APR 02 1998

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 622193

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
SST Retrieval Projects	SST Retrieval Projects	606549
5. Proj./Prog./Dept./Div.:	**6. Design Authority/ Design Agent/Cog. Engr.:**	**7. Purchase Order No.:**
W-320 / 8C620	J.W. Bailey/J. R. Bellomy	N/A
8. Originator Remarks:		**9. Equip./Component No.:**
Supporting Document Approval and Initial Release		AY-Farm Electrical
		10. System/Bldg./Facility: 241-C-106
11. Receiver Remarks: **11A. Design Baseline Document?** [ ] Yes [X] No		**12. Major Assm. Dwg. No.:** H-2-818693
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: N/A

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Desig-nator	(G) Reason for Trans-mittal	(H) Origi-nator Dispo-sition	(I) Receiv-er Dispo-sition
1	HNF-SD-W320-ATR-007	ALL	0	AY-Farm Electrical Distribution	SQ	1	N/A	N/A

16. KEY

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

17. SIGNATURE/DISTRIBUTION
(See Approval Designator for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
1	1	Design Authority/ J.W. Bailey	J.W. Bailey	4/1/98	S2-48
		Design Agent			
1	1	Cog.Eng./ J.R. Bellomy			S2-48
1	1	Cog. Mgr./ J.W. Bailey	J.W. Bailey	4/1/98	S2-48
1	1	QA/ K.C. Conrad	Keith Conrad	4/1/98	S2-48
1	1	Safety/ S.U. Zaman	S.U. Zaman	4/2/98	B5-12
		Env.			

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
1	1	R.R. Bevins	R.R. Bevins	4/1/98	S2-48
3	1	K.B. Ferlan (2)			S2-48
3	1	Project Files			R1-29
3	1	Central Files			A3-88
3	1	M.C. Davenport			S2-48

18.	19.	20.	21. DOE APPROVAL (if required) Ctrl. No.
J. R. Bellomy Signature of EDT Originator 4/1/98 Date	N/A Authorized Representative for Receiving Organization Date	J. W. Bailey Design Authority/ Cognizant Manager 4/1/98 Date	[ ] Approved [ ] Approved w/comments [ ] Disapproved w/comments

BD-7400-172-2 (05/96) GEF097

PROJECT W-320 ACCEPTANCE TEST REPORT FOR AY-FARM ELECTRICAL DISTRIBUTION

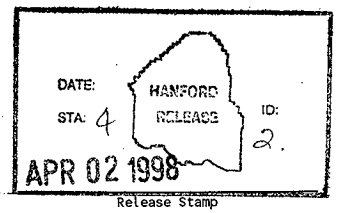
R. R. Bevins
Numatec Hanford Corporation
U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: 622193 UC: 510
Org Code: 8C470 Charge Code: D2MEP
B&R Code: EW3130010 Total Pages: ~~57~~ 60
Kme 4/2/98

Key Words: 241-C-106, Project W-320, Sluicing, AY-Farm Electrical

Abstract: Project W-320 Acceptance Test Report for AY-Farm Electrical Distribution

Release Approval 4/2/98 Date



Release Stamp

Approved for Public Release

gd 3/31/98
HNF
~~WHC~~-SD-W320-ATR-007, Rev. 0

AY-Farm Electrical Distribution

J. R. Bellomy
Westinghouse Hanford Company, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-87RL10930

EDT/ECN: 606549 UC: 510
Org Code: 73532 Charge Code: D2MP6
B&R Code: EW3130010 Total Pages: ~~38~~ 34 Kme 4/2/96

Key Words: 241-C-106, Project W-320, Sluicing, AY-Farm Electrical

Abstract: Project W-320 Acceptance Test Procedure for AY-Farm Electrical Distribution.

APR 25 1996
DATE
HANFORD
STA: 4 RELEASE ID: 56

Release Approval 4/30/96 Date

Release Stamp

Approved for Public Release

ACCEPTANCE TEST PROCEDURE WHC-SD-W320-ATP-007

TEST TITLE AY-Farm Electrical Distribution System

LOCATION AY-Farm

PROJECT NUMBER W-320 WORK ORDER ER6159

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

Prepared By
ICF Kaiser Hanford Company
Richland, Washington

For Westinghouse Hanford Company
Subcontract WHC-380393

PROCEDURE APPROVAL

ICF KAISER HANFORD COMPANY (ICF KH)

Author	4/16/96 Date	Technical Document	4-15-96 Date
Checker	4/16/96 Date	Safety	4-15-96 Date
Environmental	4/16/96 Date	Quality Engineering	4-16-96 Date
Project Management	4/16/96 Date		

Westinghouse Hanford Company (WHC)

Projects Department	4/24/96 Date	Quality Assurance	4-19-96 Date
Safety	4.24.96 Date	Operations	4/24/96 Date

ECN's Incorporated

W-320-409
427
443
545
661

HNF 3/31/98

EXECUTION AND TEST APPROVAL

EXECUTED BY

Test Director/Organization	11/4/97 Date	Test Operator/Organization	11-4-97 Date
Recorder/Organization	11/4/97 Date		

WITNESSES

Witness/Organization	11/4/97 Date	Title III Inspector	11/4/97 Date
Witness/Organization	Date	Witness/Organization	Date

A-E APPROVAL

ICF Kaiser Hanford Company (ICF KH)

Without exceptions	With exceptions resolved	With exceptions outstanding
___	X	___

Acceptance Inspection	11/4/97 Date	Design Engineer	11/4/97 Date
Project Manager	11-06-97 Date		

TEST APPROVAL AND ACCEPTANCE

Westinghouse Hanford Company

Without exceptions	With exceptions resolved	With exceptions outstanding
___	X *	___

W320 PROJECT TEST ENG. (Title or Department)	3/24/98 Date	RR Bevins W320 STARTUP MANAGER (Title or Department)	3/24/98 Date
Jackie Sentech W320 PROJECT MANAGER (Title or Department)	3/24/98 Date	Keith Conrad W320 PROJECT QA (Title or Department)	3/25/98 Date

* CONTINUOUS TRIPPING OF SEISMIC SYSTEM OCCURRED DURING PERFORMANCE OF ATP STEP 10.4.112. DEFICIENCY DOCUMENTED ON NCR W-320-001. DEFICIENCY RESOLVED PER NCR DISPOSITION AND NCR CLOSED 3-24-98 JR Bellows 3-24-98

HNF 3/31/98

TABLE OF CONTENTS

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

1 PURPOSE

This Acceptance Test Procedure (ATP) has been prepared to demonstrate that the AY-Farm Electrical Distribution System functions as required by the design criteria. This test is divided into three parts to support the planned construction schedule; Section 8 tests Mini-Power Panel AY102-PP1 and the EES; Section 9 tests the SSS support systems; Section 10 tests the SSS and the Multi-Pak Group Control Panel. This test does not include the operation of end-use components (loads) supplied from the distribution system. Tests of the end-use components (loads) will be performed by other W-320 ATPs.

2 REFERENCES

2.1 DRAWINGS

H-2-818559, Sh 1, Rev 0	Project W-320 P&ID Tank 241-AY-102
H-2-818693, Sh 1, Rev 0 (including ECNs W-320-167 and 257)	Electrical AY-Farm One-Line Diagram
H-2-818695, Sh 2, Rev 1	Electrical AY-Farm Plans and Details
H-2-818695, Sh 3, Rev 1	Electrical AY-Farm EES Plans and Details
H-2-818696, Sh 1, Rev 0 (including ECN W-320-167)	Electrical AY-Farm Seismic Shutdown Sys Elementary Diagram
H-2-818696, Sh 2, Rev 0 (including ECN W-320-167)	Electrical AY-Farm Seismic Shutdown Sys Elementary Diagram
H-2-818696, Sh 3, Rev 0 (including ECN W-320-167)	Electrical AY-Farm Seismic Shutdown Sys Plan & Details
H-2-820751, Sh 1, Rev 0 (including ECN W-320-254)	Electrical AY-Farm One Line Diagram

2.2 SPECIFICATIONS

Construction Specification W-320-C7, Rev 0 Package 3 - AY Tank Farm

Procurement Specification W-320-P33, Rev 0 Electrical Equipment Skid AY-Farm (including ECNs W-320-96, 124, 134 and 152)

Procurement Specification W-320-P35, Rev 0 Seismic Shutdown System (including ECNs W-320-142, 165, 175 and 212)

Procurement Specification W-320-P36, Rev 0 Enclosure, Environmental Control (including ECN W-320-143)

2.3 ENGINEERING CHANGE NOTICES (ECNs)

Prior to final test approval, markup the controlled copy of this ATP with all of the ECNs written against it.

2.4 VENDOR INFORMATION

File #22668, supplement #LATER

3 RESPONSIBILITIES

3.1 GENERAL

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

3.2 WHC 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 ATP.

3.3 ICF KH PROJECT MANAGER

3.3.1 Designates a Test Director.

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

3.3.3 Signs exception form when all exceptions have been resolved.

3.4 TEST DIRECTOR

3.4.1 Coordinates and directs acceptance testing.

3.4.2 Coordinates testing with ICF KH Utilities.

3.4.3 Coordinates testing with ICF KH Craft.

3.4.4 Distributes the approved testing schedule, to ICF KH Project Manager and WHC Project Engineer, before start of testing.

3.4.5 Notifies concerned parties (includes ICF KH Project Manager, ICF KH Lead Electrical Engineer, and WHC Project Engineer) when a change is made in 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.

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 ATP.

3.4.13 Reviews recorded data, discrepancies, and exceptions.

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

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

3.4.16 Obtains required signatures on the ATP Master before reproduction and distribution.

3.5 WITNESSES (Provided by Participating Organizations. 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 ICF KH)

3.6.1 Prepares a field copy from the ATP Master.

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

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

3.6.4 Initials and dates every test step on the field copy as it is completed next to the step number or on a Data Sheet, when provided. Records test data.

3.6.5 Records exceptions on an exception form. 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 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.

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

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

3.7.4 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 on ECNs 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 undue hazards and to prevent damage to property and environment. Facility line managers shall ensure 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 on or near energized equipment; all procedural requirements for working on or near energized equipment shall be followed, and an Energized Electrical Work Permit (KEH-2211.00/WHC-A-6001-687) shall be completed.

5.2 PERFORMANCE

5.2.1 Conduct testing in accordance with ICF KH Procedure CON 3.5 (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 in Sections 7, 8, 9, and 10 are completed, the person completing the step shall initial and date in the space provided.

6 EXCEPTIONS

6.1 GENERAL

Exceptions to the required test results are sequentially numbered and recorded on individual exception forms (KEH-428). 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.

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. Action taken may not be the same as planned action.

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

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

6.4 APPROVAL AND ACCEPTANCE

The 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 each participant. The signed original is attached to the ATP Master.

7 PREREQUISITES, EQUIPMENT/INSTRUMENTS, AND ABBREVIATIONS

Note: This ATP was prepared based on performing a partial ATP for testing of Mini-Power Panel AY102-PP1, the EES lighting, the EES receptacles, the EES HVAC, the AY-PDP-1 light and the AY-PDP-1 receptacle (Section 8), performing a partial ATP at a later date to test the SSS support systems (Section 9), and then performing a partial ATP at a later date to test the SSSs and the Multi-Pak Group Control Panel (Section 10).

7.1 PREREQUISITES

See Para 8.1 for prerequisites for testing the Mini-Power Panel AY102-PP1 and the EES.

See Para 9.1 for prerequisites for testing of the SSS support systems.

See Para 10.1 for prerequisites for testing of the SSS and the Multi-Pak Group Control Panel.

7.2 EQUIPMENT/INSTRUMENTS

See Para 8.2 for equipment/instruments required for testing the Mini-Power Panel AY102-PP1 and the EES.

See Para 9.2 for equipment/instruments required for testing of the SSS support systems.

See Para 10.2 for equipment/instruments required for testing of the SSS and the Multi-Pak Group Control Panel.

7.3 ABBREVIATIONS

A	A phase voltage or current
B	B phase voltage or current
C	C phase voltage or current
ECN	Engineering Change Notice
EES	Electrical Equipment Skid - Building 241-AY-51
H	120 V Hot Leg
L1	First 120 V Hot Leg
L2	Second 120 V Hot Leg

N	Neutral
PDP	Power Distribution Panel AY-PDP-1
PP	Power Panel
SSS	Seismic Shutdown System
VOM	Volt-ohmmeter
VSD	Variable Speed Drive

8 TESTING OF MINI-POWER PANEL AY102-PP1 AND THE EES

Note: If the results of any step do not agree with expectations, STOP the test and NOTIFY the Test Director.

8.1 PREREQUISITES FOR TESTING MINI-POWER PANEL AY102-PP1 AND THE EES

The following conditions shall exist at start of the testing in Section 8 of this ATP. Note that Para 9.1 lists prerequisites required for performance of Section 9, and that Para 10.1 lists prerequisites required for performance of Section 10.

8/3/96 8.1.1 WHC Project Engineer has been notified 24 hours prior to start of the testing.

8/3/96 8.1.2 Mini-Power Panel AY102-PP1 and the EES have been inspected for compliance with construction documents and general cleanliness.

8/3/96 8.1.3 Reference documents (including this ATP) have been verified for correct revision number and outstanding ECNs.

8/3/96 8.1.4 A Prejob Safety Analysis has been prepared and a Prejob Safety Meeting has been conducted for this section of testing.

8/3/96 8.1.5 Test instruments have a valid calibration stamp attached. Test instrument identification numbers and calibration expiration dates have been recorded in Para 8.2.

8/3/96 8.1.6 Grounding has been visually inspected and continuity tested.

8/3/96 8.1.7 Wiring from the AY-Farm Power Distribution Panel AY-PDP-1 to the Mini-Power Panel AY102-PP1 has been continuity tested and meggered, as applicable.

8/3/96 8.1.8 Wiring has not been terminated on the load side of the Mini-Power Panel AY102-PP1 breakers 2, 7, 8, 9, 10, 12, 13, 14, 15, and 16, or the load side wiring is lifted to prevent injury to personnel or damage to equipment.

8/3/96 8.1.9 All circuit breakers on Mini-Power Panel AY102-PP1 are open (OFF position). The HVAC unit disconnect switch is open (OFF position).

8/3/96 8.1.10 Mini-Power Panel AY102-PP1 feeder breaker, on Power Distribution Panel AY-PDP-1, is open (OFF position).

8/3/96 8.1.11 Power Distribution Panel AY-PDP-1 is energized.

8/3/96 8.1.12 All worker safety equipment required to perform test is readily available.

8.2 EQUIPMENT/INSTRUMENTS FOR TESTING MINI-POWER PANEL AY102-PP1 AND THE EES

Supplied by Test Operator unless otherwise noted.

8.2.1 Volt-ohmmeters (VOM): 120/240 to 277/480 V

Instrument No. 0168 Expiration Date 7/22/97

8.3 CIRCUIT BREAKER RATINGS FOR MINI-POWER PANEL AY102-PP1 AND THE EES

8.3.1 Verify that the equipment feeder breakers on EES Mini-Power Panel AY102-PP1 have the correct trip ratings as follows:

BREAKER	LOAD	TRIP RATING (AMPS)
AY-PDP-1/#7	Mini-Power Panel AY102-PP1	70
Panelboard Primary MAIN	Mini-Power Panel AY102-PP1 Input	60
Panelboard SECONDARY MAIN	Panelboard AY102-PP1	80
Panelboard ckts 1, 2, 4, 7, 8, 9, 10, 11, 12, 13, 14, 15 & 16	Various loads and spares	20
Panelboard ckts 5 & 6	241-AY-51B RCPT & HVAC; 241-AY-51A RCPT & HVAC	30

8.4 MEASUREMENTS - MINI-POWER PANEL AY102-PP1 AND THE EES

CAUTION: Observe proper electrical safety precautions around energized equipment in accordance with WHC-CM-1-10, WKS 15, Electrical Work Safety.

Note: Steps 8.4.1 through 8.4.20 involve testing Mini-Power Panel AY102-PP1 and its breakers, the EES lighting and receptacles, the EES HVAC unit, the AY-PDP-1 light, and the AY-PDP-1 receptacle.

8.4.1 Using the IQ Data meter on AY-PDP-1, read and record V_{AB}, V_{BC}, and V_{CA} on the Data Sheet.

8.4.2 Close the Mini-Power Panel AY102-PP1 feeder breaker AY-PDP-1/#7 (ON position).

8.4.3 Using the VOM, measure ~~that all 3~~ THE APPLICABLE phase-to-phase voltages ~~on~~ FOR the load ~~side of the~~ Mini-Power Panel AY102-PP1 feeder breaker AY-PDP-1/#7. Record the values of V_{AB}, V_{BC}, and V_{CA} on the Data Sheet.

8.4.4 Verify that the voltages in the preceding step agree (±2 V ac) with the voltages from the IQ Data meter in Step 8.4.1 ~~and are in the range of 480 to 504 V ac~~.

8.4.5 Close the panelboard AY102-PP1 PRIMARY MAIN breaker (ON position).

8.4.6 Close the panelboard AY102-PP1 SECONDARY MAIN breaker (ON position).

8/3/96	8.4.7	Using the VOM, measure the line-to-line voltage and both line-to-neutral voltages in the panelboard. Record the values of V_{LL}, V_{L1N}, and V_{L2N} on the Data Sheet.
8/3/96	8.4.8	Verify that the panelboard line-to-line voltage is in the range of 240 to 252 V ac and that the panelboard line-to-neutral voltages are in the range of 120 to 126 V ac.
8/3/96	8.4.9	Close panelboard breaker for EES lighting and EES receptacles AY102-PP1/#4 (ON positions).
8/3/96	8.4.10	Verify that the EES light fixtures function properly using the toggle switch. Verify that the pilot light is ILLUMINATED when the interior light fixtures are ILLUMINATED.
8/3/96	8.4.11	Using the VOM, measure and verify the voltage at each of the three EES duplex receptacles is in the range of 120 to 126 V ac. Verify that the GFCI feature of the applicable duplex receptacle functions properly via the test and reset buttons.
8/3/96	8.4.12	Set the EES HVAC unit (AC-0623) thermostat controls to OFF.
8/3/96	8.4.13	Close the EES HVAC unit (AC-0623) feeder breaker AY102-PP1/#1 (ON position).
8/3/96	8.4.14	Using the VOM, measure and verify that the line-to-line voltage on the line side of the HVAC unit disconnect switch, located in a side panel of the HVAC unit, is in the range of 240 to 252 V ac.
8/3/96	8.4.15	Close the EES HVAC unit (AC-0623) disconnect breaker (located on the side of the HVAC unit) (ON position).
	8.4.16	Verify that the EES HVAC unit (AC-0623) functions properly by adjusting the thermostat controls as follows:
8/3/96	8.4.16.1	Set the EES HVAC unit (AC-0623) thermostat controls to automatically maintain 50 to 70 °F. Set the thermostat controls to operate in AUTO.
8/3/96	8.4.16.2	Raise the temperature setting enough to cause the HVAC unit to start heating the inside of the EES and allow to run for approximately 5 minutes.
8/3/96	8.4.16.3	Lower the temperature setting enough to cause the HVAC unit to start cooling the inside of the EES and allow to run for approximately 5 minutes.
8/3/96	8.4.16.4	Set the EES HVAC unit (AC-0623) thermostat controls to maintain 50 to 70 °F in AUTO.
8/3/96	8.4.17	Close the AY-PDP-1 LTG & RCPT feeder breaker AY102-PP1/#11, in the EES (ON position).
8/3/96	8.4.18	Verify that the AY-PDP-1 light fixture functions properly using the toggle switch on AY-PDP-1.

8/3/96 8.4.19 Using the VOM, measure and verify the voltage at the AY-PDP-1 duplex receptacle is in the range of 114 to 126 V ac. Verify that the GFCI feature of the duplex receptacle functions properly via the test and reset buttons.

8/3/96 8.4.20 For each 20 A feeder breaker in panelboard AY102-PP1, except circuits #1, #4, and #11: Close the breaker, use the VOM on the load side of the breaker to verify the line-to-neutral voltage is in the range of 120 to 126 V ac, and then open the breaker.

8/3/96 8.4.21 Reconnect any wiring that was lifted, from the load side of the ~~480 V~~ 120/240 V feeder breakers on Mini-Power Panel AY102-PP1, due to this procedure. ECN 644

8/3/96 8.4.22 Perform the Final Equipment Lineup in Step 8.5

SECTION 8 DATA SHEET WHC-SD-W320-ATP-007

STEP	PERFORM/VERIFY	MEASUREMENT		INITIAL	DATE
8.4.1	AY-PDP-1: IQ DATA V_{AB} =	482	Volts	8/3/96	8/3/96
	AY-PDP-1: IQ DATA V_{BC} =	482	Volts		
	AY-PDP-1: IQ DATA V_{CA} =	479	Volts		
8.4.3	AY-PDP-1/#7: VOM V_{AB} =	0	Volts	8/3/96	8/3/96
	AY-PDP-1/#7: VOM V_{BC} =	0	Volts		
	AY-PDP-1/#7: VOM V_{CA} =	455.1	Volts		
8.4.7	Panelboard AY102-PP1: VOM V_{LL} =	239	Volts	8/3/96	8/3/96
	Panelboard AY102-PP1: VOM V_{L1N} =	120	Volts		
	Panelboard AY102-PP1: VOM V_{L2N} =	120	Volts		

8.5 FINAL EQUIPMENT LINEUP FOR TESTING MINI-POWER PANEL AY102-PP1 AND THE EES

Upon completion of the testing steps in Section 8, the status of the equipment used in this Section of the ATP should be as shown in the following table. If any of the equipment is not in the required condition, notify the Test Director. The Test Director will determine the appropriate action.

SECTION 8 FINAL EQUIPMENT LINEUP WHC-SD-W320-ATP-007			
LOCATION	PERFORM/VERIFY	INITIAL	DATE
AY-PDP-1/#7	Mini-Power Panel AY102-PP1 feeder breaker: ON	1	8/3/96
EES	Mini-Power Panel AY102-PP1 PRIMARY MAIN breaker: ON	1	8/3/96
EES	Mini-Power Panel AY102-PP1 SECONDARY MAIN breaker: ON	1	8/3/96
EES	AY102-PP1 circuit breakers #1, #4, #11: ON	1	8/3/96
EES	AY102-PP1 circuit breakers #2, #5, #6, #7, #8, #9, #10, #12, #13, #14, #15, #16: OFF	1	8/3/96
EES	HVAC unit (AC-0623) local disconnect breaker: ON	1	8/3/96
EES	HVAC unit (AC-0623) thermostat controls: AUTO	1	8/3/96

>> END OF SECTION 8 <<

9 TESTING OF SSS SUPPORT SYSTEMS

Note: If the results of any step do not agree with expectations, STOP the test and NOTIFY the Test Director.

9.1 PREREQUISITES FOR TESTING OF SSS SUPPORT SYSTEMS

The following conditions shall exist at start of this testing.

8/3/96 9.1.1 WHC Project Engineer has been notified 24 hours prior to start of the testing.

8/3/96 9.1.2 The Missile Shield Enclosure Bldgs 241-AY-51A and 241-AY-51B, and associated wiring, have been inspected for compliance with construction documents and general cleanliness.

8/3/96 9.1.3 Reference documents (including this ATP) have been verified for correct revision number and outstanding ECNs.

8/3/96 9.1.4 A Prejob Safety Analysis has been prepared and a Prejob Safety Meeting has been conducted for this section of testing.

8/3/96 9.1.5 Test instruments have a valid calibration stamp attached. Test instrument identification numbers and calibration expiration dates have been recorded in Para 9.2.

8/3/96 9.1.6 The Missile Shield Enclosures grounding has been visually inspected and continuity tested.

1/17/97 9.1.7 The following instrumentation has been calibrated. Record the calibration expiration date:

Instrument No. TSHL-0623 Expiration Date ~~2/16/96~~ 2/16/97 1/17/97

Instrument No. TSHL-0624 Expiration Date ~~2/16/96~~ 2/16/97

8/15/96 9.1.8 The IE-0621 annunciator system in Bldg 241-AY-51 is functional.

Note: For all steps that involve checking an annunciator on IE-0621 in Bldg 241-AY-51, the alarms shall be acknowledged and reset as necessary to complete the step.

8/3/96 9.1.9 The Receptacle and the HVAC circuit breakers, in Bldg 241-AY-51A, are open (OFF position).

8/3/96 9.1.10 The Receptacle and the HVAC circuit breakers, in Bldg 241-AY-51B, are open (OFF position).

8/3/96 9.1.11 Circuit breakers AY102-PP1/#5 and AY102-PP1/#6, in the EES, are open (OFF position).

8/3/96 9.1.12 Panelboard AY102-PP1 is energized.

8/3/96 9.1.13 All worker safety equipment required to perform test is readily available.

9.2 EQUIPMENT/INSTRUMENTS FOR TESTING OF SSS SUPPORT SYSTEMS

Supplied by Test Operator unless otherwise noted.

9.2.1 Volt-ohmmeters (VOM): 120/240 to 277/480 V

Instrument No. 0168 Expiration Date 7/26/97

9.3 MEASUREMENTS - SSS SUPPORT SYSTEMS

CAUTION: Observe proper electrical safety precautions around energized equipment in accordance with WHC-CM-1-10, WKS 15, Electrical Work Safety.

Note: Steps 9.3.1 through 9.3.7 involve testing the receptacle and the HVAC unit (AC-0621), for Bldg 241-AY-51A.

✓ 8/3/96 9.3.1 Close the 241-AY-51A RCPT & HVAC (AC-0621) feeder breaker AY102-PP1/#6, in the EES (ON position).

✓ 8/3/96 9.3.2 Close the receptacle breaker, in Bldg 241-AY-51A (ON position).

✓ 8/3/96 9.3.3 Using the VOM, measure and verify the voltage at the duplex receptacle, in Bldg 241-AY-51A, is in the range of 114 to 126 V ac. Verify that the GFCI feature of the duplex receptacle functions properly via the test and reset buttons. (After this step is completed, the receptacle is available for use).

✓ 8/3/96 9.3.4 Set the Bldg 241-AY-51A HVAC unit thermostat controls (TC-0626) to OFF.

✓ 8/3/96 9.3.5 Close the HVAC breaker in Bldg 241-AY-51A (ON position).

9.3.6 Verify that the Bldg 241-AY-51A HVAC unit functions properly by adjusting the thermostat controls (TC-0626) as follows:

✓ 8/3/96 9.3.6.1 Set the Bldg 241-AY-51A HVAC unit thermostat controls (TC-0626) to automatically maintain 50 to 70 °F. Set the thermostat controls (TC-0626) to operate in AUTO. (In Auto or Manual) ECN-4434

✓ 8/3/96 9.3.6.2 Raise the temperature setting enough to cause the HVAC unit to start heating the inside of Bldg 241-AY-51A and allow to run for approximately 5 minutes.

✓ 8/3/96 9.3.6.3 Lower the temperature setting enough to cause the HVAC unit to start cooling the inside of Bldg 241-AY-51A and allow to run for approximately 5 minutes.

✓ 8/3/96 9.3.6.4 Set the Bldg 241-AY-51A HVAC unit thermostat controls (TC-0626) to maintain 50 to 70 °F in AUTO.

9.3.7 Verify that the AY-FARM SEISMIC SYSTEM 241-AY-51A/B TEMP HIGH/LOW annunciator window 2-3 on IE-0621 functions properly, by performing the following in Bldg 241-AY-51A:

1 8/15/96 9.3.7.1 Lift a wire from the TSHL-0623 output terminals for high temperature and verify that the annunciator window is STEADY ON. Then reconnect the lifted wire and verify that the annunciator window is OFF.

1 8/15/96 9.3.7.2 Lift a wire from the TSHL-0623 output terminals for low temperature and verify that the annunciator window is STEADY ON. Then reconnect the lifted wire and verify that the annunciator window is OFF.

Note: Steps 9.3.8 through 9.3.14 involve testing the receptacle and the HVAC unit (AC-0622), for Bldg 241-AY-51B.

1 8/3/96 9.3.8 Close the 241-AY-51B RCPT & HVAC (AC-0622) feeder breaker AY102-PP1/#5, in the EES (ON position).

1 8/3/96 9.3.9 Close the receptacle breaker, in Bldg 241-AY-51B (ON position).

1 8/3/96 9.3.10 Using the VOM, measure and verify the voltage at the duplex receptacle, in Bldg 241-AY-51B, is in the range of 114 to 126 V ac. Verify that the GFCI feature of the duplex receptacle functions properly via the test and reset buttons. (After this step is completed, the receptacle is available for use).

1 8/3/96 9.3.11 Set the Bldg 241-AY-51B HVAC unit thermostat controls (TC-0627) to OFF.

1 8/3/96 9.3.12 Close the HVAC breaker, in Bldg 241-AY-51B (ON position).

9.3.13 Verify that the Bldg 241-AY-51B HVAC unit functions properly by adjusting the thermostat controls (TC-0627) as follows:

1 8/3/96 9.3.13.1 Set the Bldg 241-AY-51B HVAC unit thermostat controls (TC-0627) to automatically maintain 50 to 70 °F. Set the thermostat controls (TC-0627) to operate in AUTO.

1 8/3/96 9.3.13.2 Raise the temperature setting (In Auto or Manual) ECN 4431 enough to cause the HVAC unit to start heating the inside of Bldg 241-AY-51B and allow to run for approximately 5 minutes.

1 8/3/96 9.3.13.3 Lower the temperature setting enough to cause the HVAC unit to start cooling the inside of Bldg 241-AY-51B and allow to run for approximately 5 minutes.

1 8/3/96 9.3.13.4 Set the Bldg 241-AY-51B HVAC unit thermostat controls (TC-0627) to maintain 50 to 70 °F in AUTO.

9.3.14 Verify that the AY-FARM SEISMIC SYSTEM 241-AY-51A/B TEMP HIGH/LOW annunciator window 2-3 on IE-0621 functions properly, by performing the following in Bldg 241-AY-51B:

1 8/15/96 9.3.14.1 Lift a wire from the TSHL-0624 output terminals for high temperature and verify that the annunciator window is STEADY ON. Then reconnect the lifted wire and verify that the annunciator window is OFF.

9.3.14.2 Lift a wire from the TSHL-0624 output terminals for low temperature and verify that the annunciator window is STEADY ON. Then reconnect the lifted wire and verify that the annunciator window is OFF.

9.3.15 Perform the Final Equipment Lineup in step 9.4.

9.4 FINAL EQUIPMENT LINEUP FOR TESTING OF SSS SUPPORT SYSTEMS

Upon completion of the testing steps in Section 9, the status of the equipment used in this test should be as shown in the following table. If any of the equipment is not in the required condition, notify the Test Director. The Test Director will determine the appropriate action.

SECTION 9 FINAL EQUIPMENT LINEUP WHC-SD-W320-ATP-007			
LOCATION	PERFORM/VERIFY	INITIAL	DATE
EES	AY102-PP1/#5: ON	✓	10/22/97
EES	AY102-PP1/#6: ON	✓	10/22/97
241-AY-51A	Receptacle breaker: ON	✓	10/22/97
241-AY-51A	HVAC breaker: ON	✓	10/22/97
241-AY-51A	HVAC unit thermostat controls (TC-0626): AUTO	✓	10/22/97
241-AY-51A	Missile Shield Enclosure Doors: LOCKED CLOSED	✓	10/22/97
241-AY-51B	Receptacle breaker: ON	✓	10/22/97
241-AY-51B	HVAC breaker: ON	✓	10/22/97
241-AY-51B	HVAC unit thermostat controls (TC-0627): AUTO	✓	10/22/97
241-AY-51B	Missile Shield Enclosure Doors: LOCKED CLOSED	✓	10/22/97
241-AY-51 /IE-0621	AY-FARM SEISMIC SYSTEM 241-AY-51A/B TEMP HIGH/LOW annunciator window 2-3: OFF	✓	10/22/97

>> END OF SECTION 9 <<

10 TESTING OF SSS AND MULTI-PAK GROUP CONTROL PANEL

Note: If the results of any step do not agree with expectations, STOP the test and NOTIFY the Test Director.

10.1 PREREQUISITES FOR TESTING OF SSS AND MULTI-PAK GROUP CONTROL PANEL

Note: This section of the ATP takes credit for the final functional testing of the SSSs by Nutherm International procedure TPS-7050, which is documented in the Vendor Information files. Therefore, the functionality of the temperature instruments for high ambient temperature (TSHH) will not be simulated or verified in this ATP. Additionally, this section of the ATP will not test the functionality of the Triaxial Seismic Detectors AY-0621 and AY-0622. The temperature instruments for high ambient temperature (TSHH) and the seismic detectors will be calibrated and tested by WHC procedure TF-FT-251-001, AY-Farm Seismic Shutdown System Functional Test.

The following conditions shall exist at start of this testing.

10/22/97 10.1.1 WHC Project Engineer has been notified 24 hours prior to start of the testing.

10/22/97 10.1.2 Seismic Shutdown Systems AY-SSS-1A and AY-SSS-1B, and associated wiring, have been inspected for compliance with construction documents and general cleanliness.

10/22/97 10.1.3 Reference documents (including this ATP) have been verified for correct revision number and outstanding ECNs.

10/22/97 10.1.4 A Prejob Safety Analysis has been prepared and a Prejob Safety Meeting has been conducted for this section of testing.

10/22/97 10.1.5 Test instruments have a valid calibration stamp attached. Test instrument identification numbers and calibration expiration dates have been recorded in Para 10.2.

10/22/97 10.1.6 The SSS grounding has been visually inspected and continuity tested.

10/22/97 10.1.7 Seismic Shutdown System controls and indicators on IE-0621 in the EES have been installed.

10/22/97 10.1.8 Wiring from the AY-Farm Power Distribution Panel AY-PDP-1 to Seismic Shutdown Systems AY-SSS-1A and AY-SSS-1B to the Multi-Pak Group Control Panel has been continuity tested and meggered.

10/22/97 10.1.9 The EES Multi-Pak Group Control Panel circuit breakers have been continuity tested.

10/22/97 10.1.10 All circuit breakers on EES Multi-Pak Group Control Panel are open (OFF position).

10/22/97 10.1.11 The battery, inside each of the Seismic Shutdown System panels AY-SSS-1A and AY-SSS-1B, has the battery terminal leads lifted from the battery terminals.

✓ 10/22/97 10.1.12 The pre-installation functional test been performed prior to site installation in accordance with the Operating Instruction for Triaxial Seismic Trigger Model TS-33MOD. Record the performance date:

Instrument No. AE/ASH-0621 Date Performed 3/19/96

Instrument No. AE/ASH-0622 Date Performed 3/19/96
See NOTE BELOW. ECN 661 ✓

✓ 10/22/97 10.1.13 Wiring from Seismic Shutdown Systems to IE-0621 in the EES has been continuity tested and the IE-0621 annunciator system is functional.

Note: For all steps that involve checking the annunciator on IE-0621 in the EES, the alarms shall be acknowledged and reset as necessary to complete the step.

✓ 10/22/97 10.1.14 No wiring has been terminated on the load side of the feeder breakers on the Multi-Pak Group Control Panel, or the load side wiring is lifted to prevent injury to personnel or damage to equipment.

✓ 10/22/97 10.1.15 The keys for operation of the AY-SSS-1A and AY-SSS-1B door interlock bypass switches are available.

✓ 10/22/97 10.1.16 All Multi-Pak Group Control Panel breakers are open (OFF position).

✓ 10/22/97 10.1.17 The VSD input ~~circuit breaker~~ MOLDED CASE DISCONNECT SWITCH on the VSD is open (OFF position). The wiring on the load side of the VSD input ~~circuit breaker~~ MOLDED CASE DISCONNECT SWITCH is lifted. ECN 409 ✓

✓ 10/22/97 10.1.18 The EES AY-EES-1 feeder breaker AY-PDP-1/#11 is open (OFF position).

✓ 10/22/97 10.1.19 AY-PDP-1 is energized.

✓ 10/22/97 10.1.20 The HVAC in the Missile Shield Enclosure (AC-0621), Bldg 241-AY-51A, is operating.

✓ 10/22/97 10.1.21 The HVAC in the Missile Shield Enclosure (AC-0622), Bldg 241-AY-51B, is operating.

✓ 10/22/97 10.1.22 All worker safety equipment required to perform test is readily available.

10.2 EQUIPMENT/INSTRUMENTS FOR TESTING OF SSS AND MULTI-PAK GROUP CONTROL PANEL

Supplied by Test Operator unless otherwise noted.

10.2.1 Volt-ohmmeters (VOM): 120/240 to 277/480 V CAL DATE 6/6/97

Instrument No. 950-45-08-027 Expiration Date 6/6/99

10.2.2 Phase Rotation Meter: No ID number or calibration required.

10.3 CIRCUIT BREAKER SETTINGS FOR SSS AND MULTI-PAK GROUP CONTROL PANEL

✓ 10/22/97 10.3.1 Verify that the SSS ISOLATION circuit breaker has a 600 A trip unit, in Bldg 241-AY-51A.

NOTE: The Seismic Trigger User Contact (between TB3-2 and TB3-3) cannot be checked by measuring continuity because it is a solid state relay. The Seismic Trigger sensors are reset by actuating the Trigger Sensor Reset Toggle Switch (HS-0633) [HS-0634] and then reset the User Contact by depressing the RESET pushbutton (HS-0631) [HS-0632].

✓ ECN 661

1 10/22/97 10.3.2 Verify that the SSS ISOLATION circuit breaker short-time delay pickup is set at 6 X I_n, in Bldg 241-AY-51A.

1 10/22/97 10.3.3 Verify that the SSS ISOLATION circuit breaker ground fault settings are set at 2 (x I_G) and I (instantaneous).

1 10/22/97 10.3.4 Verify that the PIT COOLER (R-0621) feeder breaker Multi-Pak Group Control Panel/#2 has a 30A trip rating. | 443 1

1 10/22/97 10.3.5 Verify that the WINCH (W-0621) feeder breaker Multi-Pak Group Control Panel/#1 has a 7 A trip rating.

1 10/22/97 10.3.6 Verify that the IMMERSIBLE SLUICE PUMP (P-0621) feeder breaker Multi-Pak Group Control Panel/#3 has a 70 A trip rating. | 443 1

1 10/22/97 10.3.7 Verify that the SPARE feeder breaker Multi-Pak Group Control Panel/#4 has a 70 A trip rating.

10.4 MEASUREMENTS - SSS AND MULTI-PAK GROUP CONTROL PANEL

CAUTION: Observe proper electrical safety precautions around energized equipment in accordance with WHC-CM-1-10, WKS 15, Electrical Work Safety.

Note: Steps 10.4.1 through 10.4.9 involve testing and making connections that are necessary for the remainder of the ATP. | 661 1

1 10/22/97 10.4.1 Close the EES Bldg 241-AY-51 feeder breaker AY-PDP-1/#11 (ON position).

1 10/22/97 10.4.2 Test the EES Bldg 241-AY-51 feeder breaker AY-PDP-1/#11 trip function using the red test pushbutton on the trip unit.

1 10/22/97 10.4.3 Reset and close the EES Bldg 241-AY-51 feeder breaker ~~MCC-N1/3FD~~ AY-PDP-1/#11 (ON position). | 409 1

1 10/22/97 10.4.~~4~~ 6 Use the VOM to measure continuity between TB3-1 to TB3-2 (TSHH-06211 contact) to verify that the contact is closed in Bldg 241-AY-51A.

1A 1 10/22/97 10.4.~~5~~ 7 **If the Seismic Trigger is not connected to the Seismic Shutdown System, lift leads to the Seismic Trigger from TB3-2 and TB3-3, install a #12AWG jumper between TB3-2 and TB3-3, and then continue with remainder of Section 10 of this ATP."** | 661 1

1 10/22/97 10.4.~~6~~ 8 Use the VOM to measure continuity between TB3-1 to TB3-2 (TSHH-06212 contact) to verify that the contact is closed in Bldg 241-AY-51B. | 427 1

1A 1 10/22/97 10.4.~~7~~ 9 **If the Seismic Trigger is not connected to the Seismic Shutdown System, lift leads to the Seismic Trigger from TB3-2 and TB3-3, install a #12AWG jumper between TB3-2 and TB3-3, and then continue with remainder of Section 10 of this ATP."** | 661 1

10.4.~~8~~ 4 Perform and verify the following on AY-SSS-1A in Bldg 241-AY-51A:

1 10/22/97 10.4.~~8~~ 4.1 Connect the AY-SSS-1A battery terminal leads that were lifted and tagged by vendor (wire 4-10 connects to positive terminal and wire 4-11 connects to negative terminal) to the battery terminals.

NOTE: **The acceptance criteria for the presence of 480 V ac in the following steps is listed as "in the range of 480 to 504 V ac" which was the expected value that the Electrical Utilities Dept. typically maintains; the value of voltage that is acceptable is "in the range of 456 to 504 V ac".**

ECN 4427

10/22/97 10.4.8.2 4 Using the VOM, measure the AY-SSS-1A battery voltage between TB4-10(+) and TB4-11(-). Record the value of the AY-SSS-1A battery voltage on the Data Sheet.

10/22/97 10.4.8.3 4 Verify that the AY-SSS-1A battery voltage in the preceding step is in the range of 12.0 to 13.4 V dc.

10/22/97 10.4.4.4 CLOSE THE SSS BATT CHGR BREAKER IN BLDG 241-AY-51A. ECN 661

10.4.9 5 Perform and verify the following on AY-SSS-1B in Bldg 241-AY-51B:

10/22/97 10.4.8.1 5 Connect the AY-SSS-1B battery terminal leads that were lifted and tagged by vendor (wire 4-10 connects to positive terminal and wire 4-11 connects to negative terminal) to the battery terminals.

10/22/97 10.4.8.2 5 Using the VOM, measure the AY-SSS-1B battery voltage between TB4-10(+) and TB4-11(-). Record the value of the AY-SSS-1B battery voltage on the Data Sheet.

10/22/97 10.4.8.3 5 Verify that the AY-SSS-1B battery voltage in the preceding step is in the range of 12.0 to 13.4 V dc.

10/22/97 10.4.5.4 CLOSE THE SSS BATT CHARGER BREAKER IN BLDG 241-AY-51B. ECN 661

Note: Steps 10.4.10 through 10.4.34 involve testing AY-SSS-1A, in Bldg 241-AY-51A.

10/22/97 10.4.10 Close the SSS ISOLATION breaker AY-SSS-CB in Bldg 241-AY-51A (ON position).

10/22/97 10.4.11 Test the SSS ISOLATION breaker trip function using the red test pushbutton on the trip unit, in Bldg 241-AY-51A, and verify that the breaker trips.

10/22/97 10.4.12 Reset and close the SSS ISOLATION breaker (ON position), in Bldg 241-AY-51A.

10/22/97 10.4.13 Using the applicable key, place the AY-SSS-1A door interlock key switch (HS-0629) to BYPASS in Bldg 241-AY-51A; the SSS cabinet door can now be opened without tripping the contactor (M1).

10/22/97 10.4.14 Using the VOM, measure and verify that all 3 phase-to-phase voltages on the line side of AY-SSS-1A contactor (M1) are in the range of 480 to 504 V ac in Bldg 241-AY-51A.

10/22/97 10.4.15 Verify that the AY-SSS-1A red TRIP light (YL-06211B) is ILLUMINATED and that the white SET light (YL-06210) is OFF in Bldg 241-AY-51A.

10.4.16 Verify the following at panel IE-0621 in Bldg 241-AY-51:

10/22/97 10.4.16.1 The Seismic Shutdown System red TRIP light (YL-06211A) is ILLUMINATED.

10/22/97 10.4.16.2 The AY-FARM SEISMIC SHUTDOWN SYSTEM TRIPPED annunciator window 1-3 is STEADY ON.

10/22/97 10.4.16.3 The AY-FARM SEISMIC SYS 241-AY-51A/B POWER FAILURE annunciator window 3-3 is STEADY ON.

10/27/97 10.4.17 Using the VOM, measure and verify that all 3 phase-to-phase voltages on the load side of AY-SSS-1A contactor (M1) are 0 V ac in Bldg 241-AY-51A.

10/27/97 10.4.18 Verify that the AY-SSS-1B red TRIP light (YL-06213) and the white SET light (YL-06212) are both OFF in Bldg 241-AY-51B.

10/27/97 10.4.19 Depress the AY-SSS-1A SET pushbutton (HS-06210) in Bldg 241-AY-51A.

10/27/97 10.4.20 Verify that the AY-SSS-1A white SET light (YL-06210) is ILLUMINATED and that the red TRIP light (YL-06211B) is OFF in Bldg 241-AY-51A.

10/27/97 10.4.21 Using the VOM, measure and verify that all 3 phase-to-phase voltages on the load side of AY-SSS-1A contactor (M1) are in the range of 480 to 504 V ac in Bldg 241-AY-51A.

10/27/97 10.4.22 Verify that the AY-SSS-1B red TRIP light (YL-06213) is ILLUMINATED and that the white SET light (YL-06212) is OFF in Bldg 241-AY-51B.

10.4.23 Verify the following at panel IE-0621 in Bldg 241-AY-51:

10/27/97 10.4.23.1 The Seismic Shutdown System red TRIP light (YL-06211A) is ILLUMINATED.

10/27/97 10.4.23.2 The AY-FARM SEISMIC SHUTDOWN SYSTEM TRIPPED annunciator window 1-3 remained STEADY ON.

10/27/97 10.4.23.3 The AY-FARM SEISMIC SYS 241-AY-51A/B POWER FAILURE annunciator window 3-3 is OFF.

10/27/97 10.4.24 Close the AY-SSS-1A cabinet door and place the AY-SSS-1A door interlock key switch (HS-0629) to NORMAL in Bldg 241-AY-51A.

10/27/97 10.4.25 Open the AY-SSS-1A cabinet door in Bldg 241-AY-51A; the contactor (M1) should open.

10/27/97 10.4.26 Verify that the AY-SSS-1A red TRIP light (YL-06211B) and the white SET light (YL-06210) are both OFF in Bldg 241-AY-51A.

10.4.27 Verify the following at panel IE-0621 in Bldg 241-AY-51:

10/27/97 10.4.27.1 The Seismic Shutdown System red TRIP light (YL-06211A) is OFF ECN 545 ~~ILLUMINATED.~~

10/27/97 10.4.27.2 The AY-FARM SEISMIC SHUTDOWN SYSTEM TRIPPED annunciator window 1-3 remained STEADY ON.

10/27/97 10.4.27.3 The AY-FARM SEISMIC SYS 241-AY-51A/B POWER FAILURE annunciator window 3-3 is STEADY ON.

10/27/97 10.4.28 Close the AY-SSS-1A cabinet door AND PLACE THE AY-SSS-1A DOOR INTERLOCK KEY SWITCH (HS-0629) TO BYPASS in Bldg 241-AY-51A. ECN 544 3

10/27/97 10.4.29 Verify that the AY-SSS-1A red TRIP light (YL-06211B) is ILLUMINATED and that the white SET light (YL-06210) is OFF in Bldg 241-AY-51A.

10/22/97 10.4.30 Using the VOM, measure and verify that all 3 phase-to-phase voltages on the load side of AY-SSS-1A contactor (M1) are 0 V ac in Bldg 241-AY-51A.

10/22/97 10.4.31 Depress the AY-SSS-1A SET pushbutton (HS-06210) in Bldg 241-AY-51A.

10/22/97 10.4.32 Verify that the AY-SSS-1A white SET light (YL-06210) is ILLUMINATED and that the red TRIP light (YL-06211B) is OFF in Bldg 241-AY-51A.

10/22/97 10.4.33 Using the VOM, measure and verify that all 3 phase-to-phase voltages on the load side of AY-SSS-1A contactor (M1) are in the range of 480 to 504 V ac in Bldg 241-AY-51A.

10.4.34 Verify the following at panel IE-0621 in Bldg 241-AY-51:

10/22/97 10.4.34.1 The Seismic Shutdown System red TRIP light (YL-06211A) is ILLUMINATED.

10/22/97 10.4.34.2 The AY-FARM SEISMIC SHUTDOWN SYSTEM TRIPPED annunciator window 1-3 remained STEADY ON.

10/22/97 10.4.34.3 The AY-FARM SEISMIC SYS 241-AY-51A/B POWER FAILURE annunciator window 3-3 is OFF.

Note: Steps 10.4.35 through 10.4.71 involve testing AY-SSS-1B in Bldg 241-AY-51B.

10/22/97 10.4.35 Using the applicable key, place the AY-SSS-1B door interlock key switch (HS-0630) to BYPASS in Bldg 241-AY-51B; the SSS cabinet door can now be opened without tripping the contactor (M2).

10/22/97 10.4.36 Using the VOM, measure and verify that all 3 phase-to-phase voltages on the line side of AY-SSS-1B contactor (M2) are in the range of 480 to 504 V ac in Bldg 241-AY-51B.

10/22/97 10.4.37 Verify that the AY-SSS-1B red TRIP light (YL-06213) is ILLUMINATED and that the white SET light (YL-06212) is OFF in Bldg 241-AY-51B.

10/22/97 10.4.38 Using the VOM, measure and verify that all 3 phase-to-phase voltages on the load side of AY-SSS-1B contactor (M2) are 0 V ac in Bldg 241-AY-51B.

10/22/97 10.4.39 Depress the AY-SSS-1B SET pushbutton (HS-06212) in Bldg 241-AY-51B.

10/22/97 10.4.40 Verify that the AY-SSS-1B white SET light (YL-06212) is ILLUMINATED and that the red TRIP light (YL-06213) is OFF in Bldg 241-AY-51B.

10.4.41 Verify the following at panel IE-0621 in Bldg 241-AY-51:

10/22/97 10.4.41.1 The Seismic Shutdown System red TRIP light (YL-06211A) is OFF.

10/22/97 10.4.41.2 The AY-FARM SEISMIC SHUTDOWN SYSTEM TRIPPED annunciator window 1-3 is OFF.

10/22/97 10.4.41.3 The AY-FARM SEISMIC SYS 241-AY-51A/B POWER FAILURE annunciator window 3-3 remained OFF.

1 10/22/97 10.4.42 Using the VOM, measure and verify that all 3 phase-to-phase voltages on the load side of AY-SSS-1B contactor (M2) are in the range of 480 to 504 V ac in Bldg 241-AY-51B.

10.4.42A CLOSE THE BLDG 241-AY-51 SERVICE DISCONNECT (ON POSITION) ECN 4473 1

1 10/22/97 10.4.43 Connect the phase rotation meter on the load side of the IMMERSIBLE SLUICE PUMP feeder breaker Multi-Pak Group Control Panel/#3/2 ECN 4473 1

1 10/22/97 10.4.44 Close the IMMERSIBLE SLUICE PUMP feeder breaker Multi-Pak Group Control Panel/#3/2 (ON position). ECN 4473 1

1 10/22/97 10.4.45 Using the phase rotation meter, verify that the phase rotation is clockwise (for A,B,C).

1 10/22/97 10.4.46 Using the VOM, measure all 3 phase-to-phase voltages on the load side of the IMMERSIBLE SLUICE PUMP feeder breaker Multi-Pak Group Control Panel/#3.2 Record the values of V_{AB}, V_{BC}, and V_{CA} on the Data Sheet. ECN 4473 1

1 10/22/97 10.4.47 Verify that the voltages in the preceding step are in the range of 480 to 504 V ac.

1 10/22/97 10.4.48 Close the AY-SSS-1B cabinet door and place the AY-SSS-1B door interlock key switch (HS-0630) to NORMAL in Bldg 241-AY-51B.

1 10/22/97 10.4.49 Open the AY-SSS-1B cabinet door in Bldg 241-AY-51B; the contactor (M2) should open.

1 10/22/97 10.4.50 Verify that the AY-SSS-1B red TRIP light (YL-06213) and the white SET light (YL-06212) are both OFF in Bldg 241-AY-51B.

10.4.51 Verify the following at panel IE-0621 in Bldg 241-AY-51:

1 10/22/97 10.4.51.1 The Seismic Shutdown System red TRIP light (YL-06211A) is off ~~ILLUMINATED~~. ECN 545 1

1 10/22/97 10.4.51.2 The AY-FARM SEISMIC SHUTDOWN SYSTEM TRIPPED annunciator window 1-3 is STEADY ON.

1 10/22/97 10.4.51.3 The AY-FARM SEISMIC SYS 241-AY-51A/B POWER FAILURE annunciator window 3-3 is STEADY ON.

1 10/22/97 10.4.52 Close the AY-SSS-1B cabinet door in Bldg 241-AY-51B.

1 10/22/97 10.4.53 Verify that the AY-SSS-1B red TRIP light (YL-06213) is ILLUMINATED and that the white SET light (YL-06212) is OFF in Bldg 241-AY-51B.

10.4.54 Verify the following at panel IE-0621 in Bldg 241-AY-51:

1 10/22/97 10.4.54.1 The Seismic Shutdown System red TRIP light (YL-06211A) is ILLUMINATED.

1 10/22/97 10.4.54.2 The AY-FARM SEISMIC SHUTDOWN SYSTEM TRIPPED annunciator window 1-3 remained STEADY ON.

1 10/22/97 10.4.54.3 The AY-FARM SEISMIC SYS 241-AY-51A/B POWER FAILURE annunciator window 3-3 is OFF.

10.4.55 Using the VOM, measure and verify that all 3 phase-to-phase voltages on the load side of the IMMERSIBLE SLUICE PUMP feeder breaker Multi-Pak Group Control Panel/#~~3~~2 are 0 V ac.

10.4.56 Depress the AY-SSS-1B SET pushbutton (HS-06212) in Bldg 241-AY-51B.

10.4.57 Verify that the AY-SSS-1B white SET light (YL-06212) is ILLUMINATED and that the red TRIP light (YL-06213) is OFF in Bldg 241-AY-51B.

10.4.58 Verify the following at panel IE-0621 in Bldg 241-AY-51:

10.4.58.1 The Seismic Shutdown System red TRIP light (YL-06211A) is OFF.

10.4.58.2 The AY-FARM SEISMIC SHUTDOWN SYSTEM TRIPPED annunciator window 1-3 is OFF.

10.4.58.3 The AY-FARM SEISMIC SYS 241-AY-51A/B POWER FAILURE annunciator window 3-3 remained OFF.

10.4.59 Using the VOM, measure and verify that all 3 phase-to-phase voltages on the load side of the IMMERSIBLE SLUICE PUMP feeder breaker Multi-Pak Group Control Panel/#~~3~~2 are in the range of 480 to 504 V ac.

10.4.60 Depress the AY-SSS-1B TRIP pushbutton (HS-06213) in Bldg 241-AY-51B.

10.4.61 Verify that the AY-SSS-1B red TRIP light (YL-06213) is ILLUMINATED and that the white SET light (YL-06212) is OFF in Bldg 241-AY-51B.

10.4.62 Verify the following at panel IE-0621 in Bldg 241-AY-51:

10.4.62.1 The Seismic Shutdown System red TRIP light (YL-06211A) is ILLUMINATED.

10.4.62.2 The AY-FARM SEISMIC SHUTDOWN SYSTEM TRIPPED annunciator window 1-3 is STEADY ON.

10.4.62.3 The AY-FARM SEISMIC SYS 241-AY-51A/B POWER FAILURE annunciator window 3-3 remained OFF.

10.4.63 Using the VOM, measure and verify that all 3 phase-to-phase voltages on the load side of the IMMERSIBLE SLUICE PUMP feeder breaker Multi-Pak Group Control Panel/#~~3~~2 are 0 V ac.

10.4.64 Open the IMMERSIBLE SLUICE PUMP feeder breaker Multi-Pak Group Control Panel/#~~3~~2 (OFF position).

10.4.65 Disconnect and remove the phase rotation meter.

10.4.66 Depress the AY-SSS-1B SET pushbutton (HS-06212) in Bldg 241-AY-51B.

10.4.67 Verify that the AY-SSS-1B white SET light (YL-06212) is ILLUMINATED and that the red TRIP light (YL-06213) is OFF in Bldg 241-AY-51B.

10.4.68 Verify the following at panel IE-0621 in Bldg 241-AY-51:

10.4.68.1 The Seismic Shutdown System red TRIP light (YL-06211A) is OFF.

10/22/97 10.4.68.2 The AY-FARM SEISMIC SHUTDOWN SYSTEM TRIPPED annunciator window 1-3 is OFF.

10/22/97 10.4.68.3 The AY-FARM SEISMIC SYS 241-AY-51A/B POWER FAILURE annunciator window 3-3 remained OFF.

10/22/97 10.4.69 Close the IN-LINE SLUICE BOOSTER PUMP VSD ~~input breaker~~ MOLDED CASE DISCONNECT SWITCH on the VSD (ON position). ECN 409

10/22/97 10.4.70 Using the VOM, measure all 3 phase-to-phase voltages on the load side of the IN-LINE SLUICE BOOSTER PUMP ~~feeder breaker~~ on the VSD. Record the values of V_{AB}, V_{BC}, and V_{CA} on the Data Sheet. MOLDED CASE DISCONNECT SWITCH ECN 409

10/22/97 10.4.71 Verify that the voltages in the preceding step are in the range of 480 to 504 V ac.

Note: Steps 10.4.72 through 10.4.82 involve additional testing of both AY-SSS-1A and AY-SSS-1B, in Bldgs. 241-AY-51A and 241-AY-51B respectively.

10/22/97 10.4.72 Depress the AY-SSS-1A TRIP pushbutton (HS-06211B) in Bldg 241-AY-51A.

10/22/97 10.4.73 Verify that the AY-SSS-1A red TRIP light (YL-06211B) is ILLUMINATED and that the white SET light (YL-06210) is OFF in Bldg 241-AY-51A.

10/22/97 10.4.74 Verify that the AY-SSS-1B red TRIP light (YL-06213) and the white SET light (YL-06212) are both OFF in Bldg 241-AY-51B.

10.4.75 Verify the following at panel IE-0621 in Bldg 241-AY-51:

10/22/97 10.4.75.1 The Seismic Shutdown System red TRIP light (YL-06211A) is ILLUMINATED.

10/22/97 10.4.75.2 The AY-FARM SEISMIC SHUTDOWN SYSTEM TRIPPED annunciator window 1-3 is STEADY ON.

10/22/97 10.4.75.3 The AY-FARM SEISMIC SYS 241-AY-51A/B POWER FAILURE annunciator window 3-3 is STEADY ON.

10/22/97 10.4.76 Using the VOM, measure and verify that all 3 phase-to-phase voltages on the load side of the IN-LINE SLUICE BOOSTER PUMP VSD ~~input breaker~~ on the VSD are 0 V ac. MOLDED CASE DISCONNECT SWITCH ECN 409

10/22/97 10.4.77 Depress the AY-SSS-1A SET pushbutton (HS-06210) in Bldg 241-AY-51A.

10/22/97 10.4.78 Verify that the AY-SSS-1A white SET light (YL-06210) is ILLUMINATED and that the red TRIP light (YL-06211B) is OFF in Bldg 241-AY-51A.

10/22/97 10.4.79 Depress the AY-SSS-1B SET pushbutton (HS-06212) in Bldg 241-AY-51B.

10/22/97 10.4.80 Verify that the AY-SSS-1B white SET light (YL-06212) is ILLUMINATED and that the red TRIP light (YL-06213) is OFF in Bldg 241-AY-51B.

10.4.81 Verify the following at panel IE-0621 in Bldg 241-AY-51:

10/22/97 10.4.81.1 The Seismic Shutdown System red TRIP light (YL-06211A) is OFF.

10/22/97 10.4.81.2 The AY-FARM SEISMIC SHUTDOWN SYSTEM TRIPPED annunciator window 1-3 is OFF.

10/22/97 10.4.81.3 The AY-FARM SEISMIC SYS 241-AY-51A/B POWER FAILURE annunciator window 3-3 is OFF.

10/22/97 10.4.82 Using the VOM, measure and verify that all 3 phase-to-phase voltages on the load side of the IN-LINE SLUICE BOOSTER PUMP VSD ~~input breaker~~ switch on the VSD are in the range of 480 to 504 V ac. molded case disconnect ECN 409

Note: Steps 10.4.83 through 10.4.94 involve testing the remote trip feature of the Seismic Shutdown System from panel IE-0621 in Bldg 241-AY-51.

10/22/97 10.4.83 Depress the remote Seismic Shutdown System TRIP pushbutton (HS-06211A) on panel IE-0621 in Bldg 241-AY-51.

10.4.84 Verify the following at panel IE-0621 in Bldg 241-AY-51:

10/22/97 10.4.84.1 The Seismic Shutdown System red TRIP light (YL-06211A) is ILLUMINATED.

10/22/97 10.4.84.2 The AY-FARM SEISMIC SHUTDOWN SYSTEM TRIPPED annunciator window 1-3 is STEADY ON.

10/22/97 10.4.84.3 The AY-FARM SEISMIC SYS 241-AY-51A/B POWER FAILURE annunciator window 3-3 is STEADY ON.

10/22/97 10.4.85 Verify that the AY-SSS-1A red TRIP light (YL-06211B) is ILLUMINATED and that the white SET light (YL-06210) is OFF in Bldg 241-AY-51A.

10/22/97 10.4.86 Verify that the AY-SSS-1B red TRIP light (YL-06213) and the white SET light (YL-06212) are both OFF in Bldg 241-AY-51B.

10/22/97 10.4.87 Using the VOM, measure and verify that all 3 phase-to-phase voltages on the load side of the IN-LINE SLUICE BOOSTER PUMP VSD ~~input breaker~~ switch on the VSD are 0 V ac. molded case disconnect ECN 409

10/22/97 10.4.87A PULL OUT THE REMOTE SEISMIC SHUTDOWN SYSTEM TRIP PUSHBUTTON (HS-06211A) ON PANEL IE-0621 IN BLDG 241-AY-51

10/22/97 10.4.88 Depress the AY-SSS-1A SET pushbutton (HS-06210) in Bldg 241-AY-51A.

10/22/97 10.4.89 Verify that the AY-SSS-1A white SET light (YL-06210) is ILLUMINATED and that the red TRIP light (YL-06211B) is OFF in Bldg 241-AY-51A.

10/22/97 10.4.90 Depress the AY-SSS-1B SET pushbutton (HS-06212) in Bldg 241-AY-51B.

10/22/97 10.4.91 Verify that the AY-SSS-1B white SET light (YL-06212) is ILLUMINATED and that the red TRIP light (YL-06213) is OFF in Bldg 241-AY-51B.

10.4.92 Verify the following at panel IE-0621 in Bldg 241-AY-51:

10/22/97 10.4.92.1 The Seismic Shutdown System red TRIP light (YL-06211A) is OFF.

10/22/97 10.4.92.2 The AY-FARM SEISMIC SHUTDOWN SYSTEM TRIPPED annunciator window 1-3 is OFF.

10/22/97 10.4.92.3 The AY-FARM SEISMIC SYS 241-AY-51A/B POWER FAILURE annunciator window 3-3 is OFF.

HNF 3/31/98

10/22/97 10.4.93 Using the VOM, measure and verify that all 3 phase-to-phase voltages on the load side of the IN-LINE SLUICE BOOSTER PUMP VSD ~~input breaker~~ NON-LOAD CASE DISCONNECT SWITCH ECN 661 on the VSD are in the range of 480 to 504 V ac.

10/22/97 10.4.94 Open the IN-LINE SLUICE BOOSTER PUMP VSD ~~input breaker~~ NON-LOAD CASE DISCONNECT SWITCH ECN 661 on the VSD (OFF position).

Note: Steps 10.4.95 through 10.4.104 involve testing the AY-SSS-1A Battery Charger JC-1361 and AY-SSS-1B Battery Charger JC-0622.

10/22/97 10.4.95 Place the AY-SSS-1A door interlock key switch (HS-0629) to BYPASS in Bldg 241-AY-51A.

10/22/97 10.4.96 Using the VOM, measure and verify that the voltage between AY-SSS-1A TB3-4 and TB3-5 is in the range of ~~120~~ 114 to 126 V ac in Bldg 241-AY-51A. ECN 661

10/22/97 10.4.97 Using the VOM, measure the AY-SSS-1A Battery Charger JC-0621 output voltage between AY-SSS-1A TB4-10(+) and TB4-11(-) in Bldg 241-AY-51A. Record the value of the AY-SSS-1A Battery Charger JC-0621 output voltage on the Data Sheet.

EXCEPTION #2
10/22/97 10.4.98 Verify that the AY-SSS-1A Battery Charger JC-0621 output voltage in the preceding step is in the range of 13.5 to 14.0 V dc.

10/22/97 10.4.99 Close the AY-SSS-1A cabinet door and place the AY-SSS-1A door interlock key switch (HS-0629) to NORMAL in Bldg 241-AY-51A.

10/22/97 10.4.100 Place the AY-SSS-1B door interlock key switch (HS-0630) to BYPASS in Bldg 241-AY-51B.

10/22/97 10.4.101 Using the VOM, measure and verify that the voltage between AY-SSS-1B TB3-4 and TB3-5 is in the range of ~~120~~ 114 to 126 V ac in Bldg 241-AY-51B. ECN 661

10/22/97 10.4.102 Using the VOM, measure the AY-SSS-1B Battery Charger JC-0622 output voltage between AY-SSS-1B TB4-10(+) and TB4-11(-) in Bldg 241-AY-51B. Record the value of the AY-SSS-1B Battery Charger JC-0622 output voltage on the Data Sheet.

EXCEPTION #2
10/22/97 10.4.103 Verify that the AY-SSS-1B Battery Charger JC-0622 output voltage in the preceding step is in the range of 13.5 to 14.0 V dc.

10/22/97 10.4.104 Close the AY-SSS-1B cabinet door and place the AY-SSS-1B door interlock key switch (HS-0630) to NORMAL in Bldg 241-AY-51B.

10/22/97 10.4.105 Remove the AY-SSS-1A and AY-SSS-1B door interlock keys.

10/22/97 10.4.106 Reconnect any wiring that was lifted from the load side of the 480 V feeder breakers on EES Multi-Pak Group Control Panel, due to this procedure.

10/22/97 10.4.107 Reconnect the wiring that was lifted from the load side of the VSD input breaker on the VSD, due to this procedure.

10/22/97 10.4.108 ~~10.4.108~~ 111 Perform the Final Equipment Lineup in step 10.5. THRU 10.4.110, SEE PAGE 30a & 30b.

11/4/97 10.4.112 Operate the Immersible Sluice Pump, the In-Line Sluice Booster Pump and the winch in accordance with procedure HNF-SD-W320-PROC-001. Verify that both Seismic Shutdown Systems (with the seismic triggers fully functional) AY-SSS-1A and AY-SSS-1B, in 241-AY-51A and 241-AY-51B respectively, do NOT trip.

ECN 661

12. Description of Change

a. Para. 10.4.4 through 10.4.9.3: Renumber steps as shown on attached pages.

b. Para. 10.4.7 (after renumbering): Add text to end of paragraph as follows: "If this step cannot be completed successfully, lift leads to the Seismic trigger unit from TB3-2 and TB3-3, install a #12AWG jumper between TB3-2 and TB3-3, and then continue with remainder of Section 10 of this ATP."

c. Para. 10.4.9 (after renumbering): Revise text from "... Bldg 241-AY-51A ..." to "... Bldg 241-AY-51B ...". Add text to end of paragraph as follows: "If this step cannot be completed successfully, lift leads to the Seismic Trigger unit from TB3-2 and TB3-3, install a #12AWG jumper between TB3-2 and TB3-3, and then continue with remainder of Section 10 of this ATP."

d. Para. 10.4.108: Renumber this paragraph to be "10.4.111" and add new paragraphs as follows:

10.4.108 If a jumper was installed in step 10.4.7, perform and verify the following; if not, then skip this step:

N/A 10.4.108.1 Depress the AY-SSS-1A TRIP pushbutton (HS-06211B) in Bldg 241-AY-51A.

N/A 10.4.108.2 Open the SSS ISOLATION breaker AY-SSS-CB in Bldg 241-AY-51A (OFF position).

N/A 10.4.108.3 Remove jumper between TB3-2 and TB3-3, and reconnect the Seismic trigger unit leads that were lifted on AY-SSS-1A in Bldg 241-AY-51A.

N/A 10.4.108.4 Reset the Seismic Trigger sensors by actuating the Trigger Sensor Reset Toggle Switch (HS-0633) and reset the User Contact by depressing the AY-SSS-1A RESET pushbutton (HS-0631)."

10.4.109 If a jumper was installed in step 10.4.9, perform and verify the following; if not, then skip this step:

N/A 10.4.109.1 Depress the AY-SSS-1A TRIP pushbutton (HS-06211B) in Bldg 241-AY-51A, if necessary.

N/A 10.4.109.2 Open the SSS ISOLATION breaker AY-SSS-CB in Bldg 241-AY-51A (OFF position), if necessary.

N/A 10.4.109.3 Remove jumper between TB3-2 and TB3-3, and reconnect the Seismic trigger unit leads that were lifted on AY-SSS-1B in Bldg 241-AY-51B.

NA 1/22/97 10.4.109.4 Reset the Seismic Trigger sensors by actuating the Trigger Sensor Reset Toggle Switch (HS-0634) and reset the User Contact by depressing the AY-SSS-1B RESET pushbutton (HS-0632)."

10.4.110 If step 10.4.108 or step 10.4.109 was performed, then perform and verify the following; if steps 10.4.108 and step 10.4.109 were not performed, then skip this step:

NA 1/22/97 10.4.110.1 Close the SSS ISOLATION breaker AY-SSS-CB in Bldg 241-AY-51A (ON position).

NA 1/22/97 10.4.110.2 Depress the AY-SSS-1A SET pushbutton (HS-06210) in Bldg 241-AY-51A. Verify that the AY-SSS-1A white SET light (YL-06210) is ILLUMINATED and that the red TRIP light (YL-06211B) is OFF in Bldg 241-AY-51A.

NA 1/22/97 10.4.110.3 Depress the AY-SSS-1B SET pushbutton (HS-06212) in Bldg 241-AY-51B. Verify that the AY-SSS-1B white SET light (YL-06212) is ILLUMINATED and that the red TRIP light (YL-06213) is OFF in Bldg 241-AY-51B.

ATP-007
Rel. HNF-SD-W320-ATP-007 Rev 0

SECTION 10 DATA SHEET WHC-SD-W320-ATP-007				
STEP	PERFORM/VERIFY	MEASUREMENT	INITIAL	DATE
10.4.8.2	AY-SSS-1A TB4-10(+) to TB4-11(-) (battery): VOM V dc =	12.9 Volts dc	1	10/22/97
10.4.9.2	AY-SSS-1B TB4-10(+) to TB4-11(-) (battery): VOM V dc =	12.8 Volts dc	4	10/22/97
10.4.46	Multi-Pak Group Control Panel/#3/2: VOM V_{AB} =	469 Volts	4	8/15/96 Exception #1
	Multi-Pak Group Control Panel/#3/2: VOM V_{BC} =	469 Volts		
	Multi-Pak Group Control Panel/#3/2: VOM V_{CA} =	466 Volts		
10.4.70	MOLDED CASE DISCONNECT SWITCH VSD ~~input breaker~~: VOM V_{AB} =	464 Volts	4	8/15/96 Exception #1
	MOLDED CASE DISCONNECT SWITCH VSD ~~input breaker~~: VOM V_{BC} =	464 Volts		
	MOLDED CASE DISCONNECT SWITCH VSD ~~input breaker~~: VOM V_{CA} =	456 Volts		
10.4.97	AY-SSS-1A TB4-10(+) to TB4-11(-) (battery charger JC-0621 output): VOM V dc =	13.2 Volts dc	4	10/22/97
10.4.102	AY-SSS-1B TB4-10(+) to TB4-11(-) (battery charger JC-0622 output): VOM V dc =	13.1 Volts dc	4	10/22/97

ECN 443 1

ECN 443 4

10.5 FINAL EQUIPMENT LINEUP FOR TESTING OF SSS AND MULTI-PAK GROUP CONTROL PANEL

Upon completion of the testing steps in Section 9, the status of the equipment used in this test should be as shown in the following table. If any of the equipment is not in the required condition, notify the Test Director. The Test Director will determine the appropriate action.

SECTION 10 FINAL EQUIPMENT LINEUP WHC-SD-W320-ATP-007			
LOCATION	PERFORM/VERIFY	INITIAL	DATE
EES	IMMERSIBLE SLUICE PUMP feeder breaker Multi-Pak Group Control Panel/#3: OFF ECN 443		10/22/97
EES	IN-LINE SLUICE BOOSTER PUMP VSD ~~input breaker~~ (on the VSD): OFF w/cover case disconnect switch		10/22/97
EES	EES Bldg 241-AY-51 feeder breaker AY-PDP-1/#11: ON		10/22/97
EES	SSS ISOLATION breaker: ON		10/22/97
241-AY-51A	Door Interlock Key Switch (HS-0629): NORMAL & KEY REMOVED		10/22/97
241-AY-51A	TRIP light (YL-06211B): OFF		10/22/97
241-AY-51A	SET light (YL-06210): ON		10/22/97
241-AY-51A	HVAC unit (AC-0621): OPERATING IN AUTO		10/22/97
241-AY-51A	Missile Shield Enclosure Doors: LOCKED CLOSED		10/22/97
241-AY-51B	Door Interlock Key Switch (HS-0630): NORMAL & KEY REMOVED		10/22/97
241-AY-51B	TRIP light (YL-06213): OFF		10/22/97
241-AY-51B	SET light (YL-06212): ON		10/22/97
241-AY-51B	HVAC unit (AC-0622): OPERATING IN AUTO		10/22/97
241-AY-51B	Missile Shield Enclosure Doors: LOCKED CLOSED		10/22/97
241-AY-51 /IE-0621	SSS TRIP light (YL-06211A): OFF		10/22/97
241-AY-51 /IE-0621	AY-FARM SEISMIC SHUTDOWN SYSTEM TRIPPED annunciator window 1-3: OFF		10/22/97
241-AY-51 /IE-0621	AY-FARM SEISMIC SYS 241-AY-51A/B POWER FAILURE annunciator window 3-3: OFF		10/22/97
241-AY-51 /IE-0621	AY-FARM SEISMIC SYSTEM 241-AY-51A/B TEMP HIGH/LOW annunciator window 3-4: OFF		10/22/97

>> END OF SECTION 10 <<

EXCEPTION NO.	Project No.	ATP No.	Rev.
Recorded by	Organization	Date Recorded	ATP Page No.
Step No.	Requirement		
Description of Problem			
Objector 1 (Name/Organization)		Objector 2 (Name/Organization)	
Planned Action			
Action Taken			

RETEST EXECUTION AND ACCEPTANCE

Retest Installation Contractor	Date	Recorder	Date
Witness 1 (Name/Organization)	Date	Witness 2 (Name, Organization)	Date
Field Engineering	Date	Test Director (Name-Organization)	Date
Design Engineering (Author of ATP)	Date	A-E Project Engineer	Date

APPROVAL AND ACCEPTANCE – OPERATING CONTRACTOR

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

* Explanation

Approver 1	Date	Approver 2	Date
Approver 3	Date	Approver 4	Date

KEH-428 (6-85)

HNF 8/31/98

EXCEPTION NO. 1	Project No. W320	ATP No. WHC-SD-W320-ATP-007	Rev. 0

Recorded by	Organization	Date Recorded	ATP Page No.
F.L. SNYDER	ICFKH	8/15/96	23,24,25,26,28

Step No.	Requirement
10.4.14, 21, 33, 36, 42, 47, 71	VERIFY VOLTAGE IN THE RANGE of 480 TO 504 VAC

Description of Problem

VOLTAGES RECORDED FOR 10.4.46 & 10.4.71 WERE 456 TO 469 VAC THE REMAINING VERIFICATION WERE NOT RECORDED OFFICIALLY HOWEVER THESE VOLTAGES WERE WITHIN THE SAME RANGE AS 10.4.46

Objector 1 (Name/Organization)	Objector 2 (Name/Organization)
J. WHATTAM / ICFKH	F.L. SNYDER / ICFKH

Planned Action

NONE; These voltages are acceptable for equipment operation; utility voltages were apparently lower than originally anticipated. TJK 10/7/96

Action Taken

glb 3/31/98

HNF-SD-W320-ATR-007
Rev 0

RETEST EXECUTION AND ACCEPTANCE

Retest Installation Contractor	Date	Recorder	Date
		Lloyd Snyder	11/4/97
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
TJKasnick	10/7/96 ~~10/6~~ TJK	[signature]	10/9/96

APPROVAL AND ACCEPTANCE – OPERATING CONTRACTOR

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

* Explanation

These voltages are Acceptable for equipment operation; Utility voltages were apparently lower than originally anticipated TJK 10/7/96

Approver 1	Date	Approver 2	Date
CE Nolan Proj QAE	10-7-96	[signature] / John M Bailey	10/7/96 10/7/96
Approver 3	Date	Approver 4	Date
Kenneth A Lehfeldt	10/7/96	R.G. Nickerson TWRS/safety	10/8/96

KEH-428 (6-85)

EXCEPTION NO. 2	Project No. W-320	ATP No. WHC-SD-W320-ATP-007	Rev. 0

Recorded by	Organization	Date Recorded	ATP Page No.
F.L. SNYDER	FDH	10/22/97	30

Step No.	Requirement
10.4.98 10.4.103	BATTERY CHARGER WILL PROVIDE VOLTAGE IN THE RANGE of 13.5 TO 14.0

Description of Problem

ACTUAL VOLTAGE RECORDED FOR AY-SSS-1A IS 13.2

ACTUAL VOLTAGE RECORDED FOR AY-SSS-1B IS 13.1

Objector 1 (Name/Organization)	Objector 2 (Name/Organization)
F. L. SNYDER / FDH	TIM KASNICK / FDNW

Planned Action

Accept As IS

gld 3/31/98

HNF-SD-W320-ATR-007
Rev. 0

Action Taken

ACCEPT AS IS

RETEST EXECUTION AND ACCEPTANCE

Retest Installation Contractor	Date	Recorder	Date
		[signature] Lloyd Snyder	11/4/97
Witness 1 (Name/Organization)	Date	Witness 2 (Name/Organization)	Date
Field Engineering	Date	Test Director (Name/Organization)	Date
		[signature] FDNW	10/25/97
Design Engineering (Author of ATP)	Date	A-E Project Engineer	Date
[signature]	10/25/97	[signature]	10-27-97

APPROVAL AND ACCEPTANCE – OPERATING CONTRACTOR

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

* Explanation

Battery chargers ARE functioning properly because battery voltage is approximately 0.3 VDC higher when respective charger is energized. Charger output voltage is slightly below expected because the AC input voltage is at low end of expected range. TJK 10/25/97

Approver 1	Date	Approver 2	Date
[signature] Proj. QAE 10/27/97	10/27/97	[signature]	10/27/97
Approver 3	Date	Approver 4	Date
[signature]	10/28/97	[signature]	10/29/97

NONCONFORMANCE REPORT

NCR No. W-320-001 Page 1 of 2

1. P.O./W.O./Job Control No.	2. Facility/System No.	3. Item/Material I.D. No.
N/A	N/A	N/A
4. Dwg./Spec./Other No./Rev.	5. Program/Project/Other	6. Safety Class
HNF-SD-W320-PRO-001 REV 0	W-320	General Service
7. Lot/Heat/Serial No.	8. ASME Code Item	9. Occurrence Report Required
N/A	[] Yes [X] No (If yes, notify authorized inspector)	[] Yes [X] No (If yes, notify Occurrence Reporting Center)
10. Supplier Name/Address	11. Lot Size/Sample Size/Qty. Acc.	12. Price Anderson Amendments Act Review Required?
N/A	N/A	[] Yes [X] No
13. Risk Rank Value	14. Corrective Action Required	15. Root Cause Code
N/A	[] Yes [X] No (Required for Risk Rank 3, 4, 5)	N/A N/A for Risk value 0 or 1 (Required for Risk Rank 2, 3, 4, 5)

DESCRIPTION OF NONCONFORMANCE

16. Description of Nonconformance

During the setup phase of the procedure the seismic shutdown system tripped five (5) times. The trips occured during the setup and there were no trips during the running of the equipment.

(a) Required Condition/Origin of Requirement:

ATP WHC-SD-ATP-007 required that the immersible sluice pump, in-line sluice booster pump, and the winch be run in accordance to operational procedure HNF-SD-W320-PRO-001 without the triggers triping.

(b) Actual Condition:

During the setup phase of operational procedure HNF-SD-W320-PRO-001 the triggers trip, with no appearant reason.

17. Originator (print full name, sign and date)	18. Cognizant QA Manager validation (print full name, sign and date)
Floyd Snyder 11/19/97	Karl Feigner Karl F. Feigner 11/19/97

INTERIM DISPOSITION

19.1 Interim Disposition (check one)

[] N/A (See Final Disp.) [] OTHER [] HOLD [] MODIFY (ECN)

[] CONDITIONAL ACCEPT [] CONDITIONAL USE [] SORT [X] REINSPECT/RETEST

(a) Instructions for completion of the Interim Disposition:

See attached Interim Disposition

ORIGINAL

NONCONFORMANCE REPORT

NCR No. W-320-001

INTERIM DISPOSITION APPROVALS

20.1 Cognizant Engineer (print full name, sign and date) Timothy J KASNICK 11/25/97	21.1 QA Engineer (print full name, sign and date) Larry A. Bart 12/2/97
22.1 Authorized Inspector, required if ASME item, see Block 8	23.1 Other signatures as required J.R. Bellomy /Org. Date 12/2/97
24.1 Other signatures as required N/A LANE /Org. Date 12/02/97	25.1 Other signatures as required /Org. Date

COMPLETION OF INTERIM DISPOSITION

26.1 Interim Disposition is complete. QA/QC Signature (print full name, sign and date)
KEITH CONRAD Keith Conrad 3/24/98

FINAL DISPOSITION

19.2 Final Disposition
[ ] USE-AS-IS [ ] REJECT [X] REPAIR [ ] REWORK

(a) Technical Justification (Required for "USE-AS-IS" and "REPAIR" dispositions, N/A for "REJECT" and "REWORK" dispositions.) The seismic trigger is known to be ultra-sensitive to AC electrical noise on the 12 VDC supply to it. Transient Surge Suppressor is necessary to block noise on input to battery charger thus blocking noise from reaching charger output (12 VDC) to trigger.

(b) Instructions for completion of the Final Disposition including inspection criteria. (Required for "REPAIR" and "REWORK" dispositions.) N/A for "USE-AS-IS" and "REJECT" dispositions unless special controls are needed.
N/A

(c) ECN Number W-320-758 (Required for "USE-AS-IS" and "REPAIR" dispositions.) N/A for "REWORK" and "REJECT" dispositions.

(d) Corrective Actions (actions to prevent recurrence) when required, see Block 13.
N/A

FINAL DISPOSITION APPROVALS

20.2 Cognizant Engineer (print full name, sign and date) Timothy J KASNICK 3/24/98	21.2 QA Engineer (print full name, sign and date) KEITH CONRAD/QA Keith Conrad 3-24-98 AI Manager: Karl Feigner
22.2 Authorized Inspector, required if ASME item, see Block 8	23.2 Other signatures as required J.R. BELLOMY / PROJECT W-320 3-24-98 /Org. Date
24.2 Other signatures as required N/A LANE /Orginator Date 03/25/98	25.2 Other signatures as required /Org. Date

CLOSURE

26.2 [X] Accept [ ] Reject [ ] Follow on NCR QA/QC Closure (print full name, sign and date

Jay E. Thomas Jay E Thomas

NCR #W-320-001 Interim Disposition
Evaluate AY-Farm AY-SSS-1A Spurious Trips

Prepared by TJ Kasnick
11/20/97

Background: On 11/4/97, maintenance procedure HNF-SD-W320-PROC-001 (which operates the winch, Immersible Sluice Pump, and In-Line Sluice Booster Pump) was being performed. Both Seismic Shutdown System (SSS) cabinets at AY-Farm were initially tripped and therefore the two SSS cabinets were SET in order for power to be available for operation of the motors. A short time after the two AY-Farm SSS cabinets were SET, they tripped; this occurred about 5 times before the cabinets remained SET; the Missile Shield Enclosure (Bldg 241-AY-51A) HVAC unit appeared to be a possible source of vibration and was de-energized. The maintentance procedure was then conducted without any problems. After the maintenance procedure was completed, the HVAC unit was restarted and the SSS remained SET for about 15 minutes; it was noted later that the SSS in cabinet A was again spuriously tripping; it was also noted that soil compaction work was going on inside the AY-Farm fence about 100 ft away. This purpose of this evaluation is to determine if the AY-Farm SSS is functioning correctly and what may causing the spurious trips.

1. Verify that the shielding enclosure box surrounding the seismic trigger is firmly anchored to the concrete pad.

Verified: TJKasnick 12/2/97
Signature / Date

2. Verify that the seismic trigger is properly anchored to the concrete pad in accordance with the vendor instructions.

Per Bill Cawley

Verified: TJKasnick 12/2/97
Signature / Date

3. Check that the calibration of the seismic trigger in AY-SSS-1A is correct.

Per Report from Dave Kirg; See attached

Verified: TJKasnick 12/15/97
Signature / Date

Evaluate AY-Farm AY-SSS-1A Spurious Trips

4. Verify that the filter in the missile shield air conditioning unit is clean and that the unit is functioning correctly. (this step can be performed at anytime; does NOT need to be performed in sequence with any other steps).

Verified: J.J. Kasnick 12/10/97 12/2/97
Signature / Date

5. Verify that the battery charger is functioning properly (i.e. battery charger output voltage is approximately 0.3 Vdc greater than battery voltage when charger is off). (this step can be performed at anytime; does NOT need to be performed in sequence with any other steps).

charger off, Battery Voltage = 12.75 Vdc
charger on, Battery Voltage = 13.41 Vdc

Verified: William H. Caudle 1-29-98 ~~1-29-98~~ 98
J.J. Kasnick
Signature / Date

6. If the previous steps do not yield a cause for the spurious tripping and the spurious tripping still persists, connect a test instrument that will record possible noise levels on the 12 Vdc supply voltage to the seismic trigger; connect the test instrument at terminals TB4-10(+) and TB4-11(-). Note observations.

If there is excessive noise on the 12 Vdc supply to the seismic trigger, connect a test instrument that will record possible noise levels on the 120 Vac supply to the battery charger. Note observations.

Test instruments are not available ⇒ unable to perform this step.

Performed: J.J. Kasnick 2/9/98
Signature / Date

Evaluate AY-Farm AY-SSS-1A Spurious Trips

7. If the previous steps do not yield a cause for the spurious tripping and the spurious tripping still persists, install an accelerometer type test instrument next to the seismic trigger shielding enclosure that will measure and record vibrations that are present. Note observations.

Accelerometer not available; therefore this step not performed

Performed: _____ 3/3/98
Signature / Date

Comments:

Due to extreme sensitivity to electrical noise, purchased transient voltage suppression to protect battery charger input from noise spikes. Device installed under ECN W-320-758; installation completed on 3/11/98. As of 3/24/98 10:00 AM, NO trips have occurred since installation of surge suppressor.

NCR #W-320-001 Interim Disposition
Troubleshooting of AY-Farm AY-SSS-1A Spurious Trips

Troubleshooting history for Seismic Shutdown System AY-SSS-1A
(located in Bldg 241-AY-51A)

Date: **Monday 12/1/97**		
Time	Status	Comments
09:11 am	SET	HVAC unit energized and running continuously (fan never shuts off, even when system switch is changed to OFF)
09:13	TRIPPED	trigger had to be reset
09:13	SET	
09:14	TRIPPED	trigger had to be reset
09:14	SET	
09:20	TRIPPED	trigger had to be reset; placed HVAC breaker OFF
09:22	SET	
09:27	still SET	
09:49	still SET	
09:58	still SET	
09:58	TRIPPED	trip caused by placing HVAC breaker ON; trigger had to be reset
09:59	SET	
10:01	TRIPPED	trigger had to be reset
10:02	SET	
10:19	TRIPPED	placed HVAC breaker to OFF; HVAC unit checked by Gene Enloe including cleaning of fan blades; placed HVAC breaker to ON and restarted (less vibration now); trigger had to be reset
10:30	SET	
10:48	still SET	
10:51	still SET	also SET AY-SSS-1B
11:00	TRIPPED	Maintenance procedure PROC-001 started (runs Immersible Sluice Pump and Sluice Booster Pump); tripped due to someone bumped Emergency Trip pushbutton on IE-0621 in EES

NCR #W-320-001 Interim Disposition
Troubleshooting of AY-Farm AY-SSS-1A Spurious Trips (Continued)

Date: **Monday 12/1/97**		
Time	Status	Comments
11:01	SET	also SET AY-SSS-1B
11:04	TRIPPED	Placed HVAC breaker to OFF; trigger had to be reset on 1A, but not for 1B.
11:04	SET	also SET AY-SSS-1B
11:16	still SET	
11:33	still SET	maintenance procedure completed
12:30 pm	still SET	
12:55	TRIPPED	found tripped; placed HVAC breaker to ON; checked programming of thermostat because fan runs continuously; found that cannot program the day of the week; suspect that heater and fan are running continuously with air conditioning compressor starting periodically to limit temperature rise; operation of both the heater and the air conditioning compressor at the same time is not supposed to happen. Digital thermostat is White-Rodgers (division of Emerson Electric Co.) type 1F90-71 (sub-base 153-2598, plug-in thermostat 153-2717; Johnstone catalog #L37-470) with 3-AA batteries.
~ 1:30		temperature inside Bldg 241-AY-51A was about 80°F, well above heating setpoint of 70°F and cooling setpoint of 75°F. Verified program setpoints.
~ 2:30		temperature inside Bldg 241-AY-51A is 73°F, which is in normal range.

NCR #W-320-001 Interim Disposition
Troubleshooting of AY-Farm AY-SSS-1A Spurious Trips (Continued)

Date: **Tuesday 12/2/97**		
Time	Status	Comments
~ 7:00 am		Called Digital thermostat vendor (White-Rodgers) and discussed problems with thermostat and that fan is running continuously, even when system switch changed to OFF. Vendor recommended to remove batteries for 15 minutes to allow thermostat to reset, and then re-install batteries and reprogram. If this does not solve problem, vendor recommended replacing the thermostat.
~ 9:30		Met with Gene Enloe at AY-Farm and discussed thermostat and HVAC unit operation. Checked HVAC unit and discovered that heater and air conditioning comppressor were both running (contactors were both closed), which is not normal. Pulled Bldg 241-AY-51A thermostat out of sub-base and removed batteries. Also pulled Bldg 241-AY-51B thermostat, checked programming (and verified can set day of week) and installed it in Bldg 241-AY-51A; Bldg 241-AY-51A HVAC unit performed properly, i.e. fan did not run continuously.
~ 9:45		Re-installed batteries in the Bldg 241-AY-51A thermostat and reprogrammed; still cannot program day of week. Pulled Bldg 241-AY-51B thermostat that was temporily installed in Bldg 241-AY-51A and re-installed it in Bldg 241-AY-51B; Bldg 241-AY-51B HVAC unit performs properly. Re-installed the Bldg 241-AY-51A thermostat and HVAC unit fan operation appears to be normal now.
10:20	SET	Bldg 241-AY-51A HVAC unit appears to be operating normally.
10:21	still SET	Using thermostat keypad controls, operated Bldg 241-AY-51A HVAC unit through two cooling cycles and two heating cycles; SSS did not trip.

NCR #W-320-001 Interim Disposition
Troubleshooting of AY-Farm AY-SSS-1A Spurious Trips (Continued)

Date: Tuesday 12/2/97		
Time	Status	Comments
10:58	still SET	
11:18	still SET	Using thermostat keypad controls, operated Bldg 241-AY-51A HVAC unit through two cooling cycles and two heating cycles; SSS did not trip.
12:13	still SET	
12:14	still SET	also SET AY-SSS-1B
12:49	still SET	AY-SSS-1B also still SET
12:54	still SET	AY-SSS-1B also still SET
1:09 pm	still SET	AY-SSS-1B also still SET
~ 2:00	still SET	AY-SSS-1B also still SET; per Bill Cawley
~ 3:00	TRIPPED	per Bill Cawley
		PAR prepared to buy replacement thermostat

NCR #W-320-001 Interim Disposition
Troubleshooting of AY-Farm AY-SSS-1A Spurious Trips (Continued)

Date: **Wednesday 12/10/97**		
Time	Status	Comments
~10:00 am		Installed replacement digital thermostat (White-Rodgers). Operated unit through heat cycle, air conditioning cycle, and manually started fan, but no Seismic Shutdown System trips occurred. Bldg 241-AY-51A HVAC unit appears to be operating normally.

Dates: **Friday 12/12/97 - Wednesday 12/17/97**		
Time	Status	Comments
12/12/97 through 12/15/97		Seismic Shutdown System AY-SS-1A trigger was calibration checked in the Instrumentation shop on 12/12 and found to be out of calibration; trigger was recalibrated. Trigger was calibration checked again in the Instrumentation shop on 12/13, 12/14, and 12/15; setpoints are still satisfactory.
12/15/97 morning		Seismic Shutdown System AY-SS-1A trigger was re-installed in the field and calibration checked; setpoint is still satisfactory. SET AY-SSS-1A
12/16/97 various times 8:00am - 4:00pm	still SET	
12/17/97 various times 8:00am - 4:00pm	still SET	
12/18/97 ~ 9:00am	tripped	tripped over-night; no reason known.

NCR #W-320-001 Interim Disposition
Troubleshooting of AY-Farm AY-SSS-1A Spurious Trips (Continued)

Date: **Saturday 1/10/98**		
Time	Status	Comments
10:00 am	SET	SET AY-SSS-1A & 1B
11:00	still SET	AY-PDP-1 voltages: VAB = 474, VBC = 475, VCA = 464
11:38	still SET	
12:47 pm	still SET	
2:08	tripped	found tripped; trigger had to be reset. AY-PDP-1 voltages: VAB = 474, VBC = 475, VCA = 464
2:09	SET	SET AY-SSS-1A
2:40	still SET	

Date: **Monday 1/12/98**		
Time	Status	Comments
8:50 am	tripped	found tripped; no reason known. De-energized power to AY-SSS-1A battery charger.
8:51	SET	SET AY-SSS-1A; note that battery charger is OFF.
10:00	still SET	note that battery charger is still OFF.
12:00 pm	still SET	
2:00	still SET	
4:00	still SET	re-energized power to battery charger; AY-SSS-1A tripped as expected due to voltage transient.
4:01	SET	SET AY-SSS-1A

NCR #W-320-001 Interim Disposition
Troubleshooting of AY-Farm AY-SSS-IA Spurious Trips (Continued)

Date: **Tuesday 1/13/98**		
Time	Status	Comments
10:30 am	still SET	still SET from yesterday afternoon; note that battery charger is energized.
12:00 pm	still SET	
2:00	still SET	Pit chiller system pump and bypass pump operated for checking glycol piping.
4:00	still SET	

Date: **Wednesday 1/14/98**		
Time	Status	Comments
10:00 am	still SET	
12:00 pm	still SET	
2:00	still SET	
4:00	still SET	

Date: **Thursday 1/15/98**		
Time	Status	Comments
9:30 am	TRIPPED	found tripped; trigger had to be reset
9:32 pm	SET	trying to arrange for instrumentation support for further troubleshooting
2:00	still SET	
4:00	still SET	

NCR #W-320-001 Interim Disposition
Troubleshooting of AY-Farm AY-SSS-1A Spurious Trips (Continued)

Date: **Tuesday 2/3/98**		
Time	Status	Comments
10:00 am	TRIPPED	found tripped; trigger had to be reset
10:02 pm	SET	

Date: **Thursday 2/5/98**		
Time	Status	Comments
9:00 am		tripped system for calibration check; calibration check performed by instrument tech Pat Hurson; setpoints are satisfactory.
10:30 am	SET	

Dates: **Sunday 2/8/98**		
Time	Status	Comments
11:00 am	still SET	

Date: **Tuesday 2/10/98**		
Time	Status	Comments
8:00 am	still SET	Set AY-SSS-1B

Date: **Friday 2/13/98**		
Time	Status	Comments
12:30 pm	still SET	AY-SSS-1B also still set

NCR #W-320-001 Interim Disposition
Troubleshooting of AY-Farm AY-SSS-1A Spurious Trips (Continued)

Date: **Tuesday 2/17/98**		
Time	Status	Comments
~9:00 am	TRIPPED	found tripped; trigger had to be reset
9:02 am	SET	
12:00 pm	still SET	
2:00	still SET	
4:00	still SET	

Date: **Wednesday 3/11/98**		
Time	Status	Comments
~11:30 pm		electricians installed transient voltage suppressor for AY-SSS-1A.
11:32 pm	SET	re-energized power and set system
2:00	still SET	
4:00	still SET	

As of Tuesday 3/24/98 at ~10:00, the AY-SSS-1A system has been set for 13 days with NO trips. The Seismic Shutdown System AY-SSS-1A including the associated seismic trigger is considered operational.

Troubleshooting supervised by TJ Kasnick.
This summary prepared by TJ Kasnick.

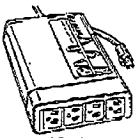
WARNER ELECTRIC
LINEAR AND ELECTRONICS
DIVISION
SUPERIOR ELECTRIC

HNF-SD-W320-ATR-007, Rev. 0

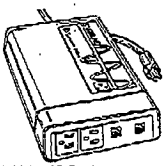
POWER PROTECTION PRODUCTS

PQI SERIES SURGE SUPPRESSOR/RFI FILTERS

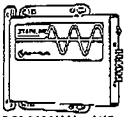
PQI-1115D Desktop
•Good Performance



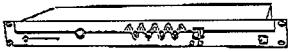
PQI-2115 Desktop
•Better Performance



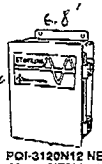
PQI-3115D Desktop
•Superior Performance



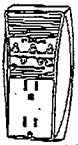
PQI-3120H Hard Wired
•Industrial Hard Wire



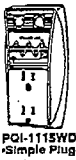
PQI-2115R Rack Mount
•19-Inch Rack Mount



PQI-3120N12 NEMA 12
•Meets NEMA 12



PQI-1115W Wall Mount
•Simple Plug-In



PQI-1115WD Wall Mount
•Simple Plug-In

Size?

• All Units are Covered by a Full 10-year Warranty.

PQI series transient voltage surge suppressor/RFI filters divert and attenuate all modes of power disturbances before they reach sensitive equipment's circuitry. The unique, performance-proven multi-stage suppression and filtration design is state-of-the-art and utilizes MOVs, gas tubes, filter capacitors, inductors and silicon avalanche diodes depending upon the series selected. Hybrid design technology offers users a choice of "good", "better" and "superior" performance levels and the circuit allows bi-directional protection from source or load power disturbances. PQI series units are lightweight and packaged in an attractive, fire-rated ABS plastic housing with convenient access to AC and data line input and output connections. All North American models are UL1449 and/or UL1363 listed/recognized (clamping level 330V) and CSA certified. All units accept IEEE 587 Category A and B Ring Wave overvoltage and Category B Unidirectional Waveform tests without failure. Reduction of these test input waveforms to let thru voltages under 330V in all modes (clamping level of 205V peak typical in L-L and L-G modes). Energy withstand: AC mains circuitry withstands in excess of 1000 IEEE 587-1980 Category B Unipolar waveforms without failure. PQI models absorb transient energy with let thru levels of 0.90 joules typical. All modes, single stage response time: 1ns. Data line multi-stage transient suppression for FAX or modem is available in most configurations. Let thru voltage (line to line) and common longitudinal (line to ground): 200V peak, 200mA max., (steady state condition); response time: 1ns. Energy withstand: telecommunication circuitry withstands in excess of 1000 FCC Part 68 metallic waveforms without failure. International types with IEC320 connection available. OEM board level types available in each performance series along with NEMA 12 enclosures. 19" rack mount and industrial hardwired style configurations.

1000 SERIES — GOOD PERFORMANCE MODELS

Stock No.	Type	Style	Volts	Amps	Receptacles AC Qty.	Receptacles AC Style	Receptacles RJ11 Qty.	Circuit Breaker	Each
51F2954	PQI-1115	Desktop	120	15	4	5-15R	...	Yes	59.73
51F2955	PQI-1115D	Desktop	120	15	2	5-15R	2	No	64.08
95F3491	PQI-1115P6	Desktop	120	15	6	5-15R	...	Yes	64.08
95F3492	PQI-1115W	Wall-Mount	120	15	2	5-15R	...	No	38.01
95F3493	PQI-1115WD	Wall-Mount	120	15	2	5-15R	2	No	42.36
			2000 SERIES — BETTER PERFORMANCE MODELS						
51F2952	PQI-2115	Desktop	120	15	4	5-15R	...	Yes	107.52
51F2953	PQI-2115D	Desktop	120	15	2	5-15R	2	No	129.24
93F5830	PQI-2310	Desktop	230	10	3	IEC320	...	Yes	194.40
95F3495	PQI-2115BR	Rack-Mount	120	15	6	5-15R	...	Yes	226.98
95F3496	PQI-2310R	Rack-Mount	230	10	6	IEC3	2	Yes	313.86
			3000 SERIES — SUPERIOR PERFORMANCE MODELS						
51F2949	PQI-3115	Desktop	120	15	4	5-15R	...	Yes	150.96
51F2950	PQI-3115D	Desktop	120	15	2	5-15R	2	No	161.82
51F2951	PQI-3120	Desktop	120	20	1	5-20R	...	No	183.54
50F8977	PQI-3120L	Desktop	120	20	1	L5-20R	...	No	237.84
50F8979	PQI-3220	Desktop	240	20	1	6-20R	...	No	216.12
50F8978	PQI-3120H	Hard Wired	120	20	...	...	...	Yes	194.40
95F3499	PQI-3120N12	NEMA 12	120	20	...	...	...	No	248.76
96F3500	PQI-3220N12	NEMA 12	240	20	...	...	...	No	281.28

(624211)

Spokane 509-327-

ENGINEERING CHANGE NOTICE

Page 1 of 6

1. ECN 647157

Proj. ECN W-320-758

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental [X] Direct Revision [] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	KARI S. HALE, FDNW, S2-47, 376-6170	[X] Yes [] No TF-98-0175	2/24/98
	6. Project Title/No./Work Order No. Tank 241-C-106 Sluicing / W320 (Pkg 3)	7. Bldg./Sys./Fac. No. 241-AY / 200E	8. Approval Designator SQ /SC
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) See Block 13a	10. Related ECN No(s). N/A	11. Related PO No. N/A

12a. Modification Work	12b. Work Package No.	12c. Modification Work Complete	12d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 12b) [X] No (NA Blks. 12b, 12c, 12d)	N/A	N/A Design Authority/Cog. Engineer Signature & Date	N/A Design Authority/Cog. Engineer Signature & Date

13a. Description of Change

13b. Design Baseline Document? [X] Yes [] No

GS

9. Document Numbers Changed by this ECN

1. H-2-818693, SH 1 REV 1
2. H-2-818696, SH 1 REV 1
3. H-2-818696, SH 2 REV 1
4. H-2-818696, SH 3 REV 1
5. H-2-818699, SH 1 REV 1

See continuation sheet for Description of Change.

14a. Justification (mark one)

Criteria Change	[]	Design Improvement	[X]	Environmental	[]	Facility Deactivation	[]
As-Found	[]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[]

14b. Justification Details

Support installation of AY-Farm electrical equipment; install Transient Voltage Suppressor in-line before Seismic Detector battery charger for AY-SSS-1A. No calculations are affected. An independent review was performed by FDNW per HNF-PRO-445.

15. Distribution (include name, MSIN, and no. of copies)

CDC, S2-53, 1
TJ Kasnick, S2-47, 1
JW Bailey, S2-48, 1
JM Jones, S5-13, 1
Project Files, R1-29, 1

RELEASE STAMP
DATE: MAR 04 1998
STA: 4
HANFORD RELEASE
ID: 2

A-7900-013-2 (05/96) GEF095

A-7900-013-1

ENGINEERING CHANGE NOTICE

Page 2 of 6

1. ECN (use no. from pg. 1): W-320-758

16. Design Verification Required	17. Cost Impact				18. Schedule Impact (days)	
	ENGINEERING		CONSTRUCTION			
[X] Yes	Additional	[X] $800	Additional	[X] $500	Improvement	[] N/A
[] No	Savings	[] $	Savings	[] $	Delay	[]

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]	N/A	[]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision

21. Approvals

	Signature	Date
Design Authority	JW Bailey	3/2/98
Cog. Eng.	SW Shaw	3/2/98
Cog. Mgr.	JW Bailey	3/2/98
QA	KC Conrad	3-2-98
Safety		3-3-98
Environ.		
Other	JM Jones (TWRS Project Review)	03-04-98

	Signature	Date
Design Agent	TJ Kasnick	2/27/98
PE	MA Lane TJ Kasnick for MA Lane	3/2/98
QA		N/A
Safety		N/A
Design - Elect/TJ Kasnick	TJ Kasnick	2/27/98
Environ.		N/A
Other		N/A
Checker	Susan L Berry	2/27/98

DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

ADDITIONAL

TIMOTHY J. KASNICK — STATE OF WASHINGTON — 31068 — REGISTERED PROFESSIONAL ENGINEER — 2/27/98

EXPIRES 11 / 18 / 98

ENGINEERING CHANGE NOTICE CONTINUATION SHEET	Page 3 of 6	ECN W-320-758
		Date 2/24/98

13a. Description of Change

1. H-2-818693, SH 1:

   a. Zone B/C-6/7: Revise One Line for the Mini Power Panel AY102-PP1 to add Local Panelboards in buildings 241-AY-51A and 241-AY-51B as shown on page 5 of this ECN.

2. H-2-818696, SH 1:

   a. Zones D/E-8 & D/E-5: Change Battery Charger JC-0621 and JC-0622 to show correct power source, show Transient Voltage Supperessor for JC-0621, and change text for HS-06211A (two places) from **"REMOTE TRIP"** to **"EMERGENCY TRIP"** as shown on page 5 of this ECN.

3. H-2-818696, SH 2:

   a. Add "PARTIAL ONE-LINE DIAGRAM" as shown on page 5 of this ECN.

4. H-2-818696, SH 3:

   a. Zones F-5, D/E-5/6, & D-7/8: Add Transient Voltage Suppressor Enclosure, and revise equipment layout and conduit routing on ENLARGED PLAN, SECTION A and SECTION B as shown on page 6 of this ECN.

ENGINEERING CHANGE NOTICE CONTINUATION SHEET

ECN W-320-758

Date 2/24/98

5. H-2-818699, SH 1:

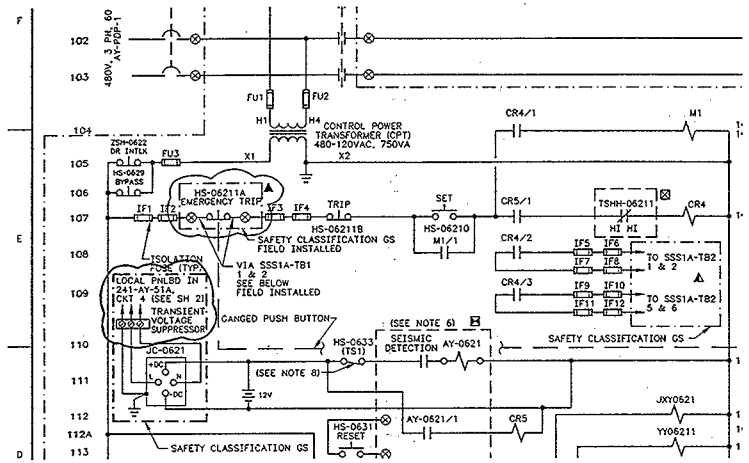
a. Zone D/E-3/7: Revise text in specified columns for wire runs #-22, #-23, #-34 & #-35, and add wire run #-34A as shown below:

WIRE RUN NO	NO OF WIRES	SIZE OF WIRES	TYPE OF WIRES	FROM	VIA	TO	WIRE NUMBERS
#-22						241-AY-51A (LOCAL PANEL)	
#-23						241-AY-51B (LOCAL PANEL)	
#-34				241-AY-51A LOCAL PANEL CKT 4	NIPPLE	TRANSIENT VOLTAGE SUPPRESSOR	CKT 4-H, -N, -GND
#-34A	2	#12	7	TRANSIENT VOLTAGE SUPPRESSOR	*-3P32	AY-SSS-1A TB1 (BATTERY CHARGER)	CKT 4-H, -N, -GND
#-35				241-AY-51B LOCAL PANEL CKT 4		AY-SSS-1B TB1 (BATTERY CHARGER)	CKT 4-H, -N, -GND

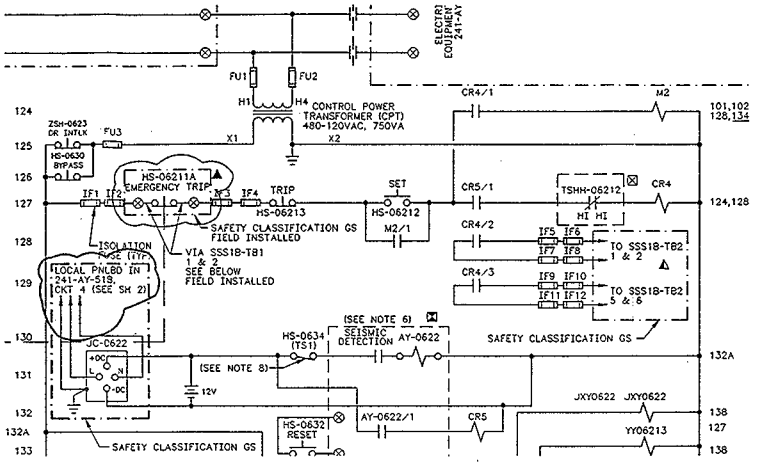
Field Note: (not to be incorporated) Relabel conductors for wire run #-35.

FLUOR DANIEL NORTHWEST, INC.	ENGINEERING CHANGE NOTICE SKETCH				
f Dwg	Sh	Rev	Prepared By	Checked By 2/24/98	ECN No	Page
EE BELOW	-	-	Kari S. Hale		W-320-758	5/6

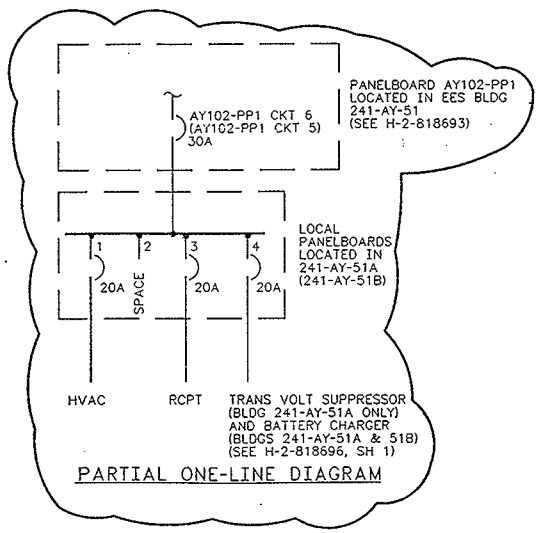
H-2-818696, SH 1, R1 ZONE D/E-8:



H-2-818696, SH. 1, R1 ZONE D/E-5:

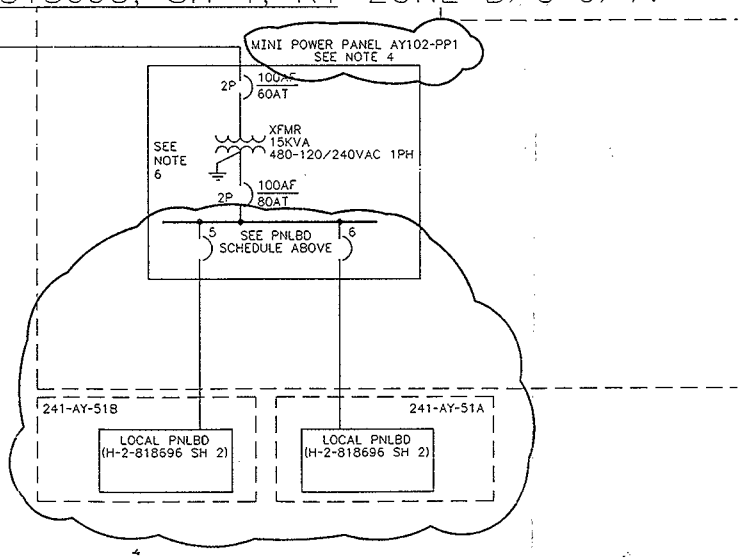


H-2-818696, SH 2, R1



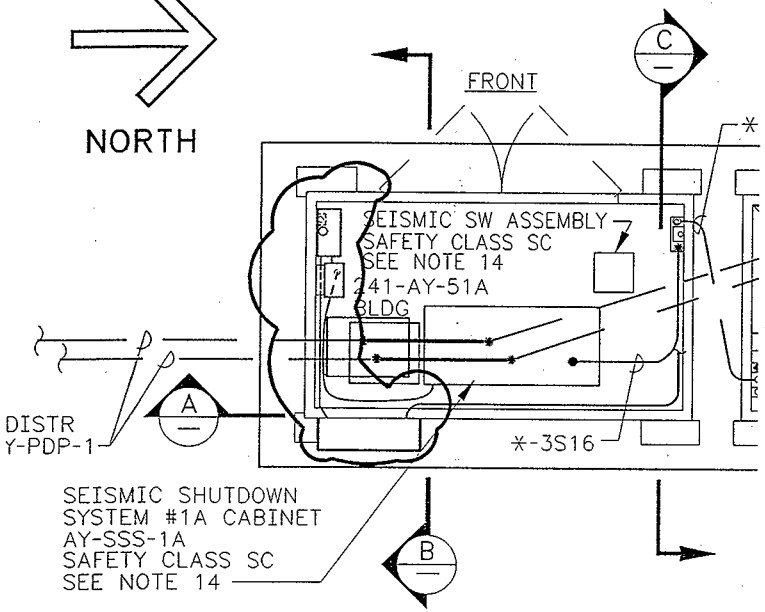
PARTIAL ONE-LINE DIAGRAM

H-2-818693, SH 1, R1 ZONE B/C-6/7:

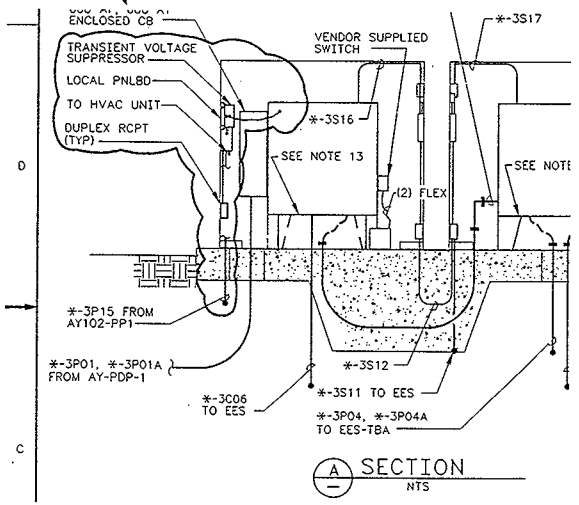


FLUOR DANIEL NORTHWEST, INC.			ENGINEERING CHANGE NOTICE SKETCH			
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
H-2-818696	3	1	Kari S. Hale	Susan L Remy 2/24/98	W-320-758	6/6

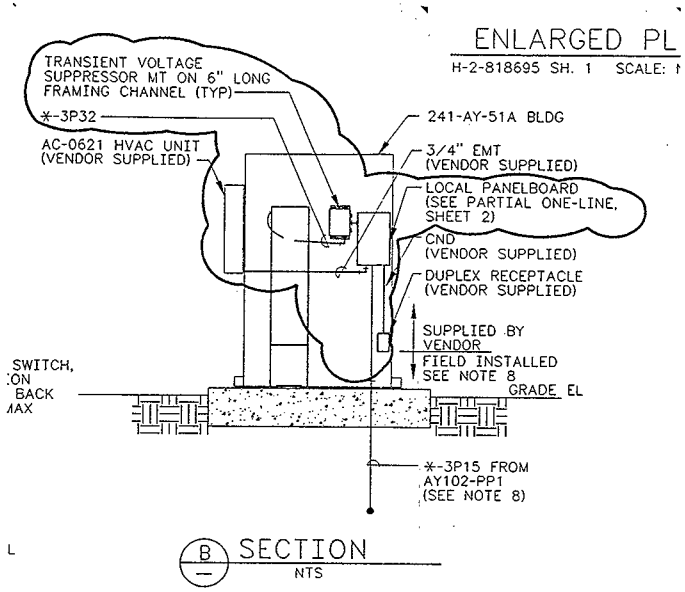
ZONE F-5:



ZONE D-7/8:



ZONE D/E-5/6:



TRANSIENT VOLTAGE SUPPRESSOR INSTALLATION CONSTRUCTION NOTE: (DO NOT INCORPORATED ON DRAWING)

1. BEFORE INSTALLING LIQUID TIGHT CONDUIT CONNECTORS, REMOVE BACK PANEL BY REMOVING THE (4) SCREWS AND REMOVE THE SCREW CONNECTING THE GROUND STUD LOCATED AT THE TOP OF THE BOX. REMOVE THE PRINTED CIRCUIT BOARD ASSEMBLY AND PLACE IN A SAFE, CLEAN ENVIRONMENT. DRILL HOLES REQUIRED FOR CONDUIT ENTRY.

   ENSURE BOX IS CLEAN OF ALL METAL FILINGS ETC. REINSTALL PRINTED CIRCUIT BOARD AND GROUND CONNECTION. MOUNT ENCLOSURE USING FRAMING CHANNEL IN APPROXIMATE LOCATION SHOWN ON THIS DRAWING. INSTALL CONDUIT CONNECTORS SO THAT THE NYLON WASHER IS ON THE OUTSIDE OF THE BOX. INSTALL FLEX CONDUIT AND TERMINATE CONDUCTORS ON APPROPRIATE INPUT/OUTPUT TERMINALS.

   RELABEL CONDUCTORS FOR WIRE RUNS #-34 AND #-34A AS SHOWN IN THIS ECN.

PLOT SCALE: 1=1 CAD FILE: W320758E