JUL 31 1998

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 622273

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) TWRS Projects/SST Retrieval	4. Related EDT No.: n/a
5. Proj./Prog./Dept./Div.: W-320 TWRS/TCPN # D2991	6. Design Authority/ Design Agent/Cog. Engr.: JW Bailey/JR Bellomy, NHC	7. Purchase Order No.: n/a
8. Originator Remarks: For approval and release.		9. Equip./Component No.: n/a
		10. System/Bldg./Facility: 241-C-106
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16. KEY

Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
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17. SIGNATURE/DISTRIBUTION
(See Approval Designator for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
1	1	Design Authority JW Bailey	JW Bailey Ron Tolcon RRB	7/24/98	S2-48	1	1	RR Bevins	RR Bevins	7/24/98	S2-48
		Design Agent				1	1	JR Bellomy	RR Bevins for JRB	7/24/98	S2-48
1	1	Cog.Eng. JM Jones	[illegible]	07-20-98	S5-13	1	1	JW Lentsch	RR Bevins for JWL Ron Tolcon	7/24/98	S2-48
1	1	Cog. Mgr. DG Baide	N.E. Boyer for	7/26/98	S5-05						
1	1	QA KC Conrad	KC Conrad	7-25-98	S2-48						
1	1	Safety SL Zeman	[illegible]	7/25/98	S5-12						
		Env.									

18. J. Paxton [signature] 7-25-98 Signature of EDT Originator Date	19. Authorized Representative Date for Receiving Organization	20. Ron Tolcon J.W. Bailey RRB JW Bailey 7/24/98 Design Authority/ Cognizant Manager Date	21. DOE APPROVAL (if required) Ctrl. No. [] Approved [] Approved w/comments [] Disapproved w/comments

BD-7400-172-1

Waste Retrieval Sluicing System Data Acquisition System Acceptance Test Report

R. R. Bevins
Numatec Hanford Co., Richland, WA 99352
U.S. Department of Energy Contract DE-AC09-96RL13200

EDT/ECN: 622273 UC: 506
Org Code: 8C452 Charge Code: D2991/HANA0600
B&R Code: EW3130010 Total Pages: 72

Key Words: Project W-320, Instrumentation, Data Acquisition System, Acceptance Test.

Abstract: Project W-320 Acceptance Test Report for Project W-320 Waste Retrieval Sluicing System Data Acquisition System (DAS).

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Release Approval — Date: JUL 31 1998

Release Stamp: DATE: JUL 31 1998 HANFORD RELEASE STA: 4 ID: 2.

Approved for Public Release

ACCEPTANCE TEST PROCEDURE HNF-1827 (W-320 DAS TEST PROCEDURE)

TEST TITLE WASTE RETRIEVAL SLUICING SYSTEM - DATA ACQUISITION SYSTEM

LOCATION AY & C FARM

PROJECT NUMBER W-320 TASK ORDER N-09

PROJECT TITLE W-320 Tank 241-C-106 Sluicing

Prepared By
FLUOR DANIEL NORTHWEST
Richland, Washington

For NUMATEC HANFORD COMPANY

PROCEDURE APPROVAL

FLUOR DANIEL NORTHWEST (FDNW)

Author	3/12/98 Date	Technical Documents	3-11-98 Date
Checker	3-12-98 Date	Safety	N/A — Date
Environmental	3-12-98 Date	Quality Engineering	N/A — Date
Project Management	03/12/98 Date		

NUMATEC HANFORD COMPANY (NHC)

Projects Department	3/12/98 Date	Quality Assurance	3-12-98 Date
Safety	3/12/98 Date	Operations	3/12/98 Date

EXECUTION AND TEST APPROVAL

EXECUTED BY

[signature] / HK Chaudhry for Steve Romero	4/9/98	[signature] / FDNW	4/9/98
Test Director/Organization	Date	Test Operator/Organization	Date
R. Taylor FDH AI	4-9-98		
Recorder/Organization	Date		

WITNESSES

HK Chaudhry	4-9-98	R. Taylor FDH AI	4-9-98
Witness/Organization	Date	Title III Inspector	Date
NA		NA	
Witness/Organization	Date	Witness/Organization	Date

A-E APPROVAL

FLUOR DANIEL NORTHWEST (FDNW)

Without exceptions __ With exceptions resolved X With exceptions outstanding __

[signature]	4/9/98	[signature]	1/24/98
Acceptance Inspection (FDH)	Date	Design Engineer	Date
[signature]	04/14/98		
Project Manager	Date		

SEE Attached page # ii(A)

TEST APPROVAL AND ACCEPTANCE

NUMATEC HANFORD COMPANY (NHC)

Without exceptions __ With exceptions resolved __ With exceptions outstanding __

(Title or Department)	Date	(Title or Department)	Date
(Title or Department)	Date	(Title or Department)	Date

WASTE RETRIEVAL SLUICING SYSTEM - DATA ACQUISITION SYSTEM

ECN W320-771
W320-798
W320-812
*W320-767

* HAS NO IMPACT ON ATR.

R. R. Bevins
NHC, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: EDT 610614 UC: 510
Org Code: 80000 Charge Code: D2MEP
B&R Code: EW31320010 Total Pages: ~~52~~ 53 KMB 3/12/98

Key Words: Project W-320, Instrumentation, Data Acquisition System, Acceptance Testing

Abstract: Project W-320 Acceptance Test Procedure for Project W-320 Waste Retrieval Sluicing System Data Acquisition System (DAS)

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DIST DATE JUL 14 1998
PROJ/WO W-320
NO AI-2

CONTROLLED DOCUMENT
STATION NO. 33
DIST DATE MAR 12 1998
PROJ/WO W320
NO AI2

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DIST DATE JUL 27 1998
PROJ/WO W-320
NO AI-2

Release Approval 3/12/98 Date

DATE: HANFORD RELEASE ID: 2
STA: 4
MAR 12 1998
Release Stamp

Approved for Public Release

TEST EXECUTION SHEET

TEST EXECUTION

AL Almquist FDNW 7-17-98
Installation Contractor Date

R.G. Dykeman FDH 7-17-98
Recorder/Organization Date

John Paxton 7-17-98
Test Director/Organization Date

TEST WITNESS

R.G. Dykeman FDH/AI 7-17-98
Witness/Organization Date

N/A
Witness/Organization Date

N/A
Witness/Organization Date

N/A
Witness/Organization Date

TEST ACCEPTANCE (FDNW)

SEE ATTACHED PAGE # ii B

___ Without Exception X With Exception/Resolved ___ With Exception/Outstanding

7-24-98
Acceptance Inspection Date

7/24/98
Design Engineer (Author) Date

07/24/98
Project Engineer Date

TEST APPROVAL AND ACCEPTANCE (NHC)

___ Without Exception X With Exception/Resolved ___ With Exception/Outstanding

RR Bevins 7/24/98
(Title or Department) Date
W-320 STARTUP MANAGER

7-25-98
(Title or Department) Date

Keith Conrad /QA 7-25-98
(Title or Department) Date
W-320 QUALITY ASSURANCE

RR Bevins for JWJ per Falcon 7/26/98
(Title or Department) Date
W-320 PROJECT MANAGER

ii-A

HNF-1827
QTP/ATP
PAGE ii B

EXECUTION AND TEST APPROVAL

EXECUTED BY

FDNW — 7-29-98
Test Director/Organization — Date

FDNW — 7-29-98
Test Operator/Organization — Date

R. TAYLOR FDH/AI — 7-29-98
Recorder/Organization — Date

WITNESSES

Witness/Organization — Date

R. TAYLOR AI — 7-29-98
Title III Inspector — Date

Witness/Organization — Date

FDH/AI — 7-29-98
Witness/Organization — Date

A-E APPROVAL

FLUOR DANIEL NORTHWEST (FDNW)

Without exceptions __ With exceptions resolved X With exceptions outstanding __

FDH/AI — 7-29-98
Acceptance Inspection — Date

Design Engineer — 7/29/98
Date

07/29/98
Project Manager — Date

TEST APPROVAL AND ACCEPTANCE

NUMATEC HANFORD COMPANY (NHC)

Without exceptions __ With exceptions resolved ✓ With exceptions outstanding __

7/29/98
(Title or Department) — Date
W-320 START-UP MGR

(Title or Department) — Date
W-320 TEST ENGINEER

7/29/98
(Title or Department) — Date
W-320 QUALITY ASSURANCE

7/30/98
(Title or Department) — Date
W-320 START-UP PROJECT MGR.

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1 INTRODUCTION

1.1 PURPOSE

This document describes the test procedure for the Project W-320 Tank C-106 Sluicing Data Acquisition System (W-320 DAS). The Software Test portion will test items identified in the WRSS DAS System Description (SD), HNF-2115. Traceability to HNF-2115 will be via a reference that follows in parenthesis, after the test section title.

The Field Test portion will test sensor operability, analog to digital conversion, and alarm setpoints for field instrumentation.

1.2 SCOPE

This test covers the display functionality, Project W-320 WRSS DAS (or DAS) networking to other systems, and overall run time performance of the WRSS DAS, including the Citect graphical interface and wireless ethernet system.

The precision of data received from analog input modules installed in the DAS Programmable Logic Controllers (PLCs) is also tested. Test cases in this document will also cover communications with remote I/O devices, such as the AY-Farm Thermocouple Multiplexer (T/C Mux), slurry mass flow and density meter, etc.

The WRSS DAS test procedure is not a calibration of sensors/transducers connected to the DAS. This procedure checks for display from sensor inputs, but assumes an accurate sensor calibration. Simulated inputs will be used to test ranges and alarm setpoints.

1.3 OVERVIEW

The W-320 DAS supplies data to assist thermal modeling of tanks 241-C-106 and 241-AY-102. It is designed to be a central repository for information from sources that would otherwise have to be read, recorded, and integrated manually. Thus, completion of the DAS requires communication with several different data collection devices and output to a usable PC data formats (e.g., *.CSV files for Excel, etc.). This test procedure will demonstrate that the DAS functions as required by the project requirements stated in Section 3 of the W-320 DAS System Description, HNF-2115.

1.4 TEST CASES

This section explains the organization of the test. Testable features of the product system include data precision, sampling rate, and data availability. The acceptance criteria are based on the system requirements defined in the WRSS DAS System Description (HNF-2115), Section 3.

The following functional areas of the DAS will be tested.

1. HMI screen navigation buttons and function keys, data display, trending, security (HNF-2115, § 3.1.1)

2. HMI system interfaces (HNF-2115, § 3.1.2)

3. Communication with PLCs (tested in various sections), W-030 HVAC Unix system, Westronics SDI-310, Micro Motion RFT 9739, Enraf density profile data files (HNF-2115, § 3.1.3)

4. HMI alarm processing (HNF-2115, § 3.1.4) (tested with I/O range requirements)

5. PLC local I/O functions (HNF-2115, § 3.1.3.1, § 3.1.3.7)

6. System power protection (HNF-2115, § 3.3.1)

2 REFERENCES

2.1 DOCUMENTS

ECN 639745	AY-801A Scanner Replacement
FDMMPT97.01	Micro Motion Mass Flow System Test (White, 1997)
HNF-1823	Project W-320 Software Configuration Management Plan
HNF-2115	Project W-320 WRSS DAS System Description
HNF-WM-SD-PCP-013	WRSS Process Control Plan

2.2 DRAWINGS

ECN W 320 -798	H-2-131075, Rev ~~0~~ 2	Project W-030 P&ID
ECN W320 -798	H-2-131356, Sh 2, Rev ~~1~~ 0	Elec Sec & Det Recirc/Clg Mdl AY & AZ Tank Farm
	H-2-818558, Sh 1, Rev 2	Project W-320 P&ID Legend
	H-2-818558, Sh 2, Rev 2	Project W-320 P&ID Equipment Identification
	H-2-818558, Sh 3, Rev 2	Project W-320 P&ID Details
W 320-798 ECN	H-2-818559, Sh 2 REV.3	Project W-320 P&ID TANK 241-C-106
	H-2-818560, Sh 1, Rev 3	Project W-320 P&ID TANK 241-AY-102
ECN W320-798	H-2-818560, Sh 2, Rev ~~2~~ 3	Project W-320 P&ID TANK 241-AY-102
	H-2-818560, Sh 3, Rev 3	Project W-320 P&ID TANK 241-AY-102
	H-2-818573, Sh 1-5, Rev 1	Instrumentation Enclosure IE-0621 Section 7 Details
	H-2-818574, Sh 4, Rev 0	Instrumentation Instrument Enclosure IE-0622 Assembly
	H-2-818574, Sh 1, Rev 1	Instrumentation 241-AY-801A Instr House Plan
	H-2-818574, Sh 5, Rev 0	Instrumentation 241-AY-801A Instr House Connection Diagram
ECN W320-798	H-2-818601, Sh 2, Rev 0	Instrumentation Loop Diagram Tank Press & Slurry Winch
ECN W 320 -798	H-2-818601, Sh 5, Rev 0	Instrumentation Loop Diagram Slurry Pres/Flo & Bldg HVAC
	H-2-818694, Sh 1, Rev 1	Electrical AY Farm Partial Site Plan
	H-2-818695, Sh 1-5, Rev 2	Electrical AY Farm Plans & Details
	H-2-818695, Sh 6, Rev 0	Electrical AY Farm Plans & Details
ECN W320 -798	H-2-818698, Sh 2, Rev 1	Electrical AY Farm Elementary Diagrams
	H-2-818699, Sh 1&2, Rev 1	Electrical AY Farm Conduit & Wire Schedule
	H-2-818700, Sh 1&2, Rev 0	Electrical AY Farm Connection Diagram
	H-2-818700, Sh 3&4, Rev 0	Electrical AY Farm Connection Diagram
	H-2-822773, Sh 1, Rev 1	Standard - C Hydrogen Monitoring System Piping & Instr Diagram

H-2-822774, Sh 1, Rev 0	Standard - C Hydrogen Monitoring System One Line, Elementary Diagrams
H-2-822775, Sh 5, Rev 0	Standard - C Hydrogen Monitoring System Cabinet Assembly
H-2-822776, Sh 2, Rev 1	Standard - C Hydrogen Monitoring System Wiring Diagram
H-2-822777, Sh 1, Rev 1	Standard - C Hydrogen Monitoring System Loop Diagram

2.3 SPECIFICATIONS

W-320-C5, Rev. 0	Construction Specification Tank 241-C-106 Sluicing - C Tank Farm
W-320-C7, Rev. 0	Construction Specification Tank 241-C-106 Sluicing - AY Tank Farm

2.4 VENDOR INFORMATION (#22668)

PO 100501-7-GIIE-000	Annulus Vent Line Flow Instrumentation
PO MR.21146	Annulus Vent Line Temp Instrumentation
PO MR.A21780	Primary Exhaust Humidity Instrumentation
PO 78256	Slurry Mass Flow Instrumentation
PO 78256	Density Instrumentation

3 RESPONSIBILITIES

3.1 GENERAL

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

3.2 NHC PROJECT ENGINEER

3.2.1 Signs Execution and Test Approval page when test is complete and accepted.

3.2.2 Provides a distribution list for the approved and accepted WRSS DAS Test Procedure.

3.3 FDNW PROJECT MANAGER

3.3.1 Designates a Test Director.

3.3.2 Signs Execution and Test Approval page when test is complete and accepted.

3.4 TEST DIRECTOR

3.4.1 Coordinates and directs acceptance testing.

3.4.2 Coordinates testing with FDNW Utilities.

3.4.3 Coordinates testing with FDNW Craft.

3.4.4 Before start of test, obtains all outstanding ECNs against referenced documents of Section 2, and informs the FDNW Project Manager and NHC Project Engineer of the testing schedule.

3.4.5 Notifies concerned parties (includes FDNW Project Manager, FDNW Principal Lead Engineer, and NHC Project Engineer) when a change is made/potential impact to the testing schedule.

3.4.6 Schedules and conducts a pretest kickoff meeting with test participants, when necessary.

3.4.7 Confirms that field testing and inspection of the system or portion of the system to be tested has been completed. The Test Director may also act as the Test Operator for small systems, such as the WRSS DAS.

3.4.8 Stops any test which, in his or her judgement, may cause damage to the system until the problem has been resolved.

3.4.9 After verifying there is no adverse impact, may alter the sequence in which systems or subsystems are tested.

3.4.10 If a test is to be suspended for a period of time, ensures that the system is left in a safe mode.

3.4.11 Before restarting suspended test, reverifies the test prerequisites.

3.4.12 Initiates ECNs to document required changes to the WRSS DAS Test Procedure, as needed.

3.4.13 Reviews recorded data, discrepancies, and exceptions.

3.4.14 Signs exception form when an exception has been resolved.

3.4.15 Signs Execution and Test Approval page when test has been performed.

3.4.16 Takes necessary actions to clear exceptions to the test, and signs exception form when exceptions have been resolved.

3.5 WITNESS(ES) (One witness shall be a Title III acceptance inspector.)

3.5.1 Witnesses the tests.

3.5.2 Reviews results of testing.

3.5.3 Assists the Test Director when requested.

3.5.4 Signs Execution and Test Approval page when test has been performed.

3.5.5 Signs exception form when exception has been resolved.

3.6 RECORDER (Provided by FDNW)

3.6.1 Prepares a field copy from the WRSS DAS Test Procedure Master.

3.6.2 Records names of all designated personnel on field copy of test procedure before start of testing.

3.6.3 Records test instrument identification numbers and calibration expiration dates, as required.

3.6.4 Records test data.

3.6.5 Record exceptions on an exception form per the Test Operator's direction. Uses additional exception forms as needed. Notifies the Test Director at time the exception is made.

3.6.6 Signs Execution and Test Approval page when test has been performed.

3.6.7 After test is finished, assigns alpha-numeric page numbers to added data sheets and exception forms. Records additional page numbers in the Table of Contents.

3.6.8 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.

3.6.9 Signs exception form when exception has been resolved and transmits to Test Director.

3.7 TEST OPERATOR

3.7.1 Performs test under direction of the Test Director. The Test Director may also act as the Test Operator for small systems, such as the WRSS DAS.

3.7.2 Provides direction to the test recorder regarding test exceptions.

3.7.3 Provides labor, equipment, and test instruments required for performing tests which have not been designated as being provided by others.

3.7.4 Confirms that all equipment required for performing test will be available at the start of testing.

3.7.5 Signs the Execution and Test Approval page.

3.8 A-E ACCEPTANCE INSPECTION, DESIGN ENGINEER, AND PROJECT MANAGER

3.8.1 Evaluates results.

3.8.2 Signs for A-E Approval on Execution and Test Approval page.

4 CHANGE CONTROL

Required changes to this ATP must be processed in accordance with company procedures. 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 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.

These tests involve working near energized equipment; all procedural requirements for working near energized equipment shall be followed, and an Energized Electrical Work Permit shall be completed.

5.2 PERFORMANCE

5.2.1 Conduct testing in accordance with guidelines within FDNW Practice 134.500.8354 (Performance and Recording of Acceptance Test Procedures).

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

5.2.3 As each step is completed, the person witnessing the steps shall initial and date in the space provided. After each Section is completed, the witness shall initial and date in the space provided in Section 24.

6 EXCEPTIONS

6.1 GENERAL

Sections 8 - 17 of this document that are test procedures for the DAS software are governed by the W-320 Software Configuration Management Plan, HNF-1823. Exceptions found in these sections fall entirely within the configuration control procedures in the WRSS DAS SCMP.

The remaining sections test PLC functionality (in conjunction with the DAS software). 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. Also, log the exception onto the exception log form.

6.2.2 Enter name and organization of the individual that identifies 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.

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 Test Director 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 Test Director signs and dates the exception form and obtains other approvals, if required.

6.5 DISTRIBUTION

A copy of the approved exception form is distributed to appropriate participants. The signed original is attached to the WRSS DAS Test Procedure Master Copy.

7 PREREQUISITES, EQUIPMENT/INSTRUMENTS, DEFINITIONS, GLOSSARY AND ANNUNCIATORS

7.1 PREREQUISITES

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

Rt 3-26-98 7.1.1 NHC Project Engineer has been notified prior to start of the testing.

Rt 3-26-98 7.1.2 Electrical power is available for instruments in AY Farm; IE-0622 in AY-801A, VC-0622 Cabinet C in 241-AY-51; and AZ-271 (W-030 Control Room).

Rt 3-26-98 7.1.3 Electrical power is available for instruments in CB-01, CP-01, IE-1363, and Operator Interface Station (OIS) in MO-211; IE-1361 and IR-1361 in 241-C-51 Process Bldg; and IE-1362 in 241-C-51.

Rt 3-26-98 7.1.4 Systems and components have been appropriately tagged in accordance with P&ID Drawings H-2-131075, H-2-131356, H-2-818559, and H-2-818560, and inspected for compliance with construction documents.

Rt 4-9-98 7.1.5 Reference documents (including this test procedure) have been verified for correct revision number and outstanding ECNs.

Rt 3-26-98 7.1.6 A Prejob Safety Analysis has been prepared and a Prejob Safety Meeting has been conducted.

Rt 3-26-98 7.1.7 Wiring has been continuity tested and meggered (testing for insulation breakdown).

Rt 3-26-98 7.1.8 Grounding has been visually inspected and continuity tested.

Rt 3-26-98 7.1.9 Voice communications are available between Tank 241-AY-102, 241-AY-801A, 241-AZ-271, and MO-211.

Rt 4-9-98 7.1.10 Calibration for instruments listed in Data Sheet ~~7.1.9~~ 7.1.10 ECN W-320-771 is up-to-date.

Rt 3-26-98 7.1.11 Test Operator possesses a set of HMI security passwords given to him by DAS Development Personnel.

Rt 4-9-98 7.1.12 Thermocouples associated with Westronics Mux Datalogger and listed in Appendix B of HNF-2115 have been tested for malfunction (out of range/open).

Rt 3-26-98 7.1.13 DAS wireless network operational as demonstrated by DAS Development Personnel.

Rt 3-26-98 7.1.14 DAS field installation complete, including HLAN connection to DAS PC.

Rt 3-26-98 7.1.15 DAS programming complete to satisfaction of DAS development personnel, in accordance with WRSS DAS System Description HNF-2115.

Rt 3-26-98 7.1.16 Test Operator or staff has knowledge and skills to operate Windows NT, WRSS DAS and Citect programs.

Rt 3-26-98 7.1.17 Data log directory on Micon DCS workstation is mounted as X: on HMI PC, and data is currently being logged.

Rt 3-27-98 7.1.18 Testing of PIC-1361 and PIT-1361 is completed in accordance with W320-ATP-012.

7.1.10 ECN W320-771

DATA SHEET ~~7.1.9~~			
INITIAL/DATE	INSTRUMENT TAG NUMBER	VERIFY CALIBRATION	
		CAL/VAL (DATE)	EXPIRATION DATE
Rt 3-27-98	FIT-0622	3-4-98	3-4-01
Rt 3-27-98	TE/TIT-0620	3-2-98	3-2-01
Rt 3-27-98	UE-0621/UT-0621	10-21-97	10-20-00
Rt 3-27-98	NIT-02JAY-12-1	2-19-98	5-19-98
ECN-W320-798	~~AE-0623/AIT-0623~~		
Rt 3-27-98	MIT (TE-06230 to TE-06251)	2-25-98	2-25-99
-CN-W320-798	~~WST-LIT-602A~~		
Rt 3-27-98	FE-13616/FIT-13616	4-12-96	4-12-99
Rt 3-27-98	PE-1361/PIT-1361	2-27-98	2-27-01
Rt 3-27-98	PE-1362/PIT-1362	3-21-96	3-21-99
-N-W320-798	~~WSTR. SDI-310 IN AY-801A~~		
Rt 3-27-98	LI-602B IN 241-AY-51	2-24-98	2-24-01

7.2 EQUIPMENT/INSTRUMENTS

The following test instruments shall be available (supplied by Test Operator).

TYPE	INSTRUMENT NO.	CALIBRATION EXP. DATE
Transmitter calibrator simulator with 4-20 mA output. Display must be adjustable to ~~± 0.001~~ ± 0.01 ECN W-320-771 mA (nominal), or use with DMM, below.	817-13-55-026	3-30-99
Digital Multimeter, with mA readout of ± 0.001 units.	817-45-05-076	3-12-99
Thermocouple simulator, Type K & J, with display, adjustable to ± 0.1 °F resolution (nominal)	817-13-55-013	9-5-98
RTD Readout/Calibrator/Simulator: Platinum 100 ohm DIN, ± 0.1 °F resolution (nominal)	817-63-02-003	6-27-98
ECN W-320-771 Variable Test Pressure Source (VTPS): 0 to .5" H_2O	817-13-~~N/A~~ 81-020	1-21-~~N/A~~ 99
Stop Watch ROSEMOUNT MODEL 268	N/A	N/A
ECN W-320-771 ECN-W320-798 Micro Motion Model 275 HART/Communicator	58169-A09E	N/A
ENRAF Density Meter data file available on floppy disk.	N/A	N/A
ECN-W320-798 ~~Pressure Simulator~~ (strain gage simulator): 0-150 psig (MV SOURCE)	817-13-55-026	3-30-99

7.3 DEFINITIONS AND GLOSSARY OF TERMS

Click: Use the mouse to point at a screen target, then press down on the button on the left side of the mouse. Compare Right-Click.

DAS: Data Acquisition System based on a PLC/PC architecture to collect field data and provide a full user interface/HMI to display, manipulate, save and print data.

DCS: Distributed Control System. A control system package combining PLC and HMI functionality, with multiple autonomous controllers and interfaces.

ECN: Engineering Change Notice

Ethernet Hub: Device used as a connection point between two or more ethernet devices. Analogous to a null modem for communication between serial devices.

HMI Software: A Human-Machine Interface software package developed by Ci Technologies, Citect, is used to create the human-machine interface portion of the DAS. The PC-based package works within the Microsoft Windows NT environment to provide graphic displays with user-friendly controls.

IE: Instrument Enclosure

I/O: Inputs and Outputs - The PLC provides the hardware interface for all field inputs and outputs which are typically divided into Discrete (On/Off) and Analog (Process Variable) types. Examples of discrete Inputs and Outputs (DI and DO) include devices such as limit switches (DI) and motor starters (DO), respectively. Process variable transmitters and variable speed drives are examples of Analog Inputs and Outputs (AI and AO), respectively. Currently there are no DOs or AOs in the DAS system.

PC: Personal computer used with HMI software to provide the human-machine interface.

PLC: The Programmable Logic Controller is the microprocessor-based industrial controller capable of real-time control. It provides all of the discrete and process control logic required for controlling and/or monitoring the process. Once the program has been loaded into the controller module, it will execute all control/monitoring functions even if connection to the HMI computer is severed or interrupted.

Real-time: Indicates that monitoring and control signals are being processed and implemented in an acceptable time frame which is usually an imperceptible amount of time after the actual process events.

Right-Click: Use the mouse to point at a screen target, then press down on the button on the right side of the mouse. Compare Left-Click.

RTD: Resistance Temperature Detector

TC: Thermocouple

TCP/IP: Transport Control Protocol/Internet Protocol (de facto Ethernet standard for UNIX and Microsoft Windows communications)

Tool-Tip: Phrase explaining the function of a button or other object in a HMI graphics screen that appears temporarily when the mouse pointer is moved over the object.

TWRS: Tank Waste Remediation Systems

VOM: Volt-ohmmeter

Window: Term used to describe a part or all of a complete screen display

WRSS: Waste Retrieval Sluicing System. Includes the C-106 submersible pump, booster pump, the sluicer, the AY-102 submersible pump, booster pump, C-106 HVAC, all interconnecting piping, and instrumentation related to these items.

VTPS: Variable Test Pressure Source.

7.4 ANNUNCIATOR

7.4.1 WRSS DAS: The following annunciator sequence applies to all analog alarms for the WRSS DAS.

7.4.1.1 Sequence: ISA Sequence Number A (ISA S18.1)

STAGE	VISUAL DISPLAY		AUDIBLE ALARM/SOUND
	DISPLAY STATE	COLOR	
NORMAL	OFF	GRAY	SILENT
UNACKNOWLEDGED - LOW/HIGH	FLASHING	AMBER	ON/BUZZING
UNACKNOWLEDGED - LOW-LOW/HIGH-HIGH	FLASHING	RED	ON/PULSING CHIME
ACKNOWLEDGED - LOW/HIGH	STEADY ON	AMBER	SILENT
ACKNOWLEDGED - LOW-LOW/HIGH-HIGH	STEADY ON	RED	SILENT
RETURN TO NORMAL	OFF	GRAY	SILENT

7.4.2 ANN-1361, ANN-1363A, and ANN-1363B: The following annunciator sequence applies to alarms for the ANN-1361, ANN-1363, and ANN-1363B.

7.4.2.1 Sequence: ISA Sequence Number M (ISA S18.1).

STAGE	VISUAL SIGNAL	AUDIBLE SIGNAL
NORMAL	OFF	OFF
ALERT	FLASHING	ON
ACKNOWLEDGE	STEADY ON	OFF
RETURN TO NORMAL	STEADY ON	OFF
RESET	OFF	OFF
TEST	FLASHING	ON

END OF SECTION 7

SECTIONS 8 - 17

DAS SOFTWARE TESTS

8 HMI SCREEN NAVIGATION AND FUNCTION KEYS (HNF-2115, § 3.1.1.1 - 2)

Tests HMI screen navigation and the function keys described in Appendix A of the DAS System Description, HNF-2115. The ACKNOWLEDGE ALARMS function key, F12, will be tested during the alarm annunciator test.

RK-3-26-98 8.1 Verify applicable prerequisites from Section 7 have been completed.

JRC 3-21-98 8.2 Start WRSS DAS software.

JRC 3-21-98 8.3 Use the screen transition paths matrix checklist in Data Sheet 8.3 to verify the available transition paths to each screen.

NOTE: Test available paths from the originating screen in left-most column of Data Sheet 8.3 to each unshaded box in that row.

JRC 3-21-98 8.4 Test the following function keys:

Key	Response
F1	Displays WRSS DAS HELP
F2	Displays TANK AY-102 STATUS
F3	Displays TANK C-106 STATUS
F4	Displays PLC AND COMMUNICATION STATUS
F5	Displays TREND SELECTION
F6	Displays ALARM SUMMARY
HOME	Returns display to initial screen

DATA SHEET 8.3 - SCREEN TRANSITION PATHS MATRIX

	OVERVIEW	AY-102 STAT	C-106 STAT	PLC/ COMM STAT	TREND SELECT	ALARM SUMMARY	AY-102 TANK TEMPS	AY-102 MIT	AY-102 HVAC	AY-102 DENS	INITIAL/ DATE
OVERVIEW		✓	✓	✓	✓	✓					JRC 3-21-98
AY-102 STAT	✓		✓	✓	✓	✓	✓	✓	✓	✓	JRC 3-21-98
C-106 STAT	✓	✓		✓	✓	✓					JRC 3-21-98
PLC/COMM STAT	✓	✓	✓		✓	✓					JRC 3-21-98
TREND SELECT	✓	✓	✓	✓		✓					JRC 3-21-98
ALARM SUM	✓	✓	✓	✓	✓						JRC 3-21-98
AY-102 TANK TEMPS		✓									JRC 3-21-98
AY-102 MIT		✓									JRC 3-21-98
AY-102 HVAC		✓									JRC 3-21-98
AY-102 DENS		✓									JRC 3-21-98

END OF

9 HMI SCREEN DATA DISPLAY (HNF-2115, § 3.1.1.3, 3.1.3.1, 3.1.3.7)

RX 3-27-98 9.1 Verify applicable prerequisites from Section 7 have been completed.

RX 3-27-98 9.2 Log into the WRSS DAS as an Operator.

RX 3-27-98 9.3 Inspect WRSS DAS screens to verify that all data points listed in Data Sheet 9.3 have appropriate tags AND units, and display values within calibration range AS LISTED ECN W-320-771 as listed in HNF-2115, Appendix B.

Note: To change WRSS DAS screen views, click on the folder tabs at the top. Inspect pop-up screen data by clicking on grey buttons, one at a time, on each screen to display data for comparison to the HNF-2115 Appendix B data point list.

DATA SHEET 9.3 - HMI SCREEN DATA CHECKLIST			
INITIAL/DATE	TAG(S)	SCREEN LOCATION/NAME	FUNCTION KEY
Rt 3-26-98	TI-0620	AY-102 STATUS	F2
Rt 3-26-98	FI-0622	AY-102 STATUS	F2
Rt 3-26-98	AI-0623	AY-102 STATUS	F2
Rt 3-26-98	AI-0621	AY-102 STATUS	F2
Rt 3-26-98	DQI-0621A/B	AY-102 STATUS	F2
Rt 3-26-98	DI-0621A and DI-0621B	AY-102 STATUS	F2
Rt 3-26-98	FI-0623	AY-102 STATUS	F2
Rt 3-26-98	TI-06230 to 06251	AY-102 WASTE TEMPERATURES (MIT)	F2, Alt-M
Rt 3-26-98	DI-602-~~10A/B~~ A/B1 to DI-602-~~10A/B~~ A20/B20	AY-102 LEVEL AND DENSITY	F2, Alt-D
Rt 3-26-98	LI-602C	AY-102 STATUS	F2
Rt 3-26-98	TI-01 to TI-07, TI-10 to TI-17, TI-20 to TI-25	AY-102 TANK TEMPERATURES (CONCRETE)	F2, Alt-T
Rt 3-26-98	TI-42, 44, 50, 55, 59	AY-102 TANK TEMPERATURES (AIRLIFT CIRC)	F2, Alt-T
Rt 3-26-98	TI-60, 63, 66, 69	AY-102 TANK TEMPERATURES (DOMESPACE)	F2, Alt-T
Rt 3-26-98	TI-61, 64, 67, 70	AY-102 TANK TEMPERATURES (SUPERNATANT)	F2, Alt-T
Rt 4-9-98	TI-62, 65, 68, 71, ~~72~~, 73, 74	AY-102 TANK TEMPERATURES (SLUDGE)	F2, Alt-T
Rt 3-26-98	FI-AY2K1-2	AY-102 HVAC	F2, Alt-V
Rt 3-26-98	TI-AY2K48-1B	AY-102 HVAC	F2, Alt-V
Rt 3-26-98	TI-AY2EWS-1	AY-102 HVAC	F2, Alt-V
Rt 3-26-98	TI-AY2EWR-1	AY-102 HVAC	F2, Alt-V
Rt 3-26-98	FI-AY2EWR-1	AY-102 HVAC	F2, Alt-V
Rt 3-26-98	FI-13616	C-106 STATUS	F3
Rt 3-26-98	FQI-13616A	C-106 STATUS	F3
Rt 3-26-98	FQI-13616B	C-106 STATUS	F3
Rt 3-26-98	PI-1362	C-106 STATUS	F3
Rt 3-26-98	PI-1361	C-106 STATUS	F3
Rt 4-9-98	DI-602C	AY-102 AVERAGE DENSITY	~~F2, Alt-D~~

END OF SECTION 9

ECN-W320-798

10 CITECT INTERNAL CALCULATIONS (HNF-2115, § 3.1.3.2.1.2, 3.1.1.4.1)

10.1 TANK C-106 BOOSTER PUMP FLOW TOTALIZER (FQI-13616A/FQI-13616B)

Tests HMI totalizer calculation for grand (FQI-13616A) and batch (FQI-13616B). Function will not work unless the DAS software is running continuously during waste retrieval operations.

RT 3-28-98 TRC 10.1.1 Verify applicable prerequisites from Section 7 have been completed.

TRC 3-21-96 10.1.2 Put the C-106 PLC inputs in simulation mode (Citect reads from disk values - requires a Citect programmer).

TRC 3-21-96 10.1.3 Restart the DAS software and log in as System Engineer.

TRC 3-21-96 10.1.4 Set the booster pump discharge flow to 0 gpm, by pointing the mouse at the current value and typing "0"<enter>.

TRC 3-21-96 10.1.5 Reset the batch totalizer FQI-13616~~A~~B ECN W-320-771. Note the current value of FQI-13616A, the non-resettable total volume (T0): 990 X 1000 gal.

TRC 3-21-96 10.1.6 Set the booster pump discharge flow FI-13616 to 300 gpm, by pointing the mouse at the current value and typing "300"<enter>. Allow the totalizer to run 5 minutes, using a digital stop watch.

TRC 3-21-96 10.1.7 Note the batch total: 1500 X 1000 gal. Verify that this value differs from 1500 by less than 1% (15 gal).

TRC 3-21-96 10.1.8 Note the non-resettable total (T1): 2490 X 1000 gal. Verify that the value T1-T0 differs from 1500 by less than 1% (15 gal).

TRC 3-21-96 10.1.9 Take the C-106 PLC inputs out of simulation mode (changes will not take effect until the DAS software is restarted)

TRC 3-21-96 10.1.10 Restart WRSS DAS.

10.2 WRSS SLURRY SOLIDS LOADING CALCULATION/ALARM SETPOINTS VERIFICATION

Tests conversion of specific gravity units to percent solids, using the value for supernate density entered on the test/maintenance page. Tests alarm set/reset points for the calculated value. (Calculation is based on the equation in § 4.1.1 of the the C-106 WRSS PCP, WHC-SD-NM-PCP-013.)

TRC 3-21-96 10.2.1 Put the AY-102 PLC inputs in simulation mode (Citect reads from disk values - requires a Citect programmer)

TRC 3-21-96 10.2.2 Restart the WRSS DAS software and log in as System Engineer.

TRC 3-21-96 10.2.3 Go to the test page by pressing Ctrl-Alt-T. Set the supernate density to 1.0 by using the up and down arrows.

TRC 3-21-96 10.2.4 Go to the AY-102 STATUS page. Set the slurry density (g/mL) on DI-0621A to 1.13 by pointing the mouse at the currently displayed value, then typing "1.13"<enter>. Verify that the percent solids reading on DI-0621B is 20.5 ± 0.1%.

RT 4-9-98

TRC 3-21-96 10.2.5 Verify that the slurry percent solids - HIGH alarm is tripped, THEN ACKNOWLEDGE ALARM [~~BY CLICKING ON THE ACKNOWLEDGE BUTTON.~~] ECN-W-320-771 ECN-W320-798

TRC 3-21-96 10.2.6 Set the slurry density (g/mL) on DI-0621A to 1.21 by pointing the mouse at the currently displayed value, then typing "1.21"<enter>. Verify that the percent solids reading on DI-0621B is 30.9 ± 0.1%.

TRC 3-21-96 10.2.7 Verify that the slurry percent solids - HIGH HIGH alarm is tripped. Acknowledge the alarm (F12).

TRC 3-21-96 10.2.8 Decrease the slurry density value ~~by 0.01~~ IN STEPS OF 0.05 ECN W-320-771 g/mL until the HIGH HIGH alarm is reset. Verify that the alarm does not reset until the solids loading is approximately 28%.

TRC 3-21-96 10.2.9 Acknowledge the HIGH alarm by clicking the display symbol. Decrease the slurry density value by 0.01 g/mL until the HIGH alarm is reset. Verify that the alarm does not reset until the solids loading is approximately 18%.

TRC 3-21-96 10.2.10 Take the AY-801A PLC inputs out of simulation mode and restart WRSS DAS.

END OF SECTION 10

11 HISTORICAL TRENDING (HNF-2115, § 3.1.1.5)

Tests adjustable parameters on the DAS TREND SELECTION screen.

RT 3-28-98 11.1 Verify applicable prerequisites from Section 7 have been completed.

TRC 3-21-98 11.2 Log in as System Engineer.

TRC 3-21-98 11.3 Go to the TREND SELECTION screen (F5). Right-click on one of the 10 configuration buttons on the left side of the screen. A form will be displayed with text input fields and drop-down menus.

11.4 Verify that the form displayed in Step 11.3 is functional as follows:

TRC 3-21-98 11.4.1 Select 5 trend pens: AI-0621, AI-0623, TI-06230, ~~TI-0622~~ FI-0622 ECN W-320-771, PI-1361. Select a plot span of 10 minutes.

TRC 3-21-98 11.4.2 Enter a minimum and maximum value for each pen corresponding to the instrument ranges shown in Appendix B of the WRSS DAS System Description, HNF-2115.

TRC 3-21-98 11.4.3 Enter a title for the plot.

TRC 3-21-98 11.4.4 Save the data.

TRC 3-21-98 11.4.5 The window will close.

11.5 View the stored configuration and restore the default values as follows:

TRC 3-21-98 11.5.1 Right-click the button from Step 11.3.

TRC 3-21-98 11.5.2 Verify the data is as entered in Step 11.4.

TRC 3-21-98 11.5.3 Click DEFAULTS to recall the default values. The old configuration will appear on the form.

TRC 3-21-98 11.5.4 Click SAVE to restore the default values to the database.

TRC 3-21-98 11.6 Left-click the button configured in Step 11.4. The trend configuration will be transferred to the plot.

TRC 3-21-98 11.7 Click the SAVE TREND DATA TO DISK (an icon). Name the file ~~C:\TREND.XLS.~~ C:TREND.CSV ECN W-320-771
Note the following:

End Time:	1:49	End Date:	3-21-98
Trend Span:	10 min.	Pen in Focus:	PI 1321

TRC 3-21-98 11.8 Click the COPY TREND DATA TO CLIPBOARD (icon).

TRC 3-21-98 11.9 Go to the TEST page (Ctrl-Alt-T). Click OPEN NT EXPLORER. Open a view of C:\ and open C:\TREND.XLS. Verify the end time and date for the data, the tag name of the pen in focus, and the trend span recorded previously.

TRC 3-21-98 11.10 Select an empty column of the worksheet. Paste (the data from Step 11.8.) Verify the pasted data is approximately the same as the data that was saved to disk. Close Excel without saving changes.

END OF SECTION 11

12 HMI SECURITY FUNCTIONS (HNF-2115, § 3.1.1.6)

Tests user (viewing, Operator-level, shift supervisor-level and System Engineer-level) access to privileged portions of the DAS. NOTE: Access to alarm acknowledgment will be tested with the PLC LOCAL I/O procedure.

RT 3-27-98 12.1 Verify applicable prerequisites from Section 7 have been completed.

12.2 NOT LOGGED IN (VIEW ONLY)

RT 3-27-98 12.2.1 Log out of the DAS if logged in.

RT 3-27-98 12.2.2 Verify the absence of minimize/close buttons for the DAS OVERVIEW screen. Click on the SHUT DOWN DAS button to verify that it is INACTIVE.

RT 4-9-98 12.2.3 Verify that none of the following key combinations (Alt-Tab, ALT-SPACE Alt-Esc, ~~Ctrl-Alt-Del~~) ~~reboots the HMI PC or switches the active application to any other Windows function or program.~~ ALLOWS THE USER TO CHANGE THE ACTIVE APPLICATION OR VIEW OTHER WINDOWS NT FUNCTIONS. VERIFY THAT PRESSING CTRL-ALT-DEL DOES NOT ALLOW THE USER TO RUN TASK MANAGER, ~~OR SHUT DOWN THE PC~~.

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RT 3-27-98 12.2.4 Go to the ALARMS screen (F6). Right-click one of the alarm annunciator windows. Verify that the alarm setpoint form does NOT appear.

RT 3-27-98 12.2.5 Click one of the alarm annunciator windows. An alarm display window appears. Verify that the ALARM CONFIGURATION button is INACTIVE.

RT 3-27-98 12.2.6 Go to the TREND SELECTION screen (F5). Verify that there is no response to left- and right-clicking the 10 plot configuration buttons and DEFINE BUTTON.

12.3 OPERATOR-LEVEL SECURITY

RT 3-27-98 12.3.1 Go to the OVERVIEW screen (HOME key). Log in as Operator.

RT 3-27-98 12.3.2 Verify the absence of minimize/close buttons for the DAS OVERVIEW screen. Click on the SHUT DOWN DAS button to verify that it is INACTIVE.

RT 4-9-98 12.3.3 Verify that none of the following key combinations (Alt-Tab, ALT-SPACE Alt-Esc, ~~Ctrl-Alt-Del~~) ~~reboots the HMI PC or switches the active application to any other Windows function or program.~~ ALLOWS THE USER TO CHANGE THE ACTIVE APPLICATION OR VIEW OTHER WINDOWS NT FUNCTIONS. VERIFY THAT PRESSING CTRL-ALT-DEL DOES NOT ALLOW THE USER TO RUN TASK MANAGER, ~~OR SHUTDOWN THE PC~~.

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RT 3-27-98 12.3.4 Click one of the alarm annunciator windows. An alarm display window appears. Verify that the ALARM CONFIGURATION button is ACTIVE. GO TO THE ALARMS SCREEN (F6) ECN W-320-771

RT 3-27-98 12.3.5 Go to the TREND SELECTION screen (F5). Click DEFINE BUTTON. Verify that the MAKE DEFAULT button is ABSENT from the form that appears.

RT 3-27-98 12.3.6 Right- and left-click the plot configuration buttons to verify that trends may be configured and activated.

12.4 SHIFT SUPERVISOR-LEVEL SECURITY

RT 3-27-98 12.4.1 Go to the OVERVIEW screen (HOME key). Log in as SUPERVISOR.

RT 3-27-98 12.4.2 Verify the ABSENCE of minimize/close buttons for the DAS OVERVIEW screen. Click on the SHUT DOWN DAS button to verify that it is INACTIVE .

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RT 3-27-98 12.4.3 Verify that none of the following key combinations (Alt-Tab, Alt-Esc, ~~Ctrl-Alt-Del~~) ALT-SPACE ~~reboots the HMI PC or switches the active application to any other Windows function or program.~~ ALLOWS THE USER TO CHANGE THE ACTIVE APPLICATION OR VIEW OTHER WINDOWS NT FUNCTIONS. VERIFY THAT PRESSING CTRL-ALT-DEL DOES NOT ALLOW THE USER TO RUN TASK MANAGER ~~OR SHUTDOWN THE PC.~~ ECN W320-798

DELETED PER ECN-W-320-771 ~~12.4.4~~ ~~Open the annunciator window from Step 12.23. Verify that the change was saved. Restore the default values by clicking DEFAULTS. Verify that the defaults were restored.~~

RT 3-27-98 12.4.5 Click one of the alarm annunciator windows. An alarm display window appears. Verify that the ALARM CONFIGURATION button is ACTIVE. GO TO THE ALARMS SCREEN (F6) ECN W320-771

RT 3-27-98 12.4.6 Go to the TREND SELECTION screen (F5). Click DEFINE BUTTON. Verify that the MAKE DEFAULT button is ABSENT on the form that appears.

RT 3-27-98 12.4.7 Right- and left-click the plot configuration buttons to verify that trends may be configured and activated.

12.5 SYSTEM ENGINEER-LEVEL SECURITY (FULL ACCESS)

RT 3-27-98 12.5.1 Go to the OVERVIEW screen (HOME key). Log in as System Engineer.

RT 3-27-98 12.5.2 Verify the ABSENCE of minimize/close buttons for the DAS OVERVIEW screen. Click on the SHUT DOWN DAS button to verify it is ACTIVE.

RT 4-9-98 12.5.3 Verify that none of the following key combinations (Alt-Tab, Alt-Esc, ~~Ctrl-Alt-Del~~) ALT-SPACE ~~reboots the HMI PC or switches the active application to any other Windows function or program.~~ ALLOWS THE USER TO CHANGE THE ACTIVE APPLICATIONS OR VIEW OTHER WINDOWS NT FUNCTIONS. VERIFY THAT PRESSING CTRL-ALT-DEL DOES NOT ALLOW THE USER TO RUN TASK MANAGER ~~OR SHUT DOWN THE PC.~~ ECN W-320-771 ECN-W320-798

DELETED PER ECN W320-771 ~~12.5.4~~ ~~Open the annunciator window from Step 12.23. Verify that the change was saved. Restore the default values by clicking DEFAULTS. Verify that the defaults were restored.~~

RT 3-27-98 12.5.5 Click one of the alarm annunciator windows. An alarm display window appears. Verify that the ALARM CONFIGURATION button is ACTIVE. GO TO THE ALARMS SCREEN (F6) ECN W-320-771

RT 3-27-98 12.5.6 Go to the TREND SELECTION screen (F5). Click DEFINE BUTTON. Verify that the MAKE DEFAULT button is PRESENT on the form that appears.

RT 3-27-98 12.5.7 Right- and left-click the plot configuration buttons to verify that trends may be configured and activated.

RT 3-27-98 12.5.8 Go to the OVERVIEW screen (HOME key).

RT 3-27-98 12.5.9 Click ADD/EDIT USERS. Verify that new users RECORDS may be added, ~~and that user privileges may be changed with the form that appears.~~ CURRENT USERS MAY BE DELETED, AND THAT PASSWORDS MAY BE CHANGED ECN-W320-771

RT 3-27-98 12.5.10 ~~Press CTRL-ALT-M to display the flat screen menu.~~ VERIFY THAT PRESSING CTRL-ALT-M DISPLAYS THE FLAT SCREEN MENU. ECN W-320-771

RT 3-27-98 12.5.11 ~~Press CTRL-ALT-T to display the test page.~~ VERIFY THAT PRESSING CTRL-ALT-T DISPLAYS THE TEST PAGE. ECN W-320-771

RT 3-27-98 12.5.12 Log out of the DAS.

END OF SECTION 12

13 ALARM SETPOINTS (HNF-2115, § 3.1.4.9)

Tests the alarm setpoint change and enable/disable functions.

NOTE: LIT-602A has been selected as an example. All other alarms operate on the same program code and do not need to be tested.

RJ 3-25-98 13.1 Verify applicable prerequisites from Section 7 have been completed.

TKC 3-21-98 13.2 Log in as System Engineer.

TKC 3-21-98 13.3 Put AY-801A PLC in simulation mode (Requires Citect programmer). Restart WRSS DAS software. Log in as Shift Supervisor.

TKC 3-21-98 13.4 Go to the ALARMS screen (F6). Right-click the alarm annunciator window for LI-602C. A form should be displayed showing the alarm tag and current setpoints.

TKC 3-21-98 13.5 Record the current high alarm setpoint: 220.0 inches.

TKC 3-21-98 13.6 Click the DISABLE checkbox for LI-602C. Save the alarm configuration form.

TKC 3-21-98 13.7 Go to the AY-102 STATUS page. Increase value of LI-602C above the HIGH alarm setpoint recorded in Step 13.5 by pointing the mouse at the currently displayed value, and typing in (integar = H sp +5), and press <enter>. Go to the ALARM SUMMARY page and verify that no alarm has tripped.

TKC 3-21-98 13.8 Go back to the AY-102 STATUS page and decrease the value of LI-602C to 120 inches.

TKC 3-21-98 13.9 Go to the ALARMS screen (F6). Right-click the alarm annunciator window for LI-602C. Re-enable the disabled alarm.

TKC 3-21-98 13.10 Change the high alarm setpoint on the form to 150 inches, and click the SAVE button. REVERIFY DATA WAS SAVED. ECN W-320-771-

TKC 3-21-98 13.11 Go to the AY-102 Status screen and enter a value of 160. Verify that the alarm trips. Acknowledge the alarm.

TKC 3-21-98 13.12 ~~Recall the form to check if the new data has been saved~~. Click DEFAULTS and verify that original data appears in the form, AS THAT RECORDED ON STEP 13.5 ECN W320-771-

TKC 3-21-98 13.13 Click SAVE to close the form. REVERIFY DATA WAS SAVED ECN-W320-771-

TKC 3-21-98 13.14 Log in as System Engineer.

TKC 3-21-98 13.15 Take AY-801A PLC out of simulation mode. Restart WRSS DAS.

END OF SECTION 13

14 SYSTEM INTERFACES (HNF-2115 §3.1.2.1 - 3)

Tests reporting frequency, data file turnover, and HLAN access for WRSS DAS periodic reports.

RA 4-1-98 14.1 Verify applicable prerequisites from Section 7 have been completed.

RA 4-1-98 14.2 Log in as System Engineer. ~~Go to the TEST page and open the Windows NT Explorer.~~ SHUT DOWN THE DAS (THIS REQUIRES THAT WINDOWS NT IS NOT SET UP WITH CITECT 32 AS THE SHELL) ECN W-320-771 Delete the files C:\Citect\Data*.CSV (all DAS history files).

RA 4-1-98 14.3 Use the Date/Time control panel to change the system time to ~~4:55~~ 3:45 AM. ECN W320-771

RA 4-1-98 14.4 Restart the WRSS DAS and log in as System Engineer. Allow the DAS to acquire data for a minimum of one hour and ~~ten~~ 20 minutes, ~~then use the date and time control panel to change the system time to 4:55 AM on the following day.~~ ECN W-320-771

RA 4-1-98 14.5 ~~Let the software run for another ten minutes, then~~ go to the TEST page and open the Windows NT Explorer. ECN W-320-771

RA 4-1-98 14.6 Open a file list of C:\Citect\Data. Copy the ~~previous day's report files (*.CSV)~~ RECENTLY CLOSED AND CURRENT REPORT FILES (*.CSV) ECN W320-771 to C:\Citect.

RA 4-1-98 14.7 Using the Windows NT Explorer, open the files in Microsoft Excel.

RA 4-1-98 14.8 Verify that each file NOT CONTAINING A DATE CODE (*CSV, NOT INCLUDING *FCSV ~~starts with a header row listing the data points recorded in the file. Verify that the each header's tag list is identical to the corresponding report definition file's tag list. See HNF-2115, Appendix C, for a list of report definition files.~~ OR ENRAF.CSV) CONTAINS A HEADER ROW LISTING THE DATA POINTS RECORDED IN THE FILE ECN W-320-771

RA 4-1-98 14.9 Verify ~~that the first entry in each file (except the ENRAF density profile - ENRAF.CSV) was recorded within one trend period of 5:00 AM (see HNF-2115, WRSS DAS System Description, Appendix B)~~ THE REPORTING FREQUENCY OF EACH FILE CONTAINING A DATE CODE (*FCSV) BY CHECKING THE TIMESTAMP OF 2 ENTRIES IN THE FILE. THE FREQ. SHALL BE THAT REPORTED IN APPEND. B OF THE WRSS DAS SYSTEM DESCRIPTION (HNF-2115) ECN W-320-771

DELETED PER ECN W-320-771 ~~14.10 Find at least one data point from each group in Description column of HNF-2115, Appendix B, and verify the reporting frequency in the history files.~~

RA 4-1-98 14.11 Close Microsoft Excel and the Explorer. Log out of the DAS

RA 4-2-98 14.12 On a remote workstation (in MO-294, for example), open the Map Network Drive dialog in the Windows Explorer (or File Manager). Map the next available drive letter to "\\WC62613\CTDATA".

RA 4-2-98 14.13 Open a listing of the files in the network volume, and copy the files *.CSV to the local hard drive.

RA 4-2-98 14.14 Open one of the files in Microsoft Excel, and verify that it contains WRSS DAS data.

END OF SECTION 14

15 MASS FLOW TRANSMITTER (MICRO MOTION) (HNF-2115, §3.1.3.2.1)

The following tests functionality of the mass flow transmitter UT-0621 by verifying the communication to the PLC/DAS functions for the W-320 slurry line.

NOTE: The Mass Flow Element and Transmitter were tested by PNNL, Ref. FDMMPT97.01.

RA 4-2-98 15.1 Verify applicable prerequisites from Section 7 have been completed.

RA 4-2-98 15.2 With the DAS software running, open the AY-102 STATUS screen. Verify that DI-0621A, FI-0623, DQI-0621A (GRAND TOTAL), and DQI-0621B (BATCH TOTAL) are within the calibration range listed in HNF-2115, Appendix B.

RA 4-9-98 15.3 At Tank 241-AY-102 Pump Pit 02A, connect the Micro Motion Model 275 OR ROSEMOUNT MODEL 268 HART Communicator to the Micro Motion RFT9739 field mount transmitter, UT-0621, terminals 17 (+) and 18 (-). Verify that the ~~Model 275~~ HART COMMUNICATOR field readings for MASS FLOW, DENSITY, and TOTAL MASS are the same as those displayed on the WRSS DAS.

ECN-W320-798 ✓

RA 4-2-98 15.4 Disconnect the HART Communicator.

END OF SECTION 15

16 ENRAF DENSITY METER DATA FILE I/O (HNF-2115, § 3.1.3.3)

Tests processing of density meter data files generated by the meter control program.

NOTE: Operating accuracy for this equipment was established in maintenance procedure 6-TF-125. File names generated by the density meter control program are numbered sequentially. The most recent file will have the highest number.

RT 3-27-98 16.1 Verify applicable prerequisites from Section 7 have been completed.

RT 3-27-98 16.2 Start WRSS DAS software and log in as Operator.

RT 3-27-98 16.3 Insert a floppy disk containing an ENRAF density meter data file into the DAS PC.

RT 3-27-98 16.4 Go to the AY-102 DENSITY PROFILE screen (F2, Alt-D). Click the READ DENSITY PROFILE button. Verify that data appears in each field on the screen. Print the screen by clicking the printer icon at the bottom of the window.

RT 3-27-98 16.5 Log in as System Engineer. Go to the TEST page (Ctrl-Alt-T). Open Windows NT Explorer. Open the density meter data file in Notepad (C:\WINNT\NOTEPAD.EXE) and verify the sampling date, level, and density data are correct. NOTE: Density values in the data file correspond to specific gravity units/% SOLIDS on the printed page (tags DI-602A~~-1A~~ to DI-602A~~-10A~~).20 AND DI-602B1 TO DI-602B20)

ECN W-320-771

RT 3-27-98 16.6 Open the density meter report file (C:\CITECT\DATA\DENSITY.CSV) and verify the most recent data (both specific gravity and percent solids) is recorded in the last line of the file.

RT 3-27-98 16.7 Using the following formula from Section 4.1.1 of the WRSS PCP, VERIFY ~~check~~ the calculated value for DI-602~~A-5B~~ B5. ~~(The formula assumes that DI-602A-1A has zero solids loading and uses 2.28 g/mL as the density of the solid sludge.)~~ (REPLACE THE SYMBOL DI-602Ax W/THE SPECIFIC GRAVITY VALUE MEAS. CLOSEST TO THE SOLUTION SURFACE)

ECN W320-771

DI-602~~A-5B~~ B5 = 100 * [2.28 * (DI-602~~A-5A~~ B5 - DI-602~~A-1A~~ Ax)] / [DI-602~~A-5A~~ B5 * (2.28 - DI-602~~A-1A~~ Ax)]

RT 3-27-98 16.8 Log out of the DAS.

END OF SECTION 16

17 TANK AY-102 VENTILATION (MICON DCS) DATA FILE I/O (HNF-2115, § 3.1.3.4-5)

Tests access to data in DBF file on MICON DCS server in 241-AZ-271 (W-030 Control Room).

RtA-2-98 17.1 Verify applicable prerequisites from Section 7 have been completed.

RtA-2-98 17.2 Go to the OVERVIEW screen and log in as System Engineer.

RtA-2-98 17.3 Go to the AY-102 HVAC STATUS screen (F2, Alt-V). Verify that data appears in each field and that the data is updated at least every 12 minutes. Print the screen by clicking on the printer icon at the bottom of the window.

RtA-2-98 17.4 Go to the TEST page (Ctrl-Alt-T). Click "MS-DOS PROMPT" ~~VIEW HVAC SNAPSHOT. A window will appear showing the current data obtained directly from the Micon DCS.~~ TYPE " TYPE Y:\W320.CSV/MORE<ENTER>". THE CURRENT DATA FILE ON THE MICON DCS WILL BE DISPLAYED ECN W320-771

RtA-2-98 17.5 Verify that the data listed on screen is approximately the same as that listed on the screen print.

RtA-2-98 17.6 Close the MS-DOS WINDOW ECN W-320-771 ~~HVAC SNAPSHOT~~ view and return to the DAS. Log out of the DAS.

END OF SECTION 17

SECTIONS 18 - 23

FIELD TESTS FOR PLC FUNCTIONALITY

18 AY-102 TANK TEMPERATURES (WESTRONICS MUX) (HNF-2115, §3.1.4.1 - 4, 3.1.4.6 - 7)

The following tests for appropriate point mapping for all tank thermocouples (TI-01 - TI-93) listed in Data Sheet 9.3. Alarm set/reset points and ranges are tested for DAS thermocouples required by HNF-SD-WM-PCP-013, the WRSS Process Control Plan (p. 4-32). Where only one thermocouple of a given category is required, one extra is tested as a backup.

CAUTION: Observe proper electrical safety precautions around energized equipment in accordance with FDNW Practice 134.653.2309, Electrical Work Safety.

NOTE: The Westronics SDI-310 will not be fully tested in this procedure. It was previously tested by operations.

RA 3-25-98 18.1 Verify applicable prerequisites from Section 7 have been completed.

RA 3-25-98 18.2 Go to the AY-102 TANK TEMPERATURES screen (F2, Alt-T). (Reference Figure S-8, HNF-2115)

18.3 VALID DISPLAY/POINT MAPPING VERIFICATION

RA 4-9-98 18.3.1 Verify that no invalid readings appear for any thermocouple functional category on the AY-102 TANK TEMPERATURES screen. A reading shall be considered invalid if it is less than 50° F or greater than 250° F, or if any error code is displayed in place of a value. Record any invalid readings in Data Sheet 18.3.1; use extra sheets if required:

EXCEPTION # 1
ECN W-320-798

DATA SHEET 18.3.1 - LIST INVALID READINGS FROM SDI-310			
TAG NAME	INVALID READING	TAG NAME	INVALID READING
TE-72	RANGE		

RA 4-9-98 18.3.2 LIFT POSITIVE LEADON ECN-W320-798 ~~Apply a shorting jumper to~~ each set of input terminals (one set at a time) specified for the AY-102 thermocouples in Data Sheet 9.3. Check for display errors in the expected tag, and record exceptions with the expected and actual display tag (if known) in Data Sheet 18.3.2.

NOTE: The jumper must be applied for a minimum of 10 seconds. Use ECN 639745 as a reference for terminal selection.

DATA SHEET 18.3.2 - LIST INVALID POINT MAPPING FOR SDI-310			
EXPECTED TAG NAME	ACTUAL	EXPECTED TAG NAME	ACTUAL

18.4 ALARM SET/RESET POINT AND DISPLAY ACCURACY VERIFICATION FOR SELECTED THERMOCOUPLES LISTED IN DATA SHEET 18.4 (REF. HNF-SD-WM-PCP-013, §4.3.2)

NOTE: Complete the following steps for each of the thermocouples listed in Data Sheet 18.4. Use ECN 639745 as a reference for terminal connections.

DATA SHEET 18.4 - THERMOCOUPLES TO BE FULLY VERIFIED		
CATEGORY	**APPLICABLE TEMP. ELEMENTS (TE-102-XX)**	**SETPOINTS (°F)**
DOMESPACE	60, 66 (RISERS 13A AND 13C, AT 300" FROM TANK BOTTOM)	H:120
SLUDGE	62, 68 (RISERS 13A AND 13C, AT 4" FROM TANK BOTTOM)	H:150, HH:195
INS. CONCRETE	1, 3, 6, 10, 14, 24 ECN-W320-798	NONE
SUPERNATE	61, 67 (RISERS 13A AND 13C, AT 158" FROM TANK BOTTOM)	H:150, HH:195

18.4.1 Record the current reading for the selected TC in the appropriate location in Data Sheet 18.4.1.

18.4.2 Disconnect TC listed in Data Sheet 18.4.1 from the terminals on the Westronics SDI-310 wiring block.

18.4.3 Connect TC simulator (Type J) to the terminals disconnected in Step 18.4.2.

18.4.4 Apply a signal equivalent to 70 °F, verify response on Tank AY-102 tank temperatures screen is 70 ± 4 °F and record response in the appropriate location in Data Sheet 18.4.1.

18.4.5 For TCs 60 AND 66: Apply a signal equivalent to 110 °F, then increase slowly until the HIGH alarm trips. Record alarm trip point from the alarm notification window in the appropriate location in Data Sheet 18.4.1. FOR TCs 61, 62, 67, 68: Apply a signal equivalent to 140 °F, then increase slowly until the HIGH alarm trips. Record alarm trip point from the alarm notification window in the appropriate location in Data Sheet 18.4.1.

18.4.6 For TCs 60, 61, 62, 66, 67, and 68: Verify that the alarm symbol is flashing AMBER and buzzer is sounding. Acknowledge the alarm by clicking on the flashing display symbol. The symbol will stop flashing. Decrease the input signal until the alarm symbol returns to normal. Verify that the alarm reset point is at least 4 °F less than the HIGH setpoint listed in Data Sheet 18.4.1. Record the alarm reset point in the appropriate location in Data Sheet 18.4.1.

18.4.7 Apply a signal equivalent to 185° F, verify response on DAS screen is 185 ± 4 °F and record response in the appropriate location in Data Sheet 18.4.1.

18.4.8 For TCs 61, 62, 67, 68: Slowly increase the signal until the HIGH HIGH alarm trips. Record alarm trip point from the alarm notification window in the appropriate location in Data Sheet 18.4.1.

18.4.9 For TCs 61, 62, 67, 68: Verify that the alarm symbol is flashing RED and chime is sounding. Acknowledge the alarm by clicking on the flashing display symbol. The

symbol will stop flashing. Decrease the input signal until the HIGH HIGH alarm clears and the HIGH alarm trips. Verify that the alarm reset point is at least 4 °F less than the HIGH HIGH setpoint listed in Data Sheet 18.4. Record the alarm reset point in the appropriate location in Data Sheet 18.4.1.

RT 3-30-98 18.4.10 Disconnect simulator connected in Step 18.4.3.

RT 3-30-98 18.4.11 Reconnect TC to the terminals disconnected in Step 18.4.2.

RT 3-30-98 18.4.12 Verify reading on DAS screen is approximately the same as that recorded in Step 18.4.1.

DATA SHEET 18.4.1 - RANGE AND ALARM RESPONSE FOR SELECTED TANK AY-102 TCs

18.4.2 / 18.4.3 TC # (TE-102-XX)	18.4.1 INITIAL READING	RESPONSE TO INPUT		ALARM TRIP		ALARM RESET		INITIAL/ DATE
		18.4.4 AT 70 °F	18.4.7 AT 185 °F	18.4.5 HIGH	18.4.8 HIGH HIGH	18.4.6 HIGH	18.4.9 HIGH HIGH	
1	81.0	70.0	184.0					RT 3-30-98
2	80.0	70.0	184.0					RT 3-30-98
6	87.0	70.0	183.0					RT 3-30-98
10	72.0	69.0	182.0					RT 3-30-98
14	71.0	73.0	184.0					RT 3-30-98
24	68.0	70.0	184.0					RT 3-30-98
60	63.0	68.0	183.0	121.0		113.0		RT 3-30-98
66	63.0	69.0	184.0	121.0		115.0		RT 3-30-98
61	63.0	69.0	183.0	151.0	196.0	144.0	189.0	RT 3-30-98
62	70.0	70.0	183.0	151.0	196.0	145.0	190.0	RT 3-30-98
67	64.0	69.0	184.0	151.0	197.0	145.0	189.0	RT 3-30-98
68	68.0	68.0	182.0	151.0	197.0	145.0	190.0	RT 3-30-98
CN-W320-98 3	78.0	70.0	185.0					RT 4-9-98

END OF SECTION 18

19 AY-FARM MIT (TYPE K THERMOCOUPLE INPUT MODULES) (HNF-2115, § 3.2.1, 3.1.4.5, 3.1.4.6.3)

The following simulates thermocouple inputs to the DAS display, TI-06230 to TI-06251. Simulation of thermocouples TE-06240 failure will be performed to verify out of range behavior reading on the DAS display.

CAUTION: Observe proper electrical safety precautions around energized equipment in accordance with FDNW Practice 134.653.2309, Electrical Work Safety.

Rt 3-26-98 19.1 Verify applicable prerequisites from Section 7 have been completed.

Rt 3-26-98 19.2 Go to the OVERVIEW screen and log in as Operator. Go to the MIT screen (F2, Alt-M)

19.3 Perform the following for each thermocouple listed in Data Sheet 19.3.

19.3.1 Record initial reading from DAS MIT screen.

19.3.2 Disconnect TC from the terminals listed.

19.3.3 Connect TC simulator to the terminals of Step 19.3.2.

19.3.4 Apply a signal equivalent to 70°F, verify response on DAS MIT screen is 70 ± 4 °F and record the DAS response value.

19.3.5 Slowly INCREASE the signal to 90 °F, verifying that the measured resolution is better than 0.1 °F (verify step size <=0.1). Record the resolution.

19.3.6 For TE-~~06230~~ 06251 ECN W320-771; apply a signal equivalent to 110 °F.

19.3.7 For TE-~~06231~~ 06230 through TE-~~06251~~ 06250 ECN W-320-771- apply a signal equivalent to 140 °F.

19.3.8 Switch to the DAS ALARMS screen (function key F6). INCREASE the input signal until the HIGH alarm trips. This will cause a buzzing sound to play, a message window to appear, and a flashing AMBER annunciator window. Record the HIGH alarm trip temperature.

19.3.9 Click DISMISS on the message window. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop. Slowly DECREASE the input signal until the HIGH alarm resets. Verify that the reset temperature is at least 4 degrees less than the alarm trip temperature. Record the HIGH alarm reset temperature.

19.3.10 Switch to the MIT screen (function keys F2, Alt-M). Apply a signal equivalent to 185 °F, verify response on DAS MIT screen is 185 ± 4 °F and record response.

19.3.11 INCREASE the input signal until the HIGH HIGH alarm trips. This will cause a pulsating chime sound to play, a message window to appear, and a flashing RED annunciator window. Record the HIGH HIGH alarm trip temperature. EXCEPT FOR TE-06251 ECN-W320-771-

19.3.12 Acknowledge the alarm. Slowly DECREASE the input signal until the HIGH HIGH alarm resets. Verify that the reset temperature is at least 4 degrees less than the alarm trip temperature. Record the HIGH alarm reset temperature.

19.3.13 Reduce the input signal to less than the HIGH trip point determined in Step 19.3.8. Acknowledge the alarm. Verify that the alarms have cleared.

19.3.14 Disconnect simulator connected in Step 19.3.3.

19.3.15 Reconnect TC to the terminals disconnected in Step 19.3.2.

19.3.16 Verify reading from DAS MIT screen is approximately the same as that recorded in Step 19.3.1.

RT 3-27-98 19.4 LIFT THE NEGATIVE LEAD ~~Place a shorting jumper across the terminals~~ for TI-06240. BCN W-320-771 Verify that the TI-6240 display shows RANGE on the DAS screen.

RT 3-27-98 19.5 RECONNECT LEAD LIFTED ~~Remove shorting jumper installed~~ on Step 19.4. BCN W-320-771 Verify that the display returns to normal.

RT 3-27-98 19.6 Go to the Alarm Log (press F6, then click the text icon at the left of the screen) and verify that the recent alarm activity appears at the bottom of the list.

DATA SHEET 19.3 - RANGE AND ALARM RESPONSE FOR AY-102 MIT THERMOCOUPLES

19.3.6 / 19.3.7 TC # (TE-XX)	19.3.2/19.3.3 TERMINALS (WST-TBX-602B)	19.3.1/19.3.16 INITIAL READING	RESPONSE TO INPUT			ALARM TRIP		ALARM RESET		INITIAL/DATE
			19.3.4 AT 70 °F	19.3.5 RESOLN	19.3.10 AT 185 °F	19.3.8 HIGH	19.3.11 HIGH/HIGH	19.3.9 HIGH	19.3.12 HIGH/HIGH	
06230	TB1-1(+),TB1-2(-)	72.0	69.9	.1	184.7	150.1	195.1	145.6	190.9	RT 3-26-98
06231	TB1-3(+),TB1-4(-)	63.1	67.7	.1	182.9	150.1	197.5	145.9	190.6	RT 3-27-98
06232	TB1-5(+),TB1-6(-)	63.5	69.6	.1	183.4	150.1	195.1	145.9	190.0	RT 3-27-98
06233	TB1-7(+),TB1-8(-)	63.5	69.1	.1	184.1	150.2	195.1	145.6	190.9	RT 3-27-98
06234	TB1-9(+),TB1-10(-)	64.4	70.6	.1	184.5	150.1	195.3	146.0	190.7	RT 3-27-98
06235	TB1-11(+),TB1-12(-)	64.4	71.0	.1	185.0	152.6	195.3	145.9	191.0	RT 3-27-98
06236	TB2-1(+),TB2-2(-)	65.4	71.4	.1	185.3	150.1	195.1	146.0	191.0	RT 3-27-98
06237	TB2-3(+),TB2-4(-)	65.8	70.7	.1	185.3	150.7	195.1	145.9	191.0	RT 3-27-98
06238	TB2-5(+),TB2-6(-)	63.9	69.4	.1	183.4	150.1	195.1	145.9	190.2	RT 3-27-98
06239	TB2-7(+),TB2-8(-)	63.6	69.3	.1	183.1	150.1	195.1	145.6	190.9	RT 3-27-98
06240	TB2-9(+),TB2-10(-)	63.5	70.2	.1	183.7	150.1	195.1	145.9	191.0	RT 3-27-98
06241	TB2-11(+),TB2-12(-)	63.6	69.1	.1	183.8	150.1	195.1	144.9	190.9	RT 3-27-98
06242	TB3-1(+),TB3-2(-)	64.1	67.6	.1	183.3	150.2	195.1	146.0	190.9	RT 3-27-98
06243	TB3-3(+),TB3-4(-)	64.8	69.7	.1	185.1	150.1	195.1	145.8	190.9	RT 3-27-98
06244	TB3-5(+),TB3-6(-)	65.2	71.3	.1	185.5	150.4	195.8	145.8	191.0	RT 3-27-98
06245	TB3-7(+),TB3-8(-)	65.8	71.9	.1	187.4	150.2	195.1	145.9	191.0	RT 3-27-98
06246	TB3-9(+),TB3-10(-)	62.3	69.7	.1	184.4	150.2	195.1	146.0	191.2	RT 3-27-98
06247	TB3-11(+),TB3-12(-)	61.8	68.7	.1	184.5	150.5	195.1	146.0	191.0	RT 3-27-98
06248	TB4-1(+),TB4-2(-)	61.9	69.3	.1	184.7	150.4	195.1	146.0	191.0	RT 3-27-98
06249	TB4-3(+),TB4-4(-)	61.9	70.0	.1	184.3	150.2	195.1	146.0	190.9	RT 3-27-98
06250	TB4-5(+),TB4-6(-)	62.2	69.6	.1	184.5	150.1	195.1	145.9	190.7	RT 3-27-98
06251	TB4-7(+),TB4-8(-)	62.6	70.7	.1	185.0	120.1	N/A	116.0	N/A	RT 3-27-98

BCN-W320-771

END OF SECTI

20 AY-FARM PROCESS INPUTS (4-20 mA) (HNF-2115, § 3.2.2)

The following tests the Tank 241-AY-102 Annulus Exhaust Flow and Temperature, Primary Tank Hydrogen, Primary Tank Exhaust Moisture and Tank Level by simulation.

CAUTION: Observe proper electrical safety precautions around energized equipment in accordance with FDNW Practice 134.653.2309, Electrical Work Safety.

RA 3-31-98 20.1 Verify applicable prerequisites from Section 7 have been completed.

20.2 TANK 241-AY-102 ANNULUS EXHAUST FLOW (FIT-0622)

The following will test by simulating the Tank 241-AY-102 Annulus Exhaust Flow to ascertain that the transmitter and the DAS functions.

_____ 20.2.1 Go to the AY-102 status screen. Record reading for FI-0622: _____ SCFM.

_____ 20.2.2 On the 5 Valve Manifold for FIT-0622, CLOSE valves HV-0626-1A and 1B, and verify that valves HV-0626-1C, 1D, and 1E are CLOSED.

_____ 20.2.3 At test ports attach VTPS pressure source to High side and open and Low side to atmosphere.

_____ 20.2.4 Go to the AY-102 STATUS screen.

_____ 20.2.5 Set VTPS to 0.140 inches H_2O.

_____ 20.2.6 Verify flow reading on DAS (FI-0622) is approximately the same as that shown locally at the FIT. Record DAS response: _____ SCFM. Record FIT-0622 response _____ SCFM.

Delete per ECN # 798 Exception # 2

_____ 20.2.7 Set VTPS to 0.050 inches H_2O.

_____ 20.2.8 Verify flow reading on DAS (FI-0622) is approximately the same as that shown locally at the FIT. Record DAS response: _____ SCFM. Record FIT-0622 response: _____ SCFM.

_____ 20.2.9 Set VTPS to 0.000 inches H_2O.

_____ 20.2.10 Verify flow reading on DAS (FI-0622) is approximately the same as that shown locally at the FIT. Record DAS response: _____ SCFM. Record FIT-0622 response: _____ SCFM.

_____ 20.2.11 Remove the VTPS at FIT-0622 on the 5 Valve Manifold, and recap the test ports. OPEN HV-0626-1A and 1B.

20.3 TANK 241-AY-102 ANNULUS EXHAUST TEMPERATURE (TIT-0620)

The following will test by simulating the Tank 241-AY-102 Annulus Exhaust Temperature to ascertain that the transmitter and the DAS functions.

RD 7/18/98 20.3.1 Go to the AY-102 status screen. Record the current reading for TI-0620: 105.6 °F.

13a. Description of Change

1 HNF-1827 (QTP/ATP):

a. On Page 35, ADD Section 20.2 as follows: [Affects ECN W-320-798]

20.2 TANK 241-AY-102 ANNULUS EXHAUST FLOW (FIT-0622)

The Following will test by simulating the Tank 241-AY-102 Annulus Exhaust Flow to ascertain that the transmitter and the DAS functions as designed.

RD 7/18/98 20.2.1 Go to the AY-102 status screen on DAS. Record current reading for FI-0622: 0.5 SCFM.

RD 20.2.2 At FIT-0622, Record the current reading: 0 SCFM.

RD 20.2.3 On FIT-0622 Enclosure, verify AC/HTR POWER ON light is LIT.

RD 20.2.4 On FIT-0622 Enclosure, verify HEAT TRACE POWER ON light is LIT.

RT 7-24-98 20.2.5 At TE/TC-0625, simulate low ambient temperature by spraying temperature probe TE-0625 with canned refrigerant/circuit cooler until the Heat Trace on instrument tubing 1/4"1-750-131 and 1/4"1-751-131 is energized by verifying Heat Trace monitor lights YL-06230 and YL06231 illuminate.

RT 7-24-98 20.2.6 Allow enough time for temperature probe TE-0625 to warm up to ambient temperature (assumed to be greater than 50 °F) until the Heat Trace lights YL-06230 and YL06231 extinguish.

RD 7/18/98 20.2.7 At FIT-0622 Enclosure, record reading for TI-0620: 85 °F. Verify that TI-0620 is within the range of 45 - 87 °F.

RD 20.2.8 On 5-Valve Manifold for FIT-0622, close valves HV-0626-1A and 1B, and verify that valves HV-0626-1C, 1D and 1E are CLOSED.

RD 20.2.9 In FIT-0622 Enclosure, verify valves HV-06230 and HV-06231 are OPEN.

RD 20.2.10 In FIT-0622 Enclosure, verify valves HV-06232 and HV-06233 are CLOSED.

RD 20.2.11 At FIT-0622 test ports, attach VTPS (variable test pressure source) to High side on 5-Valve Manifold. Vent Low side to atmosphere.
VTPS# 817-13-01-020 DUE: 1-21-99

RD 20.2.12 Set VTPS to 0.000 inches H_2O.

RD 20.2.13 Verify flow reading on DAS (FI-0622) is ± 10 SCFM of that shown locally at FIT-0622. Record DAS response: 0.5 SCFM. Record FIT-0622 response: 0 SCFM.

RD 20.2.14 Set VTPS to 0.025 inches H_2O.

RD 7/18/98 20.2.15 Verify flow reading on DAS (FI-0622) is ± 10 SCFM of that shown locally at FIT-0622. Record DAS response: 734 SCFM. Record FIT-0622 response: 725 SCFM.

RD ____ 20.2.16 Set VTPS to 0.050 inches H_2O.

RD ____ 20.2.17 Verify flow reading on DAS (FI-0622) is ± 10 SCFM of that shown locally at FIT-0622. Record DAS response: 1117 SCFM. Record FIT-0622 response: 1117 SCFM.

RD ____ 20.2.18 Set VTPS to 0.075 inches H_2O.

RD ____ 20.2.19 Verify flow reading on DAS (FI-0622) is ± 10 SCFM of that shown locally at FIT-0622. Record DAS response: 1384 SCFM. Record FIT-0622 response: 1382 SCFM.

RD ____ 20.2.20 Set VTPS to 0.100 inches H_2O.

RD ____ 20.2.21 Verify flow reading on DAS (FI-0622) is ± 10 SCFM of that shown locally at FIT-0622. Record DAS response: 1617 SCFM. Record FIT-0622 response: 1614 SCFM.

RD ____ 20.2.22 Set VTPS to 0.050 inches H_2O.

RD ____ 20.2.23 Go to DAS ALARMS screen (F6). Acknowledge all active alarms (F12).

RD ____ 20.2.24 Slowly DECREASE VTPS input until the LOW alarm trips. This will cause a sound to play, a message window to appear, and a flashing AMBER annunciator window. Verify alarm trip point is 700 SCFM (680-720 SCFM). Record from DAS the LOW alarm trip point listed in message window: 687 SCFM.

RD ____ 20.2.25 Click DISMISS on the message window. Acknowledge the alarm. The annunciator will stop flashing and the alarm sound will stop.

RD ____ 20.2.26 Slowly INCREASE VTPS input until the LOW alarm clears. VERIFY alarm reset point is 800 SCFM (780-820 SCFM). Record from DAS the LOW alarm reset point: 815 SCFM.

RD ____ 20.2.27 Remove the VTPS from the 5-Valve Manifold, and recap the test ports. OPEN HV-0626-1A and 1B.

RD ____ 20.2.28 Verify reading for FI-0622 on DAS is approximately the same as that recorded in Step 20.2.1. Record reading: 0.5 SCFM

RD ✓ ____ 20.2.29 Verify reading on FIT-0622 is approximately the same as that recorded in Step 20.2.2. Record Reading: 0 SCFM.

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7-18-98 20.3.2 At the Tank 241-AY-102 Annulus Exhaust Duct and on TIT-0620, record the current reading on TIT-0620 107.0 °F. Disconnect RTD wires from TE-0620. Connect RTD simulator.

20.3.3 Increase RTD temperature to 200 °F. Verify TI-0620 indication on DAS equals RTD simulator value ± 4 °F. Verify TIT-0620 (local indication) equals TI-0620 (DAS) ± 4 °F. Record results from DAS: 197.7 °F.

20.3.4 Decrease RTD to 175 °F. Verify TI-0620 indication on DAS equals RTD simulator value ± 4 °F. Verify TIT-0620 (local indication) equals TI-0620 (DAS) ± 4 °F. Record results from DAS: 173.6 °F.

20.3.5 Decrease RTD to 150 °F. Verify TI-0620 indication on DAS equals RTD simulator value ± 4 °F. Verify TIT-0620 (local indication) equals TI-0620 (DAS) ± 4 °F. Record results from DAS: 147.9 °F.

20.3.6 Decrease RTD to 125 °F. Verify TI-0620 indication on DAS equals RTD simulator value ± 4 °F. Verify TIT-0620 (local indication) equals TI-0620 (DAS) ± 4 °F. Record results from DAS: 123.6 °F.

20.3.7 Disconnect RTD simulator from TIT-0620 and reconnect TE-0620 RTD wires.

20.3.8 Verify TI-0620 (DAS) and TIT-0620 reading is approximately the same as that recorded in Steps 20.3.1 and 20.3.2.

20.4 PRIMARY TANK 241-AY-102 DOME HYDROGEN (NIT-02JAY-12-1)

The following will test by simulating the Primary Tank 241-AY-102 Dome Hydrogen to ascertain that the transmitter signal and the DAS functions.

7-18-98 20.4.1 Go to the AY-102 STATUS screen. Record the current reading for AI-0621: 0.10 %.LFL BCN W320-798 BCN W320-812 BCN W320-798 1/40

20.4.2 In the SHMS Enclosure for Tank 241-AY-102, record current reading for NIT-02JAY-12-1: 0.00 %. Verify the reading is approximately the same as that recorded in Step 20.4.1. Disconnect transmitter lead wiring NR-02JAY-12-1 and NIT-02JAY-12-1 from terminals 9 and 10 on terminal block TB2.

7-28-98 20.4.3 Connect transmitter simulator (4-20 mA source) to terminals 9 and 10 of Step 20.4.2.

NOTE: Acknowledge and reset alarms generated during Steps 20.4.4 through 20.4.6.

10 BCN W320 812 BCN 320-798 ~~6.25~~

7-28-98 20.4.4 Apply 8.00 mA, verify response on DAS screen falls within the tolerance of ~~25~~ ± 1%, and record results from DAS: 10.00 %.

20.4.5 Apply 12.00 mA. Slowly increase the signal, and verify the measured step size is less than the maximum of 0.1%. Record the resolution from DAS: 0.1 %. 30

BCN W320-798 ~~18.75~~ BCN 320 812

20.4.6 Apply 16.00 mA, verify response on DAS screen falls within the tolerance of ~~75~~ ± 1%, Record results from DAS: 30.01 %.

20.4.7 Go to the DAS ALARMS screen (F6). Acknowledge any active alarms (F12).

20.4.8 Apply 4 mA, then INCREASE the input signal until the HIGH alarm trips. This will cause a sound to play, a message window to appear, and a flashing AMBER annunciator window. Record results from DAS the HIGH alarm trip point listed in

the message window: 10.1 % (should be 10%). Record results from the transmitter simulator: 10.50 mA.

Rt 4-1-98 20.4.9 Click DISMISS on the message window. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

Rt 4-1-98 20.4.10 Slowly decrease input until HIGH alarm clears. Record reset point from DAS: 7.99 %. Verify that the reset point is no greater than 8%. Record current reading from the transmitter simulator: 9.11 mA. 9.6 ECN W320-812

Rt 4-1-98 20.4.11 INCREASE the input signal past the HIGH alarm setpoint and until the HIGH HIGH alarm trips. This will cause a different sound to play, a message window to appear, and a flashing RED annunciator window. Record results from DAS the HIGH HIGH alarm trip point listed in the message window: 25.2 % (should be 25%). Record results from the transmitter simulator: 20.1 mA.

Rt 4-1-98 20.4.12 Click DISMISS on the message window. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

Rt 4-1-98 20.4.13 Slowly decrease input until HIGH HIGH alarm clears. Record reset point from DAS: 22.96 %. Verify that the reset point is no greater than 23%. Record current reading from the transmitter simulator: 18.7 mA. 24.6 ECN W-320-812

Rt 4-1-98 20.4.14 Verify that the HIGH alarm trips after the HIGH HIGH alarm resets.

Rt 4-1-98 20.4.15 DECREASE the input signal to 5 mA and DO NOT acknowledge any alarms. Verify that the unacknowledged HIGH alarm does not clear and is listed on the ALARM SUMMARY screen.

SEE PAGE 37A FOR RE-RUN 7-30-98

Rt 4-1-98 20.4.16 Disconnect transmitter simulator installed in Step 20.4.3.

Rt 4-1-98 20.4.17 Reconnect transmitter lead wiring to terminals disconnected in Step 20.4.2.

Rt 4-1-98 20.4.18 Verify reading on DAS and NIT-02JAY-12-1 ~~is the same as~~ IS SIMILAR TO ECN W-320-798 that recorded in Steps 20.4.1 and 20.4.2, respectively.

20.5 TANK AY-102 LEVEL MONITORING (LIT-602A) SIMULATION

NOTE: The ENRAF LEVEL GAUGE will not be tested in this procedure. It was tested in 6-TF-125 (HNF-SD-ATP-023).

Rt 4-1-98 20.5.1 Go to the AY-102 STATUS screen. Record the current reading for LI-602C: 114.37 inches; WST-LIT-602A (TK-241-AY-102, Riser 22A): 99999 inches; LI-602A (2750E Bldg): 722.91 inches; and LI-602B (241-AY-51): 114.6 inches.

SEE PAGE 37A FOR RERUN 7-30-98

Rt 4-1-98 20.5.2 In the WST-TBX-602A, disconnect transmitter lead wiring from terminals TB1-1 and TB1-2.

Rt 4-1-98 20.5.3 Connect transmitter simulator (4-20 mA source) to terminal of Step 20.5.2.

Rt 4-1-98 20.5.4 Apply 8.00 mA, verify response on DAS screen falls within the tolerance of 165 ± 1 inch, and record results from DAS: 164.89 inches and LI-602B: 165.0 inches.

Rt 4-1-98 20.5.5 Apply 12.00 mA and record results from DAS: 209.91 inches and LI-602B: 210.0 inches. Slowly increase the signal, and verify the measured step size is

the message window: 10.0 % (should be 10%). Record results from the transmitter simulator: 8 mA.

Rt 7-2898 20.4.9 Click DISMISS on the message window. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

_____ 20.4.10 Slowly decrease input until HIGH alarm clears. Record reset point from DAS: 9.57 %. Verify that the reset point is no greater than 8%. Record current reading from the transmitter simulator: 7.83 mA. 9.6 ECN W320-812

_____ 20.4.11 INCREASE the input signal past the HIGH alarm setpoint and until the HIGH HIGH alarm trips. This will cause a different sound to play, a message window to appear, and a flashing RED annunciator window. Record results from DAS the HIGH HIGH alarm trip point listed in the message window: 25.0 % (should be 25%). Record results from the transmitter simulator: 14.0 mA.

_____ 20.4.12 Click DISMISS on the message window. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

_____ 20.4.13 Slowly decrease input until HIGH HIGH alarm clears. Record reset point from DAS: 24.6 %. Verify that the reset point is no greater than 23%. Record current reading from the transmitter simulator: 13.83 mA. 24.6 ECN W-320-812

_____ 20.4.14 Verify that the HIGH alarm trips after the HIGH HIGH alarm resets.

_____ 20.4.15 DECREASE the input signal to 5 mA and DO NOT acknowledge any alarms. Verify that the unacknowledged HIGH alarm does not clear and is listed on the ALARM SUMMARY screen.

_____ 20.4.16 Disconnect transmitter simulator installed in Step 20.4.3.

_____ 20.4.17 Reconnect transmitter lead wiring to terminals disconnected in Step 20.4.2.

NA Rt 7-2898 20.4.18 Verify reading on DAS and NIT-02JAY-12-1 ~~is the same as~~ SIMILAR TO ECN W320-798 that recorded in Steps 20.4.1 and 20.4.2, respectively.

20.5 TANK AY-102 LEVEL MONITORING (LIT-602A) SIMULATION

NOTE: The ENRAF LEVEL GAUGE will not be tested in this procedure. It was tested in 6-TF-125 (HNF-SD-ATP-023).

Rt 7-2898 20.5.1 Go to the AY-102 STATUS screen. Record the current reading for LI-602C: 167.22 inches; WST-LIT-602A (TK-241-AY-102, Riser 22A): 167.32 inches; LI-602A (2750E Bldg): 167.31 inches; and LI-602B (241-AY-51): 167.5 inches.

NA _____ 20.5.2 In the WST-TBX-602A, disconnect transmitter lead wiring from terminals TB1-1 and TB1-2.

_____ 20.5.3 Connect transmitter simulator (4-20 mA source) to terminal of Step 20.5.2.

_____ 20.5.4 Apply 8.00 mA, verify response on DAS screen falls within the tolerance of 165 ± 1 inch, and record results from DAS: _____ inches and LI-602B: _____ inches.

_____ 20.5.5 Apply 12.00 mA and record results from DAS: _____ inches and LI-602B: _____ inches. Slowly increase the signal, and verify the measured step size is

less than the maximum of 0.2 inches. Record the resolution from DAS: 0.1 inches.

Rt 4-1-98 20.5.6 Apply 16.00 mA, verify response on DAS screen falls within the tolerance of 255 ± 1 inch, and record results from DAS: 254.85 inches and LI-602B: 254.9 inches.

Rt 4-1-98 20.5.7 Go to the DAS ALARMS screen (F6).

Rt 4-1-98 20.5.8 INCREASE the input signal until the HIGH alarm trips. This will cause a sound to play, a message window to appear, and a flashing AMBER annunciator window. Record results from DAS the HIGH alarm trip point listed in the message window: 270.0 inches (should be 270 inches) and LI-602B: 270.1 inches. Record results from the transmitter simulator: 17.35 mA.

Rt 4-1-98 20.5.9 Click DISMISS on the message window. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

Rt 4-1-98 20.5.10 Slowly decrease input until HIGH alarm clears. Record reset point from DAS: 268.92 inches and LI-602B: 269.0 inches. Verify that the reset point is no greater than 269 inches. Record current reading from the transmitter simulator: 17.25 mA.

Rt 4-1-98 20.5.11 INCREASE the input signal past the HIGH alarm setpoint and until the HIGH HIGH alarm trips. This will cause a different sound to play, a message window to appear, and a flashing RED annunciator window. Record results from DAS the HIGH HIGH alarm trip point listed in the message window: 280.0 inches (should be 280 inches) and LI-602B: 280.1 inches. Record results from the transmitter simulator: 18.24 mA.

Rt 4-1-98 20.5.12 Click DISMISS on the message window. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

Rt 4-1-98 20.5.13 Slowly decrease input until HIGH HIGH alarm clears. Record reset point from DAS: 279.0 inches and LI-602B: 278.1 inches. Verify that the reset point is no greater than 279 inches. Record current reading from the transmitter simulator: 18.15 mA.

Rt 4-1-98 20.5.14 Verify that the HIGH alarm trips after the HIGH HIGH alarm resets.

Rt 4-1-98 20.5.15 DECREASE the input signal to 5 mA. Go to the ALARM SUMMARY screen, and verify that the alarms list is in reverse chronological order. Acknowledge any active alarms.

Rt 4-1-98 20.5.16 Disconnect transmitter simulator installed in Step 20.5.3.

Rt 4-1-98 20.5.17 Reconnect transmitter lead wiring to terminals disconnected in Step 20.5.2.

Rt 4-1-98 20.5.18 Verify readings on LI-602C (DAS), WST-LIT-602A, LI-602A and LI-602B are the same as that recorded in Step 20.5.1.

20.6 TANK AY-102 EXHAUST HUMIDITY MONITORING (AIT-0623) SIMULATION

Rt 3-31-9 20.6.1 Go to the AY-102 STATUS screen. Record the current reading for AI-0623 (DAS): 99.9 % ~~and AIT-0623: _____ % at 241-AY-402.~~ ECN W320-798

RT 3-31-98	20.6.2	In AY-102-JB-3S5, disconnect transmitter lead wiring and from terminals TB1-1 and TB1-2.
RT 3-31-98	20.6.3	Connect transmitter simulator (4-20 mA source) to terminals TB1-1 and TB!-2.
RT 3-31-98	20.6.4	Apply 8.00 mA, verify response on DAS screen falls within the tolerance of 25 ± 1%, and record results from DAS: 25.0 %.
RT 3-31-98	20.6.5	Apply 12.00 mA, verify response on DAS screen falls within the tolerance of 50 ± 1%, and record results from DAS: 50.0 %.
RT 3-31-98	20.6.6	Apply 16.00 mA, verify response on DAS screen falls within the tolerance of 75 ± 1%, Record results from DAS: 75.0 %.
RT 3-31-98	20.6.7	Apply 12.00 mA. Slowly increase the signal, and verify the measured step size is less than the maximum of 0.1%. Record the resolution from DAS: 0.1 %.
RT 3-31-98	20.6.8	Disconnect transmitter simulator installed in Step 20.6.3.
RT 3-31-98	20.6.9	Reconnect transmitter lead wiring to terminals disconnected in Step 20.6.2.
RT 4-9-98	20.6.10	Verify readings on DAS and local ~~AIT-0623~~ AT-0623 ECN W320-798 are the same as that recorded in Step 20.6.1.

END OF SECTION 20

f. On Page 40, delete and replace Section 21.2 as follows: [Affects ECN W-320-798]

21.2 TANK 241-C-106 PRESSURE (PIT-1361) SIMULATION

NOTE: PIT-1361 and PIC-1361 have been tested in HNF-SD-W320-ATP-012 in accordance with Step 16.3. Acknowledge any alarms generated during the steps in this section.

RD 7-17-98 21.2.1 Go to the C-106 STATUS screen on DAS. Record current reading for PI-1361: -0.037 inches H_2O.

RD ____ 21.2.2 On CP-01, Record the current reading from PIC-1361: .0 inches H_2O.

RD ____ 21.2.3 ON IR-1361 in Process Bldg 241-C-91, Record the current reading from PIT-1361: .9760 inches H_2O.

Exc #5 7-24-98 21.2.4 Verify readings obtained in above steps are all within +/- 0.1 inches H_2O of each other.

RD 7-17-98 21.2.5 In CP-01, disconnect transmitter (PIT-1361) lead wiring from terminals TB-1-6 and TB-1-7.

RD ____ 21.2.6 In CP-01, verify that TB-3 fuse block 4 is LIFTED/OPEN (this disables the evacuation horn PAL-1361B).

RD ____ 21.2.7 In CP-01, connect transmitter simulator (4-20 Ma source) to terminals TB-1-6 and TB-1-7. W# 817-13-55-026 Due: 3-30-99

RD ____ 21.2.8 Apply 8.00 Ma, verify response on DAS screen is -6.25 inches H_2O (-6.20 to -6.30 inches H_2O). Record results from DAS: -6.249 inches H_2O. Verify response on PIC-1361 is -6.1 to -6.4 inches H_2O) Record results from PIC-1361: -6.2 inches H_2O.

RD ____ 21.2.9 Apply 12.00 Ma, verify response on DAS screen is -2.50 inches H_2O (-2.45 to -2.55 inches H_2O). Record results from DAS: -2.502 inches H_2O. Verify response on PIC-1361 is -2.4 to -2.6 inches H_2O) Record results from PIC-1361: -2.5 inches H_2O.

RD ____ 21.2.10 Apply 16.00 Ma, verify response on DAS screen is 1.25 inches H_2O (1.20 to 1.30 inches H_2O). Record results from DAS: 1.249 inches H_2O. Verify response on PIC-1361 is 1.1 to 1.4 inches H_2O) Record results from PIC-1361: 1.3 inches H_2O.

RD ____ 21.2.11 Go to DAS ALARMS screen (F6). Acknowledge all active alarms (F12).

RD ____ 21.2.12 Apply 12 Ma, then INCREASE input signal until the LOW VACUUM/LOSS OF VACUUM alarms trip on DAS, PIC-1361 and ANN-1361 (window 1-2). This will cause a sound to play, a message window to appear, and a flashing AMBER annunciator window in DAS.

39A

R 7-18-98 21.2.13 On ANN-1361, acknowledge TANK 241-C-106 LOSS OF VACUUM (PAL-1361A) alarm (window 1-2).

R 21.2.14 On PIC-1361, acknowledge LOW VACUUM alarm.

Exc #6 21.2.15 Verify DAS alarm trip point is -0.30 inches H_2O (-0.25 to -0.35 inches H_2O). Record from DAS the LOW VACUUM alarm trip point listed in message window: 0.29 inches H_2O. Record transmitter simulator input value: 14.35 mA.

R 7-18-98 21.2.16 Verify ANN-1361 alarm trip point is -0.30 inches (-0.20 to -0.40 inches H_2O). Record from PIC-1361 the LOW VACUUM alarm trip point: -.30 inches H_2O. Record transmitter simulator input value: 14.35 mA.

R 21.2.17 Click DISMISS on the message window on DAS. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

R 21.2.18 Slowly DECREASE input until LOW VACUUM/LOSS OF VACUUM alarms clear on DAS & PIC-1361, and annunciator TANK 241-C-106 LOSS OF VACUUM (PAL-1361A) alarm (window 1-2) resets.

R 21.2.19 Verify DAS alarm reset point is -1.40 inches H_2O (-1.35 to -1.45 inches H_2O). Record reset point from DAS: -1.403 inches H_2O. Record transmitter simulator input value: 13.17 mA.

R 21.2.20 Verify ANN-1361 (window 1-2) reset point is -1.40 inches H_2O (-1.30 to -1.50 inches H_2O). Record reset point from PIC-1361: -1.4 inches H_2O. Record transmitter simulator input value: 13.20 mA.

R 21.2.21 Apply 12 mA, then DECREASE input signal until the HIGH VACUUM/ EXCESSIVE VACUUM alarms trip on DAS, PIC-1361 and ANN-1361 (window 1-1). This will cause a sound to play, a message window to appear, and a flashing AMBER annunciator window in DAS.

R 21.2.22 On ANN-1361, acknowledge TANK 241-C-106 EXCESSIVE VACUUM (PAH-1361A) alarm (window 1-1).

R 21.2.23 On PIC-1361, acknowledge HIGH VACUUM alarm.

R 21.2.24 Verify DAS alarm trip point is -4.00 inches H_2O (-3.95 to -4.05 inches H_2O). Record from DAS the HIGH VACUUM alarm trip point listed in message window: -4.00 inches H_2O. Record transmitter simulator input value: 10.4 mA.

R 21.2.25 Verify ANN-1361 alarm trip point is -4.00 inches (-3.90 to -4.10 inches H_2O). Record from PIC-1361 the HIGH VACUUM alarm trip point: -4.0 inches H_2O. Record transmitter simulator input value: 10.4 mA.

39B

RD 7/17/98 21.2.26 Click DISMISS on the message window on DAS. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

RD _____ 21.2.27 Slowly INCREASE input until HIGH VACUUM/EXCESSIVE VACUUM alarms clear on DAS & PIC-1361, and annunciator TANK 241-C-106 EXCESSIVE VACUUM (PAH-1361A) alarm (window 1-1) resets.

RD _____ 21.2.28 Verify DAS alarm reset point is -2.90 inches H_2O (-2.85 to -2.95 inches H_2O). Record reset point from DAS: -2.894 inches H_2O. Record transmitter simulator input value: 11.5 mA.

RD _____ 21.2.29 Verify ANN-1361 (window 1-1) reset point is -2.90 inches H_2O (-2.80 to -2.90 inches H_2O). Record reset point from PIC-1361: -2.9 inches H_2O. Record transmitter simulator input value: 11.5 mA.

RD _____ 21.2.30 DECREASE input signal past the HIGH VACUUM alarm until the HIGH HIGH VACUUM alarm trips on DAS. This will cause a sound to play, a message window to appear, and a flashing RED annunciator window in DAS.

RD _____ 21.2.31 Verify alarm trip point is -5.80 inches H_2O (-5.75 to 5.85 inches H_2O). Record from DAS the HIGH HIGH VACUUM alarm trip point listed in message window: -5.83 inches H_2O. Record transmitter simulator input value: 8.4 mA.

RD _____ 21.2.32 Click DISMISS on the message window on DAS. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

RD _____ 21.2.33 Slowly INCREASE input until HIGH HIGH VACUUM alarm clears on DAS.

RD _____ 21.2.34 Verify alarm reset point is -4.70 inches H_2O (-4.65 to -2.75 inches H_2O). Record reset point from DAS: -4.65 inches H_2O. Record transmitter simulator input value: 9.7 mA.

RD _____ 21.2.35 In CP-01, disconnect transmitter simulator from terminals TB-1-6 and TB-1-7.

RD _____ 21.2.36 In CP-01, reconnect transmitter (PIT-1361) lead wiring to terminals TB-1-6 [wire PIT-1361-(+)] and TB-1-7 [wire PIT-1361-(-)].

RD 7/18/98 21.2.37 Verify reading on DAS is approximately the same as that recorded in Step 21.2.1.

RD _____ 21.2.38 Verify reading on PIC-1361 is approximately the same as that recorded in Step 21.2.2.

RD _____ 21.2.39 Verify reading on PIT-1361 is approximately the same as that recorded in Step 21.2.3.

39C

21 C-FARM PROCESS INPUTS (4-20 mA) (HNF-2115, § 3.2.2)

The following tests will simulate the Tank C-106 Dome Pressure (PIT-1361), Booster Pump Discharge Pressure (PIT-1362), and Booster Pump Discharge Flow (FIT-13611).

CAUTION: Observe proper electrical safety precautions around energized equipment in accordance with FDNW Practice 134.653.2309, Electrical Work Safety.

RT 3-27-98 21.1 Verify applicable prerequisites from Section 7 have been completed.

21.2 TANK 241-C-106 PRESSURE (PIT-1361) SIMULATION

TO BE RE-RUN PER BCN W-320-812 NOTE: PIT-1361 and PIC-1361 have been tested in HNF-SD-W320-ATP-012 in accordance with Step 7.1.18. Acknowledge any alarms generated during Steps 21.2.4 through 21.1.9.

RT 3-27-98 21.2.1 Go to the C-106 STATUS screen. Record the current reading for PI-1361: .154 inches H_2O.

RT 3-27-98 21.2.2 On CP-01, record the current reading from PIC-1361: .2 inches H_2O.

RT 3-27-98 21.2.3 On IR-1361 in Process Bldg 241-C-91, record the current reading from PIT-1361: .1445 inches H_2O.

RT 3-27-98 21.2.4 In CP-01 in MO-211, disconnect transmitter (PIT-1361) lead wiring from terminals TB-1-6 and TB-1-~~80~~7 BCN W-320-771

RT 3-27-98 21.2.5 Verify that fuse block 4 is lifted (this disables the evacuation horn PAL-1361B).

RT 3-27-98 21.2.6 Connect transmitter simulator (4-20 mA source) to terminals TB-1-6 and TB-1-~~80~~7. BCN W320-771

RT 3-27-98 21.2.7 Apply 8.00 mA, verify response on DAS screen falls within the tolerance of -6.25 ± 0.05 inches H_2O, and record results from DAS: -6.253 inches H_2O. Verify reading from PIC-1361 is approximately the same as that recorded.

RT 3-27-98 21.2.8 Apply 12.00 mA, verify response on DAS screen falls within the tolerance of -2.5 ± 0.05 inches H_2O, and record results from DAS: -2.502 inches H_2O. Verify reading from PIC-1361 is approximately the same as that recorded.

RT 3-27-98 21.2.9 Apply 16.00 mA, verify response on DAS screen falls within the tolerance of 1.25 ± 0.05 inches H_2O, and record results from DAS: 1.249 inches H_2O. Verify reading from PIC-1361 is approximately the same as that recorded.

RT 3-27-98 21.2.10 Go to the DAS ALARMS screen (F6). Acknowledge all active alarms (F12).

RT 3-27-98 21.2.11 Apply 12 mA, then INCREASE the input signal until the LOW VACUUM alarm trips. This will cause a sound to play, a message window to appear, and a flashing AMBER annunciator window. Record results from DAS the LOW VACUUM alarm trip point listed in the message window: -.48 inches H_2O (should be -0.5 ± 0.05 inches H_2O). Record results from the transmitter simulator: 14.15 mA.

RT 3-27-98 21.2.12 Click DISMISS on the message window. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

Rt 3-27-98 21.2.13 Slowly decrease input until LOW VACUUM alarm clears. Record reset point from DAS: -.703 inches H_2O. Verify that the reset point is no greater than 0.7 ± 0.05 inches H_2O. Record current reading from the transmitter simulator: 13.92 mA.

Rt 3-27-98 21.2.14 INCREASE the input signal past the LOW VACUUM alarm setpoint and until the LOW LOW VACUUM alarm trips. This will cause a different sound to play, a message window to appear, and a flashing RED annunciator window. Record results from DAS the LOW LOW VACUUM alarm trip point listed in the message window: -0.01 inches H_2O (should be 0 ± 0.05 inches H_2O). Record results from the transmitter simulator: 14.67 mA.

Rt 3-30-98 21.2.15 On ANN-1361, verify and acknowledge PAL-1361. A ECN W-320-798

Rt 3-30-98 21.2.16 Click DISMISS on the message window. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

Rt 3-30-98 21.2.17 Slowly decrease input until the LOW LOW VACUUM alarm clears. Record reset point from DAS: -.205 inches H_2O. Verify that the reset point is approximately -0.2 ± 0.05 inches H_2O. Record current reading from the transmitter simulator: 14.45 mA.

A ECN W-320-798

Rt 3-30-98 21.2.18 On ANN-1361, verify, RESET, and verify that PAL-1361 is STEADY ON.

Rt 3-30-98 21.2.19 Apply 12 mA, then DECREASE the input signal until the HIGH VACUUM alarm trips. This will cause a sound to play, a message window to appear, and a flashing AMBER annunciator window. Record results from DAS the HIGH VACUUM alarm trip point listed in the message window: -4.00 inches H_2O (should be -4 ± 0.05 inches H_2O). Record results from the transmitter simulator: 10.40 mA.

Rt 3-30-98 21.2.20 On ANN-1361, verify and acknowledge PAH-1361.

A W-320-798

Rt 3-30-98 21.2.21 On ANN-1361, verify, RESET, and verify that PAL-1361 is OFF.

Rt 3-30-98 21.2.22 Click DISMISS on the message window. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

Rt 3-30-98 21.2.23 Slowly increase input until HIGH VACUUM alarm clears. Record reset point from DAS: -3.799 inches H_2O. Verify that the reset point is at least -3.8 ± 0.05 inches H_2O. Record current reading from the transmitter simulator: 10.62 mA.

DELETED BY ECN W320-798 EXCEPTION #3 ~~21.2.24 On ANN-1361, verify, RESET, and verify that PAH-1361 is STEADY ON.~~

Rt 3-27-98 21.2.25 DECREASE the input signal past the HIGH VACUUM alarm setpoint and until the HIGH HIGH VACUUM alarm trips. This will cause a different sound to play, a message window to appear, and a flashing RED annunciator window. Record results from DAS the HIGH HIGH alarm trip point listed in the message window: - 5.80 inches H_2O (should be -5.8 ± 0.05 inches H_2O). Record results from the transmitter simulator: 8.48 mA.

Rt 3-27-98 21.2.26 Click DISMISS on the message window. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

SEE PAGES 39 A, B, C FOR RERUN 7-30-98

Rt 3-27-98 21.2.27 Slowly increase input until HIGH HIGH alarm clears. Record reset point from DAS: -5.60 inches H_2O. Verify that the reset point is no less than -5.6 ± 0.05 inches H_2O. Record current reading from the transmitter simulator: 8.72 mA.

Rt 3-27-98 21.2.28 Disconnect transmitter simulator installed in Step 21.2.5.

Rt 3-27-98 21.2.29 Reconnect transmitter lead wiring to terminals disconnected in Step 21.2.4.

Rt 3-27-98 21.2.30 Verify reading on DAS is the same as that recorded in Step 21.2.1.

Rt 4-9-98 21.2.31 Verify reading on PIC-1361 is the same as that recorded in Step ~~21.1.2.~~ ECN W 320-798 21.2.2

Rt 4-9-98 21.2.32 Verify reading on PIT-1361 is the same as that recorded in Step ~~21.1.3.~~ ECN W-320-798 21.2.3

SEE PAGES 39A,B,C FOR RE-RUN 7-30-98

21.3 BOOSTER PUMP DISCHARGE PRESSURE (PIT-1362) SIMULATION

Rt 3-28-98 21.3.1 Go to the C-106 STATUS screen. Record the current reading for PI-1362: -1.5 psig.

Rt 3-28-98 21.3.2 At IE-1362 in 241-C-51, record current reading for PSL/PIT-1362: -1.7 psig.

Rt 3-28-98 21.3.3 Deenergize PSL/PIT-1362. On rear of PSL/PIT-1362, disconnect PE-1362 lead wires and connect ~~pressure calibrator~~ STRAIN GAGE SIMULATOR (mV source) set at 0 psig. 0mV ECN W320-798

Rt 3-28-98 21.3.4 Energize PSL/PIT-1362 and verify PSL/PIT-1363 indicates approximately 0 psig.

Rt 3-28-98 21.3.5 Verify response on DAS screen is 0 ± 1 psig.

Rt 3-28-98 21.3.6 On ANN-1363, verify and acknowledge alarm PAL-1362.

DELETED BY ECN W320-798 EXCEPTION #4 ~~21.3.7 On CP-01 and ANN-1361, verify alarm XA-1369 is in ALERT condition, then acknowledge.~~

Rt 3-28-98 21.3.8 Increase source until PSL/PIT-1362 indicates 130 psig and reset alarm PAL-1362 and verify that it is in NORMAL condition.

DELETED BY ECN W320-798 EXCEPTION #4 ~~21.3.9 Reset and verify alarm XA-1369 is in NORMAL condition.~~

Rt 3-28-98 21.3.10 Verify response on DAS screen is 130 ± 1 psig.

Rt 3-28-98 21.3.11 Decrease source until PSL/PIT-1362 indicates 120 psig. Verify alarm PAL-1362 is in ALERT condition.

DELETED BY ECN W320-798 EXCEPTION #4 ~~21.3.12 Verify alarm XA-1369 is in ALERT condition, then acknowledge.~~

Rt 3-28-98 21.3.13 Verify response on DAS screen is 120 ± 1 psig.

Rt 3-28-98 21.3.14 Increase source until PSL/PIT-1362 indicates 130 psig, Verify and RESET alarm PAL-1362 and verify that it is in NORMAL condition.

DELETED BY ECN W320-798 EXCEPTION #4 ~~21.3.15 Reset and verify alarm XA-1369 is in NORMAL condition.~~

Rt 3-28-98 21.3.16 Verify response on DAS screen is 130 ± 1 psig.

Rt 3-28-98 21.3.17 Unplug/deenergize PSL/PIT-1362. Disconnect pressure simulator and reconnect PE-1362 lead wires.

*_____ 21.3.18 Reenergize and verify PSL/PIT-1362 indicates approximately 0 psig.

*_____ 21.3.19 Verify response on DAS screen is the same as PI-1362 ± 1 psig.

21.4 BOOSTER PUMP DISCHARGE FLOW (FI-13616) SIMULATION

RT 7-29-98 21.4.1 Go to the C-106 STATUS screen. Record the current reading for FI-13616B: 0.29 gpm; FIT/~~FQT~~-13616 (IR-1361): 0 %; FI-13616 ~~(CB-01)~~ CP-01: 0.0 gpm, and; FI-13616A (IE-1362): 6 AVG gpm.
BCN-320-798 FQT-13616 (IR-1361 38873 g

*_____ 21.4.2 In CP-01 in MO-211, disconnect transmitter lead wiring from terminals TB1-69 and TB1-78 at FIT-13616.

*_____ 21.4.3 Connect transmitter simulator (4-20 mA source) to terminals TB1-69 and TB1-78.

*_____ 21.4.4 Apply 8.00 mA, verify response on DAS screen falls within the tolerance of 125 ± 1 gpm, and record results from DAS: _____ gpm.

*_____ 21.4.5 Apply 16.00 mA, verify response on DAS screen falls within the tolerance of 375 ± 1 gpm, and record results from DAS: _____ gpm.

*_____ 21.4.6 Apply 12.00 mA. Slowly increase the signal, and verify the measured step size is less than the maximum of 0.5 gpm. Record the resolution from DAS: _____ gpm.

*_____ 21.4.7 Go to the DAS ALARMS screen (F6). Acknowledge all active alarms (F12).

*_____ 21.4.8 Apply 12 mA, then INCREASE the input signal until the HIGH alarm trips. This will cause a sound to play, a message window to appear, and a flashing AMBER annunciator window. Record results from DAS the HIGH alarm trip point listed in the message window: _____ gpm (should be approximately 425 gpm). Record results from the transmitter simulator: _____ mA.

*_____ 21.4.9 Click DISMISS on the message window. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

*_____ 21.4.10 Slowly decrease input until HIGH alarm clears. Record reset point from DAS: _____ gpm. Verify that the reset point is no greater than approximately 417 gpm. Record current reading from the transmitter simulator: _____mA.

*_____ 21.4.11 INCREASE the input signal past the HIGH alarm setpoint and until the HIGH HIGH alarm trips. This will cause a different sound to play, a message window to appear, and a flashing RED annunciator window. Record results from DAS the HIGH HIGH alarm trip point listed in the message window: _____ gpm (should be approximately 450 gpm). Record results from the transmitter simulator: _____ mA.

*_____ 21.4.12 Click DISMISS on the message window. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

*_____ 21.4.13 Slowly decrease input until the HIGH HIGH alarm clears. Record reset point from DAS: _____ gpm. Verify that the reset point is no greater than approximately 442 gpm. Record current reading from the transmitter simulator: _____mA.

*_____ 21.4.14 Apply 12 mA, then DECREASE the input signal until the LOW alarm trips. This will cause a sound to play, a message window to appear, and a flashing AMBER annunciator window. Record results from DAS the LOW alarm trip point listed in

* SEE FOLLOWING PAGE FOR ORIGINAL SIGNOFFS RT 7-29-98

Rt 3-28-98 21.3.18 Reenergize and verify PSL/PIT-1362 indicates approximately 0 psig.

Rt 3-28-98 21.3.19 Verify response on DAS screen is the same as PI-1362 ± 1 psig.

21.4 BOOSTER PUMP DISCHARGE FLOW (FI-13616) SIMULATION

Rt 4-9-98 ~~21.4.1~~ Go to the C-106 STATUS screen. Record the current reading for FI-13616B: ~~.20 gpm; FIT/EQI-13616 (IR-1361): 62022 %; FI-13616 (CB-01): CP-01~~ ~~-124 gpm, and; FI-13616A (IE-1362): -124 gpm.~~ SEE PAGE 43 Rt
ECN-W320-798 FQI-13616 CIR-1361 28810 9

Rt 3-28-98 21.4.2 In CP-01 in MO-211, disconnect transmitter lead wiring from terminals TB1-69 and TB1-78 at FIT-13616. 7-29-98

Rt 3-28-98 21.4.3 Connect transmitter simulator (4-20 mA source) to terminals TB1-69 and TB1-78.

Rt 3-28-98 21.4.4 Apply 8.00 mA, verify response on DAS screen falls within the tolerance of 125 ± 1 gpm, and record results from DAS: 125.15 gpm.

Rt 3-28-98 21.4.5 Apply 16.00 mA, verify response on DAS screen falls within the tolerance of 375 ± 1 gpm, and record results from DAS: 375.34 gpm.

Rt 3-28-98 21.4.6 Apply 12.00 mA. Slowly increase the signal, and verify the measured step size is less than the maximum of 0.5 gpm. Record the resolution from DAS: .4 gpm.

Rt 3-28-98 21.4.7 Go to the DAS ALARMS screen (F6). Acknowledge all active alarms (F12).

Rt 3-28-98 21.4.8 Apply 12 mA, then INCREASE the input signal until the HIGH alarm trips. This will cause a sound to play, a message window to appear, and a flashing AMBER annunciator window. Record results from DAS the HIGH alarm trip point listed in the message window: 425.0 gpm (should be approximately 425 gpm). Record results from the transmitter simulator: 17.6 mA.

Rt 3-28-98 21.4.9 Click DISMISS on the message window. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

Rt 3-28-98 21.4.10 Slowly decrease input until HIGH alarm clears. Record reset point from DAS: 416.73 gpm. Verify that the reset point is no greater than approximately 417 gpm. Record current reading from the transmitter simulator: 17.3 mA.

Rt 3-28-98 21.4.11 INCREASE the input signal past the HIGH alarm setpoint and until the HIGH HIGH alarm trips. This will cause a different sound to play, a message window to appear, and a flashing RED annunciator window. Record results from DAS the HIGH HIGH alarm trip point listed in the message window: 450.3 gpm (should be approximately 450 gpm). Record results from the transmitter simulator: 18.4 mA.

Rt 3-28-98 21.4.12 Click DISMISS on the message window. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

Rt 3-28-98 21.4.13 Slowly decrease input until the HIGH HIGH alarm clears. Record reset point from DAS: 441.8 gpm. Verify that the reset point is no greater than approximately 442 gpm. Record current reading from the transmitter simulator: 18.13 mA.

Rt 4-9-98 21.4.14 Apply ~~12~~ 13 mA, then DECREASE the input signal until the LOW alarm trips. This will cause a sound to play, a message window to appear, and a flashing AMBER annunciator window. Record results from DAS the LOW alarm trip point listed in ECN W320-798

the message window: 275.0 gpm (should be approximately 275). Record results from the transmitter simulator: 12.79 mA.

Rt 3-28-98 21.4.15 Click DISMISS on the message window. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

Rt 3-28-98 21.4.16 Slowly increase input until the LOW alarm clears. Record reset point from DAS: 283.64 gpm. Verify that the reset point is at least 283 gpm. Record current reading from the transmitter simulator: 13.07 mA.

Rt 3-28-98 21.4.17 DECREASE the input signal past the LOW alarm setpoint and until the LOW LOW alarm trips. This will cause a different sound to play, a message window to appear, and a flashing RED annunciator window. Record results from DAS the LOW LOW alarm trip point listed in the message window: 249.8 gpm. (should be approximately 250 gpm). Record results from the transmitter simulator: 11.99 mA.

Rt 3-28-98 21.4.18 Click DISMISS on the message window. Acknowledge the alarm. The annunciator window will stop flashing and the alarm sound will stop.

Rt 3-28-98 21.4.19 Slowly increase input until LOW LOW alarm clears. Record reset point from DAS: 258.1 gpm. Verify that the reset point is at least 258 gpm. Record current reading from the transmitter simulator: 12.26 mA.

Rt 3-28-98 21.4.20 Disconnect transmitter simulator installed in Step 21.4.3.

Rt 3-28-98 21.4.21 Reconnect transmitter lead wiring to terminals disconnected in Step 21.4.2.

Rt 4-9-98 21.4.22 Verify readings on FI-13616B (DAS), FIT/~~FQI~~-13616, FI-13616, and FI-13616A are ~~the same as~~ SIMILAR TO that recorded in Step 21.4.1. FQI-13616 ECN W320-798

END OF SECTION 21

g. On Page 44, ADD Section 21.5 as follows:

21.5 SLURRY BOOSTER PUMP P-1362 VSD FAILURE ALARM

NOTE: On ANN-1363A and ANN-1363B, it is acceptable to temporary deactivate any alarm that may be in an alarm state, with the exception of alarm XA-1361.

7/17/98 21.5.1 At Bldg 241-C-51 (EES), on ANN-1363A and ANN-1363B, verify all alarms are in NORMAL condition.

21.5.2 On ANN-1361, verify TANK 241-C-106 BSTR/SBM PUMPS TROUBLE (XA-1369) alarm (window 6-3) is in the NORMAL condition.

21.5.3 At Bldg 241-C-51, in VSD Cabinet, lift ~~and tape~~ wires ANN-1363B-7 and ANN-1363B-(+) from terminals 134 and 135. Install a test switch across ~~terminals~~ WIRES lifted from 134 and 135. 7-17-98

21.5.4 OPEN test switch. On ANN-1363B, verify BSTR PMP VSD FAILURE (XA-1361) alarm (window 7) is FLASHING. Acknowledge and then verify alarm is STEADY ON.

21.5.5 On ANN-1361, verify that TANK 241-C-106 BSTR/SBM PUMPS TROUBLE (XA-1369) alarm (window 6-3) is FLASHING. Acknowledge and then verify alarm is STEADY ON.

21.5.6 CLOSE test switch. On ANN-1363B, reset BSTR PMP VSD FAILURE (XA-1361) alarm (window 7) and then verify alarm is in the NORMAL condition.

21.5.7 On ANN-1361, reset TANK 241-C-106 BSTR/SBM PUMPS TROUBLE (XA-1369) alarm (window 6-3) and then verify alarm is in the NORMAL condition.

21.5.8 Remove test switch from terminals 134 and 135. Reconnect wires ANN-1363B-7 and ANN-1363B-(+) to terminals 134 and 135 respectively.

21.5.9 Verify that any alarms that were temporily deactivated are restored to service.

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h. On Page 44, ADD Section 21.6 as follows:

21.6 SUBMERSIBLE PUMP WINCH W-1361 LOWER TRAVEL LIMIT ALARM.

R 7/18/98 21.6.1 On ANN-1361, verify SBM PUMP P-1361 EXTENDED PSN TRAVEL LIMIT (ZAL-13616) alarm (window 7-2) is in the NORMAL condition.

R 21.6.2 In CP-01, at terminal block TB-3, open fuse holder FU-9.

R 21.6.3 At Pump Pit terminal box 3, terminal block WL, perform zero energy check and then install a test switch across terminals 6 and 8.

R 21.6.4 In CP-01, at terminal block TB-3, close fuse holder FU-9.

R 21.6.5 Close test switch. On ANN-1361, verify SBM PUMP P-1361 EXTENDED PSN TRAVEL LIMIT (ZAL-13616) alarm (window 7-2) is FLASHING. Acknowledge and then verify alarm is STEADY ON.

R 21.6.6 Open test switch. On ANN-1361, reset SBM PUMP P-1361 EXTENDED PSN TRAVEL LIMIT (ZAL-13616) alarm (window 7-2) and then verify alarm is in the NORMAL condition.

R 21.6.7 In CP-01, at terminal block TB-3, open fuse holder FU-9.

R 21.6.8 At Pump Pit terminal box 3, terminal block WL, perform zero energy check and then remove test switch from terminals 6 and 8.

R 21.6.9 In CP-01, at terminal block TB-3, close fuse holder FU-9.

44b

22 POWER INTERRUPTION/RECOVERY (UPS SYSTEM PROTECTION)

Tests temporary battery backup power for MO-211 and AY-801A PLC/HMI components. AY-102 HVAC system has emergency diesel generators; these are not tested.

Rt 3-27-98 22.1 Verify that applicable prerequisites in section 7 have been completed.

Rt 3-27-98 22.2 Log in to the WRSS DAS as an Operator. Go to the TREND SELECTION screen. Configure a trend plot containing the tags listed in Data Sheet 22, with a span of 10 minutes.

Rt 4-9-98 22.3 Verify that all DISPLAYED trend data are reading normally, and record the current values in Data Sheet 22. ECN W320-798

Rt 3-31-98 22.4 Note the time: 1444. Remove AC power from the MO-211 UPS by removing fuse FU-10 from TB3 in IE-1363. Verify that the DAS continues to operate normally. Record the current values for the tags listed in Data Sheet 22.

Rt 3-31-98 22.5 Five minutes after the time noted in Step 22.4, return the MO-211 UPS to AC power by putting the fuse FU-10 back in place. Verify that the DAS continues to operate normally. Record the current values for the tags listed in Data Sheet 22.

Rt 3-30-98 22.6 Note the time: 1331. Remove AC power from the AY-801A UPS by removing fuse FU-7 from TB3 in IE-0622. Verify that the DAS continues to operate normally. Record the current values for the tags listed in Data Sheet 22.

Rt 3-30-98 22.7 Five minutes after the time noted in Step 22.6, return the AY-801A UPS to AC power by putting the fuse FU-7 back in place. Verify that the DAS continues to operate normally. Record the current values for the tags listed in Data Sheet 22.

Rt 4-9-98 22.8 Verify that the PLC/COMMUNICATIONS STATUS page indicates no hardware alarms occurred during the test.

DATA SHEET 22

CURRENT VALUES	TAGS				
	ECN W320-798 ~~TI-06230~~ ~~AI-0621~~	AI-0623	FI-0622	ECN W-320-798 TI-06238 ~~TI-0620~~	ECN W320-771 ~~PI-~~ ECN W320-798 ~~FI-1364~~ FI-13616
VALUE (22.3)	71.9	99.9	0.0	64.3	0.23
VALUE (22.4)	72.2	99.9	726.45	64.5	0.11
VALUE (22.5)	72.2	99.9	687.7	64.4	0.23
VALUE (22.6)	71.9	99.9	0.0	64.3	0.23
VALUE (22.7)	72.2	99.9	0.0	64.4	0.23

END OF SECTION 22

23 COMM DEVICE FAILURE ALARMS

This test simulates a few major communications failures, and tests the DAS response. In all cases, the Operator should be notified by a flashing annunciator and a sound unique to communications errors.

Rt 3-30-98 23.1 Verify that all applicable prerequisites from section 7 have been completed.

Rt 3-30-98 23.2 Verify that the PLC/COMMUNICATIONS STATUS page indicates no hardware alarms.

Rt 3-30-98 23.3 Simulate ~~HW~~ HARDWARE failure by turning ~~power~~ MO-2H PLC POWER SUPPLY MODULE switch to OFF. ECN W320-771

Rt 3-30-98 23.4 Verify that a flashing annunciator symbol appears on the DAS screen and that an alarm sounds.

Rt 3-30-98 23.5 RETURN MO-2H-PLC POWER SUPPLY MODULE SWITCH TO ON POSITION ~~Reconnect the PLC. Acknowledge the alarm(s) on the Hardware Alarms page by clicking on the alarm text (the HARDWARE ALARMS page is available from the ALARM SUMMARY or PLC and COMMUNICATIONS STATUS pages)~~. The alarm(s) clear(s), and communications return to normal. ECN W-320-771

Rt 3-30-98 23.6 Simulate ~~HW~~ HARDWARE failure by turning ~~power switch to OFF~~ BOTH AY-801A PLC POWER SUPPLY MODULE SWITCHES TO OFF. ECN W-320-771.

Rt 3-30-98 23.7 Verify that a flashing annunciator symbol appears on the DAS screen and that an alarm sounds.

Rt 3-30-98 23.8 RETURN BOTH AY-801A PLC POWER SUPPLY MODULE SWITCHES TO ON POSITION ECN W-320-771 ~~Reconnect the PLC. Acknowledge the alarm(s) on the HARDWARE ALARMS page by clicking on the alarm text (the HARDWARE ALARMS page is available from the ALARM SUMMARY or PLC and COMMUNICATIONS STATUS pages)~~. The alarm(s) clear(s), and communications return to normal.

END OF SECTION 23

24 TEST COMPLETION RECORD

Upon completion of the testing steps in each Section, initial and date in the space provided.

Test Completion HNF-1827 (W320, DAS QTP/ATP)			
PERFORM		INITIAL	DATE
7	Prerequisites, Equipment/Instruments, Definitions, Glossary and Annunciators	Rt	4-9-98
8	HMI Screen Navigation and Function Keys	Rt	4-9-98
9	HMI Screen Data Display	Rt	4-9-98
10	Citect Internal Calculations	Rt	4-9-98
11	Historical Trending	Rt	4-9-98
12	HMI Security Functions	Rt	4-9-98
13	Alarm Setpoints	Rt	4-9-98
14	System Interfaces	Rt	4-9-98
15	Mass Flow Transmitter	Rt	4-9-98
16	ENRAF Density Meter Data File I/O	Rt	4-9-98
17	Tank AY-102 Ventilation Data File I/O	Rt	4-9-98
18	AY-102 Tank Temperatures	Rt	4-9-98
19	AY-Farm MIT (Type K Thermocouple Input Modules)	Rt	4-9-98
20	AY Farm Process Inputs (4-20 mA)	Rt	4-9-98
21	C-Farm, Process Inputs (4-20 mA)	Rt	4-9-98
22	Power Interruption/Recovery	Rt	4-9-98
23	Comm Device Failure Alarms	Rt	4-9-98

03/12/98
14:19:26

DISTRIBUTION/VERIFICATION LOG
[DISTRIBUTION STATUS] = A
DOCUMENT#:HNF-1827

REV	INITIAL DIST. DATE	PROJECT#	PROJECT TITLE	DISTRIBUTION SET#	NAME
0	03/12/98	W-320	W-320 EQUIPMENT REMOVAL SYSTEM	AI-2	G CHINERY 2
0	03/12/98	W-320	W-320 EQUIPMENT REMOVAL SYSTEM	CE-1	K LESSER

I acknowledge I have received the documents (set#) highlighted above.

Signature _____ Date _____

EXCEPTION NO. 1	Project No. W-320	ATP No. HNF-1827	Rev. 0
Recorded By R. TAYLOR	Organization FDH AI	Date Recorded 3-30-98	ATP Package No. 15

Step No. 18.3.1

Requirement VERIFY THAT NO INVALID READINGS APPEAR FOR ANY THERMOCOUPLE

Description of Problem
TE-72 IS OUT OF RANGE

Objector 1 (Name/Organization) Robert Taylor FDH AI

Objector 2 (Name/Organization) Steph D. Romero FDNW

Planned Action
REMOVE FROM SERVICE PER RESOLUTION OF ECN-W320-798

Action Taken

RETEST EXECUTION AND ACCEPTANCE

Retest Installation Contractor	Date	Recorder R. Taylor	Date 4-8-98
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

☐ Retest Approved and Accepted ☒ Exception Accepted-as-is* ☐ Other*

* Explanation
Per resolution of ECN-W320-798

Approver 1 J J Kaasch	Date 7/25/98	Approver 2 [illegible] for John Maxson	Date 07-25-98
Approver 3 R R Bevins	Date 7/26/98	Approver 4 Keith Conrad / QA	Date 7-25-98

A-6002-213 (02/97)

EXCEPTION NO. 2	Project No. W-320	ATP No. HNF-1827	Rev. 0
Recorded By R. TAYLOR	Organization FDH AI	Date Recorded 4-1-98	ATP Package No. 15

Step No. 20.2.5 + 20.2.6

Requirement SET VTPS TO 0.140 INCHES OF H_2O AND VERIFY FLOW READING ON DAS (FI-0622)

Description of Problem

UNABLE TO ACHEIVE A STEADY FLOW INDICATION READINGS. UNABLE TO PERFORM REMAINING STEPS (20.2.7 THRU 20.2.11)

Objector 1 (Name/Organization) Robert Taylor FDH AI

Objector 2 (Name/Organization) Steve D. Romer FDNW

Planned Action

ECN-W320-798

Action Taken

RETEST EXECUTION AND ACCEPTANCE

Retest Installation Contractor	Date	Recorder R. Taylor	Date 4-9-98
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

☐ Retest Approved and Accepted ☒ Exception Accepted-as-is* ☐ Other*

* Explanation

Per resolution of ECN-W320-798

Approver 1	Date	Approver 2	Date
J Koenich	7/25/98	MA CAVE FOR JOHN PAXTON	07-25-98
Approver 3 R.R. Beeman	Date 7/26/98	Approver 4 Keith Conrad/QA	Date 7-25-98

A-6002-213 (02/97)

DAS
W320~~QTP~~/ATP

HNF-1827(Q
Rev 0
~~03/09/98~~
03/11/98

EXCEPTION NO. 3	Project No. W-320	ATP No. HNF-1827	Rev. 0
Recorded By R. TAYLOR	Organization FDH AI	Date Recorded 3-27-98	ATP Package No. 15

Step No. 21.2.24

Requirement VERIFY ANN-1361 IS RESET AND VERIFY PAH-1361 IS STEADY ON.

Description of Problem

N-BITHER INSTRUMENT IS CAPABLE OF PERFORMING THE FUNCTION AS STATED.

Objector 1 (Name/Organization) Robert Taylor FDH AI

Objector 2 (Name/Organization) Steve D. Romero FDNW

Planned Action

DELETE THE STEP, NOT NEEDED ECN-W320-798

Action Taken

RETEST EXECUTION AND ACCEPTANCE

	Date		Date
Retest Installation Contractor		Recorder R. Taylor	4-9-98
Witness 1 (Name/Organization)		Witness 2 (Name/Organization)	
Field Engineering		Test Director (Name/Organization)	
Design Engineering (Author of ATP)		A-E Project Engineer	

APPROVAL AND ACCEPTANCE - CLIENT

☐ Retest Approved and Accepted ☒ Exception Accepted-as-is* ☐ Other*

* Explanation

Per resolution of ECN-W320-798

Approver 1 J. Kosanich	Date 7/25/98	Approver 2 MARLANE FOR JOHN BAXTON	Date 07-25-98
Approver 3 R.R. Bevins	Date 7/25/98	Approver 4 Keith Conrad/QA	Date 7-25-98

A-6002-213 (02/97)

EXCEPTION NO. 4	Project No. W-320	ATP No. HNF-1827	Rev. 0
Recorded By R. TAYLOR	Organization FDH AI	Date Recorded 3-28-98	ATP Package No. 15

Step No. 21.3.7, 21.3.9, 21.3.12 + 21.3.15

Requirement VERIFY ALARM XA-1369 DID ~~NOT~~ GO INTO ALERT NORMAL OR RESET CONDITION AT CP-01

Description of Problem

ALARM XA-1369 WOULD NOT PERFORM AS CALLED FOR IN THE STEPS ABOVE

Objector 1 (Name/Organization) Robert Taylor FDH AI

Objector 2 (Name/Organization) Steve D. Romero FDNW

Planned Action

DELETE STEPS, AS ALARM STEPS WERE VERIFIED AND ACKNOWLEDGED AT THE DAS ECN W320-798

Action Taken

RETEST EXECUTION AND ACCEPTANCE

Retest Installation Contractor	Date	Recorder R. Taylor	Date 4-9-98
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

☐ Retest Approved and Accepted ☒ Exception Accepted-as-is* ☐ Other*

* Explanation

Per resolution of ECN-W320-798.

Approver 1 J Kaemik	Date 7/25/98	Approver 2 MALANE FOR JOHN MARTIN	Date 07-25-98
Approver 3 RRBeans	Date 7/25/98	Approver 4 Keith Conrad/QA	Date 7-25-98

A-6002-213 (02/97)

DAS
W320~~QTP~~/ATP

-1827
Rev 0
~~09/98~~
03/11/98

EXCEPTION NO. #5	Project No. W-320	ATP No. HNF-1827	Rev. 0
Recorded by R.G. DyKeMAN	Organization FDH	Date Recorded 7-17-98	ATP Page No. 42

Step No. 21.2.4

Requirement: Verify Readings ARE All within +/- 0.1

Description of Problem: Readings taken in Steps # 21.2.1, 21.2.2 and 21.2.3 ARE out of tolerance RANGE.

Objector 1 (Name/Organization): R.G. DyKeMAN FDH

Objector 2 (Name/Organization): John PAxton

Planned Action: RETEST

Action Taken: RETESTED STEPS 21.2.1, 21.2.2 AND 21.2.3. VALUES OBTAINED ARE WITHIN ACCEPTANCE RANGE OF ATP-015, STEP 21.2.4 VALUES OBTAINED: .026, .0, .1093

RETEST EXECUTION AND ACCEPTANCE

Retest Installation Contractor	Date	Recorder: Robert Taylor	Date: 7-28-98
Witness 1 (Name/Organization)	Date	Witness 2 (Name/Organization)	Date
Field Engineering	Date	Test Director (Name/Organization): /FDNB	Date: 7/28/98
Design Engineering (Author of ATP)	Date	A-E Project Engineer	Date

APPROVAL AND ACCEPTANCE – OPERATING CONTRACTOR

☒ Retest Approved and Accepted ☐ Exception Accepted-as-is* ☐ Other*

* Explanation: Retested see page # 2 of this Exception.

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Page 59-a

Approver 1	Date: 7/29/98	Approver 2	Date: 7-29-98
Approver 3: Keith Conrad/QA	Date: 7/29/98	Approver 4	Date: 7/29/98

KEH-428 (6-85)

Page # 2 of Exception # 5

f. On Page 40, delete and replace Section 21.2 as follows: [Affects ECN W-320-798]

21.2 TANK 241-C-106 PRESSURE (PIT-1361) SIMULATION

NOTE: PIT-1361 and PIC-1361 have been tested in HNF-SD-W320-ATP-012 in accordance with Step 16.3. Acknowledge any alarms generated during the steps in this section.

RT 7-2898 21.2.1 Go to the C-106 STATUS screen on DAS. Record current reading for PI-1361: .026 inches H_2O.

RT 7-2898 21.2.2 On CP-01, Record the current reading from PIC-1361: .0 inches H_2O.

RT 7-2898 21.2.3 ON IR-1361 in Process Bldg 241-C-91, Record the current reading from PIT-1361: .1093 inches H_2O.

Exc #5 21.2.4 Verify readings obtained in above steps are all within +/- 0.1 inches H_2O of each other.

NA RT 7-2898 21.2.5 In CP-01, disconnect transmitter (PIT-1361) lead wiring from terminals TB-1-6 and TB-1-7.

_____ 21.2.6 In CP-01, verify that TB-3 fuse block 4 is LIFTED/OPEN (this disables the evacuation horn PAL-1361B).

_____ 21.2.7 In CP-01, connect transmitter simulator (4-20 Ma source) to terminals TB-1-6 and TB-1-7.

_____ 21.2.8 Apply 8.00 Ma, verify response on DAS screen is -6.25 inches H_2O (-6.20 to -6.30 inches H_2O). Record results from DAS: _____ inches H_2O. Verify response on PIC-1361 is -6.1 to -6.4 inches H_2O) Record results from PIC-1361: _____ inches H_2O.

_____ 21.2.9 Apply 12.00 Ma, verify response on DAS screen is -2.50 inches H_2O (-2.45 to -2.55 inches H_2O). Record results from DAS: _____ inches H_2O. Verify response on PIC-1361 is -2.4 to -2.6 inches H_2O) Record results from PIC-1361: _____ inches H_2O.

_____ 21.2.10 Apply 16.00 Ma, verify response on DAS screen is 1.25 inches H_2O (1.20 to 1.30 inches H_2O). Record results from DAS: _____ inches H_2O. Verify response on PIC-1361 is 1.1 to 1.4 inches H_2O) Record results from PIC-1361: _____ inches H_2O.

_____ 21.2.11 Go to DAS ALARMS screen (F6). Acknowledge all active alarms (F12).

NA 21.2.12 Apply 12 Ma, then INCREASE input signal until the LOW VACUUM/LOSS OF VACUUM alarms trip on DAS, PIC-1361 and ANN-1361 (window 1-2). This will cause a sound to play, a message window to appear, and a flashing AMBER annunciator window in DAS.

EXCEPTION NO. # 6	Project No. W-320	ATP No. HNF-1827	Rev. 0
Recorded by R.G. DyKeman	Organization FDH	Date Recorded 7/17/98	ATP Page No. 39(b)

Step No. 21.2.15

Requirement: Record DAS Low Vac. alarm trip point.

Description of Problem: The Low Vacuum Alarm trip point displayed 0.29 inches H_2O. Trip point should have been within (-0.25 to -0.35).

Objector 1 (Name/Organization): R.G. DyKeman FDH

Objector 2 (Name/Organization): John Paxton

Planned Action: REPROGRAM ALARM MESSAGE WINDOW TO DISPLAY NEGITAVE VALUE.

Action Taken: REPROGRAMED ALARM WINDOW AND RERAN STEP 21.2.15 MESSAGE IN WINDOW DISPLAYED VALUE OF -0.293 IN H_2O. TRANSMITTER SIMULATOR VALUE DISPLAYED WAS 12.0 mA. 7-24-98

RETEST EXECUTION AND ACCEPTANCE

Retest Installation Contractor	Date	Recorder	Date
		E J Enlow Jr FDH	7-24-98
Witness 1 (Name/Organization)	**Date**	**Witness 2 (Name/Organization)**	**Date**
R. Gutierrez OE/TWRS/LMHC	7/24/98		
Field Engineering	**Date**	**Test Director (Name/Organization)**	**Date**
		John Paxton/FDHW	7-24-98
Design Engineering (Author of ATP)	**Date**	**A-E Project Engineer**	**Date**

APPROVAL AND ACCEPTANCE – OPERATING CONTRACTOR

☒ Retest Approved and Accepted ☐ Exception Accepted-as-is* ☐ Other*

* Explanation

Approver	Date	Approver 2	Date
J Kasmik	7/25/98	M A LANE FOR JOHN PAXTON	07-25-98
Approver 3	**Date**	**App**	
RR Beeson	7/25/98	Keith Conrad QA	7-25-98

5)

DISTRIBUTION SHEET

To	From	Page 1 of 1
Distribution	JW Bailey	Date 30 July 1998
Project Title/Work Order		EDT No. 622273
HNF-1828, Rev. 0, Waste Retrieval Sluicing System, Data Acquisition System, Acceptance Test Report		ECN No. n/a

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
DG Baide	S5-05				
JW Bailey	S2-48				
JR Bellomy	S2-48				
RR Bevins	S2-48				
KC Conrad	S2-48				
JM Jones	S5-13				
JW Lentsch	S2-48				
J Paxton	S2-47				
SU Zaman	S5-12				
W-320 Project Files	R1-29				