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Title/Desc:

ACCEPTANCE TEST REPORT BACKUP POWER SYSTEM

Pages: 46

Sta. 4 (E)

JAN 26 1996

ENGINEERING DATA TRANSMITTAL

2. To: (Receiving Organization) W-030 Test Review Board		3. From: (Originating Organization) Project W-030, Tank Farm Projects		4. Related EDT No.: 613510	
5. Proj./Prog./Dept./Div.: Project W-030		6. Cog. Engr.: FT Clifton		7. Purchase Order No.: N/A	
8. Originator Remarks: Approval of W-030 acceptance test report by W-030 Test Review Board (TRB). Project W-030 provides the AY/AZ tank farms ventilation upgrade.				9. Equip./Component No.: N/A	
				10. System/Bldg./Facility: AY/AZ TANK FARMS	
11. Receiver Remarks:				12. Major Assm. Dwg. No.: N/A	
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				14. Required Response Date: January 16, 1996	

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Impact Level	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	WHC-SD-W030-ATR-007	-	0	W030 AY/AZ TANK FARM BACKUP POWER SYSTEM	2 AC 1/26/96	2	2	

16. KEY			
Impact Level (F)	Reason for Transmittal (G)		Disposition (H) & (I)
1, 2, 3, or 4 (see MRP 5.43)	1. Approval 2. Release 3. Information	4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures)											
(G)	(H)	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G)	(H)
2	2	Startup	FT Clifton	<i>[Signature]</i>	1/15/96	MD Harding				3	
2	2	Cog. Mgr.	KA Colos	<i>[Signature]</i>	1/19/96	SR Pierce				3	
2	2	QA	HM Chafin	<i>[Signature]</i>	1/23/96	RL Henke				3	
2	2	Cog. Eng.	DB Cole	<i>[Signature]</i>	1/23/96	TG Howell				3	
		Env.									
3		Safety	RM Nelson	<i>[Signature]</i>	1/26/96						

18. Signature of EDT Originator <i>[Signature]</i> 1/25/96		19. Authorized Representative Date for Receiving Organization <i>[Signature]</i> 1/19/96		20. Cognizant/Project Engineer's Manager <i>[Signature]</i> 1/19/96		21. DOE APPROVAL (if required) Ltr. No. <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments	
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BD-7400-172-2 (07/91) GEF097

ACCEPTANCE TEST REPORT, BACKUP POWER SYSTEM

DB Cole

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

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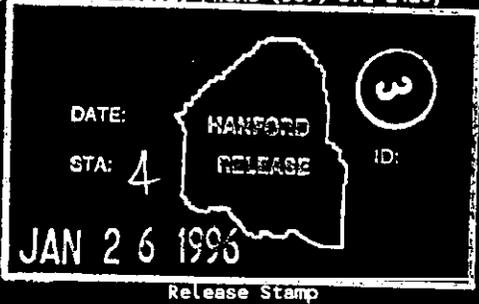
Abstract: Acceptance Test Report for construction functional testing of Project W-030 Backup Power System. Project W-030 provides a ventilation upgrade for the four Aging Waste Facility tanks. Backup power includes a single 125 KW diesel generator, three 10-kva uninterruptible power supply units, and all necessary control.

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Release Approval


Date



Approved for Public Release

ACCEPTANCE TEST PROCEDURE WHC-SD-W030-ATP-007

TEST TITLE BACK-UP POWER SYSTEM

LOCATION 200E. Buildings 241-AZ-701 and 241-AZ-702

PROJECT NUMBER W-030 WORK ORDER CR1132

PROJECT TITLE TANK FARM VENTILATION UPGRADE

Prepared By
ICF Kaiser Hanford Company
Richland, Washington

For the U.S. Department of Energy
Contract DE-AC06-93RL12359

PROCEDURE APPROVAL

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Checker	Date	Safety	Date

<u>NA</u>	<u> </u>	<u>NA</u>	<u> </u>
Environmental	Date	Quality Engineering	Date

<u>[Signature]</u>	<u>9/21/95</u>
Project Management	Date

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Project Management	Date	Quality Assurance	Date

<u>[Signature]</u>	<u>9/29/95</u>	<u>[Signature]</u>	<u>10-12-95</u>
Safety	Date	Operations	Date

EXECUTION AND TEST APPROVAL

EXECUTED BY

Donald J. Hayes KEH 12/12/95
Test Director/Organization Date

Test Operator/Organization Date

Recorder/Organization Date

WITNESSES

Witness/Organization Date

Title III Inspector Date

Witness/Organization Date

Witness/Organization Date

A-E APPROVAL

ICF Kaiser Hanford Company (ICF KH)

Without exceptions

With exceptions resolved

With exceptions outstanding

Acceptance Inspection Date

Design Engineer Date

Project Manager Date

TEST APPROVAL AND ACCEPTANCE

Westinghouse Hanford Company (WHC)

Without exceptions

With exceptions resolved

With exceptions outstanding

Projects Department Date

Quality Assurance Date

Safety Date

Operations Date

*JSH 12/27/95
Delete extra page.*

EXECUTION AND TEST APPROVAL

EXECUTED BY

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A-E APPROVAL

ICF Kaiser Hanford Company (ICF KH)

Without exceptions With exceptions resolved X With exceptions outstanding
Brian Bats 1-2-96 *M L Alford* 12/12/95
Brian Bats 12-12-95 Design Engineer 12/12/95
 Acceptance Inspection Date Date
Stefan 1/5/96
 Project Manager Date

TEST APPROVAL AND ACCEPTANCE

Westinghouse Hanford Company (WHC)

Without exceptions With exceptions resolved X With exceptions outstanding
Dennis B Cole 1/8/96 *Paul M. Chapin* 1-8-96
 Projects Department Date Quality Assurance Date
N/A per R. NELSON 1/8/96 *M. D. Harding* 1-8-96
 Safety Date Operations Date

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

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1 PURPOSE

This Acceptance Test Procedure (ATP) has been prepared to demonstrate that the Electrical Back-Up Power System consisting of one (1) diesel generator, three (3) automatic transfer switches (ATS), and three (3) uninterruptible power supply systems (UPS) functions as required by project criteria.

2 REFERENCES

2.1 DRAWINGS

- H-2-131353, Sh 1, Rev 0 Electrical One-Line Diagram
- H-2-131353, Sh 2, Rev 0 Electrical One-Line Diagram
- H-2-131368, Sh 1, Rev 0 Electrical Elem/Conn Diagram Diesel Generator System

2.2 SPECIFICATIONS

- W-030-C2, Rev 0 Construction Specification Tank Farm Ventilation Upgrade
- W-030-P11, Rev 0 Procurement Specification for Diesel Generator System
- W-030-P17, Rev 0 Procurement Specification for Uninterruptible Power Supply System
- W-030-P17 Vendor Information -- Operations and Maintenance Manual for Model IBP+10 Uninterruptible Power System (UPS)
- W-030-P11 Vendor Information -- Service Manual EMCP II (SENR58098-01 April 94)
Vendor Information -- Instruction Manual Automatic Transfer Switch 40 through 3000 Amps ZTSH Series (Zenith Controls 43R-1000B Rev 8/94)

2.3 OTHER

NONE

2.4 ENGINEERING CHANGE NOTICES (ECN)

Prior to final test approval, enter ECNs written against this ATP.

ECN-W-030-175

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 Designates a Test Director.
- 3.2.2 Coordinates testing with the Facility Manager.
- 3.2.3 Acts as liaison between the participants in acceptance testing.
- 3.2.4 Distributes the approved testing schedule before start of testing.
- 3.2.5 Schedules and conducts a pretest kickoff meeting with test participants when necessary.
- 3.2.6 Notifies the persons supporting the test 2 days before the start of testing.
- 3.2.7 Schedules a dry run when necessary.
- 3.2.8 Notifies concerned parties when a change is made in the testing schedule.
- 3.2.9 Signs Execution and Test Approval page when test is approved and accepted.
- 3.2.10 Takes necessary action to clear exceptions to the test.
- 3.2.11 Signs Exception Form when exception has been resolved.
- 3.2.12 Provides a distribution list for the approved and accepted ATP(ATR).

3.3 TEST DIRECTOR

- 3.3.1 Coordinates and directs acceptance testing.
- 3.3.2 Confirms that field testing and inspection of the system or portion of the system to be tested has been completed.
- 3.3.3 Stops any test which, in his or her judgment, may cause damage to the system until the problem has been resolved.
- 3.3.4 After verifying there is no adverse impact, may alter the sequence in which systems or subsystems are tested.
- 3.3.5 Ensures that required environmental conditions are maintained.
- 3.3.6 If a test is to be suspended for a period of time, ensures that the system is left in a safe mode.

- 3.3.7 Before restarting suspended test, re-verifies the test prerequisites.
 - 3.3.8 Initiates ECNs to document required changes to the ATP.
 - 3.3.9 Reviews recorded data, discrepancies, and exceptions.
 - 3.3.10 Obtains information or changes necessary to clear or resolve objections during the performance of the test.
 - 3.3.11 Signs Execution and Test Approval page when test has been performed.
 - 3.3.12 Signs Exception Form when exception has been resolved.
 - 3.3.13 Obtains required signatures on the ATP Master prior to reproduction and distribution.
- 3.4 WITNESSES (Provided by Participating Organizations. One witness shall be a Title III acceptance inspector.)
- 3.4.1 Witness the tests.
 - 3.4.2 Review results of testing.
 - 3.4.3 Assist the Test Director when requested.
 - 3.4.4 Sign Execution and Test Approval page when test has been performed.
 - 3.4.5 Sign Exception Form when exception has been resolved.
- 3.5 RECORDER (Provided by ICF KH)
- 3.5.1 Prepares a Field copy from the ATP Master.
 - 3.5.2 Records names of all designated personnel on Field copy of ATP prior to start of testing.
 - 3.5.3 Records test instrument identification numbers and calibration expiration dates, as required.
 - 3.5.4 Initials and dates every test step on the Field copy as it is completed next to the step number or on a data sheet, when provided. Records test data. On data sheets where there is not room for both the initial and date, date may be entered at bottom of column.
 - 3.5.5 Records objections and exceptions on an Exception form. Uses additional Exception forms as needed. Notifies the Test Director at time the objection is made.
 - 3.5.6 Signs Execution and Test Approval page when test has been performed.
 - 3.5.7 After test is finished, assigns alpha numeric page numbers to added data sheets and Exception forms. Records page numbers in the Table of Contents.

- 3.5.8 Transfers Field copy entries for each step to the Master in ink or type, signs, and dates. Transmits the completed Master to the Test Director for approval signature routing. Transmits the Field copy to Construction Document Control for inclusion in the official project file.
- 3.5.9 Signs Exception Form when exception has been resolved and transmits to Test Director.

3.6 TEST OPERATOR

- 3.6.1 Performs test under direction of the Test Director.
- 3.6.2 Provides labor, equipment, and test instruments required for performing tests which have not been designated as being provided by others.
- 3.6.3 Requests in writing from the Test Director those services, materials, or equipment that have been designated as being supplied by others.
- 3.6.4 Confirms that all equipment required for performing test will be available at the start of testing.
- 3.6.5 Signs the Execution and Test Approval page.

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

- 3.7.1 Evaluate results.
- 3.7.2 Sign for A-E Approval on Execution and Test Approval page.

4 CHANGE CONTROL

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 assure the safety of activities within their areas to prevent injury, property damage, or interruption of operation. Performance of test activities shall always include safety and health aspects.

5.2 PERFORMANCE

5.2.1 Conduct testing in accordance with 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.

6 EXCEPTIONS

6.1 GENERAL

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

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

6.2 RECORDING

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

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

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

6.3 RETEST/RESOLUTION

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

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

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

6.4 APPROVAL AND ACCEPTANCE

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

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

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

6.4.3 Other: Requires detailed explanation.

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

6.5 DISTRIBUTION

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

7 PREREQUISITES, EQUIPMENT/INSTRUMENTS, AND ABBREVIATIONS

7.1 PREREQUISITES

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

- 7.1.1 Back-up power system has been inspected for compliance with construction documents.
- 7.1.2 Reference documents (including this ATP) have been verified for correct revision number and outstanding ECNs.
- 7.1.3 A Prejob Safety Analysis has been prepared and a Prejob Safety Meeting has been conducted.
- 7.1.4 Test instruments have a valid calibration stamp attached. Test instrument identification numbers and calibration expiration dates have been recorded in Para 7.2.
- 7.1.5 Record nameplate data of the diesel generator, ATS 1, ATS 2, UPS 1, UPS 2 and UPS 3.
- 7.1.6 Power (480 V, 3 PH) is available from the unit substation transformer to Standby Panelboard No. 1 and Standby Panelboard No. 2.
- 7.1.7 Voice communications are available as required.

7.2 EQUIPMENT/INSTRUMENTS

Supplied by Test Operator unless otherwise noted.

7.2.1 Voltohmmeters (VOM): 0-600 volts, 0-10,000 ohms

Instrument No.	<u>101920</u>	Expiration Date	<u>12-8-96</u>
	<u>61140684</u>		<u>11-2-96</u>

7.2.2 Ammeters: 0-50 amperes

Instrument No.	<u>312450</u>	Expiration Date	<u>12-8-96</u>
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7.2.3 Shorting Jumpers with ON-OFF switch: 12 inch lead length.

7.2.4 Coolant Tester -50 to +50 °F

7.2.5 Phase Rotation meter

Instrument No.	<u>TE-007</u>	Expiration Date
---------------------------	---------------	----------------------------

ADD: ECN
W030-115

7.3 ABBREVIATIONS

ECN Engineering Change Notice

RWP Radiation Work Permit

SWP Special Work Procedure
ATS Automatic Transfer Switch
UPS Uninterruptible Power Supply/System

7.4 PREPARATION

- SMC 12/11/95 7.4.1 Verify all prerequisites of Para 7.1 have been met.
SMC 12/16/95 7.4.2 Notify Building Manager if applicable.
SMC 12/11/95 7.4.3 Notify personnel working in building(s). State whether evacuation is required.

NOTE: Keep appropriate personnel informed as to test status.

8 DIESEL GENERATOR SYSTEM TEST

8.1 DIESEL GENERATOR

To ensure the diesel generator will operate as intended.

- Jan 12/11/95 8.1.1 Verify engine coolant level is within 2 inches from top of filler neck.
- Jan 12/11/95 8.1.2 Verify, with coolant tester, the coolant freeze protection level is at -10°F or below.
- Jan 12/11/95 8.1.3 Verify engine crankcase oil level, using dipstick on left side of engine, is between the add and full knurled area on the dipstick.
- Jan 12/11/95 8.1.4 Verify fuel level in 300-gallon fuel tank is at least 3/4 full.
- Jan 12/11/95 8.1.5 Manually UNLOCK and OPERATE the fuel priming pump, located on right side of engine, until fuel pressure registers on fuel pressure gauge. Push the plunger in and tighten by hand.
- Jan 12/11/95 8.1.6 Verify proper electrolyte level in both starting batteries.
- Jan 12/11/95 8.1.6.1 Verify voltage level of starting batteries, on EMCP II control panel, ~~does not~~ exceeds 24 V dc and the Low Battery Voltage indicating light is not ILLUMINATED. If dc voltage is low, batteries will have to be charged, GO TO Steps 10.3.16.1 through 10.3.16.4 except use temporary power for the 120 V ac input power to the battery charger.
- Jan 12/11/95 8.1.7 Verify that there are no visible fuel, oil or coolant leaks on and around engine.
- Jan 12/11/95 8.1.8 Verify all generator circuit breakers (3) are OPEN and load bank switches are OFF.
- Jan 12/11/95 8.1.9 Verify engine control switch is in the OFF position.
- Jan 12/11/95 8.1.10 Verify displays and lights on EMCP II control panel ILLUMINATE when the lamp test button is depressed.
- Jan 12/11/95 8.1.11 Turn engine control switch to the MANUAL START position and verify engine STARTS.
- Jan 12/11/95 8.1.11.1 Allow engine to smooth out to rated speed.
- Jan 12/11/95 8.1.12 Verify the following parameters are within the range specified or adjust as required to place parameters in range:

Upper Display (Push Phase Select Key): Record indicated voltage and frequency.

480 AC Volts Phase A-B -- 480 ± 10 volts
481 AC Volts Phase B-C -- 480 ± 10 volts

ECN
W030-175

480 AC Volts Phase C-A -- 480 ± 10 volts

60 Frequency -- 60 ± .5 Hz

Lower Display (Automatic Scroll Display):

1800 Engine RPM -- 1800 ± 50 RPM

31 Engine Oil Pressure -- 50 ± 30 psi

- Jan 12/11/95 8.1.12.1 Verify fuel pressure is in the Normal range.
- Jan 12/11/95 8.1.12.2 Verify there are no unusual noises or vibrations.
- Jan 12/11/95 8.1.12.3 Allow engine to run for approximately 5 minutes. Verify there are no faults indicated on the Generator Set Control display panel. Turn engine control switch to the OFF position and verify engine stops.

The following step will view and verify setpoints associated with important generator set conditions. Access to setpoints (P01-P21) will be from the Generator Set Control (GSC) display panel.

- Jan 12/11/95 8.1.13 Press the SERVICE MODE key on the keypad of the GSC. The "SERV" indicator on the upper display will be flashing. Press SCROLL UP key to where "OP2" is showing on the lower display. Press SELECT key, "P01" followed with the setpoint value will be showing. Press SCROLL UP or SCROLL DOWN to access the other setpoint values. See EMCP II service manual for description of setpoints.
- Jan 12/11/95 8.1.13.1 Verify "P01" setpoint is 0.
- Jan 12/11/95 8.1.13.2 Verify "P02" setpoint is 0.
- Jan 12/11/95 8.1.13.3 Verify "P03" setpoint is 0.
- Jan 12/11/95 8.1.13.4 Verify "P04" setpoint is 0.
- Jan 12/11/95 8.1.13.5 Verify "P05" setpoint is 1.
- Jan 12/11/95 8.1.13.6 Verify "P06" setpoint is 0.
- Jan 12/11/95 8.1.13.7 Verify "P07" setpoint is 0.
- Jan 12/11/95 8.1.13.8 Verify "P08" setpoint is 0.
- Jan 12/11/95 8.1.13.9 Verify "P09" setpoint is 156 teeth.
- Jan 12/11/95 8.1.13.10 Verify "P10" setpoint is 2120 rpm.
- Jan 12/11/95 8.1.13.11 Verify "P11" setpoint is 400 rpm.
- Jan 12/11/95 8.1.13.12 Verify "P12" setpoint is 1130 rpm.
- Jan 12/11/95 8.1.13.13 Verify "P13" setpoint is 12 psi.

- Jan 12/11/95 8.1.13.14 Verify "P14" setpoint is 10 psi.
- Jan 12/11/95 8.1.13.15 Verify "P15" setpoint is 225°F.
- Jan 12/11/95 8.1.13.16 Verify "P16" setpoint is 70°F.
- Jan 12/11/95 8.1.13.17 Verify "P17" setpoint is 90 seconds.
- Jan 12/11/95 8.1.13.18 Verify "P18" setpoint is 10 seconds.
- Jan 12/11/95 8.1.13.19 Verify "P19" setpoint is 5 minutes.
- Jan 12/11/95 8.1.13.20 Verify "P20" setpoint is 700 volts.
- Jan 12/11/95 8.1.13.21 Verify "P21" setpoint is 300 amperes.
- Jan 12/11/95 8.1.13.22 Press EXIT key twice to return display screen to normal.

The following steps (8.1.14 through 8.1.16) will verify that the EMCP II control panel operates correctly when a fault occurs with engine overspeed, low oil pressure, or high coolant temperature. The password is required to access the option window to verify each fault.

8.1.14 Overspeed Verification

- Jan 12/11/95 8.1.14.1 Turn engine control switch to the MANUAL START position and run engine at rated speed.
- Jan 12/11/95 8.1.14.2 Press SERVICE MODE key. Press Scroll Up key 2 times. Verify "OP3" is showing on lower display.
- Jan 12/11/95 8.1.14.3 Press the SELECT key, verify "PE-----" is showing.
- Jan 12/11/95 8.1.14.4 Press the SELECT key, verify "PE-----" with the first dash flashing is showing.
- Jan 12/11/95 8.1.14.5 Press the SCROLL RIGHT key, verify "PE1----" with the second dash flashing is showing.
- Jan 12/11/95 8.1.14.6 Press the SCROLL DOWN key, verify "PE13---" with the third dash flashing is showing.
- Jan 12/11/95 8.1.14.7 Press the SCROLL UP key, verify "PE132--" with the fourth dash flashing is showing.
- Jan 12/11/95 8.1.14.8 Press the SCROLL DOWN key, verify "PE1323-" with the fifth dash flashing is showing.
- Jan 12/11/95 8.1.14.9 Press the SCROLL RIGHT key, verify "PE13231" with all digits not flashing is showing.
- Jan 12/11/95 8.1.14.10 Press ENTER key, verify "PE PASS" is showing.
- Jan 12/11/95 8.1.14.11 Press EXIT key, verify "OP1" is showing.

- Jan 12/16/95 8.1.14.12 Press the SCROLL UP key eight times, verify "OP9" is showing on the lower display.
- Jan 12/16/95 8.1.14.13 Press the SELECT key. Verify the P10 setpoint value for engine overspeed of "2120" is showing on the upper display. Verify "SC1" followed with the present engine speed value is showing on the lower display.
- Jan 12/16/95 8.1.14.14 Press the SELECT key. Verify the setpoint value "2120" is flashing on the upper display.
- Jan 12/16/95 8.1.14.15 Press the SCROLL DOWN key to decrease the setpoint value (10 rpm with each press) that is flashing on the upper display until the setpoint value decreases past the present engine speed value that is showing on the lower display.
- Jan 12/16/95 8.1.14.16 Verify engine shuts down and that the shutdown indicator for overspeed is flashing.
- Jan 12/16/95 8.1.14.17 RETURN engine control switch to OFF position.
- 8.1.15 Low Oil Pressure Verification
- Jan 12/16/95 8.1.15.1 REPEAT Steps 8.1.14.1 through 8.1.14.13.
- Jan 12/16/95 8.1.15.2 Press the SCROLL UP key one time. Verify the P13 setpoint value for low oil pressure of "12" is showing on the upper display. Verify "SC2" followed with the present oil pressure value is showing on the lower display.
- Jan 12/16/95 8.1.15.3 Press the SELECT key. Verify the setpoint value "12" is flashing on the upper display.
- Jan 12/16/95 8.1.15.4 Press the SCROLL UP key to increase the setpoint value (5 psi with each press) that is flashing on the upper display until the setpoint value increases past the present oil pressure value that is showing on the lower display.
- Jan 12/16/95 8.1.15.5 Verify engine shuts down and that the shutdown indicator for low oil pressure is flashing.
- Jan 12/16/95 8.1.15.6 RETURN engine control switch to OFF position.
- 8.1.16 High Water Temperature
- Jan 12/16/95 8.1.16.1 REPEAT Steps 8.1.14.1 through 8.1.14.13.
- Jan 12/16/95 8.1.16.2 Press the SCROLL UP key two times. Verify the P15 setpoint value for high water temperature of 225°F is showing on the upper display. Verify "SC3" followed with the present coolant water temperature value is showing on the lower display.
- Jan 12/16/95 8.1.16.3 Press the SELECT key. Verify the setpoint value 225°F is flashing on the upper display.

- Jan 12/11/95 8.1.16.4 Press the SCROLL DOWN key to decrease the setpoint value (5 degrees with each press) that is flashing on the upper display until the setpoint value decreases past the present coolant temperature value that is showing on the lower display.
- Jan 12/11/95 8.1.16.5 Verify the engine shuts down and that the shutdown indicator for high water temperature is flashing.
- Jan 12/11/95 8.1.16.6 RETURN engine control switch to OFF position.
- Jan 12/11/95 8.1.17 Turn engine control switch to MANUAL START position and run engine up to rated speed until coolant temperature exceeds 150°F.
- Jan 12/11/95 8.1.18 CLOSE generator mounted load bank circuit breaker.
- Jan 12/11/95 8.1.18.1 Turn ON load bank power control switch and master control switch.
- Jan 12/11/95 8.1.18.2 Apply 50 KW of load by turning load bank switch(es) ON. ^{ECN W030-175} "Allow engine to stabilize for a minimum of 15 minutes."
- Jan 12/11/95 8.1.18.3 RECORD the following parameters:

AC Phase-Phase Voltage:	A-B	<u>481</u>	volts
	B-C	<u>482</u>	volts
	C-A	<u>481</u>	volts
AC Frequency:			Hz
AC Amperage:	Phase A	<u>60</u>	amperes
	Phase B	<u>60</u>	amperes
	Phase C	<u>60</u>	amperes
DC Battery Voltage:		<u>26</u>	volts
Engine Speed:		<u>1801</u>	rpm
Oil Pressure:		<u>66</u>	psi
Coolant Temperature:		<u>175</u>	°F
Fuel Pressure:		<u>4</u>	psi
Turbocharger Boost Pressure (intake manifold)		<u>4</u>	psi

- Jan 12/11/95 8.1.18.4 Apply another 50 KW of load turning load bank switch(es) ON. ^{ECN W030-175} "Allow engine to stabilize for a minimum of 15 minutes."
- Jan 12/11/95 8.1.18.5 RECORD the following parameters:

AC Phase-Phase Voltage:	A-B	<u>481</u>	volts
	B-C	<u>482</u>	volts
	C-A	<u>481</u>	volts
AC Frequency:			Hz
AC Amperage:	Phase A	<u>120</u>	amperes
	Phase B	<u>120</u>	amperes
	Phase C	<u>119</u>	amperes
DC Battery Voltage:		<u>26</u>	volts
Engine Speed:		<u>1801</u>	rpm
Oil Pressure:		<u>65</u>	psi
Coolant Temperature:		<u>177</u>	°F
Fuel Pressure:		<u>4</u>	psi
Turbocharger Boost Pressure (intake manifold)		<u>3</u>	psi

- Jan 12/11/95 8.1.18.6 Apply the remaining 25 KW of load by turning load bank switch ON. ^{ECN W030-175} "Allow engine to stabilize for a minimum of 15 minutes."

Jan 12/11/95 8.1.18.7

RECORD the following parameters:

AC Phase-Phase Voltage:	A-B	<u>481</u>	volts
	B-C	<u>482</u>	volts
	C-A	<u>481</u>	volts
AC Frequency:			Hz
AC Amperage:	Phase A	<u>150</u>	amperes
	Phase B	<u>150</u>	amperes
	Phase C	<u>150</u>	amperes
DC Battery Voltage:		<u>26</u>	volts
Engine Speed:		<u>1802</u>	rpm
Oil Pressure:		<u>179</u>	psi
Coolant Temperature:		<u>63</u>	°F
Fuel Pressure:		<u>4</u>	psi
Turbocharger Boost Pressure (intake manifold)		<u>15</u>	psi

Jan 12/11/95 8.1.18.8

REMOVE load bank load by turning load switches to the OFF position. Turn OFF master control switch and power control switch.

Jan 12/11/95 8.1.18.9

OPEN generator mounted load bank circuit breaker.

Jan 12/11/95 8.1.19

Allow diesel engine to run unloaded for approximately 15 minutes. PRESS emergency stop pushbutton. Verify engine STOPS.

Jan 12/11/95 8.1.20

TURN emergency stop pushbutton clockwise until it releases. TURN engine control switch to the OFF position.

Jan 12/11/95 8.1.21

INSTALL shorting jumper with ON-OFF switch between Terminals 33 and 34 on the generator control panel terminal strip. Ensure switch is in the OFF (normally open) position before connecting to terminals. The switch will be used to simulate the remote emergency stop signal.

Jan 12/11/95 8.1.22

TURN engine control switch to manual start and bring engine up to speed.

Jan 12/11/95 8.1.22.1

PLACE shorting jumper switch in the ON position. Verify engine STOPS.

Jan 12/11/95 8.1.22.2

TURN engine control switch to the OFF position. REMOVE shorting jumper.

END OF SECTION 8

9 AUTOMATIC TRANSFER SWITCH (ATS) TEST

9.1 AUTOMATIC TRANSFER SWITCH NO. 1

To ensure ATS 1 will operate as intended.

- SM 12/11/95 9.1.1 Verify normal power feeder circuit breaker to ATS 1 at Distribution Panelboard PP-1 is OPEN.
- SM 12/11/95 9.1.2 Verify engine control switch is in the OFF position. Verify generator circuit breakers (3) are OPEN.
- SM 12/11/95 9.1.3 Insert manual operator handle and operate the transfer switch between the NORMAL and EMERGENCY positions. Verify the transfer switch operates smoothly without binding. Return switch to the NORMAL position. Remove handle and place in holder provided.
- SM 12/11/95 9.1.4 RECORD the time delay settings of the following relays:
- | | | |
|---|---------------|---------|
| P1 (Time delay to engine start) | <u>1.5</u> | seconds |
| T (Time delay on retransfer to normal) | <u>30</u> | minutes |
| U (Engine over-run timer) | <u>10 sec</u> | minutes |
| W (Time delay on transfer to emergency) | <u>2</u> | seconds |
- SM 12/11/95 9.1.5 CLOSE the normal power feeder circuit breaker to ATS 1 at Distribution Panelboard PP-1. Verify Normal Power Available Light (LNA) on bypass subpanel is ILLUMINATED.
- SM 12/11/95 9.1.5.1 RECORD phase-phase voltages at the Normal line input terminals:
- | | | |
|----------------------|----------------------|----------------------|
| A-B <u>499</u> volts | B-C <u>499</u> volts | C-A <u>493</u> volts |
|----------------------|----------------------|----------------------|
- SM 12/11/95 9.1.6 CLOSE the generator circuit breaker to ATS 1. Turn engine control switch to Manual position to Start engine. Verify engine starts and Emergency Power Available Light (LEA) on bypass subpanel is ILLUMINATED.
- SM 12/11/95 9.1.6.1 RECORD phase-phase voltages at the Emergency line input terminals:
- | | | |
|----------------------|----------------------|----------------------|
| A-B <u>484</u> volts | B-C <u>484</u> volts | C-A <u>485</u> volts |
|----------------------|----------------------|----------------------|
- SM 12/11/95 9.1.7 Verify the phase rotation of the Diesel Generator output conductors is the same as the phase rotation of the Normal power source.
- SM 12/11/95 9.1.8 Turn the engine control switch to the OFF position. Allow engine to come to a complete stop and verify Emergency Power Available Light (LEA) is OFF.
- SM 12/11/95 9.1.9 Turn the engine control switch to the AUTO position.
- SM 12/11/95 9.1.10 Close ATS 1 cabinet door. Verify Normal Power Light L2 is ILLUMINATED. Verify disconnect switch on ATS 1 is in the AUTO position.

- Jan 12/11/95 9.1.11 PRESS the Test pushbutton (TS switch) and HOLD IN (do not release) to initiate and maintain a transfer from the Normal source to the Emergency source. Relay P1 will time out and cause the diesel engine to START.
- Jan 12/11/95 9.1.12 Verify engine STARTS.
- Jan 12/11/95 9.1.13 Verify the ATS transfers to the Emergency source after the time delay of relay W. Verify Emergency Power Light L1 is ILLUMINATED and Normal Power Light L2 is OFF.
- Jan 12/11/95 9.1.14 RELEASE test pushbutton (TS switch) to initiate the retransfer to the Normal source.
- Jan 12/11/95 9.1.15 Verify the ATS retransfers to the Normal source after the time delay of relay T.
- Jan 12/11/95 9.1.16 Verify the generator is still running and continues to run for the time delay of relay U. Verify engine has stopped. TURN the engine control switch to the OFF position.
- Jan 12/11/95 9.1.17 ~~OPEN the generator circuit breaker to ATS 1.~~ Step Deleted - ECN W030-175
- Jan 12/11/95 9.1.18 TURN the engine control switch to manual start position and bring engine up to speed.
- Jan 12/11/95 9.1.19 CLOSE generator load bank circuit breaker.
- Jan 12/11/95 9.1.19.1 TURN ON load bank power control switch and master control switch.
- Jan 12/11/95 9.1.19.2 Apply 50 KW of load by turning load bank switch(es) ON.
- Jan 12/11/95 9.1.19.3 OPEN the normal power feeder circuit breaker to ATS 1 at PP-1 ^{TE-001 and to ATS-2} and PP-2, _{ECN W030-175}
- Jan 12/11/95 9.1.19.4 Verify load bank dumps (unloads) the 50 KW load, "and that ATS 1 transfers to the emergency source."
- Jan 12/11/95 9.1.19.5 CLOSE the normal power feeder circuit breaker to ATS 1 at PP-1 ^{TE-001 and to ATS-2} and PP-2
- Jan 12/11/95 9.1.19.6 REMOVE 50 KW of load by turning load bank switch(es) OFF.
- Jan 12/11/95 9.1.19.7 TURN OFF load bank master control switch and power control switch.
- Jan 12/11/95 9.1.19.8 OPEN generator load bank circuit breaker.
- Jan 12/11/95 9.1.20 ~~CLOSE generator circuit breaker to ATS 1.~~ ^{Delete per ECN W030-175} TURN the engine control switch to the OFF position. Allow engine to come to a complete stop.
- Jan 12/11/95 9.1.21 TURN the engine control switch to the AUTO position.
- The next few steps will verify the diesel generator comes on and up to speed within 10 seconds of a loss of normal power:
- Jan 12/11/95 9.1.21.1 OPEN the normal power feeder circuit breaker to ATS 1 at PP-1. Start timing from this point in time and Stop timing when ATS 1 transfers to the Emergency source.

- Jan 12/11/95 9.1.21.2 Verify engine starts and operates at rated speed.
- Jan 12/11/95 9.1.21.3 RECORD time for transfer (should be 10 seconds or less):
Time for transfer 3.7 seconds.
- Jan 12/11/95 9.1.21.4 CLOSE the normal power circuit breaker to ATS 1 at PP-1. Open generator circuit breaker to ATS 1. Verify ATS 1 switches to the Normal source without delay.
- Jan 12/11/95 9.1.21.5 CLOSE the generator circuit breaker to ATS 1. OPEN the normal power circuit breaker to ATS 1 at PP-1. Verify ATS 1 switches to the Emergency source without delay.
- Jan 12/11/95 9.1.21.6 CLOSE the normal power circuit breaker to ATS 1 at PP-1. Verify ATS 1 transfers to Normal source in 30 ± 5 minutes. Verify engine runs for approximately 4-7 minutes and Stops.
- Jan 12/11/95 9.1.22 OPEN the generator circuit breaker to ATS 1. RETURN engine control switch to the OFF position. OPEN the normal power circuit breaker to ATS 1 at PP-1.

9.2 AUTOMATIC TRANSFER SWITCH NO. 2

To ensure ATS 2 will operate as intended.

- Jan 12/11/95 9.2.1 Verify normal power feeder circuit breaker to ATS 2 at Distribution Panelboard PP-2 is OPEN.
- Jan 12/11/95 9.2.2 Verify engine control switch is in the OFF position. Verify generator circuit breakers (3) are OPEN.
- Jan 12/11/95 9.2.3 Insert manual operator handle and operate the transfer switch between the NORMAL and EMERGENCY positions. Verify the transfer switch operates smoothly without binding. Return switch to the NORMAL position. Remove handle and place in holder provided.
- Jan 12/11/95 9.2.4 RECORD the time delay settings of the following relays:
- | | | |
|---|---------------|---------|
| PI (Time delay to engine start) | <u>1.5</u> | seconds |
| T (Time delay on retransfer to normal) | <u>30</u> | minutes |
| U (Engine over-run timer) | <u>10 sec</u> | minutes |
| W (Time delay on transfer to emergency) | <u>2</u> | seconds |
- Jan 12/11/95 9.2.5 CLOSE the normal power feeder circuit breaker to ATS 2 at Distribution Panelboard PP-2. Verify Normal Power Available Light (LNA) on bypass subpanel is ILLUMINATED.
- Jan 12/11/95 9.2.5.1 RECORD phase-phase voltages at the Normal line input terminals:
- A-B 500 volts B-C 500 volts C-A 493 volts

- Jan 12/11/95 9.2.6 CLOSE the generator circuit breaker to ATS 2. Turn engine control switch to Manual position to Start engine. Verify engine starts and Emergency Power Available Light (LEA) on bypass subpanel is ILLUMINATED.
- Jan 12/11/95 9.2.6.1 RECORD phase-phase voltages at the Emergency line input terminals:
A-B 484 volts B-C 485 volts C-A 485 volts
- Jan 12/11/95 9.2.7 Verify the phase rotation of the Diesel Generator output conductors is the same as the phase rotation of the Normal power source.
- Jan 12/11/95 9.2.8 Turn the engine control switch to the OFF position. Allow engine to come to a complete stop and verify Emergency Power Available Light (LEA) is OFF.
- Jan 12/11/95 9.2.9 Turn the diesel engine control switch to the AUTO position.
- Jan 12/11/95 9.2.10 Close ATS 2 cabinet door. Verify Normal Power Light L2 is ILLUMINATED. Verify disconnect switch on ATS 2 is in the AUTO position.
- Jan 12/11/95 9.2.11 PRESS the Test pushbutton (TS switch) and HOLD IN (do not release) to initiate and maintain a transfer from the Normal source to the Emergency source. Relay P1 will time out and cause the diesel engine to START.
- Jan 12/11/95 9.2.12 Verify engine STARTS.
- Jan 12/11/95 9.2.13 Verify the ATS transfers to the Emergency source after the time delay of Relay W. Verify Emergency Power Light L1 is ILLUMINATED and Normal Power Light L2 is OFF.
- Jan 12/11/95 9.2.14 RELEASE test pushbutton (TS switch) to initiate the retransfer to the Normal source.
- Jan 12/11/95 9.2.15 Verify the ATS retransfers to the Normal source after the time delay of Relay T.
- Jan 12/11/95 9.2.16 Verify the generator is still running and continues to run for the time delay of Relay U. Verify engine has stopped. TURN the engine control switch to the OFF position.
- N/A BB 1.19.96 9.2.17 ~~OPEN the generator circuit breaker to ATS 2. Step Deleted - ECU W030-175~~
- Jan 12/11/95 9.2.18 ~~TURN the engine control switch to manual start position and bring engine up to speed. Step deleted TE-007~~
- Jan 12/11/95 9.2.19 ~~CLOSE generator load bank circuit breaker~~ *Steps Deleted TE-007*
- Jan 12/11/95 9.2.19.1 ~~TURN ON load bank power control switch and master control switch.~~
- Jan 12/11/95 9.2.19.2 ~~Apply 50 KW of load by turning load bank switch(es) ON.~~
- Jan 12/11/95 9.2.19.3 ~~OPEN the normal power feeder circuit breaker to ATS 2 at PP-2.~~

- ~~Jan 12/1/95~~ 9.2.19.4 ~~Verify load bank dumps (unloads) the 50 KW load, and that ATS 2 transfers to the emergency source.~~
- ~~Jan 12/1/95~~ 9.2.19.5 ~~CLOSE the normal power feeder circuit breaker to ATS 2 at PP-2.~~
- ~~Jan 12/1/95~~ 9.2.19.6 ~~REMOVE 50 KW of load by turning load bank switch(es) OFF.~~ *STEPS Deleted TE-002*
- ~~Jan 12/1/95~~ 9.2.19.7 ~~TURN OFF load bank master control switch and power control switch.~~
- ~~Jan 12/1/95~~ 9.2.19.8 ~~OPEN generator load bank circuit breaker.~~
- ~~Jan 12/1/95~~ 9.2.20 ~~CLOSE generator circuit breaker to ATS 2.~~ *Delete per ECN W030-175* TURN the engine control switch to the OFF position. Allow engine to come to a complete stop.
- ~~Jan 12/1/95~~ 9.2.21 TURN the engine control switch to the AUTO position.
- The next few steps will verify the diesel generator comes on and up to speed within 10 seconds of a loss of normal power:
- ~~Jan 12/1/95~~ 9.2.21.1 OPEN the normal power feeder circuit breaker to ATS 2 at PP-2. Start timing from this point in time and Stop timing when ATS 2 transfers to the Emergency source.
- ~~Jan 12/1/95~~ 9.2.21.2 Verify engine starts and operates at rated speed.
- ~~Jan 12/1/95~~ 9.2.21.3 RECORD time for transfer (should be 10 seconds or less):
Time for transfer 4 seconds.
- ~~Jan 12/1/95~~ 9.2.21.4 CLOSE the normal power circuit breaker to ATS 2 at PP-2. Open generator circuit breaker to ATS 1. Verify ATS 2 switches to the Normal source without delay.
- ~~Jan 12/1/95~~ 9.2.21.5 CLOSE the generator circuit breaker to ATS 2. OPEN the normal power circuit breaker to ATS 2 at PP-2. Verify ATS 2 switches to the Emergency source without delay.
- ~~Jan 12/1/95~~ 9.2.21.6 CLOSE the normal power circuit breaker to ATS 2 at PP-2. Verify ATS 2 transfers to Normal source in 30 ± 5 minutes. Verify engine runs for approximately 4-7 minutes and Stops.
- ~~Jan 12/1/95~~ 9.2.22 OPEN the generator circuit breaker to ATS 2. RETURN engine control switch to the OFF position. OPEN the normal power circuit breaker to ATS 2 at PP-2.

9.3 AUTOMATIC TRANSFER SWITCH NO. 3

To ensure ATS 3 will operate as intended.

- ~~BB 12-12-95~~ 9.3.1 Verify circuit breakers feeding ATS 3 at Standby Panelboard No. 1 and Standby Panelboard No. 2 are OPEN.
- ~~BB 12-12-95~~ 9.3.2 Verify input circuit breaker (CB1) in UPS No. 3 is OPEN.

- BB 12-12-95 9.3.3 CLOSE the normal power circuit breaker to ATS 1 at PP-1. CLOSE circuit breaker at Standby Panelboard No. 1 that feeds ATS 3.
- BB 12-12-95 9.3.3.1 RECORD phase-phase input voltages from Standby Panelboard No. 1 at ATS 3:
A-B 503 volts B-C 502 volts C-A 497 volts
- BB 12-12-95 9.3.4 CLOSE the normal power circuit breaker to ATS 2 at PP-2. CLOSE circuit breaker at Standby Panelboard No. 2 that feeds ATS 3.
- BB 12-12-95 9.3.4.1 RECORD phase-phase input voltages from Standby Panelboard No. 2 at ATS 3:
A-B 503 volts B-C 502 volts C-A 497 volts
- BB 12-12-95 9.3.5 Verify ATS 3 is in the Normal power operating position.
- BB 12-12-95 9.3.6 RECORD the Standby Panelboard number that feeds the Normal power terminals in ATS 3 and the Standby Panelboard number that feeds the Emergency power terminals in ATS 3:
Power to normal power terminals in ATS 3 is supplied from Standby Panelboard No. 1.
Power to emergency power terminals in ATS 3 is supplied from Standby Panelboard No. 2.
- BB 12-12-95 9.3.7 OPEN Normal power circuit breaker at corresponding standby panelboard and verify ATS 3 transfers to the terminals marked Emergency power source.
- BB 12-12-95 9.3.8 CLOSE Normal power circuit breaker at corresponding standby panelboard and verify ATS 3 retransfer to the terminals marked Normal power source.
- BB 12-12-95 9.3.9 OPEN circuit breaker at Standby Panelboard No. 2 that feeds ATS 3.
- BB 12-12-95 9.3.10 OPEN circuit breaker at Standby Panelboard No. 1 that feeds ATS 3.

END OF SECTION 9

10 UNINTERRUPTIBLE POWER SYSTEM (UPS) TEST

NOTE: The digital monitoring panel may have arrow markings instead of words below the pushbuttons. References to the pushbuttons for this test and on the screen use words. The arrows and the words correlate as follows:

→ = NEXT; ← = PREVIOUS; ↑ = UP; ↓ = DOWN; ↵ = ENTER

CAUTION: Always be aware that hazardous voltages may be present within the UPS even when the system is not operating.

10.1 UPS NO. 1 WITH PANELBOARD UPS-PP-13

To ensure UPS No. 1 can be energized and is ready for normal operation.

- BB 12-12-95 10.1.1 Verify feeder circuit breaker to UPS No. 1 at Standby Panelboard No. 1 is OPEN.
- BB 12-12-95 10.1.2 Verify all UPS No. 1 circuit breakers/switches including battery circuit breaker (CB3) and UPS-PP-13 main circuit breaker (CB4) are OPEN.
- BB 12-12-95 10.1.3 CLOSE feeder circuit breaker to UPS No. 1 at Standby Panelboard No. 1.
- BB 12-12-95 10.1.3.1 RECORD input phase-phase voltage at line terminals of UPS input power terminal block:
A-B 503 volts B-C 503 volts C-A 498 volts
- BB 12-12-95 10.1.4 Rotate UPS Control Switch knob clockwise to ON position.
- BB 12-12-95 10.1.4.1 Verify message screen reads "CHECKSUM GOOD".
- 10.1.4.2 Verify the following LEDs are ILLUMINATED:

<input checked="" type="checkbox"/> AC Input Failure	<input checked="" type="checkbox"/> Retransfer Inhibited
<input checked="" type="checkbox"/> Transfer Not Available	<input checked="" type="checkbox"/> Battery Not Available
- BB 12-12-95 10.1.5 Verify message screen reads "CLOSE BYPASS CKT.BREAKER". CLOSE the bypass circuit breaker (CB2). The same LEDs in Step 10.1.4.2 should be ILLUMINATED.
- BB 12-12-95 10.1.6 Verify message screen reads "CLOSE INPUT CKT.BREAKER". CLOSE the input circuit breaker (CB1). Message screen will read "WAITING DC LINK = XXX.X VDC" for a short time. XXX.X represents the actual voltage as displayed.
- BB 1-19-96 10.1.7 Verify message screen reads "CLOSE BATTERY CKT.BREAKER". CLOSE the battery circuit breaker (CB3). ~~Depress the ALARM SILENCE pushbutton twice to turn off some of the LEDs.~~ *SENTENCE Deleted TE-a*
- BB 12-12-95 10.1.7.1 Verify the "Transfer Not Available" LED is the only LED ILLUMINATED.

- BB 12-12-95 10.1.8 Verify message screen reads "CLOSE OUTPUT SWITCH OR BKR". CLOSE the inverter output switch (S1).
- BB 12-12-95 10.1.8.1 Verify the "Transferred to Bypass" ^{Deleted TE-004} and ~~"Retransfer Inhibited"~~ LEDs are ILLUMINATED.
- BB 12-12-95 10.1.9 Verify message screen reads "CLOSE SBS OUTPUT CKT.BREAKER". CLOSE static bypass output switch (S2).
- BB 12-12-95 10.1.9.1 Verify the same LEDs in Step 10.1.8.1 are ILLUMINATED.
- BB 12-12-95 10.1.10 Verify message screen reads "OPEN BYPASS CKT.BREAKER". OPEN the bypass circuit breaker (CB2).
- BB 12-12-95 10.1.10.1 Verify the audible alarm sounds within approximately 2 minutes. Depress the "ALARM SILENCE" pushbutton which will silence the alarm and turn the 2 LEDs off.
- BB 12-12-95 10.1.10.2 Verify the "UPS Normal" LED is ILLUMINATED.
- BB 12-12-95 10.1.11 Verify message screen reads "WAIT RETRANSFER PENDING" for a short period of time. Verify message screen then reads "UPS OPERATING NORMALLY".
- BB 12-12-95 10.1.12 RECORD UPS output phase-phase and phase-neutral voltages preferably at Panelboard UPS-PP-13 main circuit breaker line side. Phase-phase voltage readings should be nominal 208 volts. Phase-neutral voltage readings should be nominal 120 volts.
- | | | |
|----------------------|------------------------|------------------------|
| A-B <u>212</u> volts | B-C <u>204</u> volts | C-A <u>208</u> volts |
| A-N <u>122</u> volts | B-N <u>119.7</u> volts | C-N <u>118.6</u> volts |
- BB 12-12-95 10.1.13 CLOSE Panelboard UPS-PP-13 main circuit breaker (CB4).
- BB 12-12-95 10.1.13.1 RECORD Panelboard UPS-PP-13 phase-phase and phase-neutral voltages. Nominal voltage readings should be the same as shown in Step 10.1.12.
- | | | |
|----------------------|------------------------|------------------------|
| A-B <u>212</u> volts | B-C <u>204</u> volts | C-A <u>208</u> volts |
| A-N <u>122</u> volts | B-N <u>119.8</u> volts | C-N <u>118.7</u> volts |
- BB 12-12-95 10.1.13.2 OPEN Panelboard UPS-PP-13 main circuit breaker (CB4).
- 10.1.14 The following steps will be used to record input/output voltages and amperes and other parameters by viewing the message screens on the digital monitoring panel. To scroll through the different screens, depress "Next" or "Previous" pushbuttons beneath Display Select:
- BB 12-12-95 10.1.14.1 SCROLL screens to "INPUT VOLTAGE" and RECORD input voltage between phases:
- | | | |
|----------------------|----------------------|----------------------|
| A-B <u>495</u> volts | B-C <u>500</u> volts | C-A <u>503</u> volts |
|----------------------|----------------------|----------------------|

- BB 12-12-95 10.1.14.2 SCROLL screens to "INPUT CURRENT" and RECORD input current per phase:
Ia 2.7 amperes Ib 2.9 amperes Ic 2.8 amperes
- BB 12-12-95 10.1.14.3 SCROLL screens to "FREQUENCIES/TEMPERATURE" and RECORD frequencies and temperature:
Input Frequency 60 HZ Output Frequency 59.9 HZ
Inlet Temperature 10.6 °C
- BB 12-12-95 10.1.14.4 SCROLL screens to "LINK VOLTAGE" and RECORD DC link voltage, battery amperage and maximum output crest factor:
Link Voltage 245.1 volts DC Battery Current .7 amperes
Max Out CF 0
- BB 12-12-95 10.1.14.5 SCROLL screens to "OUTPUT POWER" and RECORD output power parameters:
Output KVA 0 Output KW 0 Power Factor 0
- BB 12-12-95 10.1.14.6 SCROLL screens to "OUTPUT VOLTAGE" and RECORD output phase - neutral voltage:
A-N 121 volts B-N 120 volts C-N 118 volts
- BB 12-12-95 10.1.14.7 SCROLL screens to "OUTPUT CURRENT" and RECORD output phase current:
Ia 0 amperes Ib 0 amperes Ic 0 amperes
- BB 12-12-95 10.1.15 SCROLL screens until message screen reads "UPS OPERATING NORMALLY".
- BB 12-12-95 10.1.15.1 OPEN feeder circuit breaker at Standby Panelboard No. 1. Verify "AC Input Failure" LED is ILLUMINATED.
- BB 12-12-95 10.1.15.2 RECORD run time left on battery and link voltage:
Run Time Remaining 9 H 6 M 7 S
Link Voltage 224 volts DC
- BB 12-12-95 10.1.15.3 CLOSE feeder circuit breaker at Standby Panelboard No. 1. Verify "AC Input Failure" LED is NOT ILLUMINATED. Verify screen reads "UPS OPERATING NORMALLY" and the "UPS Normal" LED is ILLUMINATED.
- 10.1.16 The following steps will shut down the UPS system:
- BB 12-12-95 10.1.16.1 SCROLL screens by using the "Next" pushbutton until the screen reads "UPS MAINTENANCE MENU". Press the "Enter" pushbutton. Screen will read "ENTER PASSWORD".

- BB 12-12-95 10.1.16.2 Depress the "Up" pushbutton until the digit "4" appears on the screen. Depress the "Next" pushbutton to activate the second digit and depress the "Up" or "Down" pushbuttons until the digit "F" appears on the screen. Depress the "Next" pushbutton to activate the third digit and depress the "Up" or "Down" pushbuttons until the digit "0" appears on the screen. Depress the "Next" pushbutton to activate the fourth digit and depress the "Up" or "Down" pushbuttons until the digit "0" appears on the screen.
- BB 12-12-95 10.1.16.3 Depress the "Enter" pushbutton to bring up the first of the secondary menus. Depress the "Next" or "Previous" pushbuttons to advance to the SBS Maintenance Menu and depress the "Enter" pushbutton. Depress the "Up" pushbutton to begin the Bypass/Shutdown Procedure. The message screen will show "CONFIRM", depress the "Up" pushbutton for Yes.
- BB 12-12-95 10.1.16.4 Verify the message screen reads "CLOSE BYPASS BREAKER". CLOSE the bypass circuit breaker (CB2).
- BB 12-12-95 10.1.16.5 Verify the message screen reads "OPEN OUTPUT BREAKER". OPEN UPS inverter output switch (S1).
- BB 12-12-95 10.1.16.6 Verify the message screen reads "OPEN SBS ~~INPUT~~ BREAKER". OPEN the static bypass output switch (S2). *OUTPUT TE-005*
- BB 12-12-95 10.1.16.7 Verify the message screen reads "OPEN BATTERY BREAKER". OPEN the battery circuit breaker (CB3).
- BB 12-12-95 10.1.16.8 Verify the message screen reads "OPEN INPUT BREAKER". OPEN input circuit breaker (CB1). When the link voltage has decreased to the proper value verify the message screen reads "WAITING DC LINK = XXX.X VDC". XXX.X represents the actual voltage as displayed.
- BB 12-12-95 10.1.16.9 Verify the message screen reads "BYPASS/SHUTDOWN COMPLETE". Rotate UPS control switch counterclockwise to the OFF position. OPEN the bypass circuit breaker (CB2).
- BB 12-12-95 10.1.16.10 OPEN feeder circuit breaker to UPS No. 1 at Standby Panelboard No. 1.

10.2 UPS NO. 2 WITH PANELBOARD UPS-PP-14

To ensure UPS No. 2 can be energized and is ready for normal operation.

- BB 12-12-95 10.2.1 Verify feeder circuit breaker to UPS No. 2 at Standby Panelboard No. 2 is OPEN.
- BB 12-12-95 10.2.2 Verify all UPS No. 2 circuit breakers/switches including battery circuit breaker (CB3) and UPS-PP-14 main circuit breaker (CB4) are OPEN.

- BB 12-12-95 10.2.3 CLOSE feeder circuit breaker to UPS No. 2 at Standby Panelboard No. 2.
- BB 12-12-95 10.2.3.1 RECORD input phase-phase voltage at line terminals of UPS input power terminal block:
A-B 502 volts B-C 502 volts C-A 498 volts
- BB 12-12-95 10.2.4 Rotate UPS Control Switch knob clockwise to ON position.
- BB 12-12-95 10.2.4.1 Verify message screen reads "CHECKSUM GOOD".
- BB 12-12-95 10.2.4.2 Verify the following LEDs are ILLUMINATED:
 AC Input Failure Retransfer Inhibited
 Transfer Not Available Battery Not Available
- BB 12-12-95 10.2.5 Verify message screen reads "CLOSE BYPASS CKT.BREAKER". CLOSE the bypass circuit breaker (CB2). The same LEDs in Step 10.2.4.2 should be ILLUMINATED.
- BB 12-12-95 10.2.6 Verify message screen reads "CLOSE INPUT CKT.BREAKER". CLOSE the input circuit breaker (CB1). Message screen will read "WAITING DC LINK = XXX.X VDC" for a short time. XXX.X represents the actual voltage as displayed.
- BB 12-19-95 10.2.7 Verify message screen reads "CLOSE BATTERY CKT.BREAKER". CLOSE the battery circuit breaker (CB3). ~~Depress the ALARM SILENCE pushbutton twice to turn off some of the LEDs.~~ *SENTENCE DELETED TE-00*
- BB 12-12-95 10.2.7.1 Verify the "Transfer Not Available" LED is the only LED ILLUMINATED.
- BB 12-12-95 10.2.8 Verify message screen reads "CLOSE OUTPUT SWTCH OR BKR". CLOSE the inverter output switch (S1).
- BB 1-19-96 10.2.8.1 Verify the "Transferred to Bypass" ^{DELETED TE-004} and ~~"Retransfer Inhibited"~~ LEDs are ILLUMINATED.
- BB 12-12-95 10.2.9 Verify message screen reads "CLOSE SBS OUTPUT CKT.BREAKER". CLOSE static bypass output switch (S2).
- BB 12-12-95 10.2.9.1 Verify the same LEDs of Step 10.2.8.1 are ILLUMINATED.
- BB 12-12-95 10.2.10 Verify message screen reads "OPEN BYPASS CKT.BREAKER". OPEN the bypass circuit breaker (CB2).
- BB 12-19-95 10.2.10.1 Verify the audible alarm sounds within approximately 2 minutes. ~~Depress the ALARM SILENCE pushbutton which will silence the alarm and turn the 2 LEDs off.~~ *SENTENCE DELETED TE-003.*
- BB 12-12-95 10.2.10.2 Verify the "UPS Normal" LED is ILLUMINATED.

- BB 12-12-95 10.2.11 Verify message screen reads "WAIT RETRANSFER PENDING" for a short period of time. Verify message screen then reads "UPS OPERATING NORMALLY".
- BB 12-12-95 10.2.12 RECORD UPS output phase-phase and phase-neutral voltages preferably at Panelboard UPS-PP-14 main circuit breaker line side. Phase-phase voltage readings should be nominal 208 volts. Phase-neutral voltage readings should be nominal 120 volts.
- | | | |
|------------------------|------------------------|------------------------|
| A-B <u>211.6</u> volts | B-C <u>209.1</u> volts | C-A <u>203.9</u> volts |
| A-N <u>120.1</u> volts | B-N <u>121.5</u> volts | C-N <u>119.0</u> volts |
- BB 12-12-95 10.2.13 CLOSE Panelboard UPS-PP-14 main circuit breaker (CB4).
- BB 12-12-95 10.2.13.1 RECORD Panelboard UPS-PP-14 phase-phase and phase-neutral voltages. Nominal voltage readings should be the same as shown in Step 10.2.12.
- | | | |
|------------------------|------------------------|------------------------|
| A-B <u>211.6</u> volts | B-C <u>209.1</u> volts | C-A <u>203.9</u> volts |
| A-N <u>120.1</u> volts | B-N <u>121.5</u> volts | C-N <u>119.0</u> volts |
- BB 12-12-95 10.2.13.2 OPEN Panelboard UPS-PP-14 main circuit breaker (CB4).
- 10.2.14 The following Steps will be used to record input/output voltages and amperes and other parameters by viewing the message screens on the digital monitoring panel. To scroll through the different screens, depress "Next" or "Previous" pushbuttons beneath Display Select:
- BB 12-12-95 10.2.14.1 SCROLL screens to "INPUT VOLTAGE" and RECORD input voltage between phases:
- | | | |
|------------------------|------------------------|------------------------|
| A-B <u>494.2</u> volts | B-C <u>499.3</u> volts | C-A <u>502.7</u> volts |
|------------------------|------------------------|------------------------|
- BB 12-12-95 10.2.14.2 SCROLL screens to "INPUT CURRENT" and RECORD input current per phase:
- | | | |
|-----------------------|-----------------------|-----------------------|
| Ia <u>2.7</u> amperes | Ib <u>2.6</u> amperes | Ic <u>2.5</u> amperes |
|-----------------------|-----------------------|-----------------------|
- BB 12-12-95 10.2.14.3 SCROLL screens to "FREQUENCIES/TEMPERATURE" and RECORD frequencies and temperature:
- | | |
|----------------------------------|---------------------------------|
| Input Frequency <u>60.0</u> HZ | Output Frequency <u>60.0</u> HZ |
| Inlet Temperature <u>11.9</u> °C | |
- BB 12-12-95 10.2.14.4 SCROLL screens to "LINK VOLTAGE" and RECORD DC link voltage, battery amperage and maximum output crest factor:
- | | |
|------------------------------------|------------------------------------|
| Link Voltage <u>245.2</u> volts DC | Battery Current <u>1.0</u> amperes |
| Max Out CF <u>0</u> | |

- BB 12-12-95 10.2.14.5 SCROLL screens to "OUTPUT POWER" and RECORD output power parameters:
Output KVA 0 Output KW 0 Power Factor 0
- BB 12-12-95 10.2.14.6 SCROLL screens to "OUTPUT VOLTAGE" and RECORD output phase - neutral voltage:
A-N 119.6 volts B-N 121.6 volts C-N 118.6 volts
- BB 12-12-95 10.2.14.7 SCROLL screens to "OUTPUT CURRENT" and RECORD output phase current:
Ia 0 amperes Ib 0 amperes Ic 0 amperes
- BB 12-12-95 10.2.15 SCROLL screens until message screen reads "UPS OPERATING NORMALLY".
- BB 12-12-95 10.2.15.1 OPEN feeder circuit breaker at Standby Panelboard No. 2. Verify "AC Input Failure" LED is ILLUMINATED.
- BB 12-12-95 10.2.15.2 RECORD run time left on battery and link voltage:
Run Time Remaining 9 H 6 M 7 S
Link Voltage 236.0 volts DC
- BB 12-12-95 10.2.15.3 CLOSE feeder circuit breaker at Standby Panelboard No. 2. Verify "AC Input Failure" LED is NOT ILLUMINATED. Verify screen reads "UPS OPERATING NORMALLY" and the "UPS Normal" LED is ILLUMINATED.
- 10.2.16 The following steps will shut down the UPS system:
- BB 12-12-95 10.2.16.1 SCROLL screens by using the "Next" pushbutton until the screen reads "UPS MAINTENANCE MENU". Press the "Enter" pushbutton. Screen will read "ENTER PASSWORD".
- BB 12-12-95 10.2.16.2 Depress the "Up" pushbutton until the digit "4" appears on the screen. Depress the "Next" pushbutton to activate the second digit and depress the "Up" or "Down" pushbuttons until the digit "F" appears on the screen. Depress the "Next" pushbutton to activate the third digit and depress the "Up" or "Down" pushbuttons until the digit "0" appears on the screen. Depress the "Next" pushbutton to activate the fourth digit and depress the "Up" or "Down" pushbuttons until the digit "0" appears on the screen.
- BB 12-12-95 10.2.16.3 Depress the "Enter" pushbutton to bring up the first of the secondary menus. Depress the "Next" or "Previous" pushbuttons to advance to the SBS Maintenance Menu and depress the "Enter" pushbutton. Depress the "Up" pushbutton to begin the Bypass/Shutdown Procedure. The message screen will show "CONFIRM", depress the "Up" pushbutton for Yes.
- BB 12-12-95 10.2.16.4 Verify the message screen reads "CLOSE BYPASS BREAKER". CLOSE the bypass circuit breaker (CB2).

- BB 12-12-96 10.2.16.5 Verify the message screen reads "OPEN OUTPUT BREAKER". OPEN UPS inverter output switch (S1).
- BD 1-9-96 10.2.16.6 Verify the message screen reads "OPEN SBS ^{OUTPUT TB-005} ~~INPUT~~ BREAKER". OPEN the static bypass output switch (S2).
- BB 12-12-95 10.2.16.7 Verify the message screen reads "OPEN BATTERY BREAKER". OPEN the battery circuit breaker (CB3).
- BB 12-12-95 10.2.16.8 Verify the message screen reads "OPEN INPUT BREAKER". OPEN input circuit breaker (CB1). When the link voltage has decreased to the proper value verify the message screen reads "WAITING DC LINK = XXX.X Vdc. XXX.X represents the actual voltage as displayed.
- BB 12-12-95 10.2.16.9 Verify the message screen reads "BYPASS/SHUTDOWN COMPLETE". Rotate UPS control switch counterclockwise to the "OFF" position. OPEN the bypass circuit breaker (CB2).
- BB 12-12-95 10.2.16.10 OPEN feeder circuit breaker to UPS No. 2 at Standby Panelboard No. 2.

10.3 UPS NO. 3 WITH PANELBOARD UPS-PP-15

To ensure UPS No. 3 can be energized and is ready for normal operation.

- BB 12-12-95 10.3.1 Verify feeder circuit breakers to Transfer Switch No. 3 at Standby Panelboard No. 1 and Standby Panelboard No. 2 are OPEN.
- BB 12-12-95 10.3.2 Verify all UPS No. 3 circuit breakers/switches including the battery circuit breaker (CB3) and UPS-PP-15 main circuit breaker (CB4) are OPEN.
- BB 12-12-95 10.3.3 CLOSE feeder circuit breaker to Automatic Transfer Switch No. 3 at Standby Panelboard No. 1.
- BB 12-12-95 10.3.3.1 RECORD input phase-phase voltage at line terminals of UPS input power terminal block:
 A-B 503 volts B-C 503 volts C-A 497 volts
- BB 12-12-95 10.3.4 Rotate UPS control switch knob clockwise to ON position.
- BB 12-12-95 10.3.4.1 Verify message screen reads "CHECKSUM GOOD".
- BB 12-12-95 10.3.4.2 Verify the following LEDs are ILLUMINATED:
- | | |
|--|---|
| <input checked="" type="checkbox"/> AC Input Failure | <input checked="" type="checkbox"/> Retransfer Inhibited |
| <input checked="" type="checkbox"/> Transfer Not Available | <input checked="" type="checkbox"/> Battery Not Available |
- BB 12-12-95 10.3.5 Verify message screen reads "CLOSE BYPASS CKT.BREAKER". CLOSE the bypass circuit breaker (CB2). The same LEDs in Step 10.3.4.2 should be ILLUMINATED.

- 10.6 Verify message screen reads "CLOSE INPUT CKT.BREAKER". CLOSE the input circuit breaker (CB1). Message screen will read "WAITING DC LINK = XXX.X VDC" for a short time. XXX.X represents the actual voltage as displayed.
- 10.3.7 Verify message screen reads "CLOSE BATTERY CKT.BREAKER". CLOSE the battery circuit breaker (CB3). ~~Depress the ALARM SILENCE pushbutton twice to turn off some of the LEDs.~~ *SENTENCE DELETED TE-003*
- 12-12-95 10.3.7.1 Verify the "Transfer Not Available" LED is the only LED ILLUMINATED.
- B 12-12-95 10.3.8 Verify message screen reads "CLOSE OUTPUT SWTCH OR BKR". CLOSE the inverter output switch (S1). *Deleted TE-004*
- BB 12-12-95 10.3.8.1 Verify the "Transferred to Bypass" ~~and "Retransfer Inhibited"~~ LEDs are ILLUMINATED.
- BB 12-12-95 10.3.9 Verify message screen reads "CLOSE SBS OUTPUT CKT.BREAKER". CLOSE static bypass output switch (S2).
- BB 12-12-95 10.3.9.1 Verify the same LEDs in Step 10.3.8.1 are ILLUMINATED.
- BB 12-12-95 10.3.10 Verify message screen reads "OPEN BYPASS CKT.BREAKER". OPEN the bypass circuit breaker (CB2).
- BB 12-12-95 10.3.10.1 Verify the audible alarm sounds within approximately 2 minutes. Depress the ALARM SILENCE pushbutton which will silence the alarm and turn the 2 LEDs off.
- BB 12-12-95 10.3.10.2 Verify the "UPS Normal" LED is ILLUMINATED.
- BB 12-12-95 10.3.11 Verify message screen reads "WAIT RETRANSFER PENDING" for a short period of time. Verify message screen then reads "UPS OPERATING NORMALLY".
- BB 12-12-95 10.3.12 RECORD UPS output phase-phase and phase-neutral voltages preferably at Panelboard UPS-PP-15 main circuit breaker line side. Phase-phase voltage readings should be nominal 208 volts. Phase-neutral voltage readings should be nominal 120 volts.
- | | | |
|------------------------|------------------------|------------------------|
| A-B <u>210</u> volts | B-C <u>207.8</u> volts | C-A <u>207.6</u> volts |
| A-N <u>120.3</u> volts | B-N <u>120.9</u> volts | C-N <u>119.9</u> volts |
- BB 12-12-95 10.3.13 CLOSE Panelboard UPS-PP-15 main circuit breaker (CB4).
- BB 12-12-95 10.3.13.1 RECORD Panelboard UPS-PP-15 phase-phase and phase-neutral voltages. Nominal voltage readings should be the same as shown in Step 10.3.12.
- | | | |
|------------------------|------------------------|------------------------|
| A-B <u>210</u> volts | B-C <u>207.8</u> volts | C-A <u>207.6</u> volts |
| A-N <u>120.3</u> volts | B-N <u>120.9</u> volts | C-N <u>119.9</u> volts |
- BB 12-12-95 10.3.13.2 OPEN Panelboard UPS-PP-15 main circuit breaker (CB4).

10.3.14 The following Steps will be used to record input/output voltages and amperes and other parameters by viewing the message screens on the digital monitoring panel. To scroll through the different screens, depress "Next" or "Previous" pushbuttons beneath Display Select:

BB 12-12-95 10.3.14.1 SCROLL screens to "INPUT VOLTAGE" and RECORD input voltage between phases:

A-B 494.5 volts B-C 501.9 volts C-A 502.1 volts

BB 12-12-95 10.3.14.2 SCROLL screens to "INPUT CURRENT" and RECORD input current per phase:

Ia 2.5 amperes Ib 2.6 amperes Ic 2.5 amperes

BB 12-12-95 10.3.14.3 SCROLL screens to "FREQUENCIES/TEMPERATURE" and RECORD frequencies and temperature:

Input Frequency 59.99 HZ Output Frequency 59.99 HZ

Inlet Temperature 16.4 °C

BB 12-12-95 10.3.14.4 SCROLL screens to "LINK VOLTAGE" and RECORD DC link voltage, battery amperage and maximum output crest factor:

Link Voltage 245.6 volts DC Battery Current 2.1 amperes

Max Out CF 0

BB 12-12-95 10.3.14.5 SCROLL screens to "OUTPUT POWER" and RECORD output power parameters:

Output KVA 0 Output KW 0 Power Factor 0

BB 12-12-95 10.3.14.6 SCROLL screens to "OUTPUT VOLTAGE" and RECORD output phase - neutral voltage:

A-N 120.5 volts B-N 120.6 volts C-N 119.8 volts

BB 12-12-95 10.3.14.7 SCROLL screens to "OUTPUT CURRENT" and RECORD output phase current:

Ia 0 amperes Ib 0 amperes Ic 0 amperes

BB 12-12-95 10.3.15 SCROLL screens until message screen reads "UPS OPERATING NORMALLY".

BB 12-12-95 10.3.15.1 OPEN feeder circuit breaker at Standby Panelboard No. 1. Verify "AC Input Failure" LED is ILLUMINATED.

BB 12-12-95 10.3.15.2 RECORD run time left on battery and link voltage:

Run Time Remaining 9 H 6 M 7 S

Link Voltage 235.0 volts DC

- ~~BB 12-12-95~~ 10.3.15.3 CLOSE feeder circuit breaker at Standby Panelboard No. 1. Verify "AC Input Failure" LED is NOT ILLUMINATED. Verify screen reads "UPS OPERATING NORMALLY" and the "UPS Normal" LED is ILLUMINATED.
- 10.3.16 The following Steps will verify that the diesel engine starting battery charger operates correctly: *TE-006*
- ~~BB 12-19-95~~ 10.3.16.1 *Temporary Power connected to the ba*
CLOSE ~~Circuit Breaker No. 11~~ in Panelboard UPS-PP-15 that feeds the battery charger.
- ~~BB 12-12-95~~ 10.3.16.2 CLOSE the charger DC circuit breaker. CLOSE the charger AC circuit breaker. Charger will take up to 30 seconds to start.
- ~~BB 12-12-95~~ 10.3.16.3 Verify the AC ON light is ILLUMINATED.
- ~~BB 12-12-95~~ 10.3.16.4 RECORD system voltage from voltmeter: 27.8 DC volts. If voltage IS NOT nominal 24 V dc switch the voltage control switch to AUTO and charge the batteries until a nominal 24 Vdc is reached.
- ~~BB 12-12-95~~ 10.3.16.5 OPEN the charger AC circuit breaker. OPEN the charger DC circuit breaker. OPEN UPS-PP-15 circuit breaker no. 11.
- 10.3.17 The following steps will verify that the diesel engine jacket water heater operates as intended when engine is cold:
- ~~BB 12-19-95~~ 10.3.17.1 *Temporary Power connected to TE-006*
CLOSE ~~Circuit Breaker No. 17~~ in Panelboard UPS-PP-15 that feeds the jacket water heater.
- ~~BB 12-12-95~~ 10.3.17.2 RECORD output voltage and amperage at Circuit Breaker No. 17:
119.8 AC volts 25 AC amperes (should be approximately 25A)
- ~~BB 12-12-95~~ 10.3.17.3 OPEN UPS-PP-15 Circuit Breaker No. 17.
- 10.3.18 The following steps will shut down the system:
- ~~BB 12-12-95~~ 10.3.18.1 SCROLL screens by using the "Next" pushbutton until the screen reads "UPS MAINTENANCE MENU". Press the "Enter" pushbutton. Screen will read "ENTER PASSWORD".
- ~~BB 12-12-95~~ 10.3.18.2 Depress the "Up" pushbutton until the digit "4" appears on the screen. Depress the "Next" pushbutton to activate the second digit and depress the "Up" or "Down" pushbuttons until the digit "F" appears on the screen. Depress the "Next" pushbutton to activate the third digit and depress the "Up" or "Down" pushbuttons until the digit "0" appears on the screen. Depress the "Next" pushbutton to activate the fourth digit and depress the "Up" or "Down" pushbuttons until the digit "0" appears on the screen.

- BB 12-12-95 10.3.18.3 Depress the "Enter" pushbutton to bring up the first of the secondary menus. Depress the "Next" or "Previous" pushbuttons to advance to the SBS Maintenance Menu and depress the "Enter" pushbutton. Depress the "Up" pushbutton to begin the Bypass/Shutdown Procedure. The message screen will show "Confirm", depress the "Up" pushbutton for Yes.
- BB 12-12-95 10.3.18.4 Verify the message screen reads "CLOSE BYPASS BREAKER". CLOSE the bypass circuit breaker (CB2).
- BB 12-12-95 10.3.18.5 Verify the message screen reads "OPEN OUTPUT BREAKER". OPEN UPS inverter output switch (S1).
- BB 12-19-95 10.3.18.6 Verify the message screen reads "OPEN SBS ^{OUTPUT TE-005} ~~INPUT~~ BREAKER". OPEN the static bypass output switch (S2).
- BB 12-12-95 10.3.18.7 Verify the message screen reads "OPEN BATTERY BREAKER". OPEN the battery circuit breaker (CB3).
- BB 12-12-95 10.3.18.8 Verify the message screen reads "OPEN INPUT BREAKER". OPEN input circuit breaker (CB1). When the link voltage has decreased to the proper value verify the message screen reads "WAITING DC LINK = XXX.X Vdc. XXX.X represents the actual voltage as displayed.
- BB 12-12-95 10.3.18.9 Verify the message screen reads "BYPASS/SHUTDOWN COMPLETE". Rotate UPS control switch counterclockwise to the "OFF" position. OPEN the bypass circuit breaker (CB2).
- BB 12-12-95 10.3.18.10 OPEN feeder circuit breaker to Automatic Transfer Switch No. 3 at Standby Panelboard No. 1.
- BB 12-12-95 10.3.18.11 OPEN the normal power feeder circuit breaker to ATS 1 at PP-1.
- BB 12-12-95 10.3.18.12 OPEN the normal power feeder circuit breaker to ATS 2 at PP-2.

END OF SECTION 10

EXCEPTION NO. 001	Project No. W030	ATP No. WHC-SD-W030-ATP-007	Rev. 0
Recorded by T.G. Howell	Organization 8KE00	Date Recorded 12/11/95	ATP Page No. 18

Step No. 9.1.19.3 & 9.1.19.5	Requirement
Description of Problem STEPS WERE INCOMPLETE.	
Objector 1 (Name/Organization)	Objector 2 (Name/Organization)

Planned Action
Add wording to steps as follows: "And to ATS-2 AT PP-2".

Action Taken
Above wording was added to steps 9.1.19.3 and 9.1.19.5.

RETEST EXECUTION AND ACCEPTANCE

Retest Installation Contractor M.D. Handley ETRD MOK	Date 12-19-95	Recorder B. B. B.	Date 12-19-95
Witness 1 (Name/Organization) M.D. Handley ETRD	Date 12-19-95	Witness 2 (Name/Organization) S. A. R.	Date 12-19-95
Field Engineering	Date	Test Director (Name/Organization) David Thompson KEIT	Date 12/19/95
Design Engineering (Author of ATP) M.L. Alfano	Date 12/20/95	A-E Project Engineer J. Mendel	Date 12/21/95

APPROVAL AND ACCEPTANCE - OPERATING CONTRACTOR

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

* Explanation
EDITORIAL CHANGES, RETEST NOT REQUIRED.

Approver 1 D.B. Cole	Date 1/24/96	Approver 2 Hank M. Chafin	Date 1/24/96
Approver 3	Date	Approver 4	Date

EXCEPTION NO. 002		Project No. W030	ATP No. WHC-SA-W030-ATR-007	Rev. 0
Recorded by T.G. Howell		Organization SKEPP	Date Recorded 12/11/95	ATP Page No. 20 of 21
Step No. 9.2.18 - 9.2.19.8	Requirement			
Description of Problem This Testing is Redundant To Testing performed in 9.1.18 through 9.1.19.8.				
Objector 1 (Name/Organization)		Objector 2 (Name/Organization)		
Planned Action Delete steps 9.2.18 Through 9.2.19.8.				
Action Taken Deleted above listed steps				
RETEST EXECUTION AND ACCEPTANCE				
Retest Installation Contractor	Date	Recorder	Date	
		Brian Babbs	12-19-95	
Witness 1 (Name/Organization)	Date	Witness 2 (Name/Organization)	Date	
M.D. Handley ETFO	12-19-95	[Signature]	12-19-95	
Field Engineering	Date	Test Director (Name/Organization)	Date	
		Aerald [Signature]	12/19/95	
Design Engineering (Author of ATP)	Date	A-E Project Engineer	Date	
ML [Signature]	12/20/95	[Signature]	12/21/95	
APPROVAL AND ACCEPTANCE - OPERATING CONTRACTOR				
<input type="checkbox"/> Retest Approved and Accepted <input checked="" type="checkbox"/> Exception Accepted - is* <input type="checkbox"/> Other*				
* Explanation EDITORIAL CHANGES ANALYSIS RETEST NOT REQUIRED.				
Approver 1	Date	Approver 2	Date	
D.B. [Signature]	1/24/96	Hank M. Chepin	1/24/96	
Approver 3	Date	Approver 4	Date	

EXCEPTION NO. 003	Project No. W030	ATP No. WHC-SD-W030-ATR-007	Rev. 0
Recorded by T. G. Howell	Organization SKEDD	Date Recorded 12/12/95	ATP Page No.
Step No. 10.1.7, 10.2.7, 10.2.10.1, 10.3.7	Requirement		
Description of Problem Three of the four LED's are "self clearing" and do not require depressing the alarm silence push button.			
Objector 1 (Name/Organization)		Objector 2 (Name/Organization)	
Planned Action DELETE the following wording from steps 10.1.7, 10.2.7, 10.2.10.1 and 10.3.7: "DEPRESS the alarm silence push button twice to turn off some of the LED's".			
Action Taken Deleted the above wording from steps 10.1.7, 10.2.7, 10.2.10.1 and 10.3.7.			
RETEST EXECUTION AND ACCEPTANCE			
Retest Installation Contractor	Date	Recorder	Date
		<i>Bruce Babbs</i>	12-19-95
Witness 1 (Name/Organization)	Date	Witness 2 (Name/Organization)	Date
<i>M. A. Nardelli ETEO</i>	12-19-95	<i>Scott Spence</i>	12-19-95
Field Engineering	Date	Test Director (Name/Organization)	Date
		<i>Arnold Harper</i>	12/19/95
Design Engineering (Author of ATP)	Date	A-E Project Engineer	Date
<i>ML Aelford</i>	12/20/95	<i>Steland</i>	12/19/95
APPROVAL AND ACCEPTANCE - OPERATING CONTRACTOR			
<input type="checkbox"/> Retest Approved and Accepted <input checked="" type="checkbox"/> Exception Accepted-as-is* <input type="checkbox"/> Other*			
* Explanation EDITORIAL CHANGES, RETEST NOT REQUIRED.			
Approver 1	Date	Approver 2	Date
<i>D. B. Clark</i>	1/24/96	<i>Hank M. Chapin</i>	1/24/96
Approver 3	Date	Approver 4	Date

EXCEPTION NO. 004		Project No. W030	ATP No. WHC-SD-W030-ATR-007	Rev. 0
Recorded by Tib. Howell		Organization GKE00	Date Recorded 12/12/95	ATP Page No. 24, 27, 31
Step No. 10.1.8.1, 10.2.8.1, 10.3.8.1	Requirement			
Description of Problem Retraussen Inhibited LED does not illuminate in this sequence by design				
Objector 1 (Name/Organization)		Objector 2 (Name/Organization)		
Planned Action Delete wording as "And Retraussen Inhibited"				
Action Taken Deleted the above wording from steps 10.1.8.1, 10.2.8.1 and 10.3.8.1				
RETEST EXECUTION AND ACCEPTANCE				
Retest Installation Contractor	Date	Recorder	Date	
		<i>Brian Bels</i>	12-19-95	
Witness 1 (Name/Organization)	Date	Witness 2 (Name/Organization)	Date	
<i>M.D. Anderson, GKE00</i>	12-19-95	<i>Scott [Signature]</i>	12-19-95	
Field Engineering	Date	Test Director (Name/Organization)	Date	
		<i>Arnold [Signature]</i>	12/19/95	
Design Engineering (Author of ATP)	Date	A-E Project Engineer	Date	
<i>MC [Signature]</i>	12/20/95	<i>[Signature]</i>	12/21/95	
APPROVAL AND ACCEPTANCE - OPERATING CONTRACTOR				
<input type="checkbox"/> Retest Approved and Accepted		<input checked="" type="checkbox"/> Exception Accepted-as-is*		<input type="checkbox"/> Other*
* Explanation EDITORIAL CHANGES. RETEST NOT REQUIRED				
Approver 1	Date	Approver 2	Date	
<i>D.B. Cole</i>	1/24/96	<i>Hank M. Chafin</i>	1/24/96	
Approver 3	Date	Approver 4	Date	

EXCEPTION NO. 005	Project No. W030	ATP No. WHG-SD-W030-ATP-001	Rev. 0
Recorded by T.G. HOWELL	Organization GRECO	Date Recorded 12/12/95	ATP Page No. 26, 30, 34
Step No. 10.1.18.6 Requirement 10.2.16.6, 10.3.18.6			
Description of Problem Typographical error, should read "SBS" OUTPUT instead of "SBS INPUT".			
Objector 1 (Name/Organization)		Objector 2 (Name/Organization)	
Planned Action Change wording to read "SBS OUTPUT"			
Action Taken changed above wording in steps 10.1.16.6, 10.2.16.6, and 10.3.18.6.			
RETEST EXECUTION AND ACCEPTANCE			
Retest Installation Contractor	Date	Recorder	Date
		Bruce Behr	12-19-95
Witness 1 (Name/Organization)	Date	Witness 2 (Name/Organization)	Date
J.H. Hordley ETFO	12-19-95	Scott Ritten	12-19-95
Field Engineering	Date	Test Director (Name/Organization)	Date
		David Higgins, MIT	12/19/95
Design Engineering (Author of ATP)	Date	A-E Project Engineer	Date
M.L. Anderson	12-20-95	H. Hurd	12/21/95
APPROVAL AND ACCEPTANCE - OPERATING CONTRACTOR			
<input type="checkbox"/> Retest Approved and Accepted <input checked="" type="checkbox"/> Exception Accepted-as-is* <input type="checkbox"/> Other*			
* Explanation EDITORIAL CHANGES. RETEST NOT REQUIRED.			
Approver 1	Date	Approver 2	Date
D.B. Gle	1/24/96	Hank M. Chepin	1/24/96
Approver 3	Date	Approver 4	Date

EXCEPTION NO. 006	Project No. W030	ATP No. W14C-5D-W030-ATP-007	Rev. 0
Recorded by T.G. Howell	Organization BRECO	Date Recorded 12/12/95	ATP Page No. 33
Step No. 10.3.16.1 10.3.17.1	Requirement		
Description of Problem The battery charger and the jacket water heater were being supplied from temporary power.			
Objector 1 (Name/Organization)		Objector 2 (Name/Organization)	
Planned Action Change wording in above steps to read "Temporary power connected". Delete words: TAN			
Action Taken Steps 10.3.16.1 and 10.3.17.1 were changed to indicate temporary power supplied to battery charger and jacket water heater.			
RETEST EXECUTION AND ACCEPTANCE			
Retest Installation Contractor	Date	Recorder	Date
		<i>[Signature]</i>	12-19-95
Witness 1 (Name/Organization)	Date	Witness 2 (Name/Organization)	Date
M.D. Hardy ETO	12-19-95	<i>[Signature]</i>	12-19-95
Field Engineering	Date	Test Director (Name/Organization)	Date
		<i>[Signature]</i>	12/19/95
Design Engineering (Author of ATP)	Date	A-E Project Engineer	Date
MC Alfano	12/20/95	<i>[Signature]</i>	12/19/95
APPROVAL AND ACCEPTANCE - OPERATING CONTRACTOR			
<input type="checkbox"/> Retest Approved and Accepted <input checked="" type="checkbox"/> Exception Accepted-as-is* <input type="checkbox"/> Other*			
* Explanation EDITORIAL CHANGES. RETEST NOT REQUIRED.			
Approver 1	Date	Approver 2	Date
D.B. Gle	1/24/96	Hank M. Chafin	1/24/96
Approver 3	Date	Approver 4	Date

EXCEPTION NO. <u>007</u>	Project No. <u>W030</u>	ATP No. <u>WHC-SD-W030-ATP-007</u>	Rev. <u>0</u>
Recorded by <u>T. G. Howell</u>	Organization <u>SKECO</u>	Date Recorded <u>12/12/95</u>	ATP Page No. <u>9</u>
Step No. <u>7.2.5</u>	Requirement		
Description of Problem <u>Phase rotation meter is a non-calibratable test device.</u>			
Objector 1 (Name/Organization)		Objector 2 (Name/Organization)	
Planned Action <u>Delete spaces provided for Instrument Number and Expiration Date</u>			
Action Taken <u>Deleted above listed spaces for step 7.2.5.</u>			
RETEST EXECUTION AND ACCEPTANCE			
Retest Installation Contractor	Date	Recorder	Date
		<u>[Signature]</u>	<u>12-19-95</u>
Witness 1 (Name/Organization)	Date	Witness 2 (Name/Organization)	Date
<u>M. D. Handley</u> <u>ETFO</u>	<u>12-19-95</u>	<u>[Signature]</u>	<u>12-19-95</u>
Field Engineering	Date	Test Director (Name/Organization)	Date
		<u>[Signature]</u>	<u>12/19/95</u>
Design Engineering (Author of ATP)	Date	A-E Project Engineer	Date
<u>[Signature]</u>	<u>12/20/95</u>	<u>[Signature]</u>	<u>12/21/95</u>
APPROVAL AND ACCEPTANCE - OPERATING CONTRACTOR			
<input type="checkbox"/> Retest Approved and Accepted <input checked="" type="checkbox"/> Exception Accepted-as-is* <input type="checkbox"/> Other*			
* Explanation <u>EDITORIAL CHANGES - RETEST NOT REQUIRED</u>			
Approver 1	Date	Approver 2	Date
<u>[Signature]</u>	<u>1/24/96</u>	<u>[Signature]</u>	<u>1/24/96</u>
Approver 3	Date	Approver 4	Date

