice bath.
- _____ 9.3.3 Verify at OIM that TI-302C-1 reads 32 ± 1 °F.
- _____ 9.3.4 Remove temperature sensor TE-302C-1 from ice bath and dry.
- _____ 9.3.5 Verify at OIM that TI-302C-1 is increasing to ambient temperature.
- _____ 9.3.6 Reinstall temperature sensor TE-302C-1 in tank TK-302-C.

9.4 RECIRCULATION LINE TEMPERATURE TE-302C-2

NOTE: All steps are performed in the vicinity of Tank TK-302-C unless otherwise noted (For location see Drawing H-2-822350 Sh 1).

- _____ 9.4.1 Verify at OIM that TI-302C-2 reads ambient temperature.
- _____ 9.4.2 Remove temperature sensor TE-302C-2 from process line and place in ice bath.
- _____ 9.4.3 Verify at OIM that TI-302C-2 reads 32 ± 1 °F.
- _____ 9.4.4 Remove temperature sensor TE-302C-2 from ice bath and dry.
- _____ 9.4.5 Verify at OIM that TI-302C-2 is increasing to ambient temperature.
- _____ 9.4.6 Reinstall temperature sensor TE-302C-2 in process line.

9.5 RECIRCULATION LINE FLOW FT-302C-1

NOTE: All steps are performed in the vicinity of Tank TK-302-C unless otherwise noted (For location see Drawing H-2-822350 Sh 1).

- _____ 9.5.1 From flow transmitter FT-302C-1, disconnect wire FT-302C-1 (+) and connect to positive terminal of PIC.
- _____ 9.5.2 Disconnect wire FT-302C-1 (-) and connect to negative terminal of PIC.
- _____ 9.5.3 Set PIC output to 4 mA.
- _____ 9.5.4 Verify at OIM that FI-302C-1 reads 0 ± 3 gpm.
- _____ 9.5.5 Set PIC output to 12 mA.
- _____ 9.5.6 Verify at OIM that FI-302C-1 reads 70 ± 3 gpm.
- _____ 9.5.7 Set PIC output to 20 mA.
- _____ 9.5.8 Verify at OIM that FI-302C-1 reads 140 ± 3 gpm.
- _____ 9.5.9 Disconnect PIC and reconnect wires FT-302C-1 (+) and FT-302C-1 (-) to flow transmitter FT-302C-1.

9.6 INLET FLOW FI-302C-2 AND CAUSTIC ADDITION

NOTE: All steps are performed in the vicinity of Tank TK-302-C unless otherwise noted (For location see Drawing H-2-822350, Sh 1).

- _____ 9.6.1 From flow transmitter FT-302C-2, disconnect wire FT-302C-2 (+) and connect to positive terminal of PIC.
- _____ 9.6.2 Disconnect wire FT-302C-2 (-) and connect to negative terminal of PIC.
- _____ 9.6.3 Set PIC output to 4 mA.

- _____ 9.6.4 Verify at OIM that FI-302C-2 reads 0 ± 7 gpm.
- _____ 9.6.5 At PCU-1, located in the 252-S Substation Building, disconnect wire FC-302C-2 (+) from TB-1, Terminal 25 (See Drawing H-2-822430, Sh 1).
- _____ 9.6.6 Connect a DMM to Terminals 25 and FC-302C-2(+) and verify that it reads 4 ± 0.1 mA.
- _____ 9.6.7 Set PIC output to 12 mA.
- _____ 9.6.8 Verify at OIM that FI-302C-2 reads 175 ± 7 gpm.
- _____ 9.6.9 Verify that DMM reads 9.6 ± 0.1 mA.
- _____ 9.6.10 Set PIC output to 20 mA.
- _____ 9.6.11 Verify at OIM that FI-302C-2 reads 350 ± 7 gpm.
- _____ 9.6.12 Verify that DMM reads 19.2 ± 0.1 mA.
- _____ 9.6.13 Disconnect DMM.
- _____ 9.6.14 Reconnect wire FC-302C-2 (+) to Terminal 25.
- _____ 9.6.15 Cap line 1/2" CHMB-M5.
- _____ 9.6.16 Close valve V-302C-5.
- _____ 9.6.17 Open valve V-302C-3.
- _____ 9.6.18 Place discharge hose of pump P-3100B in a measurable volume container that exceeds 5 gallons.
- _____ 9.6.19 Place intake hose of pump P-3100B in a 5 gallon container of water.
- _____ 9.6.20 Using stopwatch, set PIC to 8 mA for 1 minute then set PIC to 0 mA.
- _____ 9.6.21 Verify volume of pump discharge in graduated container is 47 ± 5 cc.
- _____ 9.6.22 Set PIC to 12 mA for 1 minute then set PIC to 0 mA.
- _____ 9.6.23 Verify volume of pump discharge in graduated container is 94 ± 5 cc.
- _____ 9.6.24 Set PIC to 16 mA for 1 minute then set PIC to 0 mA.
- _____ 9.6.25 Verify volume of pump discharge in graduated container is 141 ± 5 cc.
- _____ 9.6.26 Dispose of pump discharge.
- _____ 9.6.27 Uncap line 1/2" CHMB-M5.
- _____ 9.6.28 Disconnect PIC and reconnect wires FT-302C-2 (+) and FT-302C-2 (-) to flow transmitter FT-302C-2.
- _____ 9.6.29 Close valve V-302C-3.

9.7 CIRCULATION HEATER HTR-302C-1 TEMPERATURE

NOTE: All steps are performed in the circulation heater control panel unless otherwise noted. (See Drawing H-2-822502, Sh 2).

- _____ 9.7.1 Disconnect wires connecting the heater elements to their associated controller.
- _____ 9.7.2 Connect jumper across terminals F1 and F3.
- _____ 9.7.3 Connect jumper across terminals C1 and C2.
- _____ 9.7.4 Close disconnect switch.
- _____ 9.7.5 Verify heater green pilot light is ON.
- _____ 9.7.6 Disconnect white wire from Terminal TC3 of control panel.
- _____ 9.7.7 Disconnect red wire from Terminal TC4 of control panel.
- _____ 9.7.8 Connect Type J thermocouple simulator to TC3 and TC4 of control panel and set to 70 °F.
- _____ 9.7.9 Verify at OIM that TAH-302C-1A is not activated.
- _____ 9.7.10 Set thermocouple simulator to 205 °F.
- _____ 9.7.11 Verify at OIM that TAH-302C-1A is activated.
- _____ 9.7.12 Verify overtemp red pilot light is ON.
- _____ 9.7.13 Set thermocouple simulator to 195 °F.
- _____ 9.7.14 Press overtemp reset pushbutton.
- _____ 9.7.15 Verify overtemp red pilot light is OFF.
- _____ 9.7.16 Verify at OIM that TAH-302C-1A is not activated.
- _____ 9.7.17 Disconnect thermocouple simulator from TC3 and TC4 of control panel.
- _____ 9.7.18 Reconnect white wire to TC3 of control panel.
- _____ 9.7.19 Reconnect red wire to TC4 or control panel.
- _____ 9.7.20 Disconnect white wire from Terminal TC5 of control panel.
- _____ 9.7.21 Disconnect red wire from Terminal TC6 of control panel.
- _____ 9.7.22 Connect Type J thermocouple simulator to TC5 and TC6 of control panel and set to 70 °F.
- _____ 9.7.23 Verify at OIM that TAH-302C-1A is not activated.
- _____ 9.7.24 Set thermocouple simulator to 380 °F.
- _____ 9.7.25 Verify at OIM that TAH-302C-1A is activated.

- _____ 9.7.26 Verify overtemp red pilot light is ON.
- _____ 9.7.27 Set thermocouple simulator to 370 °F.
- _____ 9.7.28 Press overtemp reset pushbutton.
- _____ 9.7.29 Verify overtemp red pilot light is OFF.
- _____ 9.7.30 Verify at OIM that TAH-302C-1A is not activated.
- _____ 9.7.31 Disconnect thermocouple simulator from TC5 and TC6 of control panel.
- _____ 9.7.32 Disconnect white wire from terminal TC1 of control panel.
- _____ 9.7.33 Disconnect red wire from terminal TC2 of control panel.
- _____ 9.7.34 Record on Table 9.0, that the controller output for each heater is not energized.
- _____ 9.7.35 Connect Type J thermocouple simulator to TC1 and TC2 and set to 200 °F.

CAUTION: The next step involves circuits which utilize 480 V ac.
- _____ 9.7.36 Record on Table 9.0, which controller outputs are energized.
- _____ 9.7.37 Set thermocouple simulator to 100 °F.
- _____ 9.7.38 Record on Table 9.0, which controller outputs are energized.
- _____ 9.7.39 Remove jumper across terminals F1 and F3.
- _____ 9.7.40 Record on Table 9.0, that the controller output for each heater is not energized.
- _____ 9.7.41 Verify low flow pilot light is ON.
- _____ 9.7.42 Disconnect thermocouple simulator from TC1 and TC2 of control panel.
- _____ 9.7.43 Reconnect white wire to TC5 of control panel.
- _____ 9.7.44 Reconnect red wire to TC6 of control panel.
- _____ 9.7.45 Reconnect white wire to TC1 of control panel.
- _____ 9.7.46 Reconnect red wire to TC2 of control panel.
- _____ 9.7.47 Open disconnect switch.
- _____ 9.7.48 Verify heater green pilot light is OFF.
- _____ 9.7.49 Reconnect wires connecting controllers to heater elements.

TABLE 9.0

HEATER HTR-302-C-1

| ELEMENT NO. | STEP 9.7.34 | STEP 9.7.36 | STEP 9.7.38 | STEP 9.7.40 |
|-------------|----------------|----------------|----------------|----------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
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9.8 CIRCULATION HEATER HTR-302C-2 TEMPERATURE

NOTE: All steps are performed in the circulation heater control panel unless otherwise noted (See Drawing H-2-822502, Sh 3).

- _____ 9.8.1 Disconnect wires connecting the heater elements to their associated controller.
- _____ 9.8.2 Connect jumper across terminals F1 and F3.
- _____ 9.8.3 Connect jumper across terminals C1 and C2.
- _____ 9.8.4 Close disconnect switch.
- _____ 9.8.5 Verify heater green pilot light is ON.
- _____ 9.8.6 Disconnect white wire from Terminal TC3 of control panel.
- _____ 9.8.7 Disconnect red wire from Terminal TC4 of control panel.
- _____ 9.8.8 Connect Type J thermocouple simulator to TC3 and TC4 of control panel and set to 70 °F.
- _____ 9.8.9 Verify at OIM that TAH-302C-2A is not activated.
- _____ 9.8.10 Set thermocouple simulator to 205 °F.

- _____ 9.8.11 Verify at OIM that TAH-302C-2A is activated.
- _____ 9.8.12 Verify overtemp red pilot light is ON.
- _____ 9.8.13 Set thermocouple simulator to 195 °F.
- _____ 9.8.14 Press overtemp reset pushbutton.
- _____ 9.8.15 Verify overtemp red pilot light is OFF.
- _____ 9.8.16 Verify at OIM that TAH-302C-2A is not activated.
- _____ 9.8.17 Disconnect thermocouple simulator from TC3 and TC4 of control panel.
- _____ 9.8.18 Reconnect white wire to TC3 of control panel.
- _____ 9.8.19 Reconnect red wire to TC4 or control panel.
- _____ 9.8.20 Disconnect white wire from Terminal TC5 of control panel.
- _____ 9.8.21 Disconnect red wire from Terminal TC6 of control panel.
- _____ 9.8.22 Connect Type J thermocouple simulator to TC5 and TC6 of control panel and set to 70 °F.
- _____ 9.8.23 Verify at OIM that TAH-302C-2A is not activated.
- _____ 9.8.24 Set thermocouple simulator to 380 °F.
- _____ 9.8.25 Verify at OIM that TAH-302C-2A is activated.
- _____ 9.8.26 Verify overtemp red pilot light is ON.
- _____ 9.8.27 Set thermocouple simulator to 370 °F.
- _____ 9.8.28 Press overtemp reset pushbutton.
- _____ 9.8.29 Verify overtemp red pilot light is OFF.
- _____ 9.8.30 Verify at OIM that TAH-302C-2A is not activated.
- _____ 9.8.31 Disconnect thermocouple simulator from TC5 and TC6 of control panel.
- _____ 9.8.32 Disconnect white wire from terminal TC1 of control panel.
- _____ 9.8.33 Disconnect red wire from terminal TC2 of control panel.
- _____ 9.8.34 Record on Table 9.1, that the controller output for each heater is not energized.
- _____ 9.8.35 Connect Type J thermocouple simulator to TC1 and TC2 and set to 200 °F.
- _____ 9.8.36 CAUTION: The next step involves circuits which utilize 480 V ac.
Record on Table 9.1, which contactors are energized.

- _____ 9.8.37 Set thermocouple simulator to 100 °F.
- _____ 9.8.38 Record on Table 9.1, which contactors are energized.
- _____ 9.8.39 Remove jumper across terminals F1 and F3.
- _____ 9.8.40 Record on Table 9.1, that the contactor for each heater is not energized.
- _____ 9.8.41 Verify low flow pilot light is ON.
- _____ 9.8.42 Disconnect thermocouple simulator from TC1 and TC2 of control panel.
- _____ 9.8.43 Reconnect white wire to TC5 of control panel.
- _____ 9.8.44 Reconnect red wire to TC6 of control panel.
- _____ 9.8.45 Reconnect white wire to TC1 of control panel.
- _____ 9.8.46 Reconnect red wire to TC2 of control panel.
- _____ 9.8.47 Open disconnect switch.
- _____ 9.8.48 Verify heater green pilot light is OFF.
- _____ 9.8.49 Reconnect wires connecting controllers to heater elements.

TABLE 9.1

| HEATER HTR-302-C-2 | | | | |
|--------------------|----------------|----------------|----------------|----------------|
| ELEMENT NO. | STEP 9.8.34 | STEP 9.8.36 | STEP 9.8.38 | STEP 9.8.40 |
| 1 | | | | |
| 2 | | | | |
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| 12 | | | | |

END OF SECTION 9

| | | | | | | | |
|--|--|--------------------|---------------------|---------------------------------------|--|-------------|------------------------|
| EXCEPTION NO. | | Project No. | | ATP No. | | Rev. | |
| Recorded By | | | Organization | | Date Recorded | | ATP Package No. |
| Step No. | | Requirement | | | | | |
| Description of Problem | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Objector 1 (Name/Organization) | | | | Objector 2 (Name/Organization) | | | |
| Planned Action | | | | | | | |
| | | | | | | | |
| Action Taken | | | | | | | |
| | | | | | | | |
| RETEST EXECUTION AND ACCEPTANCE | | | | | | | |
| Retest Installation Contractor | | | Date | | Recorder | | Date |
| | | | | | | | |
| Witness 1 (Name/Organization) | | | Date | | Witness 2 (Name/Organization) | | Date |
| | | | | | | | |
| Field Engineering | | | Date | | Test Director (Name/Organization) | | Date |
| | | | | | | | |
| Design Engineering (Author of ATP) | | | Date | | A-E Project Engineer | | Date |
| | | | | | | | |
| APPROVAL AND ACCEPTANCE - CLIENT | | | | | | | |
| <input type="checkbox"/> Retest Approved and Accepted <input type="checkbox"/> Exception Accepted-as-is* <input type="checkbox"/> Other* | | | | | | | |
| * Explanation | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Approver 1 | | | Date | | Approver 2 | | Date |
| | | | | | | | |
| Approver 3 | | | Date | | Approver 4 | | Date |
| | | | | | | | |

A-6002-213 (02/97)

TEST EXCEPTION LOG

| Date | Description | Disposition |
|------|-------------|-------------|
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DISTRIBUTION SHEET

| | | |
|---|------------------------------|----------------|
| To DISTRIBUTION | From M.Friedrich/K.Colosi | Page 1 of 1 |
| | | Date 7/22/97 |
| Project Title/Work Order HNF-SD-W058-ATP-005, Acceptance Test Procedure for water flush system instrumentation | | EDT No. 617929 |
| | | ECN No. |

| Name | MSIN | Text With All Attach. | Text Only | Attach./Appendix Only | EDT/ECN Only |
|------|------|-----------------------|-----------|-----------------------|--------------|
|------|------|-----------------------|-----------|-----------------------|--------------|

| | | | | | |
|---|-------|---|--|--|--|
| * Document Control Services Project Files | G3-11 | 2 | | | |
| * Construction Document Control | S2-53 | 8 | | | |
| * G.L. Parsons | R3-47 | 1 | | | |
| * K.A. Colosi | R3-25 | 1 | | | |
| * L.R. Hall | R3-47 | 1 | | | |
| * M.J. Sutey | T4-08 | 1 | | | |
| * M.D. Gerken | R3-25 | 1 | | | |
| * D.R. Nunamaker | T4-07 | 1 | | | |
| * O.M. Jaka | S5-12 | 1 | | | |
| * M.A. Friedrich | G3-14 | 1 | | | |

** Advanced*