01-14-88
Rev. 1
WP6759P/D-0565P
WP6755P/D-0566P
WP6760P/D-0567P

STP.961

LOSS OF OFFSITE POWER

QUALITY APPROVED

Michael Williams 1-20-88
Name Date

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1.0 TEST OBJECTIVES

To demonstrate that onsite electrical distribution systems, following major modifications (ECNs A-3660Z and A-3748), will adequately support the necessary systems during a simulated emergency. This also will include periodic testing of the emergency power systems. Since there is approximately 10 years difference between the Bruce-GM and the TDI diesel generators, the codes and regulations that pertain to the TDI diesel generators may or may not pertain to the Bruce-GM diesel generators.

1.1 Demonstrate independence among the safety related diesel generators GEA, GEB, GEA2, and GEB2 including their associated 4.16KV buses 4A, 4A2, 4B and 4B2.

1.1 .1 Demonstrate that each diesel generator in each subtrain successfully starts, accelerates to design voltage and frequency in 10 seconds or less, closes its associated output breaker and sequences all emergency load breakers on the bus (emergency load breakers are in TEST position) upon simulated Safety Features Actuation System (SFAS) signal followed by a Loss of Offsite Power (LOOP).

1.1 .2 Demonstrate that all automatic and manual diesel generator trips are bypassed, for GEA and GEB except engine overspeed, ground fault and generator differential upon simulated SFAS signal.

1.1 .3 Demonstrate that all automatic diesel generator trips are bypassed, for GEA2 and GEB2 except engine overspeed, low lube oil pressure, generator differential and manual emergency shutdown pushbuttons upon simulated SFAS signal.

1.1 .4 Demonstrate that each diesel generator in each subtrain successfully starts, accelerates to design voltage and frequency in 10 seconds or less, closes its associated output breaker and sequences all emergency load breakers on the bus (emergency load breakers are in TEST position) upon simulated SFAS signal in conjunction with a LOOP.

1.2 Demonstrate independence among the redundant safety related trains "A" (A & A2) and "B" (B & B2).

1.2 .1 Demonstrate that both diesel generators in each train successfully start, accelerate to design voltage and frequency in 10 seconds or less, close their associated output breakers and sequence all emergency loads on the bus upon simulated SFAS signal in conjunction with a LOOP.

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TEST OBJECTIVES (Continued)

1.3 Demonstrate that on a simulated LOOP and subsequent interruption of emergency power from the diesel generator, the loads are shed from the associated nuclear service bus in accordance with design requirements and that the subsequent reloading of the emergency power source is through the load sequencing circuitry.

1.4 Demonstrate that all four diesel generators simultaneously start upon receipt of a simulated SFAS signal in conjunction with a LOOP, accelerate to design voltage and frequency in 10 seconds or less. (Emergency load breakers are in the TEST position)

1.5 Demonstrate that both diesel generators in a train, upon a simulated SFAS signal, successfully start and accelerate to design voltage and frequency in 10 seconds or less. That all emergency loads are sequenced on to the bus. That upon a LOOP all loads are stripped, the diesel generator breaker closed and then all emergency loads are resequenced on to the bus. (Emergency loads start and, where required, are lined up to establish recirculation or mini flowpaths in their respective systems).

All emergency loads are then transferred to the offsite power grid before the respective diesel generator is shutdown.

Simulation of the LOOP will require the manual opening of the switchyard OCBs associated with the train under TEST, this is necessary to prevent possible damage to the respective diesel generator. Manual opening of the associated nuclear service bus normal supply breakers would cause the diesel generator breaker to close immediately, bypassing the sequencer.

That both diesel generators maintain design voltage, speed and frequency upon rejection of the single largest load. The single largest load rejection will be simulated using the following loads:

A D/G	HPI Pump P-238A and DHR Pump P-261A tripped simultaneously
A2 D/G	AFW Pump P-319
B D/G	HPI Pump P-238B and DHR Pump P-261B tripped simultaneously
B2 D/G	AFW Pump P-318

1.6 Demonstrate that within 5 minutes of shutting down from a simulated 24-hr loaded run (simulated by running D/G until Lube oil and Jacket Water temperatures stabilize at operating temperatures), GEA, GEA2, GEB, and GEB2 auto start on a simulated accident signal and loads are sequenced through the load sequencer.

TEST OBJECTIVES (Continued)

1.7 Demonstrate that the auto-connected loads to each diesel generator do not exceed the 2000-hour rating of 2750 KW for GEA and GEB, and 3300 KW for GEA2 and GEB2.

2.0 SPECIAL TEST EQUIPMENT

2.1 Calibration Required:

2.1 .1 Voltage Transducer capable of measuring 0 - 120 VAC input with a 0 - 1 mA DC output, with an accuracy of at least ±0.2% of full scale, 10 each.

2.1 .2 Current Transducer capable of measuring 0 - 4 Ampere input with a 0 - 1mA DC output, with an accuracy of at least ±0.2% of full scale, 24 each.

2.1 .3 Preamplifier capable of measuring 0 - 1000 mV with an accuracy of ±1.0% of full scale, 32 each.

2.1 .4 Frequency Transducer capable of measuring 0 - 63 HZ with an accuracy of ±0.2% of full scale, 2 each.

2.1 .5 Kilowatt Transducer capable of measuring 0 - 3500 KW with an accuracy of ±0.2% of full scale, 18 each.

2.1 .6 Plug-in Zero Bias Amplifier, for the Linearcorder, Model - AZ3101 with an accuracy of ±0.5% of full scale, as required.

2.1 .7 Plug-in ±1000% Zero Bias Amplifier, for the Linearcorder, Model - AZ3101 with an accuracy of ±0.5% of full scale, as required.

2.1 .8 Linearcorder Mark VII Model - WR3101 8 each, or equivalent.

2.1 .9 IBM PC XT W/640K RAM, 8087 Math-Coprocessor Quadram card w/clock, S/N - 098694 Keithly DAS Series 500 w/software S/N - 204181.

2.1 .10 IBM PC XT W/640K RAM, 8087 Math-Coprocessor AST Omega Plus II card w/clock, S/N - 0530122 Keithly DAS Series 500 w/software S/N - 204183.

3.0 PREREQUISITES

	Initials/ Date
3.1 Verify that the diesel generator room(s) for the diesel generator(s) under test have been cleared of scaffolding, unnecessary tools and the floors are clean and free of debris:	
3.1 .1 GEA Diesel Generator Room	______/______
3.1 .2 GEB Diesel Generator Room	______/______
3.1 .3 GEA2 Diesel Generator Room	______/______
3.1 .4 GEB2 Diesel Generator Room	______/______

NOTE: The System Engineer initials below shall be those of the responsible system engineer for the system, ECN or TEST, or their Supervisor.

NOTE: The signoff of an ECN is to indicate that, for the purposes of this TEST, components are functional to the extent necessary to support Safety Features Actuation System or Loss of Offsite Power signals. For each ECN that is not work complete, a test log entry shall be made to document the status of the ECN.

	Initials/ Date System Engineer	Initials/ Date Test Director
3.2 ECN R-1060 GEB Panel Wiring.	______/______	______/______
3.3 ECN A-3660Z, Class IE Distribution Upgrades.	______/______	______/______
3.3.1 ECN A-3881-A, Move 486 contacts to Annunciator Window 92(93).	______/______	______/______
3.4 ECN A-3748, Installation of the TDI Diesel Generators.	______/______	______/______
3.5 ECN A-4353, Replacement of SFV-70001 and SFV-70003.	______/______	______/______
3.6 ECN A-4687, 125 VDC Circuit Breakers.	______/______	______/______
3.7 ECN A-5198, TDI Motor Control Centers Tie In.	______/______	______/______
3.8 ECN A-5415AA, Installation of Power Controls to HV-20581/2.	______/______	______/______

PREREQUISITES (Continued)

	Initials/ Date System Engineer	Initials/ Date Test Director
3.9 ECN A-5415AE, Modification of Control Logic for HV-20565.	/	/
3.10 ECN A-5415AH, HISSE Console Extension.	/	/
3.11 ECN A-5415E, EFIC Intercabinet Power, etc.	/	/
3.12 ECN A-5415F, SFAS Field Change.	/	/
3.13 ECN A-5415H, Mux Cabinet Modifications.	/	/
3.14 ECN A-5415J, Installation of New AFW Valves.	/	/
3.15 ECN A-5415K, Internal EFIC Upgrade Modifications.	/	/
3.16 ECN A-5415L, Cabling from EFIC to 480 VAC Switchgear Room.	/	/
3.17 ECN A-5415M, P-319 Recabling.	/	/
3.18 ECN A-5415N, P-318 Recabling.	/	/
3.19 ECN A-5415S, Installation of 480 Volt SWGR.	/	/
3.20 ECN A-5415T, AFW Test Valve Control.	/	/
3.21 ECN A-5415V, HV-31826/7 Control Logic.	/	/
3.22 ECN A-5415Y, Replace MS Failure Logic.	/	/
3.23 ECN A-5564, Restoration of Buses 4A2 and 4B2.	/	/
3.24 ECN A-0415A, Time Delay Relays.	/	/
3.25 ECN R-0415B, Synch. Check Relays.	/	/
3.26 ECN R-608, Replacement of Auxiliary Batteries A, B, C, and D.	/	/

PREREQUISITES (Continued)	Initials/ Date System Engineer	Initials/ Date Test Director
3.27 ECN R-0770A, Upgrade of Turbocharger and Spring Drive Gear.	/	/
3.28 ECN R-0770B, Replacement of Diesel Stub Shaft Assembly.	/	/
3.29 ECN R-0890, Bruce/GM Shroud and Heater.	/	/
3.30 ECN R-0914, IEB 85-03 and IEN 86-209.	/	/
3.31 ECN R-0955, Inverter Reliability Upgrade.	/	/
3.32 ECN R-0968, Add Safety Related MOVs.	/	/
3.33 ECN R-0976, Extension of IEB 8503.	/	/
3.34 ECN R-1000, Bruce/GM Relays.	/	/
3.35 ECN R-1045, Undervoltage Relays.	/	/
3.36 ECN R-1108, Bruce/GM Tach Relay Replacement.	/	/
3.37 ECN R-1128A, Bus 3A2 Supply Breaker Isolation Control Switch.	/	/
3.38 ECN R-1128B, Bus 3A2 Isolation Control Switch.	/	/
3.39 ECN R-1128C, Bus 4A2 Isolation Control Switch.	/	/
3.40 ECN R-1128D, Bus 4A2 Load Shedding Isolation Control Switch.	/	/
3.41 ECN R-1128E, Bus 4A Load Shedding Isolation Control Switch.	/	/
3.42 ECN R-1150, GEA Panel Wiring.	/	/
3.42.1 ECN R-1898, Diesel Generator B Electrical Drawings/Configuration Update.	/	/
3.43 ECN R-1214, Diesel Generator Control Panels (H2DGA2 & H2DGB2) Forced Ventiliation Cooling.	/	/

	Initials/ Date System Engineer	Initials/ Date Test Director
3.44 ECN R-1399, Bus 4A2 and 4B2 4KV Breaker Alignment.	____/____	____/____
3.45 ECN R-1760, HPI/Makeup Lube Oil Pressure Switch.	____/____	____/____
3.46 ECN R-1991, TDI Turbocharger Supports.	____/____	____/____
3.46 .1 ECN R-1778, Replace Starting Air System Relief Valves.	____/____	____/____
3.46 .2 ECN R-2079, Diesel Generator GEA2 (GEB2) Trouble Alarm.	____/____	____/____
3.46 .3 ECN R-2380, Increase of Diesel Air Start Failure Time Delay (TD-3)	____/____	____/____
3.46 .4 ECN-R2561 Fuse Coordination/ Replacement.	____/____	____/____

NOTE: For the purposes of this test, the below listed Special Test Procedures are complete and results approved. If not, the System Engineer shall review the applicable STP and determine if there are any aspects that may adversely affect the satisfactory performance of this test. A test log entry shall be made to address the status of any STP that has not been completed and results approved.

3.47 STP.195A, New D/G G-100A/GEA2 Engine Integrated System Phase I Testing.	____/____	____/____
3.48 STP.195B, New D/G G-100B/GEB2 Engine Integrated System Phase I Testing.	____/____	____/____
3.49 STP.666, EFIC Cold Functional Test.	____/____	____/____
3.50 STP.787A, SFAS Analog Channel A Module Removal Interlock Verification.	____/____	____/____
3.51 STP.787B, SFAS Analog Channel B Module Removal Interlock Verification.	____/____	____/____
3.52 STP.787C, SFAS Analog Channel C Module Removal Interlock Verification.	____/____	____/____

PREREQUISITES (Continued)

	Initials/ Date System Engineer	Initials/ Date Test Director
3.53 STP.787D, SFAS Digital Channel A Module Removal Interlock Verification.	_____/_____	_____/_____
3.54 STP.787E, SFAS Digital Channel B Module Removal Interlock Verification.	_____/_____	_____/_____
3.55 STP.959, Load Testing "B" Battery.	_____/_____	_____/_____
3.56 STP.964A, 120 Volt Vital AC Power, Channel A.	_____/_____	_____/_____
3.57 STP.964B, 120 Volt Vital AC Power, Channel B.	_____/_____	_____/_____
3.58 STP.964C, 120 Volt Vital AC Power, Channel C.	_____/_____	_____/_____
3.59 STP.964D, 120 Volt Vital AC Power, Channel D.	_____/_____	_____/_____
3.60 STP.975A, 120 Volt Regulating Transformer Functional.	_____/_____	_____/_____
3.61 STP.975B, 120 Volt Regulating Transformer Functional.	_____/_____	_____/_____
3.62 STP.975C, 120 Volt Regulating Transformer Functional.	_____/_____	_____/_____
3.63 STP.975D, 120 Volt Regulating Transformer Functional.	_____/_____	_____/_____
3.64 STP.977, 4160 Volt AC Bus 4A Isolation Control Switch.	_____/_____	_____/_____
3.65 STP.978, 4160 Volt AC Bus 4A2 Isolation Control Switch.	_____/_____	_____/_____
3.66 STP.979, 4160 Volt AC Bus 3A2 Isolation Control Switch.	_____/_____	_____/_____
3.67 STP.980, 4160 Volt AC Bus 4A Load Shedding Isolation Control Switch.	_____/_____	_____/_____
3.68 STP.981, 4160 Volt AC Bus 4A2 Load Shedding Isolation Control Switch.	_____/_____	_____/_____
3.69 STP.1001A, EDG (G-886A) Post Modification Test.	_____/_____	_____/_____

PREREQUISITES (Continued)	Initials/ Date System Engineer	Initials/ Date Test Director
3.70 STP.1007, Makeup Pump Performance Test.	_____/_____	_____/_____
3.71 STP.1009A, New Diesel Generator G-100A/GEA2 Engine Integrated System Phase 2 Testing.	_____/_____	_____/_____
3.72 STP.1009B, New Diesel Generator G-100B/GEB2 Engine Integrated System Phase 2 Testing.	_____/_____	_____/_____
3.73 STP.1012, EDG (G-886B) Post Modification Test.	_____/_____	_____/_____
3.74 STP.1062A, GEA Load Limiting Setup.	_____/_____	_____/_____
3.74 .1 STP.970, Diesel Generator (G-886A) Synch. Check Relay Functional Test.	_____/_____	_____/_____
3.75 STP.1062B, GEB Load Limiting Setup.	_____/_____	_____/_____
3.75 .1 STP.985, Diesel Generator (G-886B) Synch. Check Relay Functional Test.	_____/_____	_____/_____
3.76 STP.1130A, EGS/DFO Systems Functional Test.	_____/_____	_____/_____
3.77 STP.1130B, EGS/DFO Systems Functional Test.	_____/_____	_____/_____
3.78 STP.1134A, G-100A/GEA2 Post Mod and Integrated Systems Phase II Retest.	_____/_____	_____/_____
3.79 STP.1134B, G-100B/GEB2 Post Mod and Integrated Systems Phase II Retest.	_____/_____	_____/_____

NOTE: The below listed Surveillance Procedures shall be completed through engineering review prior to the performance of this test.

If not, a test log entry shall be made to address the status of any SP that has not been completed through engineering review including an explanation of why the test is not affected by the SP status. The SP must be through the Shift Supervisor review.

PREREQUISITES (Continued)	Initials/ Date System Engineer	Initials/ Date Test Director
3.80 SP.0041A, SFAS Digital Channel A Refueling Test.	____/____	____/____
3.81 SP.0041B, SFAS Digital Channel B Refueling Test.	____/____	____/____
3.82 SP.0042A, Refueling Interval SFAS Digital Channel 2A.	____/____	____/____
3.83 SP.0042B, Refueling Interval SFAS Digital Channel 2B.	____/____	____/____
3.84 SP.0043A, Refueling Interval Reactor Building Spray System Loop A SFAS Surveillance Test.	____/____	____/____
3.85 SP.0043B, Refueling Interval Reactor Building Spray System Loop B SFAS Surveillance Test.	____/____	____/____
3.86 SP.314A, Monthly Surveillance Check of Undervoltage Relays for Bus 4A.	____/____	____/____
3.87 SP.314B, Monthly Surveillance Check of Undervoltage Relays for Bus 4B.	____/____	____/____
3.88 SP.315A, Refueling Interval Calibration of Undervoltage Relays for Bus 4A.	____/____	____/____
3.89 SP.315B, Refueling Interval Calibration of Undervoltage Relays for Bus 4B.	____/____	____/____
3.90 SP.321A, Monthly Surveillance Check of Undervoltage Relays for Bus 4A2.	____/____	____/____
3.91 SP.321B, Monthly Surveillance Check of Undervoltage Relays for Bus 4B2.	____/____	____/____
3.92 SP.322A, Refueling Interval Calibration of Undervoltage Relays for Bus 4A2.	____/____	____/____
3.93 SP.322B, Refueling Interval Calibration of Undervoltage Relays for Bus 4B2.	____/____	____/____

PREREQUISITES (Continued) Initials/ Date

3.94 SP.206.03A (SP.056A), Diesel Generator GEA. ______/______ ______/______

3.95 SP.206.03B (SP.056B), Diesel Generator GEB. ______/______ ______/______

3.96 Computer and Linearcorder test connections have been installed and calibrated as required. QC to verify all connections have been independently verified. A list of parameters required is given on Enclosure 9.5. Actual field test connections for the parameters listed on Enclosure 9.5 were performed and documented as stated on the work request numbers identified below. These work requests and connection drawings will be attached as part of the test package documentation upon completion of restoration which will be verified by QC in the work requests. Record Work Request numbers.

Q.C. INSPECT

QC verify by WR review MRW 1/20/88

____

____ ______/______

3.97 T. computer group is set up to monito the incore temperatures at 15 minute intervals when both Decay Heat Systems are De-energized. ______/______

3.98 The System Dispatcher has been officially notified of the LOOP test at least 24 hours in advance of testing. The System Dispatcher will be notified again when actual testing is about to commence. ______/______

3.99 The Quality Control Supervisor has been notified 24 hours prior to starting test. ______/______

______________________ ______________
Name Time/Date

Q.C. INSPECT

3.100 Instrument calibration data has been recorded on Enclosure 9.4 and is within a current calibration period. ______/______

3.101 Notify Security Computer Group & MIMS (Canberra) Computer Group. ______/______

3.102 The Shift Supervisor has granted permission to perform this test by signing Enclosure 9.1, Test Procedure Authorization Form. ______/______

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4.0 INITIAL CONDITIONS	Initials/ Date
4.1 Plant is in Cold Shutdown.	______/______
4.2 RCS is OPEN to atmosphere, if not, verify Step 4.2.1 below in accordance with (IAW) Tech Specs 3.2. (OTSG "B" upper manway removed.) N/A step not used.	______/______
4.2 .1 LTOP is in service IAW Operating Procedure B.4, "Plant Shutdown and Cooldown."	______/______
4.3 NRW "A" in SFAS standby IAW A.25, Section 4.5. The Train "A" NRW pump may be left running as required to support DHR pump operation.	______/______
4.4 NRW "B" in SFAS standby IAW A.25, Section 4.6. The Train "B" NRW pump may be left running as required to support DHR pump operation.	______/______
4.5 NSCW "A" in SFAS standby IAW A.24, Section 4.2. The Train "A" NSCW pump may be left running as required to support DHR pump operation.	______/______
4.6 NSCW "B" in SFAS standby IAW A.24, Section 4.5. The Train "B" NSCW pump may be left running as required to support DHR pump operation.	______/______
4.7 Reactor Building Emergency Cooling units A-500 A/B are available for automatic operation IAW A.14.A, Section 4.1.	______/______
4.8 Reactor Building Emergency Cooling units A-500 C/D are available for automatic operation IAW A.14.A, Section 4.1.	______/______
4.9 Reactor Building Emergency Upper Dome air circulators A-532 A/C are available for automatic operation IAW A.14A, Section 4.2.	______/______
4.10 Reactor Building Emergency Upper Dome air circulators A-532 B/D are available for automatic operation IAW A.14A, Section 4.2.	______/______
4.11 Step Deleted	

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INITIAL CONDITIONS (Continued) Initials/ Date

4.12 Step Deleted

4.13 Place in service or verify in service, the SFAS analog and digital system is in standby operation IAW A.70, Sections 4.1 and 4.2. ________/________

NOTE: Systems of Steps 4.14, 4.15 and 4.16 are only aligned per the respective enclosures when system flows are established.

4.14 Makeup and High Pressure Injection Pumps are lined up in accordance with Enclosure 9.6. ________/________

4.15 Reactor Building Spray System A(B) is in STANDBY condition IAW A.7, Steps 4.1.5 through 4.1.6.4 and 4.2.5 through 4.2.6.4. ________/________

4.15 .1 Verify valve lineup per Enclosure 9.8 for Reactor Building Spray System is complete. ________/________

4.16 The AFW and EFIC systems A(B) are in STANDBY condition IAW A.51, Sections 4.2 (4.3). ________/________

4.17 The Control Room/TSC Essential HVAC System A(B) is in standby condition IAW A.14C, Section 4.2.1 (4.2.2). ________/________

4.18 The NSEB Essential HVAC System A(B) is in STANDBY condition IAW A.14D, Section 4.2.1 (4.2.2). ________/________

4.19 The following field cables are lifted for SF valves to allow Reactor Building Purge to remain in service during this STP:

Q.C. H.P. 4.19 .1 SFV-53605, Cabinet H4SDA3 wire X1 at location 9-5-7 ________/________

4.19 .2 SFV-53504, Cabinet H4SDA3 wire X1 at location 9-5-5 ________/________

Q.C. H.P. 4.19 .3 SFV-53603, Cabinet H4SDA3 wire X1 at location 9-5-9 ________/________

Q.C. H.P. 4.19 .4 SFV-53604, Cabinet H4SDB1 wire P11 at location 1-5-5 ________/________

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INITIAL CONDITIONS (Continued) Initials/ Date

Q.C. H.P.	4.19 .5 SFV-53503, Cabinet H4SDB1 wire P11 at location 1-5-3	____/____
Q.C. H.P.	4.19 .6 SFV-53610, Cabinet H4SDB1 wire P11 at location 1-5-23	____/____

4.20 The following field cables lifted to allow Reactor Building Radiation monitor to remain in service during this STP:

Q.C. H.P.	4.20 .1 SFV-53612, Cabinet H4SDB1 wire P11 at location 1-6-5	____/____
Q.C. H.P.	4.20 .2 SFV-53613, Cabinet H4SDA2 wire P11 at location 9-6-7	____/____
Q.C. H.P.	4.20 .3 SFV-53615, Cabinet H4SDA3 wire X1 at location 9-6-5	____/____
Q.C. H.P.	4.20 .4 SFV-53616, Cabinet H4SDB1 wire X1 at location 1-6-3	____/____

4.21 ~~Verify the Main Transformers X98A and X98B~~ are on Backfeed and providing power to the Unit Aux Transformer IAW EM.173. ____/____

4.22 Verify 125 VDC panel SOF is lined up to battery charger H4BF. ____/____

5.0 LIMITS AND PRECAUTIONS

5.1 Do not synchronize more than one diesel generator to the grid at the same time.

5.2 Do not attempt to synchronize a diesel generator to the grid if there is a lightning storm in the immediate area or if Rancho Seco is in a position where it is likely that offsite power will be lost.

5.3 If offsite power is lost when a diesel generator is synchronized to the grid, immediately open the normal supply to the associated nuclear service bus.

5.4 Large pump motors should be restarted in accordance with the motor starting guidelines outlined in Enclosure 9.13.

5.5 The Bruce-GM Diesel Generators GEA/GEB shall NOT be restarted if the unit has been shutdown for more than 15 minutes after a loaded operation. Due to lubrication restrictions, the engine cannot be restarted until 3 hours have elapsed.

5.6 Before each and every diesel generator start, prepare the engine for prelubrication. For the Bruce-GM diesel generators, check to assure the soak-back and the bypass motor driven lube oil pumps are in operation. For the TDI diesel generators, check to assure the turbocharger drip full flow bypass valve is open.

5.7 Whenever a DC bus or distribution panel is de-energized, an operator will be assigned to monitor battery voltages.

5.8 The verifiable lineup and operability of systems in support of this test is the responsibility of the Control Room operations personnel. The sign off, by the assigned Operations Supervisor, of system/component operability or lineup will be based on a positive response to that query from Control Room operating personnel, i.e., (Verify Train "A" (GEA and GEA2) diesel generators are operable and lined up in their normal standby status.). It is therefore implied that the supportive systems are lined up per the appropriate Operating Procedure.

5.9 Whenever a DC bus is being powered solely from its respective 125 VDC batteries the bus voltage should be monitored to ensure that the voltage does not drain to a critical level. For the purposes of this test, that level will be 115 VDC.

5.10 Makeup tank maximum allowable water level is 100 inches. Maximum level allowable with Cold Overpressure Protection selected is 86 inches.

5.11 AFW Pump P-319 motor starting criteria per Process Standard AP.152 must be adhered to except during Section 6.12, Enclosure 9.23. (EAR SY-87-156) provides specific guidelines for AFW Pump P-319 motor starting for Section 6.12.

LIMITS AND PRECAUTIONS (Continued)

5.12 In accordance with Technical Specification 3.1.2-2, do not exceed cooldown rate of 10°F per hour.

5.13 Prior to running the AFW Pumps P-318 or P-319, ensure sufficient room available in the condenser hotwell for pump discharge.

5.14 When performing system lineups out of the sequence given in this procedure or in parallel, ensure all potential flow paths are reviewed.

6.0 PROCEDURE

NOTE: Throughout this Section the word "simultaneously" is used to mean at the same time. Individual reaction times will vary and this is acceptable because the exact timing of the events will be recorded by the computers and the linearcorders.

NOTE: If the computer or linearcorder fails to start on any countdown, the test will be placed on hold per AP.82 until the problem is resolved, and a test log entry shall be made.

NOTE: During the performance of this test, it may be necessary to add lube oil to the diesel generator. If necessary, oil is to be added by Operations in accordance with the appropriate operating procedure. (GEA & GEB - A.31) (GEA2 & GEB2 - A.31B)

NOTE: The word verify is used throughout this procedure as a direction to take the necessary action to ensure a stated condition exists (i.e., verify CLOSED, verify OPEN).

NOTE: Strip Charts are generated from data acquisition points during the performance of this test procedure. Enter the following timing data on each chart when it is removed from the recorder. The strip chart speed will be 25 millimeters/second for the first 15 seconds and 10 millimeters/second for the remainder of each diesel engine run.

1) Date of test
2) Test step number
3) Time at start of test
4) Time at end of test
5) Chart speed
6) Trace identification
7) Trace calibration
8) Signature of Test Director
9) Recorder CTE #
10) Timing MARK setting

NOTE: Throughout this procedure the following terms are defined as:

1) LOOP-SFAS = Signals occur simultaneously
2) LOOP/SFAS = LOOP signals followed by SFAS signals
3) SFAS/LOOP = SFAS signals followed by LOOP signals

NOTE: A Signature/Initials Sheet (Enclosure 9.2) and a Rancho Seco Test Log (Enclosure 9.3) shall be maintained during the conduct of this test by the Test Director.

PROCEDURE (Continued)

NOTE: For all breaker sequencing steps in the procedure, see Enclosure 9.16 for acceptable values.

NOTE: The information retrieved from the data acquisition equipment for the various test sequences is recorded and stored in the computer memory during testing. The data cannot be made available until after the test section is complete. As a result, the steps requiring verification by the data acquisition equipment may be performed out of sequence.

NOTE: The Linearcorders and data acquisition computers will be started per a given step. The stopping of this equipment is to be determined by the sequence of events at the specific time and place as determined by the Test Director. The chart speed of the linearcorders and the scan rate of the computer will be established and verified per Enclosure 9.4.

NOTE: Linearcorders A-1, A2-1, B-1, and B2-1 will be used as the primary data for diesel parameters. The A-2, A2-2, B-2, and B2-2 are for backup. If these are used for data, a test log entry will be made.

NOTE: Data from the strip charts will be analyzed as follows. IF the acceptance criteria states that a parameter must be within a specified range in a certain amount of time, the time shall be recorded when the parameter enters the range.

NOTE: Data recorders on the data acquisition computers must be time referenced to the initiating event. The computers are started approximately 3 seconds prior to the test, which the computer records as time zero. If the initiating event was D/G breaker trip, all subsequent timing for that data must be referenced to the D/G breaker trip signal.

NOTE: Test Subsection sequencing will be determined by the Test Director and the assigned Operations Supervisor based upon plant status during testing.

NOTE: IF system/equipment status required by a procedural step can be determined to be correct through a review of Operations up-to-date system status file, THEN the procedural step may be signed off by the assigned Operations Supervisor based on that record. Documentation will be required in the Test Log.

NOTE: Sections 6.1, 6.2, 6.5, and 6.6 have been successfully completed in Rev. 0 and therefore will not be revised or reperformed in STP.961, Rev. 1.

PROCEDURE (Continued)

NOTE: If an out-of-tolerance timing sequence occurs, the discrepancy may be corrected by recalibration of the related timing device under Work Request, and the details noted in the test log.

NOTE: When directed by this test to rack a breaker to the test position, the DC control power shall be energized, after reaching test position, unless this test specifically directs otherwise.

NOTE; After each LOOP actuation, the Undervoltage relay targets can be reset as required. Resetting these targets does not affect the test.

		Initials/ Date
6.1	Subtrain A SFAS/LOOP (Selected BKRs in TEST position)	
6.1 .1	Prerequisites	
6.1 .1.1	A pretest briefing h . been held with all test p..rticipants. ..is briefing will include Sections 6.1 and 6.2.	______/______
6.1 .1.2	Line up the Makeup Pump P-236 and its auxiliaries to their alternate power sources in accordance with (IAW) Operating Procedure A.15.	______/______
6.1 .1.3	Rack out the following Circuit Breakers:	
6.1 .1.3.1	52-3A21, TIE BREAKER TO LOAD CENTER S3A203	______/______
6.1 .1.3.2	52-3B21, TIE BREAKER TO LOAD CENTER S3B203	______/______
6.1 .1.3.3	52-3A203, TIE TO BUS S3A	______/______
6.1 .1.3.4	52-3B203, TIE TO BUS S3B	______/______
6.1 .1.3.5	52-4C01, STARTUP TRANS NO. 2 X94	______/______
6.1 .1.3.6	52-4D01, STARTUP TRANS NO. 2 X94	______/______
6.1 .1.3.7	52-4E06, STARTUP XFMR NO. 2	______/______
6.1 .1.3.8	52-4E13, STARTUP XFMR NO. 2	______/______
6.1 .1.3.9	52-6A04, STARTUP XFMR NO. 1-X976	______/______

PROCEDURE (Continued)

Step	Action	Initials/ Date
6.1 .1.3.10	52-6B04, STARTUP XFMR NO. 1-X976	______/______
6.1 .1.3.11	52-4A10, STARTUP NO. 2 TRANSFORMER X94	______/______
6.1 .1.4	Close or verify closed the following Circuit Breakers:	
6.1 .1.4.1	52-4A01, NUCLEAR SERVICES SUPPLY TRANS	______/______
6.1 .1.4.2	52-4A09, STATION SERVICES SUPPLY TRANS X43A	______/______
6.1 .1.4.3	52-3A05, STATION SERVICE TFMR X43A	______/______
6.1 .1.4.4	52-3A22, MCC SUPPLY BREAKER	______/______
6.1 .1.5	Verify GEA is in standby IAW Operating Procedure A.31.	______/______
6.1 .1.6	Verify Train "A" Nuclear Service bus 4A and its associated motor control centers are in their normal lineup IAW Operating Procedures A.59 and A.58.	______/______
6.1 .1.7	Verify Train "B" Nuclear Services buses (4B and 4B2) and their associated motor control centers are in their normal lineup IAW Operating Procedures A.58 and A.59.	______/______
6.1 .1.8	Verify Train "B" diesel generators (GEB and GEB2) are not providing power to their respective buses.	______/______
6.1 .1.9	OPEN the following 125 VDC circuit breakers:	
6.1 .1.9.1	72-A207 4160 SWITCHGEAR O/U VOLTAGE RELAYS	______/______
6.1 .1.9.2	72-A202 DIESEL GENERATOR A2 ENGINE CONTROL PANEL	______/______
6.1 .1.9.3	72-A204 DIESEL GENERATOR A2 ENGINE CONTROL PANEL	______/______
6.1 .1.9.4	72-A206 DSL GEN CONT PNL H2DGA2 FIELD FLASHING	______/______
6.1 .1.9.5	72-A208 DIESEL GENERATOR CONTROL PANEL H2DGA2	______/______

PROCEDURE (Continued) Initials/ Date

NOTE: Completion of Step 6.i.1.10 results in 125 VDC buses SOA2 and SOC2 and 120 VAC buses S1GA-1 and S1J being powered from their respective batteries.

6.1	.1.10	De-energize bus 3A2 IAW Operating Procedure A.59.	_______/______
6.1	.1.11	De-energize bus 4A2 IAW Operating Procedure A.58.	_______/______
6.1	.1.12	OPEN the following 125 VDC circuit breakers:	
6.1	.1.12.1	72-A205 4160 SWITCHGEAR 4A2 CONTROL	_______/______
6.1	.1.12.2	72-A211 480V LOAD CENTER 3A2 CONTROL	_______/______
6.1	.1.12.3	72-A12 BATTERY CHARGER H4BAC	_______/______
6.1	.1.12.4	72-A220 BATTERY CHARGER H4BA2C2	_______/______
6.1	. · 3	Place the following circuit breakers in the TEST (OPEN) position:	
6.1	.1.13.1	52-3A09 REACTOR BLDG SPRAY PUMP P-291A	_______/______
6.1	.1.13.2	52-3A10 RB EMERG COOLING UNIT A-500A	_______/______
6.1	.1.13.3	52-3A14 RB EMERG COOLING UNIT A-500C	_______/______
6.1	.1.13.4	52-4A02 REACTOR MAKEUP PUMP P-236 ALT	_______/______
6.1	.1.13.5	52-4A05 DECAY HEAT REMOVAL PUMP P-261A	_______/______
6.1	.1.13.6	52-3A18 NUCLEAR SERVICE CLG WTR PP P-482A	_______/______
6.1	.1.13.7	52-4A04 HP INJECTION PUMP P-238A	_______/______
6.1	.1.14	Verify Nuclear Service Raw Water Pump P-472A is in standby IAW Operating Procedure A.25.	_______/______
6.1	.1.15	Verify/place "B" DHR system in operation for core cooling IAW Operating Procedure A.8, except as modified by Enclosure 9.7.	_______/______

6.1 .1.16 Verify continuous communications have been established between the Control Room, diesel generator Control Rooms for GEA and GEA2, the 4.16 KV, 480 VAC, DC buses under test, and the data acquisition computer location, in accordance with Enclosure 9.15. ________/________

6.1 .1.17 Inform plant personnel of the impending SFAS/LOOP actuation to subtrain A over the plant public address (PA) system. ________/________

6.1 .2 Subtrain A SFAS/LOOP with Subtrain A2 De-energized (Selected BKRs in TEST position)

CAUTION: THE BRUCE-GM DIESEL GENERATORS GEA/GEB SHALL NOT BE RESTARTED IF THE UNIT HAS BEEN SHUTDOWN FOR MORE THAN 15 MINUTES AFTER A LOADED OPERATION. DUE TO LUBRICATION RESTRICTIONS, THE ENGINE CANNOT BE RESTARTED UNTIL THREE (3) HOURS HAVE ELAPSED.

NOTE: The following steps will cause bus 4A to become momentarily de-energized and it will cause the diesel generator GEA to start. Buses 3A2 and 4A2 and their associated motor control centers and selected DC power sources will be de-energized for an extended period of time.

NOTE: The Linearcorder and data acquisition computers will be started per a given step, the stopping of this equipment is to be determined by the sequence of events at the specific time and place as determined by the Test Director. A test log entry will be made to indicate this action. The chart speed of the Linearcorder and the scan rate of computer will be established and verified per Enclosure 9.4.

NOTE: Before each and every diesel generator start, prepare the engine for prelubrication. For the Bruce-GM diesel generators, check to assure the soak-back and the bypass motor driven lube oil pumps are in operation. For the TDI diesel generators, check to assure the turbocharger drip full flow bypass valve is open per Enclosure 9.14.

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PROCEDURE (Continued)

		Initials/ Date
6.1 .2.1	Initiate a countdown from 10 to ZERO over the plant PA system.	______/______
6.1 .2.2	At the count of 3, start the Linearcorder A-1 and A-2 and the data acquisition computers.	______/______
6.1 .2.3	At the count of ZERO, at panel H1RC, initiate an SFAS actuation by depressing the SFAS CHANNEL pushbuttons 1A, 2A, 3A and 4A.	______/______
6.1 .2.4	Verify the following after the SFAS actuation from the data acquisition equipment:	
6.1 .2.4.1	GEA STARTS, accelerates to 900 RPM <10 sec.	______/______
6.1 .2.4.2	GEA voltage ___________ 4160 ± 416 VAC <10 sec.	______/______
6.1 .2.4.3	GEA frequency ________ 60 ± 1.2 HZ <10 sec.	______/______
6.1 .2.4.4	GEA output breaker (52-4A08) DOES NOT close.	______/______
6.1 .2.4.5	The absence of voltage and current on Buses 3A2 and 4A2 continuously.	______/______
6.1 .2.5	Verify the following loads are energized after Diesel Generator started:	
6.1 .2.5.1	52-3A13 DIESEL GEN RM VENT EXH FAN A-544A	______/______
6.1 .2.5.2	52-3A17 DIESEL GEN RM VENT SUP FAN A-544B	______/______
6.1 .2.5.3	52-4A07 NS RAW WATER PUMP P-472A	______/______
6.1 .2.6	Verify the following loads DID NOT trip:	
6.1 .2.6.1	52-4A01 NUCLEAR SERVICES SUPPLY TRANS X74	______/______
6.1 .2.6.2	52-4A09 STATION SERVICES TRANSFORMER X43A	______/______
6.1 .2.6.3	52-3A05 STATION SERVICE TRFMR X43A	______/______

NOTE The information retrieved from the data acquisition equipment in Steps 6.1.2.7 - 6.1.2.9 for the various sequencing actions will be obtained when test conditions stabilize, therefore, the input to these steps can be entered at a later time at the discretion of the Test Director and will be common throughout the procedure.

6.1.2.7	Verify the sequencing of load breakers in the TEST position, from the data acquisition computer as follows:		
6.1.2.7.1	RB EMERG AC, A-500A (52-3A10)	______SEC	______/______
6.1.2.7.2	RB EMERG AC, A-500C (52-3A14)	______SEC	______/______
6.1.2.7.3	NSCW PUMP, P-482A (52-3A18)	______SEC	______/______
6.1.2.7.4	HPI PUMP, P-238A (52-4A04)	______SEC	______/______
6.1.2.7.5	DHR PUMP, P-261A (52-[illegible]05)	______SEC	______/______
6.1.2.7.6	RX M/U PUMP P-236 (52-4A02)	______SEC	______/______
6.1.2.8	Verify the sequencing, from the data acquisition computer, of the RBS PUMP P-291A (52-3A09) load breaker in the TEST position after approximately 5 minutes.		______/______
6.1.2.9	Verify the sequencing of loads, from the data acquisition computer, to their respective buses as follows:		
6.1.2.9.1	52-3A13 (DIESEL GEN RM VENT EXH FAN A-544A)	______SEC	______/______
6.1.2.9.2	52-3A17 (DIESEL GEN RM VENT EXH FAN A-544B)	______SEC	______/______
6.1.2.9.3	52-4A07 NS RAW WATER PUMP P-472A	______SEC	______/______

PROCEDURE (Continued) Initials/ Date

6.1 .2.10 Record the following information from the computer data acquisition equipment after at least 5 minutes:

GEA

6.1 .2.10.1 Voltage __________ VAC (3744-4576) ________/________

6.1 .2.10.2 Frequency __________ HZ (58.8-61.2) ________/________

6.1 .2.11 At cubicle 4A08, OPEN Test Switch 1 in the 486-1 lockout relay for DG OUTPUT CKT BKR 52-4A08. (This prevents auto closure of the DG output breaker.)

6.1 .2.12 Initiate a countdown from 10 to ZERO over the plant PA system. ________/________

NOTE: The next step will de-energize Bus 4A.

6.1 .2.13 At the count of ZERO, at cubicle 4A01, OPEN the normal supply breaker (52-4A01) to bus 4A (LOOP). ________/________

CAUTION: PERFORM NEXT THREE (3) STEPS AS RAPIDLY AS POSSIBLE AS DIESEL GENERATOR HAS NO COOLING WATER.

6.1 .2.14 Verify the (LOOP) loadshed of Bus 4A as follows:

6.1 .2.14.1 52-3A09 REACTOR BUILDING SPRAY PUMP P-291A ________/________

6.1 .2.14.2 52-3A10 RB EMERG COOLING UNIT A-500A ________/________

6.1 .2.14.3 52-3A13 DIESEL GEN RM VENT EXH FAN A-544A ________/________

6.1 .2.14.4 52-3A14 RB EMERG COOLING UNIT A-500C ________/________

6.1 .2.14.5 52-3A17 DIESEL GEN RM VENT SUP FAN A-544B ________/________

6.1 .2.14.6 52-3A18 NUCLEAR SERVICE CLG WTR PP P-482A ________/________

6.1 .2.14.7 52-4A02 REACTOR MAKEUP PUMP P-236 ALT ________/________

6.1 .2.14.8 52-4A04 HP INJECTION PUMP P-238A ________/________

6.1 .2.14.9 52-4A05 DECAY HEAT REMOVAL PUMP P-261A ________/________

PROCEDURE (Continued) Initials/ Date

6.1	.2.14.10	52-4A07 NS RAW WATER PUMP P-472A		____/____
6.1	.2.14.11	52-4A09 STATION SERVICE TFMR X43A		____/____
6.1	.2.15	At cubicle 4A08, CLOSE (opened in Step 6.1.2.11) test switch 1-2 in the 486-1 lockout relay for DG CKT BKR 52-4A08 (This allows closure of the DG output breaker.) and verify the following:		____/____
6.1	.2.15.1	GEA output breaker (52-4A08) closes.		____/____
6.1	.2.15.2	The absence of voltage and current on Buses 3A2 and 4A2.		____/____
	NOTE:	The timing data retrieved from the data acquisition equipment in Steps 6.1.2.16 - 6.1.2.17 for the various sequencing actions will be obtained when test conditions stabilize, therefore, the input to these steps can be entered at a later time at the discretion of the Test Director.		
6.1	.2.16	Verify the sequencing of loads, from the data acquisition computer, to their respective buses as follows:		
6.1	.2.16.1	52-3A13 DIESEL GEN RM VENT EXH FAN A-544A	____SEC	____/____
6.1	.2.16.2	52-3A17 DIESEL GEN RM VENT EXH FAN A-544B	____SEC	____/____
6.1	.2.16.3	52-4A07 NS RAW WATER PUMP P-472A	____SEC	____/____
6.1	.2.16.4	52-4A09 STATION SERVICES TRANSFORMER X43A	____SEC	____/____
6.1	.2.17	Verify the sequencing of load breakers in the TEST position, from the data acquisition computer as follows:		
6.1	.2.17.1	52-3A09 REACTOR BLDG SPRAY PUMP P-291A	____SEC	____/____
6.1	.2.17.2	52-3A10 RB EMERG COOLING UNIT A-500A	____SEC	____/____
6.1	.2.17.3	52-3A14 RB EMERG COOLING UNIT A-500C	____SEC	____/____

PROCEDURE (Continued) | Initials/ Date

6.1 .2.17.4 52-3A18 NUCLEAR SERVICE CLG WTR PP P-482A _______SEC ________/______

6.1 .2.17.5 52-4A02 REACTOR MAKEUP PUMP P-236 ALT _______SEC ________/______

6.1 .2.17.6 52-4A04 HP INJECTION PUMP P-238A _______SEC ________/______

6.1 .2.17.7 52-4A05 DECAY HEAT REMOVAL PUMP P-261A _______SEC ________/______

6.1 .2.18 Record the following information from the data acquisition equipment after at least 5 minutes:

GEA

6.1 .2.18.1 Voltage _________ VAC (3744-4576) ________/______

6.1 .2.18.2 Frequency _________ HZ (58.8-61.2) ________/______

6.1 .2.19 Depress the SFAS CHANNEL RESET pushbuttons 1A, 2A, 3A and 4A at Control Room panel H1RC. ________/______

6.1 .2.20 The following steps will reset the load sequencing circuit and EFIC logic. ________/______

6.1 .2.20.1 At Control Room panel H2SFA, depress the NS Bus A2 and A UNLOADING RESET A2/A pushbutton. ________/______

6.1 .2.20.2 At EFIC panel H1SSE, depress AFW reset BLPB on EFIC Channel "A" INITIATE/TEST MATRIX. ________/______

6.1 .2.20.3 At EFIC panel H1SSE, depress EFIC "A" Control INITIATED BLPB. ________/______

6.1 .2.21 At Control Room panel H2ES, depress TRIP BLPB, OPEN GEA output circuit breaker 52-4A08. ________/______

6.1 .2.22 Verify that buses 3A and 4A de-energize. ________/______

6.1 .2.23 Verify that the GEA output breaker 52-4A08 recloses. ________/______

NOTE: The timing data retrieved from the data acquisition equipment in Step 6.1.2.24 for the various sequencing actions will be obtained when test conditions stabilize, therefore, the input to these steps can be entered at a later time at the discretion of the Test Director.

6.1 .2.24 Verify the sequencing of loads, from the data acquisition computer, to their respective buses as follows:

6.1 .2.24.1 52-3A13 (DIESEL GEN RM VENT EXH FAN A-544A) ______SEC ______/______

6.1 .2.24.2 52-3A17 (DIESEL GEN RM VENT EXH FAN A-544B) ______SEC ______/______

6.1 .2.24.3 52-4A07 NS RAW WATER PUMP P-472A ______SEC ______/______

6.1 .2.24.4 52-4A09 STATION SERVICES TRANSFORMER X43A ______SEC ______/______

6.1 .2.25 Record the following information from the data acquisition equipment after at least 5 minute:

GEA

6.1 .2.25.1 Voltage ________ VAC (3744-4576) ______/______

6.1 .2.25.2 Frequency ________ HZ (58.8-61.2) ______/______

CAUTION: IF OFFSITE POWER IS LOST WHEN A DIESEL GENERATOR IS SYNCHRONIZED TO THE GRID, IMMEDIATELY OPEN THE NORMAL SUPPLY TO THE ASSOCIATED NUCLEAR SERVICE BUS.

6.1 .2.26 Synchronize GEA to the grid across bus 4A normal supply circuit breaker 52-4A01 IAW Operating Procedure A.31. ______/______

6.1 .2.27 Shutdown GEA IAW Operating Procedure A.31. ______/______

6.1 .2.28 If Subtrain A LOOP-SFAS (Subsection 6.2) will be tested immediately and the Shift Supervisor concurs; GO TO Step 6.2.1.14 and N/A Steps 6.1.2.29 through 6.2.1.13, otherwise, N/A this step and continue.

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PROCEDURE (Continued) Initials/ Date

NOTE: Equipment started during SFAS initiation may now be stopped to eliminate unnecessary running of emergency equipment. This includes RB upper dome circulators, RB Emergency Coolers, D/G supply and exhaust fans and NSRW pump.

6.1 .2.29	Place the following circuit breakers in the CONNECTED position or as directed by the Shift Supervisor: (make a test log entry for those not connected).	
6.1 .2.29.1	52-3A09 REACTOR BLDG SPRAY PUMP P-291A	________/______
6.1 .2.29.2	52-3A10 RB EMERG COOLING UNIT A-500A	________/______
6.1 .2.29.3	52-3A14 RB EMERG COOLING UNIT A-500C	________/______
6.1 .2.29.4	52-3A18 NUCLEAR SERVICE CLG WTR PP P-482A	________/______
6.1 .2.29.5	52-4A02 REACTOR MAKEUP PUMP P-236 ALT	________/______
6.1 .2.29.6	52-4A04 HP INJECTION PUMP P-238A	________/______
6.1 .2.29.7	52-4A05 DECAY HEAT REMOVAL PUMP P-261A	________/______
6.1 .2.30	CLOSE the following 125 VDC circuit breakers:	
6.1 .2.30.1	72-A205 4160 SWITCHGEAR 4A2 CONTROL	________/______
6.1 .2.30.2	72-A211 480V LOAD CENTER 3A2 CONTROL	________/______
6.1 .2.30.3	72-A12 BATTERY CHARGER H4BAC	________/______
6.1 .2.31	Energize bus 4A2 IAW Operating Procedure A.58.	________/______
6.1 .2.32	Energize bus 3A2 IAW Operating Procedure A.59.	________/______
6.1 .2.33	CLOSE the following 125 VDC circuit breakers:	
6.1 .2.33.1	72-A202 DIESEL GENERATOR A2 ENGINE CONTROL PANEL	________/______
6.1 .2.33.2	72-A204 DIESEL GENERATOR A2 ENGINE CONTROL PANEL	________/______
6.1 .2.33.3	72-A206 DSL GEN CONT PNL H2DGA2 FIELD FLASHING	________

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PROCEDURE (Continued)		Initials/ Date
6.1 .2.33.4	72-A208 DIESEL GENERATOR CONTROL PANEL H2DGA2	________/________
6.1 .2.33.5	72-A207 4160 SWITCHGEAR O/U VOLTAGE RELAYS	________/________
6.1 .2.34	Notify the Shift Supervisor that subtrain A SFAS/LOOP test is complete.	________/________

PROCEDURE (Continued) Initials/ Date

6.2 Subtrain A LOOP-SFAS (Selected BKRs in TEST position)

6.2 .1 Prerequisites

6.2 .1.1	A pretest briefing has been held with all test participants.	______/______
6.2 .1.2	Line up the Makeup Pump P-236 and its auxiliaries to their alternate power source IAW Operating Procedure A.15.	______/______
6.2 .1.3	Verify the following CKT BKRs are RACKED OUT:	
6.2 .1.3.1	52-3A21, TIE BREAKER TO LOAD CENTER S3A203	______/______
6.2 .1.3.2	52-3B21, TIE BREAKER TO LOAD CENTER S3B203	______/______
6.2 .1.3.3	52-3A203, TIE TO BUS S3A	______/______
6.2 .1.3.4	52-3B203, TIE TO BUS S3B	______/______
6.2 .1.3.5	52-4C01, STARTUP TRANS NO. 2 X94	______/______
6.2 .1.3.6	52-4D01, STARTUP TRANS NO. 2 X94	______/______
6.2 .1.3.7	52-4E06, STARTUP XFMR NO. 2	______/______
6.2 .1.3.8	52-4E13, STARTUP XFMR NO. 2	______/______
6.2 .1.3.9	52-6A04, STARTUP XFMR NO. 1-X976	______/______
6.2 .1.3.10	52-6B04, STARTUP XFMR NO. 1-X976	______/______
6.2 .1.3.11	52-4A10, STARTUP NO. 2 TRANSFORMER X94	______/______
6.2 .1.4	Verify the following CKT BKRs are CLOSED:	
6.2 .1.4.1	52-4A01, NUCLEAR SERVICES SUPPLY TRANS	______/______
6.2 .1.4.2	52-4A09, STATION SERVICES SUPPLY TRANS X43A	______/______
6.2 .1.4.3	52-3A05, STATION SERVICE TFMR X43A	______/______
6.2 .1.4.4	52-3A22, MCC SUPPLY BREAKER	______/______
6.2 .1.5	Verify GEA is in standby IAW Operating Procedure A.31.	______/______

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PROCEDURE (Continued) Initials/ Date

6.2	.1.6	Verify Train "A" Nuclear Service bus 4A and its associated motor control centers are in their normal lineup IAW Operating Procedures A.59 and A.58.	______/______
6.2	.1.7	Verify Train "B" Nuclear Services buses (4B and 4B2) are in their normal lineup IAW Operating Procedures A.58 and A.59.	______/______
6.2	.1.8	Verify/place "B" DHR system in operation for core cooling IAW Operating Procedure A.8, except as modified by Enclosure 9.7.	______/______
6.2	.1.9	Verify Train "B" diesel generators (GEB and GEB2) are not providing power to their respective buses.	______/______
6.2	.1.10	OPEN the following 125 VDC circuit breakers:	
6.2	.1.10.1	72-A207 4160 SWITCHGEAR O/U VOLTAGE RELAYS	______/______
6.2	.1.10.2	72-A202 DIESEL GENERATOR A2 ENGINE CONTROL PANEL	______/______
6.2	.1.10.3	72-A204 DIESEL GENERATOR A2 ENGINE CONTROL PANEL	______/______
6.2	.1.10.4	72-A206 DSL GEN CONT PNL H2DGA2 FIELD FLASHING	______/______
6.2	.1.10.5	72-A208 DIESEL GENERATOR CONTROL PANEL H2DGA2	______/______
	<u>NOTE</u>:	Completion of Step 6.2.1.11 results in 125 VDC buses SOA2 and SOC2 and 120 VAC buses S1GA-1 and S1J being powered from their respective batteries.	
6.2	.1.11	De-energize bus 3A2 IAW Operating Procedure A.59.	______/______
6.2	.1.12	De-energize bus 4A2 IAW Operating Procedure A.58.	______/______
6.2	.1.13	OPEN the following 125 VDC circuit breakers:	

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PROCEDURE (Continued) Initials/ Date

6.2	.1.13.1	72-A205 4160 SWITCHGEAR 4A2 CONTROL	______/______
6.2	.1.13.2	72-A211 480V LOAD CENTER 3A2 CONTROL	______/______
6.2	.1.13.3	CKT BKR 72-A12 BAT CHARGER H4BAC	______/______
6.2	.1.14	Place the following circuit breakers in the TEST (OPEN) position:	
6.2	.1.14.1	52-3A09 REACTOR BLDG SPRAY PUMP P-291A	______/______
6.2	.1.14.2	52-3A10 RB EMERG COOLING UNIT A-500A	______/______
6.2	.1.14.3	52-3A14 RB EMERG COOLING UNIT A-500C	______/______
6.2	.1.14.4	52-3A18 NUCLEAR SERVICE CLG WTR PP P-482A	______/______
6.2	.1.14.5	52-4A02 REACTOR MAKEUP PUMP P-236 ALT	______/______
6.2	.1.14.6	52-4A04 HP INJECTION PUMP P-238A	______/______
6.2	.1.14.7	52-4A05 DECAY HEAT REMOVAL PUMP P-261A	______/______
6.2	.1.15	Verify Nuclear Service Raw Water Pump P-472A is in standby IAW Operating Procedure A.25.	______/______
6.2	.1.16	Verify continuous communications have been established between the Control Room, diesel generator Control Rooms for GEA and GEA2, the 4.16 KV, 480 VAC, DC buses under test, and the data acquisition computer location, in accordance with Enclosure 9.15.	______/______
6.2	.1.17	Inform plant personnel of the impending LOCP-SFAS actuation to subtrain A over the plant public address (PA) system.	______/______

6.2 .2 Subtrain A LOOP-SFAS with Subtrain A2 De-energized (Selected BKRs in TEST position)

CAUTION: THE BRUCE-GM DIESEL GENERATORS GEA/GEB SHALL NOT BE RESTARTED IF THE UNIT HAS BEEN SHUTDOWN FOR MORE THAN 15 MINUTES AFTER A LOADED OPERATION. DUE TO LUBRICATION RESTRICTIONS, THE ENGINE CANNOT BE RESTARTED UNTIL THREE (3) HOURS HAVE ELAPSED.

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NOTE: The following steps will cause bus 4A to become momentarily de-energized and it will cause the diesel generator GEA to start. Buses 3A2 and 4A2 and their associated motor control centers and selected DC power sources will be de-energized for an extended period of time.

NOTE: The Linearcorder and data acquisition computers will be started per a given step, the stopping of this equipment is to be determined by the sequence of events at the specific time and place as determined by the Test Director. A test log entry will be made to indicate this action. The chart speed of the Linearcorder and the scan rate of computer will be established and verified per Enclosure 9.4.

NOTE: Before each and every diesel generator start, prepare the engi . for prelubrication. For th Bruce-GM diesel generators, check to assure the soak-back and the bypass motor driven lube oil pumps are in operation. For the TDI diesel generators, check to assure the turbocharger drip full flow bypass valve is open per Enclosure 9.14.

6.2 .2.1 Initiate a countdown from 10 to ZERO over the plant PA system. ________/________

6.2 .2.2 At the count of 3, start the Linearcorder A-1 and A-2 and the data acquisition computers. ________/________

NOTE: To prevent an unloading sequence relay race that might possibly block the manual trip of the normal supply breaker, do not initiate the SFAS actuation until the TRIP BLPB indicates that breaker 52-4A01 is open.

6.2 .2.3 At the count of ZERO, simultaneously OPEN the normal supply breaker to bus 4A (52-4A01) at panel H2ES and at panel H1RC, initiate an SFAS actuation by depressing the SFAS CHANNEL pushbuttons 1A, 2A, 3A and 4A. ________/________

6.2 .2.4 Verify that buses 3A and 4A de-energize. ________/________

PROCEDURE (Continued) Initials/ Date

6.2 .2.5	Verify the following after the LOOP-SFAS actuation from the data acquisition equipment:			
6.2 .2.5.1	GEA STARTS, accelerates to 900 RPM <10 sec.			____/____
6.2 .2.5.2	GEA output breaker (52-4A08) CLOSES.			____/____
6.2 .2.5.3	GEA voltage ________4160 ± 416 VAC <10 sec.			____/____
6.2 .2.5.4	GEA frequency ______60 ± 1.2 HZ <10 sec.			____/____
6.2 .2.5.5	The absence of voltage and current on Buses 3A2 and 4A2.			____/____

NOTE: The timing data retrieved from the data acquisition equipment in steps for the various sequencing actions will be obtained when test conditions stabilize, therefore, the input to these steps can be entered at a later date at the discretion of the Test Director.

6.2 .2.6	Verify the sequencing of load breakers in the TEST position, from the data acquisition computer as follows:			
6.2 .2.6.1	52-3A10 RB EMERG COOLING UNIT, A-500A	______	SEC	____/____
6.2 .2.6.2	52-3A14 RB EMERG COOLING UNIT, A-500C	______	SEC	____/____
6.2 .2.6.3	52-3A18 NUCLEAR SERVICE CLG WTR PP P-482A	______	SEC	____/____
6.2 .2.6.4	52-4A04 HP INJECTION PUMP P-238A	______	SEC	____/____
6.2 .2.6.5	52-4A05 DECAY HEAT REMOVAL PUMP P-261A	______	SEC	____/____
6.2 .2.6.6	X43A1 SPLY BKR (52-4A09)	______	SEC	____/____
6.2 .2.6.7	M/U PUMP P-236, ALT FD (52-4A02)	______	SEC	____/____

PROCEDURE (Continued) Initials/ Date

6.2 .2.7 Verify the sequencing of loads from the data acquisition computer, to the respective buses as follows:

6.2 .2.7.1 52-3A13 DIESEL GEN RM VENT EXH FAN A-544A ______SEC ________/______

6.2 .2.7.2 52-3A17 DIESEL GEN RM VENT EXH FAN A-544B ______SEC ________/______

6.2 .2.7.3 52-4A07 NS RAW WATER PUMP P-472B ______SEC ________/______

6.2 .2.8 Verify the sequencing, from the data acquisition computer, of the RBS PUMP P-29.A (52-3A09) load breaker after approximately 5 minutes. ________/______

6.2 .2.9 Record the following information from the computer data acquisition equipment after at least 5 minutes:

GEA

6.2 .2.9.1 Voltage __________ VAC (3744-4576) ________/______

6.2 .2.9.2 Frequency __________ HZ (58.8-61.2) ________/______

6.2 .2.10 Simulate a Diesel Generator NEGATIVE PHASE SEQUENCE by manually operating relay 446 in cubicle 4A11 and verify that circuit breaker 52-4A08 (GEA output) DOES NOT trip. (Dwg. E-204, Sh-1) ________/______

6.2 .2.11 Simulate a Diesel Generator LOSS OF FIELD by manually operating relay 440 in cubicle 4A11 and verify that circuit breaker 52-4A08 (GEA output) DOES NOT trip. (Dwg. E-204, Sh-1) ________/______

6.2 .2.12 Simulate a Diesel Generator REVERSE POWER by manually operating relay 432 in cubicle 4A11 and verify that circuit breaker 52-4A08 (GEA output) DOES NOT trip. (Dwg. E-204, Sh-1) ________/______

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6.2	.2.13	At panel H2DEA, simulate a CRANKCASE HIGH PRESS HI by momentarily jumpering relay K4, contact 1-3. (Dwg. E-204, Sh-66)	_____/_____
6.2	.2.13.1	Verify that diesel generator GEA DOES NOT trip and continues to operate.	_____/_____
6.2	.2.14	At panel H7J272, simulate a JACKET WATER HIGH TEMP by momentarily jumpering TISHH-88651 between TB3-8 and TB8-14. (Dwg. E-204, Sh-65)	_____/_____
6.2	.2.14.1	Verify that diesel generator GEA DOES NOT trip and continues to operate.	_____/_____
6.2	.2.15	At panel H7J272, simulate a LUBE OIL LOW PRESSURE by momentarily jumpering lube oil pressure switch PSL-88657 between TB5-36 and TB5-27. (Dwg. E-204, Sh-65)	_____/_____
6.2	.2.15.1	Verify that diesel generator GEA DOES NOT trip and continues to operate.	_____/_____
6.2	.2.16	At panel H7J272, simulate an EMERGENCY STOP by depressing the local EMERGENCY STOP pushbutton S4. (Dwg. E-204, Sh-65)	_____/_____
6.2	.2.16.1	Verify that diesel generator GEA DOES NOT trip and continues to operate.	_____/_____
6.2	.2.17	Outside of the GEA diesel generator room, simulate an EMERGENCY STOP by depressing the remote EMERGENCY STOP pushbutton located on the wall adjacent to the room entrance. (Dwg. E-204, Sh-65)	_____/_____
6.2	.2.17.1	Verify that diesel generator GEA DOES NOT trip and continues to operate.	_____/_____
6.2	.2.18	Depress the SFAS CHANNEL RESET pushbuttons 1A, 2A, 3A and 4A at Control Room panel H1RC.	_____/_____
6.2	.2.19	The following steps will reset the load sequencing circuit and EFIC logic:	
6.2	.2.19.1	At Control Room panel H2SFA, depress the NS Bus A2 and A UNLOADING RESET A2/A pushbutton.	_____/_____

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6.2 .2.19.2 At EFIC panel H1SSE, depress AFW reset BLPB on EFIC Channel "A" INITIATE/TEST MATRIX. ________/________

6.2 .2.19.3 At EFIC panel H1SSE, depress EFIC "A" Control INITIATED BLPB. ________/________

6.2 .2.20 Place the following circuit breakers in the TEST (OPEN) position:

6.2 .2.20.1 52-3A09 REACTOR BUILDING SPRAY PUMP P-291A ________/________

6.2 .2.20.2 52-3A10 RB EMERG COOLING UNIT A-500A ________/________

6.2 .2.20.3 52-3A14 RB EMERG COOLING UNIT A-500C ________/________

6.2 .2.20.4 52-3A18 NUCLEAR SERVICE CLG WTR PP P-482A ________/________

6.2 .2.20.5 52-4A02 REACTOR MAKEUP PUMP P-236 ALT ________/________

6.2 .2.20.6 52-4A04 HP INJECTION PUMP P-238A ________/________

6.2 .2.20.7 52-4A05 DECAY HEAT REMOVAL PUMP P-261A ________/________

<u>CAUTION</u>: IF OFFSITE POWER IS LOST WHEN A DIESEL GENERATOR IS SYNCHRONIZED TO THE GRID, IMMEDIATELY OPEN THE NORMAL SUPPLY TO THE ASSOCIATED NUCLEAR SERVICE BUS.

6.2 .2.21 Synchronize GEA to the grid across bus 4A normal supply circuit breaker 52-4A01 IAW Operating Procedure A.31. ________/________

6.2 .2.22 Shutdown GEA IAW Operating Procedure A.31. ________/________

<u>NOTE</u>: Equipment started during SFAS initiation may now be stopped to eliminate unnecessary running of emergency equipment. This includes RB upper dome circulators, RB Emergency Coolers, D/G supply and exhaust fans and NSRW pump.

6.2 .2.23 Place the following circuit breakers in the CONNECTED position or as directed by the Shift Supervisor: (make a test log entry for those not connected).

6.2 .2.23.1 52-3A09 REACTOR BLDG SPRAY PUMP P-291A ________/________

6.2 .2.23.2 52-3A10 RB EMERG COOLING UNIT A-500A ________/________

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			Initials/ Date
6.2	.2.23.3	52-3A14 RB EMERG COOLING UNIT A-500C	________/______
6.2	.2.23.4	52-3A18 NUCLEAR SERVICE CLG WTR PP P-482A	________/______
6.2	.2.23.5	52-4A04 HP INJECTION PUMP P-238A	________/______
6.2	.2.23.6	52-4A05 DECAY HEAT REMOVAL PUMP P-261A	________/______
6.2	.2.24	Return Makeup Pump P-236 and its auxiliaries to their normal standby status IAW Operating Procedure A.15, or as directed by the Shift Supervisor.	________/______
6.2	.2.25	CLOSE the following 125 VDC circuit breakers:	
6.2	.2.25.1	72-A205 4160 SWITCHGEAR 4A2 CONTROL	________/______
6.2	.2.25.2	72-A211 480V LOAD CENTER 3A2 CONTROL	________/______
6.2	.2.25.3	72-A12 BATTERY CHARGER H4BAC	________/______
6.2	.2.26	Energize bus 4A2 IAW Operating Procedure A.58.	________/______
6.2	.2.27	Energize bus 3A2 IAW Operating Procedure A.59.	________/______
6.2	.2.28	CLOSE the following 125 VDC circuit breakers:	
6.2	.2.28.2	72-A202 DIESEL GENERATOR A2 ENGINE CONTROL PANEL)	________/______
6.2	.2.28.2	72-A204 DIESEL GENERATOR A2 ENGINE CONTROL PANEL	________/______
6.2	.2.28.3	72-A206 DSL GEN CONT PNL H2DGA2 FIELD FLASHING	________/______
6.2	.2.28.4	72-A208 (DIESEL GENERATOR CONTROL PANEL H2DGA2	________/______
6.2	.2.28.5	72-A207 4160 SWITCHGEAR O/U VOLTAGE RELAYS	________/______
6.2	.2.29	Notify the Shift Supervisor that Subtrain A LOOP-SFAS test is complete.	________/______

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PROCEDURE (Continued) Initials/ Date

6.3 Subtrain A2 SFAS/LOOP (Selected BKRs in TEST position)

6.3 .1 Prerequisite Lineups

6.3	.1.1	A preliminary briefing has been conducted with the Shift Supervisor and prerequisite lineups can commence. (Formal briefing to occur later.)	________/______
6.3	.1.2	Run the data acquisition program "INIT" on the "A" computer and verify all channels are functioning properly.	________/______
6.3	.1.3	Verify the following CKT BKRs are RACKED OUT:	
6.3	.1.3.1	52-3A21, TIE BREAKER TO LOAD CENTER S3A2	________/______
6.3	.1.3.2	52-3B21, TIE BREAKER TO LOAD CENTER S3B2	________/______
6.3	.1.3.3	52-3A203, TIE TO BUS S3A	________/______
6.3	.1.3.4	52-3B203, TIE TO BUS S3B	________/______
6.3	.1.3.5	52-4C01, STARTUP TRANS NO. 2 X94	________/______
6.3	.1.3.6	52-4D01, STARTUP TRANS NO. 2 X94	________/______
6.3	.1.3.7	52-4E06, STARTUP XFMR NO. 2	________/______
6.3	.1.3.8	52-4E13, STARTUP XFMR NO. 2	________/______
6.3	.1.3.9	52-6A04, STARTUP XFMR NO. 1-X976	________/______
6.3	.1.3.10	52-6B04, STARTUP XFMR NO. 1-X976	________/______
6.3	.1.4	Verify the following CKT BKRs are connected and CLOSED:	
6.3	.1.4.1	52-4A207 NSS XFMR X74	________/______
6.3	.1.4.2	52-4A204 480 VOLT LOAD CENTER S3A2	________/______
6.3	.1.4.3	52-3A202, MAIN BREAKER	________/______
6.3	.1.4.4	52-3A206 MCC S2A2	________/______

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6.3	.1.4.5	52-3A211 MCC S2A3	____/____
6.3	.1.4.6	52-3A215 MCC S2A4	____/____
6.3	.1.4.7	52-3A210 ESS CONDENSING UNIT U-545A CR/TSC	____/____
6.3	.1.4.8	52-3A217 NSEB ESSENTIAL CONDENSING UNIT U-503A	____/____
6.3	.1.5	Verify 52-4A203 START-UP XFMR NO. 2 is in the TEST position and OPEN.	____/____
6.3	.1.6	Verify 52-4A202 DIESEL GENERATOR GEA2 is in the CONNECTED position and OPEN.	____/____
6.3	.1.7	Verify 52-4A205 AUX FEEDWATER PP P-319 is in the TEST position and CLOSED.	____/____
6.3	.1.8	Verify GEA2 is in standby IAW Operating Procedure A.31B, Section 4.0.	____/____
6.3	.1.9	Step Deleted.	
6.3	.1.10	Verify Train "B" Nuclear Services buses (4B and 4B2) and their associated 480V load centers and motor control centers are energized IAW Operating Procedures A.58, Sections 4.5 and 4.7 and A.59, Sections 4.1, 4.2 and 4.4.	____/____
	NOTE:	Incore temperatures are to be trended at 15 minute intervals whenever both decay heat removal systems are shutdown. The temperature should not exceed 150°F.	
6.3	.1.11	Shutdown the operating DHR Loop(s) IAW Operating Procedure A.8, Section 6.1 and/or 6.2.	____/____
6.3	.1.12	Verify Train "B" diesel generators (GEB and GEB2) are not providing power to their respective buses.	____/____
6.3	.1.13	Step Deleted	

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PROCEDURE (Continued)

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NOTE: The following steps will align the 120 VAC and 125 VDC panel power supplies so that de-energizing MCC 2A1 will have a minimum impact. Once MCC 2A1 is de-energized, 125 VDC Panel SOC will be powered solely from the "C" Battery.

6.3 .1.14 Line up 125 VDC Panel SOA to Battery Charger H4BAC IAW Operating Procedure A.61, Section 4.6.1. ________/______

6.3 .1.15 Line up 125 VDC Panel SOA2 to Battery Charger H4BA2 IAW Operating Procedure A.61, Section 4.4.7. ________/______

6.3 .1.16 Line up 125 VDC Panel SOC2 to Battery Charger H4BC2 IAW Operating Procedure A.61, Section 4.4.9. ________/______

6.3 .1.17 Line up 120 VAC Panels S1A and S1A2-1 to be supplied by Inverter S1A2 IAW Operating Procedure A.62, Section 4.2. ________/______

6.3 .1.18 Line up 120 VAC Panels S1C and S1C2-1 to be supplied by Inverter S1C2 IAW Operating Procedure A.62, Section 4.6. ________/______

6.3 .1.19 Verify backup source for Battery Charger H4BEF breaker 52-2B134 is ON. ________/______

6.3 .1.20 Line up 125 VDC Panel SOE to Battery Charger H4BEF IAW Operating Procedure A.61, Section 4.6.3. ________/______

6.3 .1.21 A pretest briefing using the Test Briefing checklist has been held with all test participants and properly documented per AP.82. Briefing to include Section 6.4 of this procedure if it is to follow immediately. ________/______

CAUTION: IF BATTERY VOLTAGE SHOULD DROP BELOW 115 VDC, THE SHIFT SUPERVISOR AND TEST DIRECTOR SHALL BE NOTIFIED IMMEDIATELY.

6.3 .1.22 Verify Operations has assigned an operator to monitor Battery C voltage during the performance of this test. ________/______

NOTE: Buses 3A and 4A and their associated motor control centers will be de-energized for an extended period of time.

6.3 .1.23 De-energize Bus 3A and associated MCC IAW Operating Procedure A.59, Sections 6.1 and 6.2. ________/______

6.3 .1.24 De-energize bus 4A IAW Operating Procedure A.58, Section 6.1. ________/______

6.3 .1.25 OPEN the following 125 VDC circuit breakers:

6.3 .1.25.1 72-A08 4160 SWGR BUS 4A ________/______

6.3 .1.25.2 72-A05 480V SWGR BUS 3A ________/______

6.3 .1.26 Verify continuous communications have been established between the Control Room and applicable locations on Enclosure 9.15, per direction of the Shift Supervisor. ________/______

6.3 .1.27 Inform plant personnel of the impending SFAS/LOOP actuation to subtrain A2 over the plant public address (PA) system. ________/______

6.3 .2 Subtrain A2 SFAS/LOOP with Subtrain A De-energized

NOTE: The following steps will cause bus 4A2 to become momentarily de-energized and it will cause the diesel generator GEA2 to start.

6.3 .2.1 Verify recorders A2-1 and A2-2 are initialized and annotated. ________/______

6.3 .2.2 Verify computer "A" software loaded and ready to start. ________/______

6.3 .2.3 One to two minutes prior to SFAS actuation countdown per Step 6.3.2.4, START the GEA2 turbocharger bearing prelubrication by opening EGS-837. ________/______

6.3 .2.4 Initiate a countdown from 10 to ZERO over the plant PA system. ________/______

6.3	.2.5	At the count of 9, open TS-1 19/20 at 52-4A207 to block the 5 sec. delay trip of 52-4A203 S/U XFMR #2.	________/______
6.3	.2.6	At the count of 7, at Control Panel H2EW, CLOSE 52-4A203 START UP XFMR #2 TO BUS 4A2.	________/______
6.3	.2.7	At the count of 5, at Control Panel H2EW, OPEN 52-4A204 XFMR X43A2 FEED.	________/______
6.3	.2.8	At the count of 3, start the recorders A2-1 and A2-2 and the data acquisition equipment.	________/______
6.3	.2.9	At the count of ZERO, at Panel H1RC, initiate an SFAS actuation by depressing the SFAS CHANNEL pushbuttons 1A, 2A, 3A, and 4A.	________/______
6.3	.2.10	After the SFAS actuation, CLOSE GEA2 turbocharger prelube oil supply valve EGS-837.	________/______
6.3	.2.11	After the SFAS actuation, verify 52-4A203 BUS 4A2 ALT FEED DID NOT TRIP.	________/______
6.3	.2.12	After the SFAS actuation, verify the following from the data acquisition equipment:	
6.3	.2.12.1	GEA2 starts, accelerates to 450 RPM $\leq$10 sec.	________/______
6.3	.2.12.2	GEA2 voltage reaches 4160 $\pm$ 416 VAC $\leq$10 sec.	________/______
6.3	.2.12.3	GEA2 frequency reaches 60$\pm$1.2 HZ $\leq$10 Sec.	________/______
6.3	.2.12.4	52-4A202 GEA2 OUTPUT DID NOT CLOSE.	________/______
6.3	.2.12.5	Absence of voltage and current on Busses 3A and 4A.	________/______
6.3	.2.12.6	52-3A202 did not trip.	________/______
6.3	.2.12.7	52-3A206 (MCC 2A2 tripped open).	________/______
6.3	.2.12.8	52-3A210 (U-545A tripped open).	________/______
6.3	.2.12.9	52-3A215 (MCC 2A4 tripped open).	________/______

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6.3	.2.12.10	52-3A217 U-503A tripped open.		______/______
6.3	.2.12.11	52-4A204 FDR TO BUS 3A2 CLOSED.		______/______
6.3	.2.12.12	52-4A205 AFW P-319 tripped open.		______/______
6.3	.2.12.13	52-4A207 NORM FEED TO BUS 4A2 did not trip.		______/______
6.3	.2.13	Verify the sequencing of loads, from the data acquisition computer to their respective busses as follows:		

			REQUIRED	ACTUAL	
6.3	.2.13.1	52-3A215 (MCC 2A4)	23.4-28.6	_____ SEC	______/______
6.3	.2.13.2	52-3A217 (U-503A)	27.9-34.1	_____ SEC	______/______
6.3	.2.13.3	52-4A205 (AFW P-319)	27.9-34.1	_____ SEC	______/______
6.3	.2.13.4	52-3A210 (U-545A)	45.9-56.1	_____ SEC	______/______

6.3	.2.14	Verify that the following breakers CANNOT be tripped from the Control Room:	
6.3	.2.14.1	52-3A202 BUS 3A2 SUPPLY FROM 4A2	______/______
6.3	.2.14.2	52-4A203 BUS 4A2 SUPPLY FROM S/U #2	______/______
6.3	.2.14.3	52-4A204 BUS 4A2 SUPPLY TO BUS 3A2	______/______
6.3	.2.14.4	52-4A207 BUS 4A2 SUPPLY FROM S/U #1	______/______
6.3	.2.15	Record the following information from linearcorders after at least 5 minutes from SFAS initiation:	

GEA2 Recorder #______________

6.3	.2.15.1	Voltage ________ VAC (3744-4576)	______/______
6.3	.2.15.2	Frequency ________ HZ (58.8-61.2)	______/______

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PROCEDURE (Continued)

Step		Action	Initials/ Date
6.3	.2.16	At cubicle 4A207, OPEN Test Switch #3 contacts 3/4. (This prevents auto closure of DG output circuit breaker.)	________/______
6.3	.2.16.1	Close breaker 52-3A206 (MCC 2A2).	________/______
6.3	.2.17	Verify computer "A" software loaded and ready to start.	________/______
	CAUTION:	OPENING 52-4A207 WILL DE-ENERGIZE DIESEL AUXILIARIES. THEREFORE, STEPS 6.3.2.21 THROUGH 6.3.2.23 NEED TO BE COMPLETED AS RAPIDLY AS POSSIBLE.	
6.3	.2.18	Initiate a countdown from 10 to ZERO over the plant PA system.	________/______
6.3	.2.19	At the count of 3, start recorders A2-1 and A2-2 and the data acquisition computer.	________/______
6.3	.2.20	At the count of ZERO, at cubicle 4A207, OPEN the normal supply breaker (52-4A207) to bus 4A2.	________/______
6.3	.2.21	Verify 52-4A203 BUS 4A2 ALT SUPPLY trips open.	________/______
6.3	.2.22	Verify the following from the data acquisition equipment:	
6.3	.2.22.1	52-3A202 BUS 3A2 FDR FROM BUS 4A2 tripped open.	________/______
6.3	.2.22.2	52-3A206 MCC 2A2 tripped open.	________/______
6.3	.2.22.3	52-3A210 U-545A tripped open.	________/______
6.3	.2.22.4	52-3A215 MCC 2A4 tripped open.	________/______
6.3	.2.22.5	52-3A217 U-503A tripped open.	________/______
6.3	.2.22.6	52-4A202 GEA2 OUTPUT did not close.	________/______
6.3	.2.22.7	52-4A204 BUS 4A2 FDR TO BUS 3A2 did not trip.	________/______
6.3	.2.22.8	52-4A205 AFW PUMP P-319 tripped open.	________/______

PROCEDURE (Continued) Initials/ Date

6.3 .2.23	At cubicle 4A207, CLOSE Test Switch #3 contacts 3/4 (this allows closure of DG output circuit breaker) and verify the following from data acquisition equipment:				________/______
6.3 .2.23.1	52-4A202 GEA2 output breaker closes.				________/______
6.3 .2.23.2	The absence of voltage and current on Buses 3A and 4A.				________/______
6.3 .2.24	Verify the sequencing of loads to their respective buses as follows:				
		REQUIRED	ACTUAL		
6.3 .2.24.1	52-3A202 480 VAC FDR BKR BUS 3A2)	4.5- 5.5	____	SEC	________/______
6.3 .2.24.2	52-3A215 MCC 2A4	22.5-27.5	____	SEC	________/______
6.3 .2.24.3	52-3A217 U-503A	27.0-33.0	____	SEC	________/______
6.3 .2.24.4	52-4A205 AUX FEEDWATER PP P-319	27.0-33.0	____	SEC	________/______
6.3 .2.24.5	52-3A210 U-545A	45.0-55.0	____	SEC	________/______

6.3 .2.25 Record the following information from the recorder after at least 5 minutes from GEA2 output breaker closure:

GEA2 Recorder #______________

6.3 .2.25.1	Voltage __________ VAC (3744-4576)	________/______
6.3 .2.25.2	Frequency __________ HZ (58.8-61.2)	________/______
6.3 .2.26	Depress the SFAS CHANNEL RESET pushbuttons 1A, 2A, 3A and 4A at Control Room panel H1RC.	________/______
6.3 .2.27	Reset U/V relay targets on Busses 3A2 and 4A2.	________/______

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PROCEDURE (Continued) | Initials/ Date

6.3	.2.28	The following steps will reset the load sequencing circuit, TDI diesel generator, and EFIC logic:	
6.3	.2.28.1	At Control Room panel H2SFA, depress the NS Bus A2 and A UNLOADING RESET A2/A pushbutton.	_____/_____
6.3	.2.28.2	At EFIC panel H1SSE, depress AFW RESET BLPB on EFIC Channel "A" INITIATE/TEST MATRIX.	_____/_____
6.3	.2.28.3	At EFIC panel H1SSE, depress EFIC "A" CONTROL INITIATED BLPB.	_____/_____
6.3	.2.29	At local Panel H2DEA2, depress the LOCA RESET pushbutton and verify the Shutdown System Active red light energizes.	_____/_____
6.3	.2.30	Verify computer "A" software loaded and ready to start.	_____/_____
6.3	.2.31	Initiate a countdown from 10 to ZERO over the Plant PA system.	_____/_____
6.3	.2.32	At the count of 3, start recorders A2-1 and A2-2 and the data acquisition computer.	_____/_____
6.3	.2.33	At the count of ZERO, at Control Room Panel H2EW, depress TRIP BLPB, OPEN GEA2 output circuit breaker 52-4A202, and verify the following from the data acquisition equipment:	_____/_____
6.3	.2.33.1	52-4A202 DG A2 OUTPUT BREAKER trips.	_____/_____
6.3	.2.33.2	Busses 3A2 and 4A2 de-energize.	_____/_____
6.3	.2.33.3	52-3A202 480 VAC FDR BKR BUS 3A2 trips.	_____/_____
6.3	.2.33.4	52-3A215 MCC S2A4 trips.	_____/_____
6.3	.2.33.5	52-4A205 AUX FEEDWATER P-319 trips.	_____/_____
6.3	.2.33.6	52-3A217 U-503A trips.	_____/_____
6.3	.2.33.7	52-3A210 U-545A trips.	_____/_____
6.3	.2.33.8	52-4A202 DG A2 OUTPUT BREAKER recloses after 4.1-5.1 sec. Actual_______sec.	_____/_____

PROCEDURE (Continued) Initials/ Date

6.3 .2.34 Verify the sequencing of loads, from the data acquisition computer, to their respective buses as follows:

		REQUIRED	ACTUAL	
6.3 .2.34.1	52-3A202 480 VAC FDR BKR BUS 3A2	4.5- 5.5	_____ SEC	________/________
6.3 .2.34.2	52-3A215 MCC S2A4	22.5-27.5	_____ SEC	________/________
6.3 .2.34.3	52-3A217 U-503A	27.0-33.0	_____ SEC	________/________
6.3 .2.34.4	52-3A210 U-545A	45.0-55.0	_____ SEC	________/________

6.3 .2.35 Record the following information from the recorders after at least 5 minutes from GEA2 output breaker reclosure:

GEA2 Recorder #______________

6.3 .2.35.1 Voltage __________ VAC (3744-4576) ________/________

6.3 .2.35.2 Frequency __________ HZ (58.8-61.2) ________/________

CAUTION: IF OFFSITE POWER IS LOST WHEN A DIESEL GENERATOR IS SYNCHRONIZED TO THE GRID, IMMEDIATELY OPEN THE NORMAL SUPPLY TO THE ASSOCIATED NUCLEAR SERVICE BUS.

6.3 .2.36 Synchronize and shutdown GEA2 per Operating Procedure A.31B, Section 5.5 through 5.7. ________/________

6.3 .3 RESTORATION

6.3 .3.1 At S4A207, close TS-1 contacts 19/20. ________/________

6.3 .3.2 If subtrain A2 LOOP-SFAS (Subsection 6.4) will be tested immediately and the Shift Supervisor concurs; GO TO Section 6.4 and N/A the remainder of this section; otherwise, N/A this step and continue. ________/________

6.3 .3.3 Place the following circuit breakers in the CONNECTED position or as directed by the Shift Supervisor.

6.3 .3.3.1 52-4A205 AUX FEEDWATER PP P-319 ________/________

6.3 .3.3.2 52-4A203 BUS 4A2 ALT FDR ________/________

PROCEDURE (Continued) Initials/ Date

6.3	.3.4	CLOSE the following 125 VDC circuit breakers:	
6.3	.3.4.1	72-A05 480V SWGR BUS 3A	______/______
6.3	.3.4.2	72-A08 4160V SWGR BUS 4A	______/______
6.3	.3.5	Energize bus 4A per Operating Procedure A.58, Section 4.1.	______/______
6.3	.3.6	Energize bus 3A and MCC 2A1 per Operating Procedure A.59, Sections 4.1 and 4.2.	______/______
6.3	.3.6.1	Close breaker 52-3A206 MCC 2A2.	______/______
6.3	.3.7	Close the following 125 VDC circuit breakers:	
6.3	.3.7.1	72-A04 DIESEL ENG GEA CONTROL CAB.	______/______
6.3	.3.7.2	72-A07 DIESEL ENG GEA CONTROL CAB.	______/______
6.3	.3.8	Line up 125 VDC Panel SOA, IAW Operating Procedure A.61, Section 4.4.1.	______/______
6.3	.9	Notify the Shift Superviso' that the Subtrain "A2" SFAS/LOOP test is complete.	______/______

NOTE: DHR A may be placed in service, if required by the Shift Supervisor, IAW Operating Procedure A.8, Section 4.7.

PROCEDURE (Continued) Initials/ Date

6.4 Subtrain A2 LOOP-SFAS (Selected BKRs in TEST position)

6.4 .1 Prerequisite Lineups

6.4	.1.1	If this section is to be performed immediately after Section 6.3, and the restoration of Section 6.3.3 was not performed, then skip Section 6.4.1 except for the following steps: 6.4.1.4 through 6.4.1.9. Skipped steps shall be marked N/A. Otherwise N/A this step.	______/______
6.4	.1.2	A preliminary briefing has been held with the Shift Supervisor and prerequisite lineups can commence. (Formal briefing to occur later.)	______/______
6.4	.1.3	Run the data acquisition program "INIT" on the "A" computer and verify all channels are functioning properly.	______/______
6.4	.1.4	Verify the following CKT BKRs are RACKED OUT:	
6.4	.1.4.1	52-3B21 TIE BREAKER TO LOAD CENTER S3B2	______/______
6.4	.1.4.2	52-3A203 TIE TO BUS S3A	______/______
6.4	.1.4.3	52-3B203 TIE TO BUS S3B	______/______
6.4	.1.4.4	52-4C01 STARTUP TRANS NO. 2 X94	______/______
6.4	.1.4.5	52-4D01 STARTUP TRANS NO. 2 X94	______/______
6.4	.1.4.6	52-4E06 STARTUP XFMR NO. 2	______/______
6.4	.1.4.7	52-4E13 STARTUP XFMR NO. 2	______/______
6.4	.1.4.8	52-6A04 STARTUP XFMR NO. 1-X976	______/______
6.4	.1.4.9	52-6B04 STARTUP XFMR NO. 1-X976	______/______
6.4	.1.4.10	52-3A21 TIE BREAKER TO LOAD CENTER S3A2	______/______
6.4	.1.5	Verify the following CKT BKRs are connected and CLOSED:	
6.4	.1.5.1	52-4A207 NSS XFMR X74	______/______
6.4	.1.5.2	52-4A204 480 VOLT LOAD CENTER S3A2	______/______

PROCEDURE (Continued) Initials/ Date

6.4	.1.5.3	52-3A202 MAIN BREAKER	____/____
6.4	.1.5.4	52-3A206 MCC-2A2	____/____
6.4	.1.5.5	52-3A211 MCC-2A3	____/____
6.4	.1.5.6	52-3A215 MCC-2A4	____/____
6.4	.1.5.7	52-3A210 ESS CU U-545A CR/TSC	____/____
6.4	.1.5.8	52-3A217 NSEB ESS CU U-503A	____/____
6.4	.1.6	Step Deleted	
6.4	.1.7	Verify 52-4A202 Diesel Generator GEA2 is in the CONNECTED position and OPEN.	____/____
6.4	.1.8	Verify 52-4A205 P-319 is in the TEST position and CLOSED.	____/____
6.4	.1.9	Verify GEA2 is in standby IAW Operating Procedure A.31B, Section 4.0.	____/____
6.4	.1.10	Step Deleted	
6.4	.1.11	Verify Train "B" Nuclear Services busses (4B and 4B2) and their associated 480V load centers and motor control centers are energized IAW Operating Procedures A.58, Sections 4.5 and 4.7, and A.59, Sections 4.1, 4.2, and 4.4.	____/____
	NOTE:	Incore temperatures are to be trended at 15 minute intervals whenever both decay heat removal systems are shutdown. The temperature should not exceed 150°F.	
6.4	.1.12	Shutdown the operating DHR Loop(s) IAW Operating Procedure A.8, Section 6.1 or 6.2.	____/____
6.4	.1.13	Verify Train "B" diesel generators (GEB and GEB2) are not providing power to their respective buses.	____/____
6.4	.1.14	Step Deleted	
6.4	.1.14.1	Step Deleted	
6.4	.1.14.2	Step Deleted	
6.4	.1.14.3	Step Deleted	

PROCEDURE (Continued) | Initials/ Date

	NOTE:	The following steps will align the 120 VAC and 125 VDC panel power supplies so that de-energizing MCC 2A1 will have a minimum impact. Once MCC 2A1 is de-energized, 125 VDC Panel SOC will be powered solely from the "C" Battery.	
6.4	.1.15	Line up 125 VDC Panel SOA to Battery Charger H4BAC, IAW Operating Procedure A.61, Section 4.6.1.	________/______
6.4	.1.16	Line up 125 VDC Panel SOA2 to Battery Charger H4BA2, IAW Operating Procedure A.61, Section 4.4.7.	________/______
6.4	.1.17	Line up 125 VDC Panel SOC2 to Battery Charger H4BC2, IAW Operating Procedure A.61, Section 4.4.9.	________/______
6.4	.1.18	Line up 120 VAC Panels S1A and S1A2-1 to be supplied by Inverter S1A2, IAW Operating Procedure A.62, Section [illegible].2.	________/______
6.4	.1.19	Line up 120 VAC Panels S1C and S1C2-1 to be supplied by Inverter S1C2, IAW Operating Procedure A.62, Section 4.6.	________/______
6.4	.1.20	Verify backup source for Battery Charger H4BEF breaker 52-2B134 is ON.	________/______
6.4	.1.21	Line up 125 VDC Panel SOE to Battery Charger H4BEF IAW Operating Procedure A.61, Section 4.6.3.	________/______
6.4	.1.22	A pretest briefing using the Test Briefing Checklist has been held with all test participants and properly documented per AP.82.	________/______
	CAUTION:	IF BATTERY VOLTAGE SHOULD DROP BELOW 115 VDC, THE SHIFT SUPERVISOR AND TEST DIRECTOR SHALL BE NOTIFIED IMMEDIATELY.	
6.4	.1.23	Verify Operations has assigned an operator to monitor Battery C voltage during the performance of this test.	________/______
	NOTE:	Buses 3A and 4A and their associated motor control centers will be de-energized for an extended period of time.	

6.4 .1.24	De-energize bus 3A and associated MCCs IAW Operating Procedure A.59, Section 6.1 and 6.2.	____/____
6.4 .1.25	De-energize bus 4A IAW Operating Procedure A.58, Section 6.1.	____/____
6.4 .1.26	OPEN the following 125 VDC circuit breakers:	
6.4 .1.26.1	72-A08 4160 SWGR BUS 4A	____/____
6.4 .1.26.2	72-A05 480V SWGR BUS 3A	____/____
6.4 .1.27	Verify continuous communications have been established between the Control Room and applicable locations on Enclosure 9.15 per direction of Shift Supervisor.	____/____

6.4 .2 Subtrain A2 LOOP-SFAS with Subtrain A De-energized

NOTE:	The following steps will cause bus 4A2 to become momentarily de-energized and it will cause the diesel generator GEA2 to start.	
6.4 .2.1	Verify recorders A2-1 and A2-2 are initialized and annotated.	____/____
6.4 .2.1.1	Inform plant personnel of the impending LOOP-SFAS actuation to subtrain A2 over the plant public address (PA) system.	____/____
6.4 .2.2	Verify computer "A" software loaded and ready to start.	____/____
6.4 .2.3	One to two minutes prior to SFAS actuation countdown per Step 6.4.2.4, START the GEA2 turbocharger bearing prelubrication by opening EGS-837.	____/____
NOTE:	Step 6.4.2.10 must be performed within 30 seconds of SFAS Initiation to verify the Block Close function.	
6.4 .2.4	Initiate a countdown from 10 to ZERO over the plant PA system.	____/____
6.4 .2.5	Step Deleted	
6.4 .2.6	Step Deleted	

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			Initials/ Date
6.4	.2.7	Step Deleted	
6.4	.2.8	At the count of 3, start linearcorders A2-1 and A2-2 and the data acquisition computer.	______/______
	NOTE:	To prevent an unloading sequence relay race that might possibly block the manual trip of the normal supply breaker, do not initiate the SFAS actuation until the TRIP BLPB indicates that 52-4A207 is OPEN.	
6.4	.2.9	At the count of ZERO, OPEN the normal supply breaker to bus 4A2 (52-4A207) at panel H2EW and at panel H1RC, initiate an SFAS actuation by depressing the SFAS CHANNEL pushbuttons 1A, 2A, 3A and 4A. Verify the following from the data acquisition equipment:	______/______
6.4	.2.9.1	Buses 3A2 and 4A2 de-energize.	______/______
6.4	.2.9.2	52-4A205 AFW PUMP P-319 tripped open.	______/______
6.4	.2.9.3	Diesel Generator GEA2 STARTS, accelerates to 450 RPM in $\leq$10 sec.	______/______
6.4	.2.9.4	GEA2 output breaker 52-4A202 CLOSES.	______/______
6.4	.2.9.5	GEA2 voltage reaches 4160 $\pm$ 416 VAC in $\leq$10 sec.	______/______
6.4	.2.9.6	GEA2 frequency reaches 60 $\pm$ 1.2 HZ in $\leq$10 sec	______/______
6.4	.2.9.7	The absence of voltage and current on Buses 3A and 4A.	______/______
6.4	.2.10	52-4A205 CANNOT be closed from the Control Room Panel H1SSE.	______/______
6.4	.2.11	After LOOP-SFAS actuation, close GEA2 turbocharger prelube oil supply valve EGS-837.	______/______
6.4	.2.12	Step Renumbered	
6.4	.2.13	Step Renumbered	
6.4	.2.14	Step Renumbered	

6.4 .2.15 Step Renumbered

6.4 .2.16 Step Renumbered

6.4 .2.17 Step Renumbered

6.4 .2.18 Verify the sequencing of loads, from the data acquisition computer, to their respective buses as follows:

		REQUIRED	ACTUAL	Initials/ Date
6.4 .2.18.1	52-3A202 480 VAC FDR BKR BUS 3A2	4.5- 5.5	____ SEC	______/______
6.4 .2.18.2	52-3A215 MCC 2A4 CKT BKR	22.5-27.5	____ SEC	______/______
6.4 .2.18.3	52-4A205 AFW PUMP P-319 CKT BKR	27.0-33.0	____ SEC	______/______
6.4 .2.18.4	52-3A217 U-503A	27.0-33.0	____ SEC	______/______
6.4 .2.18.5	52-3A210 U-545A	45.0-55.0	____ SEC	______/______

6.4 .2.19 Record the following information from the recorders after at least 5 minutes following SFAS initiation:

GEA2 Recorder #____________

6.4 .2.19.1 Voltage ________ VAC (3744-4576) ______/______

6.4 .2.19.2 Frequency ________ HZ (58.8-61.2) ______/______

NOTE: The pneumatic lines that are vented in the following steps are located at local panel H2DEA2.

6.4 .2.20 At local panel H2DEA2, simulate a HIGH TEMP LUBE OIL trip signal by loosening the compression fitting to vent pneumatic line E-18. ______/______

6.4 .2.20.1 Verify Ann. Pos. 5-1 is ON. ______/______

6.4 .2.20.2 Verify that Diesel Generator GEA2 DID NOT trip. ______/______

PROCEDURE (Continued) | Initials/ Date

NOTE: All swagelock fittings to be tightened in accordance with I-1155, Sheet 8. QC to witness all retightening.

Q.C. H.P. mech QC MRW 1/20/88	6.4 .2.21	Tighten compression fitting for pneumatic line E-18.	____/____
	6.4 .2.22	Reset window 5-1 alarm on the local panel H2DEA2.	____/____
	6.4 .2.23	At Local Panel H2DEA2, simulate a HIGH TEMP BEARING trip signal by loosening the compression fitting to vent pneumatic line E-19.	____/____
	6.4 .2.23.1	Verify Ann. Pos. 8-1 is ON.	____/____
	6.4 .2.23.2	Verify that Diesel Generator GEA2 DID NOT trip.	____/____
Q.C. H.P. MRW 1/20/88 mech QC	6.4 .2.24	Tighten compression fitting at pneumatic line E-19.	____/____
	6.4 .2.25	Reset window 8-1 alarm on the local panel H2DEA2.	____/____
	6.4 .2.26	At Local Panel H2DEA2, simulate a HIGH VIBRATION trip signal by loosening the compression fitting to vent pneumatic line E-23.	____/____
	6.4 .2.26.1	Verify Ann. Pos. 9-1 is ON.	____/____
	6.4 .2.26.2	Verify that Diesel Generator GEA2 DID NOT trip.	____/____
MRW 1/20/88 Q.C. H.P. mech QC	6.4 .2.27	Tighten compression fitting for pneumatic line E-23.	____/____
	6.4 .2.28	Reset window 9-1 alarm on the local panel H2DEA2.	____/____
	6.4 .2.29	At Local Panel H2DEA2, simulate a LOW PRESS TURBO OIL trip signal by loosening the compression fitting to vent pneumatic line E-92.	____/____
	6.4 .2.29.1	Verify Ann. Pos. 4-2 is ON.	____/____
	6.4 .2.29.2	Verify that Diesel Generator GEA2 DID NOT trip.	

PROCEDURE (Continued) Initials/ Date

Q.C. H.P. Mech QC MRW 1/20/88	6.4 .2.30	Tighten compression fitting for pneumatic line E-92.	_____/_____
	6.4 .2.31	Reset window 4-2 alarm on the local panel H2DEA2.	_____/_____
	6.4 .2.32	At Local Panel H2DEA2, simulate a HIGH TURBO VIBRATION trip signal by loosening the compression fitting to vent pneumatic line E-21.	_____/_____
	6.4 .2.32.1	Verify Ann. Pos. 9-2 is ON.	_____/_____
	6.4 .2.32.2	Verify that Diesel Generator GEA2 DID NOT trip.	_____/_____
Q.C. H.P. Mech QC MRW 1/20/88	6.4 .2.33	Tighten compression fitting for pneumatic line E-21.	_____/_____
	6.4 .2.34	Reset window 9-2 alarm on the local panel H2DEA2.	_____/_____
	6.4 .2.35	At Local Panel H2DEA2, simulate a HIGH TEMP JACKET WATER trip signal by loosening the compression fitting to vent pneumatic line E-16.	_____/_____
	6.4 .2.35.1	Verify Ann. Pos. 13-1 is ON.	_____/_____
	6.4 .2.35.2	Verify that Diesel Generator GEA2 DID NOT trip.	_____/_____
Q.C. H.P. Mech QC MRW 1/20/88	6.4 .2.36	Tighten compression fitting for pneumatic line E-16.	_____/_____
	6.4 .2.37	Reset window 13-1 alarm on the local panel H2DEA2.	_____/_____
	6.4 .2.38	At Local Panel H2DEA2, simulate a LOW PRESS JACKET WATER trip signal by loosening the compression fitting to vent pneumatic line E-14.	_____/_____
	6.4 .2.38.1	Verify Ann. Pos. 15-1 is ON.	_____/_____
	6.4 .2.38.2	Verify that Diesel Generator GEA2 DID NOT trip.	_____/_____
Q.C. H.P. Mech QC RW 1/20/88	6.4 .2.39	Tighten compression fitting for pneumatic line E-14.	_____/_____

PROCEDURE (Continued) Initials/ Date

6.4 .2.40		Reset window 15-1 alarms on the local panel H2DEA2.	____/____
6.4 .2.41		At Local Panel H2DEA2, simulate a HIGH PRESS CRANKCASE trip signal by loosening the compression fitting to vent pneumatic line E-68.	____/____
6.4 .2.41.1		Verify Ann. Pos. 29-2 is ON.	____/____
6.4 .2.41.2		Verify that Diesel Generator GEA2 DID NOT trip.	____/____
6.4 .2.42	mRW 1/20/88 Q.C. H.P. mech QC	Tighten compression fitting for pneumatic line E-68.	____/____
6.4 .2.43		Reset window 29-2 alarm on the local panel H2DEA2.	____/____
6.4 .2.44		Simulate a REVERSE POWER trip by manually operating relay 432 at panel H2DGA2.	____/____
6.4 .2.44.1		Verify Ann. Pos. 23-1 is ON.	____/____
6.4 .2.44.2		Verify that Diesel Generator GEA2 DID NOT TRIP.	____/____
6.4 .2.45		Depress the Relay Reset pushbutton on the Local Panel H2DGA2.	____/____
6.4 .2.46		Reset the 486D Lockout Relay on the Local Panel H2DGA2.	____/____
6.4 .2.47		Reset alarms on the local panel H2DEA2.	____/____
	NOTE:	The REVERSE POWER trip circuitry is in parallel with numerous trip relays. These relays trip a common lockout relay 486D; therefore, the remaining relay trips need not be verified.	
6.4 .2.48		Step Deleted	
6.4 .2.49		Depress the SFAS CHANNEL RESET pushbuttons 1A, 2A, 3A and 4A at Control Room panel H1RC.	____/____
6.4 .2.50		The following steps will reset the load sequencing circuit, TDI diesel generator, and EFIC logic:	
6.4 .2.50.1		At Control Room panel H2SFA, depress the NS Bus A2 and A UNLOADING RESET A2/A pushbutton.	____/____

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PROCEDURE (Continued) | Initials/ Date

6.4	.2.50.2	At EFIC panel H1SSE, depress AFW RESET BLPB on EFIC CHANNEL "A" INITIATE/TEST MATRIX.	______/______
6.4	.2.50.3	At EFIC panel H1SSE, depress EFIC "A" CONTROL INITIATED BLPB.	______/______
6.4	.2.50.4	At local panel H2DEA2, depress the LOCA RESET pushbutton and verify the Shutdown System Active red light is On.	______/______
	CAUTION:	IF OFFSITE POWER IS LOST WHEN A DIESEL GENERATOR IS SYNCHRONIZED TO THE GRID, IMMEDIATELY OPEN THE NORMAL SUPPLY TO THE ASSOCIATED NUCLEAR SERVICE BUS.	
6.4	.2.51	Synchronize and shutdown GEA2 per Operating Procedure A.31B, Section 5.5 through 5.7.	______/______
6.4	.3	RESTORATION	
6.4	.3.1	Trip the following circuit breaker and then place in the CONNECTED position or as directed by the Shift Supervisor:	
6.4	.3.1.1	52-4A205 AUX FEEDWATER PP P-319	______/______
6.4	.3.2	CLOSE the following 125 VDC circuit breakers:	
6.4	.3.2.1	72-A05 480V SWGR BUS 3A	______/______
6.4	.3.2.2	72-A08 4160V SWGR BUS 4A	______/______
6.4	.3.3	Step Deleted	
6.4	.3.4	Energize Bus 4A per Operating Procedure A.58, Section 4.1.	______/______
6.4	.3.5	Energize Bus 3A and MCC 2A1 per Operating Procedure A.59, Sections 4.1 and 4.2.	______/______

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6.4 .3.6 Line up 125 VDC Panel SOA, IAW Operating Procedure A.61, Section 4.4.1. ________/______

6.4 .3.7 Run the data acquisition program "INIT" on the "A" computer and verify all channels are functioning properly. ________/______

6.4 .3.8 Notify the Shift Supervisor that the Subtrain A2 LOOP-SFAS test Sections 6.3 and 6.4 are complete. ________/______

NOTE: DHR A maybe placed in service, if required by the Shift Supervisor, IAW Operating Procedure A.8, Sections 4.7.

Q.C. INSPECT → 6.4 .4 Acceptance Criteria Review

QC to review after data taken all of Section 6.4.4 MRW 1/20/88

6.4 .4.1 Review the data recorded during Section 6.3 and verify the following:

6.4 .4.1.1 At Step 6.3.2.12.2, GEA2 reached 3744 VAC in ≤ 10 seconds. Record time at which envelope was entered:

_____ SEC

Data from Recorder #______________ ________/______

6.4 .4.1.2 At Step 6.3.2.12.3, GEA2 reached 58.8 HZ in ≤ 10 seconds. Record time at which envelope was entered:

_____ SEC

Data from Recorder #______________ ________/______

6.4 .4.1.3 At Step 6.3.2.23.1, GEA2 output breaker 52-4A202 closed. (From computer digital data.) ________/______

6.4 .4.1.4	At Step 6.3.2.13 and 6.3.2.24, the loads sequenced on in the required time frame. (From computer digital data.)	______/______
6.4 .4.1.5	At Step 6.3.2.15, 6.3.2.35, and 6.3.2.25, GEA2 operated with these loads for at least 5 minutes. Voltage and frequency were within the limits specified.	______/______
6.4 .4.1.6	During the performance of Steps 6.3.2.12.5 and 6.3.2.23.2 absence of voltage and current at de-energized Subtrain A Busses 3A and 4A. (From computer analog data.)	______/______
6.4 .4.1.7	At Step 6.3.2.33 and 6.3.2.34, busses 3A2 and 4A2 de-energized, loads shed as required, and the loads listed reloaded per the bus sequencer. (From computer digital data.)	______/______
6.4 .4.2	Review the data recorded during Section 6.4 and verify the following:	
6.4 .4.2.1	At Step 6.4.2.9.5, GEA2 reached 3744 VAC in ≤10 seconds. Record time at which envelope was entered: _____ SEC Data from Recorder #______________	______/______
6.4 .4.2.2	At Step 6.4.2.9.6, GEA2 reached 58.8 HZ in ≤10 seconds. Record time at which envelope was entered: _____ SEC Data from Recorder #______________	______/______
6.4 .4.2.3	At Steps 6.4.2.9.4 and 6.4.2.18, GEA2 output breaker closed, and the loads sequenced on in the required time frame.	______/______
6.4 .4.2.4	At Step 6.4.2.19, GEA2 operated with the loads for at least 5 minutes. Voltage and frequency were within the limits specified.	______/______

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6.4 .4.2.5 During the performance of Step 6.4.2.9.7, the absence of voltage and current at de-energized Subtrain A Busses 3A and 4A. (From computer analog data.) ______/______

6.4 .4.2.6 At Steps 6.4.2.20.2, 6.4.2.23.2, 6.4.2.26.2, 6.4.2.29.2, 6.4.2.32.2, 6.4.2.35.2, 6.4.2.38.2, 6.4.2.41.2, and 6.4.2.44.1, GEA2 did not trip on simulated faults. ______/______

6.5 Subtrain B SFAS/LOOP (Selected BKRs in TEST Position)

6.5	.1	Prerequisities	
6.5	.1.1	A pretest briefing has been held with all test participants. This briefing will include sections 6.5 and 6.6.	________/________
6.5	.1.2	Line-up a Make-up Pump P-236 and its auxiliaries to their normal SFAS line-up IAW operating procedure A.15.	________/________
6.5	.1.3	Verify the following CKT BKRs are RACKED OUT:	
6.5	.1.3.1	52-3A21 TIE BREAKER TO LOAD CENTER S3A203	________/________
6.5	.1.3.2	52-3B21 TIE BREAKER TO LOAD CENTER S3B203	________/________
6.5	.1.3.3	52-3A203 TIE to BUS S3A	________/________
6.5	.1.3.4	52-3B203 TIE BTO BUS S3B	________/________
6.5	.1.3.5	52-4C01 STARTUP TRANS NO. 2 X94	________/________
6.5	.1.3.6	~~52-4D01 STARTUP TRANS NO 2 X94~~	________/________
6.5	.1.3.7	52-4E06 STARTUP XFMR NO. 2	________/________
6.5	.1.3.8	52-4E13 STARTUP XFMR NO. 2	________/________
6.5	.1.3.9	52-6A04 STARTUP XFMR NO. 1-X976	________/________
6.5	.1.3.10	52-6B04 STARTUP XFMR NO. 1-X976	________/________
6.5	.1.3.11	52-4B04 4B ALT SPLY BKR	________/________
6.5	.1.4	Verify the following CKT BKRs are CLOSED:	
6.5	1.4.1	52-4B01 4B NORM SPLY BKR	________/________
6.5	1.4.2	52-4B05 X43B2 SPLY BKR	________/________
6.5	1.4.3	52-3B05 3B NORM SPLY BKR	________/________
6.5	1.4.4	52-3B22 MCC-2B1	________/________
6.5	.1.5	Verify GEB is in standby per Operating Procedure A.31.	________/________
6.5	.1.6	Verify Train "A" Nuclear Service Buses (4A and 4A2) and their associated motor control centers are in their normal line-up IAW operating procedures A.58 and A.59.	________/________

PROCEDURE (Continued)

			Initials/ Date
6.5	.1.7	Verify Train B Nuclear Service bus 4B and its associated motor control centers are in their normal line-up IAW Operating Procedures A.58 and A.59.	_____/_____
6.5	.1.8	Verify/place "A" DHR system in operation for core cooling IAW Operating Procedure A-8, except as modified by Enclosure 9.7.	_____/_____
6.5	.1.9	Verify Train "A" (GEA and GEA2) diesel generators are not providing power to their respective busses.	_____/_____
6.5	.1.10	OPEN the following 125 VDC circuit breakers:	
6.5	1.10.1	72-B207 4160 SWITCHGEAR O/U VOLTAGE RELAYS	_____/_____
6.5	1.10.2	72-B202 DIESEL GENERATOR B2 ENGINE CONTROL PANEL	_____/_____
6.5	1.10.3	72-B204 DIESEL GENERATOR B2 ENGINE CONTROL PANEL)	_____/_____
6.5	1.[illegible].4	72-B206 D/G CONT PANEL H2DGB2 FIELD FLASH	_____/_____
6.5	1.10.5	72-B208 DIESEL GENERATOR B2 ENGINE CONTROL PANEL	_____/_____
	NOTE:	Completion of Step 6.5.1.11 Results in 125 VDC busses SOB2 and SOD2 and 120 VAC busses SIGB-1 and SIN-1 being powered from their respective batteries.	
6.5	.1.11	De-energize bus 3B2 per Operating Procedure A.59.	_____/_____
6.5	.1.12	De-energize 4B2 per Operating Procedure A.58.	_____/_____
6.5	.1.13	OPEN the following 125 VDC circuit breakers:	
6.5	.1.13.1	72-B205 4160V SWITCHGEAR 4B2 CONTROL	_____/_____
6.5	.1.13.2	72-B211 480V LOAD CENTER 3B2 CONTROL	_____/_____
6.5	.1.13.3	72-B12 BATTERY CHARGER H4BBD	_____/_____
6.5	.1.13.4	72-B220 STANDBY [illegible]ER H4BB2D2	_____/_____

6.5 .1.14 Place the following circuit breakers in the TEST (OPEN) Position:

6.5 .1.14.1 52-3B09 REACTOR BLDG SPRAY PUMP P-291-B ______/______

6.5 .1.14.2 52-3B10 RB EMERG COOLING UNIT A-500B ______/______

6.5 .1.14.3 52-3B14 RB EMERG COOLING UNIT A-500D ______/______

6.5 .1.14.4 52-3B18 NSCW PUMP P-482B ______/______

6.5 .1.14.5 52-4B07 HP INJECTION PUMP P-238B ______/______

6.5 .1.14.6 52-4B08 REACTOR MAKE-UP PUMP P-236 NORM ______/______

6.5 .1.14.7 52-4B09 REACTOR BLDG SPRAY PUMP P-291B ______/______

6.5 .1.15 Verify Nuclear Raw Water Pump P-472B is in standby IAW Operating Procedure A.25. ______/______

6.5 .1.16 Verify continuous communications have been established between the Control Room, ~~diesel generator Control Rooms for GEB and~~ GEB2, the data acquisition computer location in accordance with Enclosure 9.15. ______/______

6.5 .1.17 Inform plant personnel of the impending SFAS/LOOP actuation to subtrain B over the plant public address (PA) system. ______/______

6.5 .2 Subtrain B SFAS/LOOP with Subtrain B2 de-energized

NOTE: The following steps will cause bus 4B to become momentarily de-energized and it will cause the diesel generator GEB to start. Buses 3B2 and 4B2 and their associated motor control centers and for an extended period of time.

NOTE: The Linearcorder and data acquisition computers will be started per a given step, the stopping of this equipment is to be determined by the sequence of events at the specific time and place as determined by the Test Director. The chart speed of the Linearcorder and the scan rate of computer will be established and verified per Enclosure 9.4.

CAUTION: THE BRUCE-GM DIESEL GENERATORS GEA/GEB SHALL NOT BE RESTARTED IF THE UNIT HAS BEEN SHUTDOWN FOR MORE THAN 15 MINUTES AFTER A LOADED OPERATION. DUE TO LUBRICATION RESTRICTIONS THE ENGINE CANNOT BE RESTARTED UNTIL 3 HOURS HAVE ELAPSED.

NOTE: Before each and every diesel generator start, prepared the engine for prelubrication. For the Bruce-GM diesel generators check to assure the soak-back and bypass motor driven lube oil pumps are in operation. For the TDI diesel generators check to assure the turbocharger drip full flow bypass valve is open per Enclosure 9.4.

6.5	.2.1	Initiate a countdown from 10 to ZERO over the plant PA system.	______/______
6.5	.2.2	At the count of 3 start the Linearcorder B-1 and B-2 and the data acquisition computers.	______/______
6.5	.2.3	At the count of ZERO, at panel H1RC, initiate an SFAS actuation by depressing the SFAS CHANNEL Pushbuttons 1B, 2B, 3B and 4B.	______/______
6.5	.2.4	Verify the following after the SFAS actuation:	
6.5	.2.4.1	GEB STARTS, accelerates to 900 RPM < 10 sec.	______/______
6.5	.2.4.2	GEB voltage ________. 4160 ±416 VAC <10 sec.	______/______
6.5	.2.4.3	GEB frequency ________ 60 ±1.2 HZ <10 sec.	______/______
6.5	.2.4.4	GEB output breaker (52-4B11) DOES NOT close.	______/______
6.5	.2.4.5	The absence of voltage and current on Buses 3B2 and 4B2.	______/______
6.5	.2.5	Verify the following loads are energized after Diesel Generator started:	
6.5	.2.5.1	52-3B06 DG RM EXH FAN, A-544C	______/______
6.5	.2.5.2	52-3B17 DIESEL GEN RM VENT SUP FAN A-544D	______/______
6.5	.2.5.3	52-4B06 NS RAW WATER PUMP, P-472B	______/______

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6.5 .2.6	Verify that busses 3B and 4B remain energized.			______/______
6.5 .2.7	Verify the following loads DID NOT trip:			
6.5 .2.7.1	Normal supply to bus 4B (52-4B01).			______/______
6.5 .2.7.2	4160 VAC feeder breaker to XFMR 43B1 (52-4B05).			______/______
6.5 .2.7.3	Bus 3B feeder breaker (52-3B05)			______/______
NOTE:	The timing data retrieved from the data acquisition equipment in steps 6.5.2.7 - 6.5.2.9 for the various sequencing actions will be obtained when test conditions stabilize, therefore the input to these steps can be entered at a later time at the discretion of the Test Director.			
6.5 .2.8	Verify the sequencing of load breakers in the test position, fr[illegible] the data acquisition computer [illegible] follows:			
6.5 2.8.1	RB EMERG AC, A-500B 52-3B10	____	SEC	______/______
6.5 2.8.2	RB EMERG AC, A-500D 52-3B14	____	SEC	______/______
6.5 2.8.3	NSCW PUMP, P-482B 52-3B18	____	SEC	______/______
6.5 2.8.4	HPI PUMP, P-238B 52-4B07	____	SEC	______/______
6.5 2.8.5	DHR PUMP, P-261B 52-4B09	____	SEC	______/______
6.5 2.8.6	M/U PUMP, P-236 52-4B08	____	SEC	______/______
6.5 .2.9	Verify the sequencing, from the data acquisition computer, of the RBS PUMP P-291B (52-3B09) load breaker in the TEST position after at least 3 minutes.			______/______
6.5 .2.10	Verify the sequencing of loads, from the data acquisition computer, to their respective busses as follows:			
6.5 .2.10.1	DG RM EXH FAN, A-544C (52-3B06)	____	SEC	______/______
6.5 .2.10.2	52-3B17 DIESEL GEN RM VENT SUP FAN A-544D	____	SEC	______/______
6.5 .2.10.3	NSRW PUMP, P-472B (52-4B06)	____	SEC	______/______

PROCEDURE (Continued)

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6.5 .2.11	Record the following information from the computer data acquisition equipment after at least 5 minutes:		
	GEB		
6.5 .2.11.1	Voltage ________ VAC (3744-4576)	______/______
6.5 .2.11.2	Frequency ________ HZ (58.8-61.2)	______/______
6.5 .2.12	At cubicle 4B11 OPEN Test Switch #1 in the 486-1 lockout relay for DG OUTPUT CKT BKR 52-4B11. (This prevents autoclosure of the DG output breaker)	______/______
6.5 .2.13	Initiate a countdown from 10 to ZERO over the plant PA system.	______/______
6.5 .2.14	At the count of ZERO, at cubicle 4B01, OPEN the normal supply breaker (52-4B01) to bus 4B (LOOP).	______/______
CAUTION:	PERFORM NEXT THREE (3) STEPS AS RAPIDLY AS POSSIBLE AS DIESEL GENERATOR HAS NO COOLING WATER.	
6.5 .2.15	Verify the (LOOP) loadshed of busses 3B and 4B as follows from the data acquisition equipment:	
6.5 .2.15.1	52-3B06 DIESEL GEN RM VENT EXH FAN A-544C	______/______
6.5 .2.15.2	52-3B09 REACTOR BLDG SPRAY PUMP P-291B	______/______
6.5 .2.15.3	52-3B10 RB EMERG COOLING UNIT A-500B	______/______
6.5 .2.15.4	52-3B14 RB EMERG COOLING UNIT A-500D	______/______
6.5 .2.15.5	52-3B17 DIESEL GEN RM VENT SUP FAN A-544D	______/______
6.5 .2.15.6	52-3B18 NUCLEAR SERVICE CLG WTR PP P-482B	______/______
6.5 .2.15.7	52-4B06 NS RAW WATER PUMP P-472B	______/______
6.5 .2.15.8	52-4B07 HP INJECTION PUMP P-238B	______/______
6.5 .2.15.9	52-4B08 REACTOR MAKE-UP PUMP P-236 NORM	______/______
6.5 .2.15.10	52-3B09 REACTOR BLDG SPRAY PUMP P-291B	______/______
6.5 .2.15.11	52-4B05 STATION SERVICE TRANSFORMER X43B2	______/______

6.5 .2.16	At cubicle 4B11 CLOSE Test Switch #1 in the 486-1 lockout relay for DG OUTPUT CKT BKR 52-4B11, (this will close the DG output breaker) and verify the following:		______/______
6.5 .2.16.1	Verify that DG output breaker 52-4B11 CLOSES .		______/______
6.5 .2.16.2	Verify the absence of voltage and current on Buses 3B2 and 4B2.		______/______
NOTE:	The timing data retrieved from the data acquisition equipment for the various sequencing actions will be obtained when test conditions stabilize, therefore the input to these steps can be entered at the discretion of the Test Director.		
6.5 .2.17	Verify the sequencing of loads, from the data acquisition computer, to their respective busses as follows:		______/______
6.5 .2.17.1	DG RM EXH FAN, A-544C (52-3B[illegible])	_____ SEC	______/______
6.5 .2.17.2	52-3B17 DIESEL GEN RM VENT SUP FAN A-544D	_____ SEC	______/______
6.5 .2.17.3	NSRW PUMP, P-472B (52-4B06)	_____ SEC	______/______
6.5 .2.17.4	X43B2 SPLY BKR (52-4B05)	_____ SEC	______/______
6.5 .2.18	Verify the sequencing of load breakers in the TEST position, from the data acquisition computer as follows:		
6.5 .2.18.1	RBS PUMP, P-291B (52-3B09)	_____ SEC	______/______
6.5 .2.18.2	RB EMERG AC, A-500B (52-3B10)	_____ SEC	______/______
6.5 .2.18.3	RB EMERG AC, A-500D (52-3B14)	_____ SEC	______/______
6.5 .2.18.4	NSCW PUMP, P-482B (52-3B18)	_____ SEC	______/______
6.5 .2.18.5	HPI PUMP, P-238B (52-4B07)	_____ SEC	______/______
6.5 .2.18.6	M/U PUMP, P-236 (52-4B08)	_____ SEC	______/______
6.5 .2.18.7	DHR PUMP, P-261B (52-4B09)	_____ SEC	______/______

6.5 .2.19	Record the following information from the computer data acquisition equipment after at least 5 minutes:		
6.5 .2.19.1	Voltage __________ VAC (3744-4576)		________/_______
6.5 .2.19.2	Frequency __________ HZ (58.8-61.1)		________/_______
6.5 .2.20	Depress the SFAS CHANNEL RESET pushbuttons 1B, 2B, 3B, and 4B at Control Room panel H1RC.		________/_______
6.5 .2.21	The following steps will reset the load sequencing circuit and EFIC logic:		
6.5 .2.21.1	At Control Room panel H2SFB, depress the NS Bus B2 and B UNLOADING RESET B2/B pushbutton.		________/_______
6.5 .2.21.2	At EFIC panel H2SSE depress AFW reset BLPS on EFIC Channel "B" INITIATE/TEST MATRIX.		________/_______
6.5 .2.21.3	At EFIC panel H2SSE depress EFIC "B" Control INITIATED BLPB.		________/_______
6.5 .2.22	At Control Room panel H2ES, depress TRIP BLPB, OPEN GEB output circuit breaker 52-4B11.		________/_______
6.5 .2.22.1	Verify that busses 3B and 4B de-energize.		________/_______
6.5 .2.23	Verify that the GEB output breaker 52-4B11 closes in at least 5 seconds.		________/_______
NOTE:	The timing data retrieved from the data acquisition equipment for in step 6.5.2.24 the various sequencing actions will be obtained when test conditions stabilize, therefore the input to these steps can be entered at a later time at the discretion of the Test Director.		
6.5 .2.24	Verify the sequencing of loads, from the data acquisition computer, to their respective busses as follows:		
6.5 .2.24.1	DG RM EXH FAN, A-544C (52-3B06)	_____ SEC	________/_______
6.5 .2.24.2	52-3B17 DIESEL GEN RM VENT SUP FAN A-544D	_____ SEC	________/_______

6.5 .2.24.3 NSRW PUMP, P-472B (52-4B06) ____ SEC ______/______

6.5 .2.24.4 X43B2 SPLY BKR (52-4B05) ____ SEC ______/______

6.5 .2.25 Record the following information from the computer data acquisition equipment after at least 5 minutes:

GEB

6.5 .2.25.1 Voltage ________ VAC (3744-4576) ______/______

6.5 .2.25.2 Frequency ________ HZ (58.8-61.2) ______/______

6.5 .2.26 Synchronize GEB to the grid across bus 4B normal supply circuit breaker 52-4B01 per Operating Procedure A.31. ______/______

CAUTION: IF OFFSITE POWER IS LOST WHEN A DIESEL GENERATOR IS SYNCHRONIZED TO THE GRID, IMMEDIATELY OPEN THE NORMAL SUPPLY TO THE ASSOCIATED NUCLEAR SERVICE BUS.

6.5 .2.27 Shutdown GEB per Operating Procedure A.31. ______/______

NOTE: Equipment started during SFAS initiation may now be stopped to eliminate unnecessary running of emergency equipment. This includes RB upper dome air circulators, RB Emergency coolers, D/G supply and exhaust fans and NSRW pump.

6.5 .2.28 If Subtrain B LOOP-SFAS (subsection 6.6) will be tested immediately and the Shift Supervisor concurs; GO TO step 6.6.1.13 and N/A steps 6.5.2.29 through 6.6.1.12; otherwise N/A this step and continue. ______/______

6.5 .2.29 Place the following circuit breakers in the CONNECTED position or as directed by the Shift Supervisor:

6.5 .2.29.1 52-3B09 REACTOR BLDG SPRAY PUMP P-291B ______/______

6.5 .2.29.2 52-3B10 RB EMERG COOLING UNIT A-500B ______/______

6.5 .2.29.3 52-3B14 RB EMERG COOLING UNIT A-500D ______/______

PROCEDURE (Continued)		Initials/ Date
6.5 .2.29.4	52-3B18 NUCLEAR SERVICE CLG WTR PF P-482B	______/______
6.5 .2.29.5	52-4B08 REACTOR MAKE-UP PUMP P-236 NORM	______/______
6.5 .2.29.6	52-4B07 HP INJECTION PUMP P-238B	______/______
6.5 .2.29.7	52-4B09 DECAY HEAT REMOVAL PUMP P-261B	______/______
6.5 .2.30	CLOSE the following 125 VDC circuit breakers:	
6.5 .2.30.1	CKT BKR 72-B205 (BUS 4B2)	______/______
6.5 .2.30.2	CKT BKR 72-B211 (BUS 3B2)	______/______
6.5 .2.30.3	CKT BKR 72-B12 (BAT CHG H44BBD)	______/______
6.5 .2.30.4	CKT BKR 72-B220 (BAT CHGR H4BB2D2)	______/______
6.5 .2.31	Energize bus 4B2 per Operating Procedure A.58.	______/______
6.5 .2.32	Energize bus 3B2 per Operating Procedure A.59.	______/______
6.5 .2.33	CLOSE the following 125 VDC circuit breakers:	
6.5 .2.33.1	72-B202 DIESEL GENERATOR B2 ENGINE CONTROL PANEL	______/______
6.5 .2.33.2	CKT BKR 72-B204 DG ENG CONT PNL H2DEB2	______/______
6.5 .2.33.3	CKT BKR 72-B206 DG FIELD FLASH H2DGB2	______/______
6.5 .2.33.4	CKT BKR 72-B208 DG GEN CONT PNL H2DGB2	______/______
6.5 .2.33.5	CKT BKR 72-B207 BUS 4B2 SEQUENCER	______/______
6.5 .2.34	Notify the Shift Supervisor that the Subtrain B SFAS/LOOP test is complete.	______/______

PROCEDURE (Continued)		Initials/ Date
6.6	Subtrain B LOOP-SFAS (Selected BKRs in TEST position)	________/________
6.5 .1	Prerequisites	
6.6 .1.1	A pretest briefing has been held with all test participants.	________/________
6.5 .1.2	Line-up the Make-up Pump P-236 and its auxiliaries to their normal SFAS line-up IAW operating procedure A.15.	________/________
6.6 .1.3	Verify the following CKT BKRs are RACKED OUT:	
6.6 .1.3.1	52-3A21, TIE BREAKER TO LOAD CENTER S3A203	________/________
6.6 .1.3.2	52-3B21, TIE BREAKER TO LOAD CENTER S3B203	________/________
6.6 .1.3.3	52-3A203, TIE TO BUS S3A	________/________
6.6 .1.3.4	52-3B203, TIE TO BUS S3B	________/________
6.6 .1.3.5	52-4C01, STARTUP TRANS NO. 2 X94	________/________
.3.6	52-4D01, STARTUP TRANS NO. 2 X94	________/________
.1.3.7	52-4E06, STARTUP XFMR NO. 2	________/________
6.6 .1.3.8	52-4E13, STARTUP XFMR NO. 2	________/________
6.6 .1.3.9	52-6A04, STARTUP XFMR NO. 1-X976	________/________
6.6 .1.3.10	52-6B04, STARTUP XFMR No. 1-X976	________/________
6.6. .1.4	Verify the following CKT BKRs are CLOSED:	
6.6 .1.4.1	52-4B01 STARTUP NO. 2 TRANSFORMER X94	________/________
6.6 .1.4.2	52-4B05 STARTUP SERVICE TRANSFORMER X43B2	________/________
6.6 .1.4.3	52-3B05 STATION SERVICE TRANSFORMER X43B2	________/________
6.6 .1.4.4	52-3B02 MCC 2B1	________/________

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PROCEDURE (Continued) Initials/ Date

6.6	.1.4.5	Verify GEB is in standby per Operating Procedure A.31.	______/______
6.6	.1.6	Verify Train "A" Nuclear Service Buses (4A and 4A2) and their associated motor control centers are in their normal line-up IAW operating procedures A.058 and A.59.	______/______
6.6	.1.7	Verify/place "A" DHR system in operation for core cooling IAW Operating Procedure A.8 except as modified by Enclosure 9.7.	______/______
6.6	.1.8	Verify Train B Nuclear Service bus 4B and its associated motor control centers are in their normal line-up IAW Operating Procedures A.58 and A.59.	______/______
6.6	.1.9	Verify Train "A" (GEA and GEA2) diesel generators are not providing power to their respective busses.	______/______
6.6	.1.10	OPEN the following 125 VDC circuit breakers:	
6.6	.1.10.1	72-B207 4160 SWITCHGEAR O/U VOLTAGE RELAYS	______/______
6.6	.1.10.2	72-B202 DIESEL GENERATOR B2 ENGINE CONTROL PANEL	______/______
6.6	.1.10.3	72-B204 DIESEL GENERATOR B2 ENGINE CONTROL PANEL	______/______
6.6	.1.10.4	72-B206 D/G CONT PANEL H2DGB2 FIELD FLASH	______/______
6.6	.1.10.5	72-B208 DIESEL GENERATOR B2 CONTROL PANEL	______/______
	<u>NOTE</u>:	Completion of step 6.6.1.11 results in 125 VDC busses SOB2 and SOD2 and 120 VAC busses S1GB-1 and S1N-1 being powered from their respective batteries.	
6.6	.1.11	De-energize bus 3B2 per Operating Procedure A.59.	______/______
6.6	.1.12	De-energize bus 4B2 per Operating Procedure A.58.	______/______
6.6	.1.13	OPEN the following 125 VDC circuit breakers:	
6.6	.1.13.1	72-B205 4160V SWITCHGEAR 4B2 CONTROL	______/______

PROCEDURE (Continued) Initials/ Date

6.6 .1.13.2 72-B211 480V LOAD CENTER 3B2 CONTROL ________/______

6.6 .1.13.3 72-B12 BATTERY CHARGER H4BBD ________/______

6.6 .1.13.4 72-B220 STANDBY CHARGER H4BB2D2 ________/______

6.6 .1.14 Place the following circuit breaker in the TEST (OPEN) position:

6.6 .1.14.1 52-3B09 REACTOR BLDG SPRAY PUMP P-291B ________/______

6.6 .1.14.2 52-3B10 RB EMERG COOLING UNIT A-500B ________/______

6.6 .1.14.3 52-3B14 RB EMERG COOLING UNIT A-500D ________/______

6.6 .1.14.4 52-3B18 NUCLEAR SERVICE CLG WTR PP-482B ________/______

6.6 .1.14.5 52-4B07 HP INJECTION PUMP P-238B ________/______

6.6 .1.14.6 52-4B08 REACTOR MAKE-UP PUMP P-236 NORM ________/______

6.6 .1.14.7 52-4B09 DECAY HEAT REMOVAL PUMP P-261B ________/______

6.6 .1.15 Verify Nuclear Raw Water Pump P-472B is in standby IAW Operating Procedure A.25. ________/______

6.6 .1.16 Verify continuous communications have been established between the Control Room, diesel generator Control Rooms for GEB and GEB2, the 4.16 KV, 480 VAC, DC busses under test, and the data acquisition computer location in accordance with Enclosure 9.15. ________/______

6.6 .1.17 Inform plant personnel of the impending SFAS/LOOP actuation to subtrain B over the plant public address (PA) system. ________/______

6.6 .2 Subtrain B LOOP-SFAS with Subtrain B2 de-energized.

<u>NOTE</u>: The following steps will cause bus 4B to become momentarily de-energized and it will cause the diesel generator GEB to start. Buses 3B2 and 4B2 and their associated motor control centers and selected DC power sources will be de-energized for an extended period of time.

PROCEDURE (Continued) Initials/ Date

NOTE: The Linearcorder and data acquisition computers will be started per a given step, the stopping of this equipment is to be determined by the sequence of events at the specific time and place as determined by the Test Director. The chart speed of the Linearcorder and the scan rate of computer will be established and verified per Enclosure 9.4.

CAUTION: THE BRUCE-GM DIESEL GENERATORS GEA/GEB SHALL NOT BE RESTARTED IF THE UNIT HAS BEEN SHUTDOWN FOR MORE THAN 15 MINUTES AFTER A LOADED OPERATION. DUE TO LUBRICATION RESTRICTIONS THE ENGINE CANNOT BE RESTARTED UNTIL 3 HOURS HAVE ELAPSED.

NOTE: Before each and every diesel generator start, prepare the engine for prelubrication. For the Bruce-GM diesel generators check to assure the turbocharger drip full flow bypass valve is open per Enclosure 9.14.

6.6 .2.1 Initiate a count down 10 to ZERO over the plant PA system. ________/________

6.6 .2.2 At the count of 3 start the Linearcorder B-1 and B-2 and the data acquisition computers. ________/________

NOTE: To prevent an unloading sequence relay relay race that might possibly block the manual trip of the normal supply breaker do not initiate the SFAS actuation until the TRIP BLPB indicates that breaker 52-4B01 is open.

6.6 .2.3 At the count of ZERO, simultaneously OPEN the normal supply breaker to bus 4B (52-4B01) at panel H2ES and at panel H1RC, initiate an SFAS actuation by depressing the SFAS CHANNEL pushbuttons 1B, 2B, 3B, and 4B. ________/________

6.6 .2.4 Verify that busses 3B and 4B de-energize. ________/________

6.6 .2.4.1 Verify normal supply to bus 4B (52-4B01) OPEN. ________/________

PROCEDURE (Continued) Initials/ Date

6.6 .2.5	Verify the following after the LOOP-SFAS actuation from the data acquisition equipment:		
6.6 .2.5.1	GEB STARTS, accelerates to 900 RPM <10 sec.		______/______
6.6 .2.5.2	GEB output breaker (52-4B11) CLOSES.		______/______
6.6 .2.5.3	GEB voltage __________ 4160 ±416 VAC <10 sec.		______/______
6.6 .2.5.4	GEB frequency __________ 60 ±1.2 HZ <10 sec.		______/______
6.6 .2.5.5	The absence of voltage and current on Buses 3B2 and 4B2.		______/______
NOTE:	The timing data retrieved from the data acquisition equipment for in step 6.6.2.6 - 6.6.2.7 the various sequencing actions will be obtained when test conditions stabilize, therefore the input to these steps can be entered at a later time at the discretion of the Test Director.		
6.6 .2.6	Verify the sequencing of load breakers in the TEST position, from the data acquisition computer as follows:		
6.6 .2.6.1	X43B2 SPLY BKR (52-4B05)	_____ SEC	______/______
6.6 .2.6.2	RB EMERG AC, A-500B (52-3B10)	_____ SEC	______/______
6.6 .2.6.3	RB EMERG AC, A-500D (52-3B14)	_____ SEC	______/______
6.6 .2.6.4	NSCW PUMP, P-482B (52-3B18)	_____ SEC	______/______
6.6 .2.6.5	HPI PUMP, P-238B (52-4B07)	_____ SEC	______/______
6.6 .2.6.6	DHR PUMP, P-261B (52-4B09)	_____ SEC	______/______
6.6 .2.6.7	M/U PUMP, P-236 (52-4B08)	_____ SEC	______/______
6.6 .2.6.8	RBS PUMP, P-291B (52-3B09)	_____ SEC	______/______
6.6 .2.7	Verify the sequencing of loads, from the data acquisition computer, to their respective busses as follows:		

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PROCEDURE (Continued) Initials/ Date

6.6 .2.7.1 52-3B06 (DG RM EXH FAN, A-544C) _____ SEC ________/______

6.6 .2.7.2 52-3B17 DIESEL GEN RM VENT SUP FAN A-544D _____ SEC ________/______

6.6 .2.7.3 52-4B06 (NSRW PUMP, P-472B) _____ SEC ________/______

6.6 .2.8 Verify the sequencing, from the data acquisition computer, of the RBS PUMP P-291B (52-3B09) load breaker in the TEST position after approximately 5 minutes. ________/______

6.6 .2.9 Record the following information from the computer data acquisition equipment after at least 5 minutes:

GEB

6.6 .2.9.1 Voltage __________ VAC (3744-4576) ________/______

6.6 .2.9.2 Frequency __________ HZ (58.8-61.2) ________/______

6.6 .2.10 Simulate a Diesel Generator NEGATIVE PHASE SEQUENCE by manually operating relay 446 in cubicle 4B12 and verify that circuit breaker 52-4B11 (GEB output) DOES NOT trip. (Dwg. E-204, Sh-2) ________/______

6.6 .2.11 Simulate a Diesel Generator LOSS OF FIELD by manually operating relay 440 in cubicle 4B12 and verify that circuit breaker 52-4B11 GEB output DOES NOT trip. (Dwg. E-204, Sh-2) ________/______

6.6 .2.12 Simulate a Diesel Generator REVERSE POWER by manually operating relay 432 in cubicle 4B12 and verify that circuit breaker 52-4B11 (GEB output) DOES NOT trip. (Dwg. E-204, Sh-2) ________/______

6.6 .2.13 At panel H2DEB, simulate a CRANKCASE HIGH PRESS HI by momentarily jumpering relay K4, contact 1-3. (Dwg. E-204, Sh-70) ________/______

6.6 .2.13.1 Verify that diesel generator GEB DOES NOT trip and continues to operate. ________/______

6.6 .2.14 At panel H7J273, simulate a JACKET WATER HIGH TEMP by momentarily jumpering TSHH-88652 between TB5-36 and TB8-14. (Dwg. E-204, Sh-69) ________

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PROCEDURE (Continued)

		Initials/ Date
6.6 .2.14.1	Verify that diesel generator GEB DOES NOT trip and continues to operate.	______/______
6.6 .2.15	At panel H7J273, simulate a LUBE OIL LOW PRESSURE by momentarily jumpering lube oil pressure switch PSL-88658 between TB5-36 and TB5-27. (Dwg. E-204, Sh-69)	______/______
6.6 .2.15.1	Verify that diesel generator GEB DOES NOT trip and continues to operate.	______/______
6.6 .2.16	At panel H7J273, simulate an EMERGENCY STOP by depressing the local EMERGENCY STOP pushbutton S4. (Dwg. E-204, Sh-69)	______/______
6.6 .2.16.1	Verify that diesel generator GEB does not trip and continues to operate.	______/______
6.6 .2.17	Outside of the GEB diesel generator room, simulate an EMERGENCY STOP by depressing the remote EMERGENCY pushbutton located on the wall adjacent to the room entrance. (Dwg. E-204, Sh-69)	______/______
6.6 .2.17.1	Verify that diesel generator GEB DOES NOT trip and continues to operate.	______/______
6.6 .2.18	Depress the SFAS CHANNEL RESET pushbuttons 1B, 2B, 3B, and 4B at Control Room panel H1RC.	______/______
6.6 .2.19	The following steps will reset the load sequencing circuit and EFIC logic:	
6.6 .2.19.1	At Control Room panel H2SFB, depress the NS Bus B2 and B UNLOADING RESET B2/B pushbutton.	______/______
6.6 .2.19.2	At EFIC panel H1SSE depress AFW reset BLPB on EFIC Channel "B" INITIATE/TEST MATRIX.	______/______
6.6 .2.19.3	At EFIC panel H1SSE depress EFIC "B" Control INITIATED BLPB.	______/______
6.6 .2.20	Place the following circuit breakers in the TEST (OPEN) position:	
6.6 .2.20.1	52-3B09 REACTOR BLDG SPRAY PUMP P-291B	______/______
6.6 .2.20.2	52-3B10 RB EMERG COOLING UNIT A-500B	______/______

PROCEDURE (Continued) Initials/ Date

6.6 .2.20.3 52-3B14 RB EMERG COOLING UNIT A-500D ________/______

6.6 .2.20.4 52-3B18 NUCLEAR SERVICE CLG WTR PP P-482B ________/______

6.6 .2.20.5 52-4B07 HP INJECTION PUMP P-238B ________/______

6.6 .2.20.6 52-4B08 REACTOR MAKE-UP PUMP P-236 NORM ________/______

6.6 .2.20.7 52-4B09 DECAY HEAT REMOVAL PUMP P-261B ________/______

6.6 .2.21 Synchronize GEB to the grid across bus 4B normal supply circuit breaker 52-4B01 per Operating Procedure A.31. ________/______

CAUTION: IF OFFSITE POWER IS LOST WHEN A DIESEL GENERATOR IS SYNCHRONIZED TO THE GRID, IMMEDIATELY OPEN THE NORMAL SUPPLY TO THE ASSOCIATED NUCLEAR SERVICE BUS.

6.6 .2.22 Shutdown GEB per Operating Procedure A.31. ________/______

NOTE: Equipment started during SFAS initiation may now be stopped to eliminate unnecessary running of emergency equipment. This includes RB upper dome air circulators, RB Emergency Coolers, D/G supply AND EXHAUST FANS AND NSRW pump.

6.6 .2.23 Place the following circuit breakers in the CONNECTED position or as directed by the Shift Supervisor:

6.6 .2.23.1 52-3B09 REACTOR BLDG SPRAY PUMP P-291B ________/______

6.6 .2.23.2 52-3B10 RB EMERG COOLING UNIT A-500B ________/______

6.6 .2.23.3 52-3B14 RB EMERG COOLING UNIT A-500D ________/______

6.6 .2.23.4 52-3B18 NUCLEAR SERVICE CLG WTR PP P-482B ________/______

6.6 .2.23.5 52-4B08 REACTOR MAKE-UP PUMP P-236 NORM ________/______

6.6 .2.23.6 52-4B07 HP INJECTION PUMP P-238B ________/______

6.6 .2.23.7 52-4B09 DECAY HEAT REMOVAL PUMP P-261B ________/______

6.6 .2.24 CLOSE the following 125 VDC circuit breakers:

6.6 .2.24.1 72-B205 4160V SWITCHGEAR 4B2 CONTROL ________/______

6.6 .2.24.2 72-B211 480V LOAD CENTER 3B2 CONTROL ________/______

PROCEDURE (Continued) Initials/ Date

6.6	.2.24.3	72-B12 BATTERY CHARGER H4BBD	____/____
6.6	.2.24.4	72-B220 STANDBY CHARGER	____/____
6.6	.2.25	Energize bus 4B2 per Operating Procedure A.58.	____/____
6.6	.2.26	Energize bus 3B2 per Operating Procedure A.59.	____/____
6.6	.2.27	CLOSE the following 125 VDC circuit breakers:	
6.6	.2.27.1	72-B202 DIESEL GENERATOR B2 ENGINE CONTROL PANEL	____/____
6.6	.2.27.2	72-B204 DIESEL GENERATOR B2 ENGINE CONTROL PANEL	____/____
6.6	.2.27.3	72-B206 D/G CONT PANEL H2DGB2 FIELD FLASH	____/____
6.6	.2.27.4	72-B208 DIESEL GENERATOR B2 CONTROL PANEL	____/____
6.6	.2.27.5	72-B207 4160 SWITCHGEAR · /U VOLTAGE RELAYS	____/____
6.6	.2.28	Notify the Shift Supervisor that the subtrain B LOOP-SFAS the test is complete.	____/____

PROCEDURE (Continued) Initials/ Date

6.7 Subtrain B2 SFAS/LOOP (Selected BKRs in TEST position)

6.7 .1 Prerequisites Lineups

6.7 .1.1	A preliminary briefing has been conducted with the Shift Supervisor and prerequisite lineups can commence. Formal briefing to occur later.	______/______
6.7 .1.2	Run the data acquisition program "INIT" on the "B" computer and verify all channels are functioning properly.	______/______
6.7 .1.3	Verify the following CKT BKRs are RACKED OUT:	
6.7 .1.3.1	52-3A21 TIE BREAKER TO LOAD CENTER S3A2	______/______
6.7 .1.3.2	52-3B21 TIE BREAKER TO LOAD CENTER S3B2	______/______
6.7 .1.3.3	52-3A203 TIE TO BUS S3A	______/______
6.7 .1.3.4	52-3B203 TIE TO BUS S3B	______/______
6.7 .1.3.5	52-4C01 STARTUP TRANS NO. 2 X94	______/______
6.7 .1.3.6	52-4D01 STARTUP TRANS NO. 2 X94	______/______
6.7 .1.3.7	52-4E06 STARTUP XFMR NO. 2	______/______
6.7 .1.3.8	52-4E13 STARTUP XFMR NO. 2	______/______
6.7 .1.3.9	52-6A04 STARTUP XFMR NO. 1-X976	______/______
6.7 .1.3.10	52-6B04 STARTUP XFMR NO. 1-X976	______/______
6.7 .1.4	Verify the following CKT BKRs are connected and CLOSED:	
6.7 .1.4.1	52-4B203 START-UP XFRM No. 2	______/______
6.7 .1.4.2	52-4B204 480 VOLT LOAD CENTER S3B2	______/______
6.7 .1.4.3	52-3B202 MAIN BREAKER	______/______
6.7 .1.4.4	52-3B206 MCC S2B2	______/______
6.7 .1.4.5	52-3B211 MCC S2B3	______/______
6.7 .1.4.6	52-3B215 MCC S2B4	______/______

PROCEDURE (Continued) Initials/ Date

6.7	.1.4.7	52-3B210 ESS C.U. U-545B CR/TSC	____/____
6.7	.1.4.8	52-3B217 NSEB ESS C.U. U-503B	____/____
6.7	.1.5	Verify 52-4B207 NSS XFMR X74 is in the TEST position and OPEN.	____/____
6.7	.1.6	Verify 52-4B202 Diesel Generator GEB-2 is in the CONNECTED position and OPEN.	____/____
6.7	.1.7	Verify 52-4B205 Auxiliary Feed Water Pump P-318 is in the TEST position and CLOSED.	____/____
6.7	.1.8	Verify GEB2 is in STANDBY per Operating Procedure A.31B, Section 4.0.	____/____
6.7	.1.9	Verify Train "A" Nuclear Service Busses (4A and 4A2) and their associated 480V load centers and motor control centers are energized IAW Operating Procedures A.58, Sections 4.1 and 4.3, and A.59, Sections 4.1, 4.2, and 4.4.	____/____
6.7	.1.10	Step Deleted	
6.7	.1.11	Verify Train "A" (GEA & GEA2) diesel generators are not powering their respective busses.	____/____
	<u>NOTE</u>:	Incore temperatures are to be trended at 15 minute intervals whenever both decay heat removal systems are shutdown. The temperature should not exceed 150°F.	
6.7	.1.12	Shutdown operating DHR Loop(s) IAW Operating Procedure A.8, Sections 6.1 and/or 6.2.	____/____
6.7	.1.13	Step Deleted	
	<u>NOTE</u>:	The following steps will align the 120 VAC and 125 VDC panel supplies so that de-energizing MCC 2B1 will have a minimum impact. Once MCC 2B1 is de-energized, 125 VDC Panel SOD will be powered solely from the "D" Battery.	

6.7	.1.14	Line up 125 VDC Panel SOB to Battery Charger H4BBD IAW Operating Procedure A.61, Section 4.6.2.	____/____
6.7	.1.15	Line up 125 VDC Panel SOB2 to Battery Charger H4BB2 IAW Operating Procedure A.61, Section 4.4.8.	____/____
6.7	.1.16	Line up 125 VDC Panel SOD2 to Battery Charger H4BD2 IAW Operating Procedure A.61, Section 4.4.10.	____/____
6.7	.1.17	Line up 120 VAC Panels S1B and S1B2-1 to be supplied by Inverter S1B2 IAW Operating Procedure A.62, Section 4.4.	____/____
6.7	.1.18	Line up 120 VAC Panels S1D and S1D2-1 to be supplied by Inverter S1D2 IAW Operating Procedure A.62, Section 4.8.	____/____
6.7	.1.19	Verify normal source for Battery Charger H4BEF Breaker 52-2A130 is ON.	____/____
6.7	.1.20	A pretest briefing using the Test Briefing Checklist has been held with all test participants and properly documented per AP.82. Briefing to include Section 6.8 if it is to follow immediately.	____/____
	CAUTION:	IF BATTERY VOLTAGE SHOULD DROP BELOW 115 VDC, THE SHIFT SUPERVISOR AND TEST DIRECTOR SHALL BE NOTIFIED IMMEDIATELY.	
6.7	.1.21	Verify operations has assigned an operator to monitor Battery "D" voltage during the performance of this test.	____/____
	NOTE:	Busses 3B and 4B and their associated motor control centers will be de-energized for an extended period of time.	
6.7	.1.22	De-energize Bus 3B and associated MCC per Operating Procedure A.59, Sections 6.1 and 6.2.	____/____
6.7	.1.23	De-energize Bus 4B per Operating Procedure A.58, Section 6.3.	____/____
6.7	.1.24	OPEN the following 125 VDC circuit breakers:	

6.7 .1.24.1 72-B08 4160V SWGR BUS 4B ______/______

6.7 .1.24.2 72-B05 480V SWGR BUS 3B ______/______

6.7 .1.25 Verify continuous communications has been established between the Control Room and applicable locations on Enclosure 9.15, per direction of the Shift Supervisor. ______/______

6.7 .1.26 Inform plant personnel of the impending SFAS/LOOP actuation to Subtrain B2 over the plant public address (PA) system. ______/______

6.7 .2 Subtrain B2 SFAS/LOOP with Subtrain B de-energized.

NOTE: The following steps will cause Bus 4B2 to become momentarily de-energized and it will cause diesel generator GEB2 to start.

6.7 .2.1 Verify recorders B2-1 and B2-2 are initialized and annotated. ______/______

6.7 .2.2 Verify computer "B" software loaded and ready to start. ______/______

6.7 .2.3 One to two minutes prior to SFAS actuation countdown per Step 6.7.2.4, START the GEB2 turbocharger bearing prelubrication by opening EGS-838. ______/______

6.7 .2.4 Initiate a countdown from 10 to ZERO over the plant PA system. ______/______

6.7 .2.5 At the count of 9, open TS-3, 5/6 at 52-4B203 to block the 5 sec. delay trip of 52-4B207 (S/U XFMR #1). ______/______

6.7 .2.6 At the count of 7, CLOSE 52-4B207. ______/______

6.7 .2.7 At the count of 5, at control panel H2EW OPEN 52-4B204. ______/______

6.7 .2.8 At the count of 3, start the Linearcorders B2-1 and B2-2 and the data acquisition computer. ______/______

Step		Action	Initials/ Date
6.7	.2.9	At the count of ZERO, at panel H1RC, initiate an SFAS actuation by depressing the SFAS CHANNEL pushbuttons 1B, 2B, 3B, and 4B.	______/______
6.7	.2.10	After the SFAS actuation, verify 52-4B207 BUS 4B2 ALT FEED did not trip.	______/______
6.7	.2.11	After the SFAS actuation, CLOSE GEB2 turbocharger prelube oil supply valve EGS-838.	______/______
6.7	.2.12	Verify the following after the SFAS actuation from the data acquisition equipment:	
6.7	.2.12.1	Diesel Generator GEB2 STARTS, accelerates to 450 RPM in ≤10 sec.	______/______
6.7	.2.12.2	GEB2 voltage reaches 4160 ±416 VAC in ≤10 sec.	______/______
6.7	.2.12.3	GEB2 frequency reaches [illegible] ±1.2 HZ in ≤10 sec.	______/______
6.7	.2.12.4	GEB2 output breaker (52-4B202) DID NOT CLOSE.	______/______
6.7	.2.12.5	The absence of voltage and current on Busses 3B and 4B.	______/______
6.7	.2.12.6	52-3B202 BUS 3B SPLY did not trip.	______/______
6.7	.2.12.7	52-3B206 MCC 2B2 tripped open.	______/______
6.7	.2.12.8	52-3B210 U-545B tripped open.	______/______
6.7	.2.12.9	52-3B215 MCC 2B4 tripped open.	______/______
6.7	.2.12.10	52-3B217 U-503B tripped open.	______/______
6.7	.2.12.11	52-4B203 BUS 4B2 NORM FEED did not trip.	______/______
6.7	.2.12.12	52-4B207 BUS 4B2 ALT FEED did not trip.	______/______
6.7	.2.12.13	52-4B204 BUS 3B2 SPLY CLOSED.	______/______
6.7	.2.12.14	52-4B205 AFW PUMP P-318 tripped OPEN.	______/______

PROCEDURE (Continued) Initials/ Date

6.7 .2.13 Verify the sequencing of loads, from the data acquisition computer, to their respective busses as follows:

			REQUIRED	ACTUAL	Initials/ Date
6.7	.2.13.1	52-3B215 MCC S2B4	23.4-28.6	____ SEC	________/______
6.7	.2.13.2	52-3B217 U-503B SUPPLY BKR)	27.9-34.1	____ SEC	________/______
6.7	.2.13.3	52-3B210 U-545B SPLY BKR	45.9-56.1	____ SEC	________/______

6.7 .2.14 Verify that the following breakers CANNOT be tripped from the Control Room:

6.7 .2.14.1 52-3B202 BUS 3B2 SPLY ________/______

6.7 .2.14.2 52-4B203 BUS 4B2 NORM FEED ________/______

6.7 .2.14.3 52-4B204 BUS 3B2 SPLY ________/______

6.7 .2.14.4 52-4B207 BUS 4B2 ALT FEED ________/______

6.7 .2.15 Record the following information from the recorder after at least 5 minutes from SFAS initiation:

GEB2 Recorder #______________

6.7 .2.15.1 Voltage ________ VAC (3744-4576) ________/______

6.7 .2.15.2 Frequency ________ HZ (58.8-61.2) ________/______

6.7 .2.16 At cubicle 52-4B203, OPEN Test Switch 3 contacts 3/4. (This prevents auto closure of DG output circuit breaker.) ________/______

CAUTION: OPENING 52-4B203 WILL DE-ENERGIZE DIESEL AUXILIARIES. THEREFORE, STEPS 6.7.2.21 THROUGH 6.7.2.23 NEED TO BE COMPLETED AS RAPIDLY AS POSSIBLE.

6.7 .2.16.1 Close breaker 52-3B206 (MCC 2B2). ________/______

6.7 .2.17 Verify Computer "B" software loaded and ready to start. ________/______

PROCEDURE (Continued) Initials/ Date

6.7 .2.18	Initiate a countdown from 10 to ZERO over the Plant PA system.		____/____
6.7 .2.19	At the count of 3, start recorders B2-1 and B2-2 and the data acquisition computer.		____/____
6.7 .2.20	At the count of ZERO, at cubicle 52-4B203, OPEN the normal supply breaker (52-4B203) to Bus 4B2.		____/____
6.7 .2.21	Verify 52-4B207 BUS 4B2 ALT SUPPLY trips open after a brief time delay.		____/____
6.7 .2.22	Verify the following from the data acquisition equipment:		
6.7 .2.22.1	52-3B202 BUS 3B2 SUPPLY tripped open.		____/____
6.7 .2.22.2	52-3B206 MCC 2B2 tripped open.		____/____
6.7 .2.22.3	52-3B210 U-545B tripped open.		____/____
6.7 .2.22.4	52-3B215 MCC 2B4 tripped open.		____/____
6.7 .2.22.5	52-3B217 U-503B tripped open.		____/____
6.7 .2.22.6	52-4B202 GEB2 OUTPUT did not close.		____/____
6.7 .2.22.7	52-4B204 BUS 3B2 SPLY did not trip.		____/____
6.7 .2.23	At cubicle 52-4B203, CLOSE Test Switch #3 contacts 3/4 (this allows closure of DG output circuit breaker) and verify the following:		____/____
6.7 .2.23.1	52-4B202 GEB2 output breaker closes.		____/____
6.7 .2.23.2	The absence of voltage and current on Busses 3B and 4B.		____/____
6.7 .2.24	Verify the sequencing of loads to their respective busses as follows:		____/____

		REQUIRED	ACTUAL	
6.7 .2.24.1	52-3B202 BUS 3B2 SUPPLY	4.5- 5.5	____ SEC	____/____
6.7 .2.24.2	52-3B215 MCC 2B4	22.5-27.5	____ SEC	____/____
6.7 .2.24.3	52-3B217 U-503B	27.0-33.0	____ SEC	____/____

6.7	.2.24.4	52-3B210 U-545B 45.0-55.0 _____ SEC	________/______
6.7	.2.25	Record the following information from the recorders after at least 5 minutes from GEB2 output breaker closure:	
		GEB2 Recorder #______________	
6.7	.2.25.1	Voltage _________ VAC (3744-4576)	________/______
6.7	.2.25.2	Frequency _________ HZ (58.8-61.2)	________/______
6.7	.2.26	Depress the SFAS CHANNEL RESET pushbuttons 1B, 2B, 3B, and 4B at Control Room panel H1RC.	________/______
6.7	.2.27	Reset U/V relay targets on Busses 4B2 and 3B2.	________/______
6.7	.2.28	The following steps will reset the load sequencing circuit and EFIC logic:	
6.7	.2.28.1	At Control Room panel H2SFB, depress the NS Bus B2 and B UNLOADING RESET B2/B pushbutton.	________/______
6.7	.2.28.2	At EFIC panel H1SSE, depress AFW RESET BLPB on EFIC Channel "B" INITIATE/TEST MATRIX.	________/______
6.7	.2.28.3	At EFIC panel H1SSE, depress EFIC "B" CONTROL INITIATED BLPB.	________/______
6.7	.2.29	At local panel H2DEB2, depress the LOCA RESET pushbutton and verify the SHUTDOWN SYSTEM ACTIVE Red light energizes.	________/______
6.7	.2.30	Verify computer "B" software loaded and ready to start.	________/______
6.7	.2.31	Initiate a countdown from 10 to ZERO over the Plant PA system.	________/______
6.7	.2.32	At the count of 3, start recorders B2-1 and B2-2 and the data acquisition computer.	________/______

			Initials/ Date
6.7	.2.33	At the count of ZERO, at Control Room panel H2EW, depress the TRIP BLPB to OPEN GEB2 Output Circuit Breaker 52-4B202, and verify the following from data acquisition equipment:	_______/_______
6.7	.2.33.1	52-4B202 DG B2 output breaker trips.	_______/_______
6.7	.2.33.2	Busses 3B2 and 4B2 de-energize.	_______/_______
6.7	.2.34	The following breakers opened:	
6.7	.2.34.1	52-3B202 480 VAC FDR BKR BUS 3B2	_______/_______
6.7	.2.34.2	52-3B215 MCC S2B4	_______/_______
6.7	.2.34.3	52-3B217 U-503B	_______/_______
6.7	.2.34.4	52-3B210 U-545B	_______/_______
6.7	.2.35	52-4B202 DG B2 output breaker recloses after 4.1-5.1 sec. Actual_______sec.	_______/_______
6.7	.2.36	Verify the sequencing of loads, from the data acquisition computer, to their respective busses as follows:	

			REQUIRED	ACTUAL	
6.7	.2.36.1	52-3B202 BUS 3B2 SUPPLY	4.5- 5.5	____ SEC	_______/_______
6.7	.2.36.2	52-3B215 MCC 2B4	22.5-27.5	____ SEC	_______/_______
6.7	.2.36.3	52-3B217 U-503B	27.0-33.0	____ SEC	_______/_______
6.7	.2.36.4	52-3B210 U-545B	45.0-55.0	____ SEC	_______/_______

6.7.	.2.37	Record the following information from the recorders after at least 5 minutes from GEB2 output breaker reclosure:	
		GEB2 Recorder #____________	
6.7	.2.37.1	Voltage _________ VAC (3744-4576)	_______/_______
6.7	.2.37.2	Frequency _________ HZ (58.8-61.2)	_______/_______

Initials/ Date

CAUTION: IF OFFSITE POWER IS LOST WHEN A DIESEL GENERATOR IS SYNCHRONIZED TO THE GRID, IMMEDIATELY OPEN THE NORMAL SUPPLY TO THE ASSOCIATED NUCLEAR SERVICE BUS.

6.7 .2.38	Synchronize and shutdown GEB2 IAW Operating Procedure A.31B, Sections 5.5 through 5.7.	______/______

6.7 .3 RESTORATION

6.7 .3.1	At 52-4B203, CLOSE TS-3 contacts 5/6.	______/______
6.7 .3.2	If subtrain B2 SFAS/LOOP (subsection 6.8) will be tested immediately and the Shift Supervisor concurs; GO TO Section 6.8 and N/A the remainder of this section; otherwise N/A this step and continue.	______/______
6.7 .3.3	Trip and then Place 52-4B205 AFW Pump P-318 in the connected position or as directed by the Shift Supervisor.	______/______
6.7 .3.4	Trip and then Place 52-4B207 Bus 4B2 ALT SPLY in the connected position or as directed by the Shift Supervisor.	______/______
6.7 .3.5	CLOSE the following 125 VDC circuit breakers:	
6.7 .3.5.1	72-B08 4160 SWGR BUS 4B	______/______
6.7 .3.5.2	72-B05 480V SWGR BUS 3B	______/______
6.7 .3.6	Energize bus 4B per Operating Procedure A.58, Section 4.5.	______/______
6.7 .3.7	Energize bus 3B and MCC 2B1 per Operating Procedure A.59, Sections 4.1 and 4.2.	______/______
6.7 .3.7.1	Close breaker 52-3B206 MCC 2B2.	______/______

PROCEDURE (Continued) Initials/ Date

6.7 .3.8 Restore 125 VDC Panel SOB to normal IAW Operating Procedure A.61, Section 4.3. ________/______

6.7 .3.9 Notify the Shift Supervisor that the Subtrain B2 SFAS/LOOP test is complete. ________/______

NOTE: DHR B may be placed in service, if required by the Shift Supervisor, IAW Operating Procedure A.8, Sections 4.8 otherwise N/A this step.

6.8 Subtrain B2 LOOP-SFAS (Selected BKRs in TEST position)

6.8 .1 Prerequisites Lineups

6.8 .1.1	If this section is to be performed immediately after Section 6.7, and the restoration of Section 6.7.3 was not performed, then skip Section 6.8.1 (N/A this step) except for the following steps: 6.8.1.5 through 6.8.1.9. Skipped steps shall be marked N/A.	______/______
6.8 .1.2	A preliminary briefing has been held with the Shift Supervisor and prerequisite lineups can commence. (Formal briefing to occur later.)	______/______
6.8 .1.3	Run the data acquisition program "INIT" on the "B" computer and verify all channels are functioning properly.	______/______
6.8 .1.4	Verify the following CKT BKRs are RACKED OUT:	
6.8 .1.4.1	52-3A21 TIE BREAKER TO LOAD CENTER S3A2	______/______
6.8 .1.4.2	52-3B21 TIE BREAKER TO LOAD CENTER S3B2	______/______
6.8 .1.4.3	52-3A203 TIE TO BUS S3A	______/______
6.8 .1.4.4	52-3B203 TIE TO BUS S3B	______/______
6.8 .1.4.5	52-4C01 STARTUP TRANS NO. 2 X94	______/______
6.8 .1.4.6	52-4D01 STARTUP TRANS NO. 2 X94	______/______
6.8 .1.4.7	52-4E06 STARTUP XFMR NO. 2	______/______
6.8 .1.4.8	52-4E13 STARTUP XFMR NO. 2	______/______
6.8 .1.4.9	52-6A04 STARTUP XFMR NO. 1-X976	______/______
6.8 .1.4.10	52-6B04 STARTUP XFMR NO. 1-X976	______/______

PROCEDURE (Continued) Initials/ Date

6.8 .1.5	Verify the following CKT BKRs are connected and CLOSED:	
6.8 .1.5.1	52-4B203 START-UP XFMP NO.2	______/______
6.8 .1.5.2	52-4B204 480 VOLT LOAD CENTER S3B2	______/______
6.8 .1.5.3	52-3B202 MAIN BREAKER	______/______
6.8 .1.5.4	52-3B206 MCC 2B2	______/______
6.8 .1.5.5	52-3B211 MCC 2B3	______/______
6.8 .1.5.6	52-3B215 MCC 2B4	______/______
6.8 .1.5.7	52-3B210 ESS C.U. U-545B R/TSC	______/______
6.8 .1.5.8	52-3B217 NSEB ESS C.U. U-503B	______/______
6.8 .1.6	Step Deleted	
6.8 .1.7	Verify 52-4B202 Diesel Generator GEB2 is in the CONNECTED position and OPEN.	______/______
6.8 .1.8	Verify 52-3205 Auxiliary Feed Water Pump P-318 is in to the TEST position and CLOSED.	______/______
6.8 .1.9	Verify GEB2 is in STANDBY per Operating Procedure A.31B, Section 4.0.	______/______
6.8 .1.10	Verify Train "A" Nuclear Service Busses (4A and 4A2) and their associated 480V load centers and motor control centers are energized IAW Operating Procedures A.58, Sections 4.1 and 4.3, and A.59, Sections 4.1, 4.2, and 4.4.	______/______
6.8 .1.11	Step Deleted	
6.8 .1.12	Verify Train "A" (GEA & GEA2) diesel generators are not providing power to their respective busses.	______/______

Initials/ Date

NOTE: Incore temperatures are to be trended at 15 minute intervals whenever both decay heat removal systems are shutdown. The temperature should not exceed 150°.

6.8 .1.13 Shutdown the operating DHR Loop(s) IAW Operating Procedure A.8, Section 6.1 and/or 6.2. ______/______

6.8 .1.14 Step Deleted

NOTE: The following steps will align the 120 VAC and 125 VDC panel power supplies so that de-energizing MCC 2B1 will have a minimum impact. Once MCC 2B1 is de-energized, 125 VDC Panel SOD will be powered solely from the "D" Battery.

6.8 .1.15 Line up 125 VDC Panel SOB to Battery Charger H4BBD, IAW Operating Procedure A.61, Section 4.6.2. ______/______

6.8 .1.16 Line up 125 VDC Panel SOB2 to Battery Charger H4BB2, IAW Operating Procedure A.61, Section 4.4.8. ______/______

6.8 .1.17 Line up 125 VDC Panel SOD2 to Battery Charger H4BD2, IAW Operating Procedure A.61, Section 4.4.10. ______/______

6.8 .1.18 Line up 120 VAC Panels S1B and S1B2-1 to be supplied by Inverter S1B2, IAW Operating Procedure A.62, Section 4.4. ______/______

6.8 .1.19 Line up 120 VAC Panels S1D and S1D2-1 to be supplied by Inverter S1D2, IAW Operating Procedure A.62, Section 4.8. ______/______

6.8 .1.20 Verify normal source for Battery Charger H4BEF breaker 52-2A130 is ON. ______/______

6.8 .1.21 A pretest briefing using the Test Briefing Checklist has been held with all test participants and properly documented per AP.82. ______/______

CAUTION: IF BATTERY VOLTAGE SHOULD DROP BELOW 115 VDC, THE SHIFT SUPERVISOR AND TEST DIRECTOR SHALL BE NOTIFIED IMMEDIATELY.

6.8 .1.22 Verify Operations has assigned an operator to monitor Battery "D" voltage during the performance of this test. ______/______

PROCEDURE (Continued) Initials/ Date

NOTE: Buses 3B and 4B and their associated motor control centers will be de-energized for an extended period of time.

6.8	.1.23	De-energize bus 3B and associated MCC per Operating Procedure A.59, Sections 6.1 and 6.2.	______/______
6.8	.1.24	De-energize bus 4B per Operating Procedure A.58, Section 6.3.	______/______
6.8	.1.25	OPEN the following 125 VDC circuit breakers:	
6.8	.1.25.1	72-B08 BUS 4B	______/______
6.8	.1.25.2	72-B05 480V SWGR BUS 3B	______/______
6.8	.1.26	Verify continuous communications have been established between the Control Room and applicable locations on Enclosure 9.15 per direction of Shift Supervisor.	______/______

6.8 .2 Subtrain B2 LOOP-SFAS with subtrain B de-energized

NOTE: The following steps will cause bus 4B2 to become momentarily de-energized and it will cause the diesel generator GEB2 to start.

6.8	.2.1	Verify recorders B2-1 and B2-2 are initialized and annotated.	______/______
6.8	.2.1.1	Inform plant personnel of the impending LOOP-SFAS actuation to subtrain B2 over the plant public address (PA) system.	______/______
6.8	.2.2	Verify computer "B" software is loaded and ready to start.	______/______
6.8	.2.3	One to two minutes prior to SFAS actuation countdown per Step 6.8.2.4, START the GEB2 turbocharger bearing prelubrication by opening EGS-838.	______/______

NOTE: Step 6.8.2.9.10.1 must be performed within 30 seconds of SFAS initiation to verify the Block Close function.

PROCEDURE (Continued) Initials/ Date

6.8	.2.4	Initiate a countdown from 10 to ZERO over the plant PA system.	____/____
6.8	.2.5	Step Deleted	
6.8	.2.6	Step Deleted	
6.8	.2.7	Step Deleted	
6.8	.2.8	At the count of 3 start the Linearcorder B2-1 and B2-2 the data acquisition computer.	____/____
	NOTE:	To prevent an unloading sequence relay race that might possibly block the manual trip of the normal supply breaker, do not initiate the SFAS actuation until the TRIP BLPB indicates that breaker 52-4B203 is OPEN.	
6.8	.2.9	At the count of ZERO, OPEN the normal supply breaker to bus 4B2 (52-4B203) at panel H2EW and at panel H1RC, initiate an SFAS actuation by depressing the SFAS CHANNEL pushbuttons 1B, 2B, 3B, and 4B. Verify the following from the data acquisition equipment:	____/____
6.8	.2.9.1	Buses 3B2 and 4B2 de-energize.	____/____
6.8	.2.9.2	52-4B205 AFW PUMP P-318 tripped open.	____/____
6.8	.2.9.3	Step Deleted	
6.8	.2.9.4	Diesel Generator GEB2 STARTS, accelerates to 450 RPM in ≤10 sec.	____/____
6.8	.2.9.5	GEB2 output breaker (52-4B202) CLOSES.	____/____
6.8	.2.9.6	GEB2 voltage reaches 4160 ±416 VAC in ≤10 sec.	____/____
6.8	.2.9.7	GEB2 frequency reaches 60 ±1.2 HZ in ≤10 sec.	____/____
6.8	.2.9.8	The absence of voltage and current on Busses 3B and 4B.	____/____
6.8	.2.10	After the SFAS actuation, CLOSE GEB2 turbocharger prelube oil supply valve EGS-838.	____/____

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PROCEDURE (Continued) Initials/ Date

6.8 .2.10.1	52-4B205 CANNOT be closed from the Control Room panel H1SSE.		____/____
6.8 .2.11	Verify the sequencing of loads, from the data acquisition computer, to their respective busses as follows:		

		REQUIRED	ACTUAL	
6.8 .2.11.1	52-3B202 480 VAC FDR BKR, BUS 3B2	4.5- 5.5	____ SEC	____/____
6.8 .2.11.2	52-3B215 MCC S2B4	22.5-27.5	____ SEC	____/____
6.8 .2.11.3	52-3B217 U-503B	27.0-33.0	____ SEC	____/____
6.8 .2.11.4	52-3B210 U-545B	45.0-55.0	____ SEC	____/____

6.8 .2.12 Record the following information from the recorder after at least 5 minutes following SFAS initiation:

GEB2 Recorder #____________

6.8 .2.12.1 Voltage ________ VAC (3744-4576) ____/____

6.8 .2.12.2 Frequency ________ HZ (58.8-61.2) ____/____

NOTE: The pneumatic lines that are vented in the following steps are located at local panel H2DEB2.

6.8 .2.13 At Local Panel H2DEB2, simulate a HIGH TEMP LUBE OIL trip signal by loosening the compression fitting to vent pneumatic line E-18. ____/____

6.8 .2.13.1 Verify Ann. Pos. 5-1 is ON. ____/____

6.8 .2.13.2 Verify that Diesel Generator GEB2 DID NOT trip. ____/____

NOTE: All swaglock fittings to be tightened in accordance with I-1155, Sheet 8. QC to witness all retightening.

MRW 1/10/83 Q.C. H.P. mech QC

6.8 .2.14 Tighten compression fitting for pneumatic line E-18. ____/____

6.8 .2.15 Reset window 5-1 alarm on the local panel H2DEB2. ____/____

PROCEDURE (Continued)

			Initials/ Date
6.8	.2.16	At Local Panel H2DEB2, simulate a HIGH TEMP BEARING trip signal by loosening the compression fitting to vent pneumatic line E-19.	______/______
6.8	.2.16.1	Verify Ann. Pos. 8-1 is ON.	______/______
6.8	.2.16.2	Verify that Diesel Generator GEB2 DID NOT trip.	______/______
MRW 1/20/88 Q.C. H.P. mech QC 6.8	.2.16	Tighten compression fitting for pneumatic line E-19.	______/______
6.8	.2.17	Reset window 8-1 alarm on the local panel H2DEB2.	______/______
6.8	.2.18	At local Panel H2DEB2, simulate a HIGH VIBRATION trip signal by loosening the compression fitting to vent pneumatic line E-23.	______/______
6.8	.2.18.1	Verify Ann. Pos. 9-1 is ON.	______/______
6.8	.2.18.2	Verify that Diesel Generator GEB2 did not trip.	______/______
MRW 1/20/88 Q.C. H.P. mech QC 6.8	.2.19	Tighten compression fitting for pneumatic line E-23.	______/______
6.8	.2.20	Reset window 9-1 alarm on the local panel H2DEB2.	______/______
6.8	.2.21	At local Panel H2DEB2, simulate a LOW PRESS TURBO OIL trip signal by loosening the compression fitting to vent pneumatic line E-92.	______/______
6.8	.2.21.1	Verify Ann. Pos. 4-2 is ON.	______/______
6.8	.2.21.2	Verify that Diesel Generator GEB2 DID NOT trip.	______/______
MRW 1/20/88 Q.C. H.P. mech QC 6.8	.2.22	Tighten compression fitting for pneumatic line E-92.	______/______
6.8	.2.23	Reset window 4-2 alarm on the local panel H2DEB2.	______/______
6.8	.2.24	At local Panel H2DEB2, simulate a HIGH TURBO VIBRATION trip signal by loosening the compression fitting to vent pneumatic line E-21 in panel H2DEB2.	

PROCEDURE (Continued)

	Step	Action	Initials/ Date
	6.8 .2.24.1	Verify Ann. Pos. 9- s ON.	____/____
	6.8 .2.24.2	Verify that Diesel Generator GEB2 DID NOT trip.	____/____
MRW 1/20/88 Q.C. H.P. mech QC	6.8 .2.25	Tighten compression fitting for pneumatic line E-21.	____/____
	6.8 .2.26	Reset window 9-2 alarm on the local panel H2DEB2.	____/____
	6.8 .2.27	At local Panel H2DEB2, simulate a HIGH TEMP JACKET WATER trip signal by loosening the compression fitting to vent pneumatic line E-16.	____/____
	6.8 .2.27.1	Verify Ann. Pos. 13-1 is ON.	____/____
	6.8 .2.27.2	Verify that Diesel Generator GEB2 DID NOT trip.	____/____
MRW 1/20/88 Q.C. H.P. mech QC	6.8 .2.28	Tighten compression fitting for pneumatic line E-16.	____/____
	6.8 .2.29	Reset window 13-1 alarm on th local panel H2DEB2.	____/____
	6.8 .2.30	At local Panel H2DEB2, simulate a LOW PRESS JACKET WATER trip signal by loosening the compression fitting to vent pneumatic line E-14.	____/____
	6.8 .2.30.1	Verify Ann. Pos. 15-1 is ON.	____/____
	6.8 .2.30.2	Ve-ify that Diesel Generator GEB2 DID NOT t	____/____
MRW 1/20/88 Q.C. H.P. mech QC	6.8 .2.31	Tig. n compression fitting for pneumatic line E-14.	____/____
	6.8 .2.32	Reset window 15-1 alarm on the local panel H2DEB2.	____/____
	6.8 .2.33	At local Panel H2DEB2, simulate a HIGH PRESSURE CRANKCASE trip signal by loosening the compression fitting to vent pneumatic line E-68.	____/____

PROCEDURE (Continued) Initials/ Date

6.8	.2.33.1	Verify Ann. Pos. 29-2 is ON.	______/______
6.8	.2.33.2	Verify that Diesel Generator GEB2 DID NOT trip.	______/______
MRW 1/20/88 Q.C. H.P. 6.8	.2.34	Tighten compression fitting for pneumatic line E-68. mech QC	______/______
6.8	.2.35	Reset window 29-2 alarm on the local panel H2DEB2.	______/______
6.8	.2.36	Simulate a REVERSE POWER trip by manually operating relay 432 at panel H2DGB2.	______/______
6.8	.2.36.1	Verify Ann. Pos. 23-1 is ON.	______/______
6.8	.2.36.2	Verify that Diesel Generator GEB2 DID NOT TRIP.	______/______
6.8	.2.37	Depress the Relay Reset pushbutton on Local Panel H2DGB2.	______/______
6.8	.2.38	Reset the 486D Lockout Relay on the Local Panel H2DGB2.	______/______
6.8	.2.39	Reset alarms on the local panel H2DEB2.	______/______
	NOTE:	The REVERSE POWER trip circuitry is in parallel with numerous trip relays. These relays trip a common lock out relay 486D; therefore, the remaining relay trips need not be verified.	
6.8	.2.40	Depress the SFAS CHANNEL RESET pushbuttons 1B, 2B, 3B and 4B at Control Room Panel H1RC.	______/______

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PROCEDURE (Continued) Initials/ Date

6.8 .2.41 The following steps will reset the load sequencing circuit, TDI diesel generator and EFIC logic:

6.8 .2.41.1 At Control Room panel H2SFB, depress the NS Bus B2 and B UNLOADING RESET B2/B pushbutton. ________/______

6.8 .2.41.2 At EFIC panel H1SSE depress AFW RESET BLPB on EFIC CHANNEL "B" INITIATE/TEST MATRIX. ________/______

6.8 .2.41.3 At EFIC panel H1SSE depress EFIC "B" CONTROL INITIATED BLPB. ________/______

6.8 .2.41.4 At local panel H2DEB2, depress LOCA RESET pushbutton and verify the Shutdown System Active red light is ON. ________/______

CAUTION: IF OFFSITE POWER IS LOST WHEN A DIESEL GENERATOR IS SYNCHRONIZED TO THE GRID, IMMEDIATELY OPEN THE NORMAL SUPPLY TO THE ASSOCIATED NUCLEAR SERVICE BUS.

6.8 .2.42 Synchronize and shutdown GEB2 per Operating Procedure A.31B, Sections 5.5. through 5.7. ________/______

6.8 .3 RESTORATION

6.8 .3.1 Place the following circuit breakers in the connected position or as directed by the Shift Supervisor.

6.8 .3.1.1 52-4B205 AFW Pump P-318 ________/______

6.8 .3.1.2 52-4B207 BUS 4B2 ALT FDR ________/______

6.8 .3.2 CLOSE the following 125 VDC circuit breakers:

6.8 .3.2.1 72-B05 480V SWGR BUS 3B ________/______

6.8 .3.2.2 72-B08 480V SWGR BUS 4B ________/______

PROCEDURE (Continued) Initials/ Date

6.8 .3.2 Energize bus 4B per Operating Procedure A.58, Section 4.5. ______/______

6.8 .3.3 Energize bus 3B and MCC 2B1 per Operating Procedure A.59, Section 4.1 and Section 4.2. ______/______

6.8 .3.4 Restore 125VDC Panel SOB, IAW Operating Procedure A.61, Section 4.3 ______/______

6.8 .3.5 Run the data acquisition program "INIT" on the "B" computer and verify all channels are functioning properly. ______/______

6.8 .3.6 Notify the Shift Supervisor that Subtrain B2 LOOP-SFAS test, Section 6.7 and 6.8 are complete. ______/______

NOTE: DHR B may be placed in service, if required by the Shift Supervisor, IAW Operating Procedure A.8, Section 4.8.

Q.C. INSPECT → 6.8 .4 **Acceptance Criteria Review**

QC to review after data taken all of section 6.8.4 MRW 1/20/88

6.8 .4.1 Review the data recorded during Section 6.7 and verify the following:

6.8 .4.1.1 At Step 6.7.2.12.2, GEB2 reached 3744 VAC in ≤ 10 seconds. Record time at which envelope was entered: ________ sec. Data from recorder # ________. ______/______

6.8 .4.1.2 At Step 6.7.2.12.3, GEB2 reached 58.8 HZ in ≤ 10 seconds. Record time at which envelope was entered: ________ sec. Data from recorder # ________. ______/______

6.8 .4.1.3	At Step 6.7.2.23.1, GEB2 Output Breaker 52-4B202 closed. (From computer digital data).	______/______
6.8 .4.1.4	At Step 6.7.2.13 and 6.7.2.24, the loads sequenced on (from computer digital data) in the required time frame.	______/______
6.8 .4.1.5	At Step 6.7.2.15, 6.7.2.25 and 6.7.2.37 GEB2 operated with these loads for at least 5 minutes and voltage and frequency were within the limits specified.	______/______
6.8 .4.1.6	During the performance of Steps 6.7.2.12.5 and 6.7.2.23.2 the absence of voltage and current at de-energized subtrain B busses 3B and 4B. (From computer analog data)	______/______
6.8 .4.1.7	At Steps 6.7.2.33.2 and 6.7.2.34 busses 3B2 and 4B2 de-energized, loads shed as required, and the loads listed reloaded per the bus sequence. (From computer digital data)	______/______
6.8 .4.2	Review the data recorded during Section 6.8 and verify the following:	
6.8 .4.2.1	At Step 6.8.2.9.6, GEB2 reached 3744 VAC in ≤ 10 seconds. Record time at which envelope was entered: ________ sec. Data from recorder # __________.	______/______
6.8 .4.2.2	At Step 6.8.2.9.7, GEB2 reached 58.8 HZ in ≤ 10 seconds. Record time at which envelope was entered: ________ sec. Data from recorder # __________.	______/______
6.8 .4.2.3	At Step 6.8.2.9.5 and 6.8.2.11, GEB2 Output Breaker closed, and the loads sequenced on in the required time frame.	______/______
6.8 .4.2.4	At Step 6.8.2.12, GEB2 operated with these loads for at least 5 minutes. Voltage and frequency were within the limits specified.	______/______

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PROCEDURE (Continued)

Initials/ Date

6.8 .4.2.5 During the performance of Step 6.8.2.9.8 the absence of voltage and current at de-energized subtrain B busses 3B and 4B. (From computer analog data) ________/________

6.8 .4.2.6 At Steps 6.8.2.13.2, 6.8.2.16.2, 6.8.2.18.2, 6.8.2.21.2, 6.8.2.24.2, 6.8.2.27.2, 6.8.2.30.2, 6.8.2.33.2, and 6.8.2.36.1, GEB2 did not trip on simulated faults. ________/________

PROCEDURE (Continued) Initials/ Date

6.9 Train "A" Independence Verification LOOP-SFAS

NOTE: During this test section, the following pumps will start automatically and run per the flowpaths described below:

Makeup Pump P-236 - minimum flow thru the seal return line, E-240A and B, thru Make-up Tank V-235, and back to pump suction.

DHR Pump P-261A - minimum flow thru DH Removal Cooler E-260A, thru the minimum flow line and back to pump suction.

RBS Pump P-291A - approximately 1500 gpm thru CBS-045 and CBS-047 (open 3 turns) to BWST. Suction from BWST, thru SFV-25003 to pump suction.

AFW Pump P-319 - minimum flow suction from CST. Discharge thru minimum flow line to the condenser.

6.9 .1 Prerequisites

6.9 .1.1 A preliminary briefing has been conducted with the Shift Supervisor and prerequisite lineups can commence. (Formal briefing to occur later.) ________/________

NOTE:: During this section of the test both DHR loops will be out of service and incore T.C.s are to be trended. The temperature should not exceed 150°F.

6.9 .1.2 Run the data acquisition program "INIT" on the A and B computers and verify all channels are functioning properly. ________/________

6.9 .1.3 Have operations complete the initial pretest lineup on Enclosure 9.17. This step can be marked N/A if Section 6.12 immediately preceded this section and the restoration section for 6.12 was not performed. ________/________

PROCEDURE (Continued) | Initials/ Date

NOTE: The pretest lineup for Sections 6.9 and 6.12 are identical.

6.9 .1.4 CR/TSC Essential Condensing Unit U-545A and its associated support equipment are lined up in STANDBY IAW A.14C, Section 4.2.1. ______/______

6.9 .1.5 NSEB Essential Condensing Unit U-503A and its associated support equipment are lined up in STANDBY IAW A.14D, Section 4.2.1. ______/______

6.9 .1.6 Train "A" Nuclear Raw Water System is in SFAS STANDBY IAW A.25, Section 4.5. ______/______

6.9 .1.7 Train "A" Nuclear Service Cooling Water is in SFAS STANDBY IAW A.24, Section 4.2. ______/______

6.9 .1.8 Reactor Building Emergency Cooling Units A-500A/C and Reactor Building Emergency Upper Dome air circulators A-532A/B are available for automatic operation IAW A.14A, Sections 4.1 and 4.2. ______/______

NOTE: Incore temperatures are to be trended at 15 minute intervals whenever both decay heat removal systems are shutdown. The temperature should not exceed 150°F.

6.9 .1.9 Lineup Makeup and Purification System IAW A.15, Steps 4.2.1 to 4.2.10 and 4.3.4 except as modified by Enclosure 9.6. ______/______

6.9 .1.9.1 Lineup Makeup Pump P-236 and its auxiliaries electrically to replace HPI Pump P-238A IAW Operating Procedure A.15, Steps 7.12.3 through 7.12.8 and rack out breaker 52-4A04. ______/______

6.9 .1.10 Verify DHR System lineup IAW A.8 Sections 4.7 and 4.8 except as modified by Enclosure 9.11. Do not start pumps. ______/______

6.9 .1.11 At H1RC, place the Bailey Hand/Auto Station for the following valves in HAND, and verify the valves are CLOSED:

6.9 .1.11.1 LV-21503 Pressurizer Level ______/______

6.9 .1.11.2 FV-23606 RC Pump Seal Injection Flow ______/______

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PROCEDURE (Continued) Initials/ Date

6.9 .1.12	Place or verify in service the SFAS analog and digital system IAW A.70, Sections 4.1 and 4.2.	______/______
6.9 .1.13	Building Spray System A is in STANDBY condition IAW A.7, Section 4.1, Steps 4.1.5 to 4.1.6.4, except as modified by Enclosure 9.8.	______/______
6.9 .1.14	The AFW and EFIC systems are in STANDBY conditions IAW A.51, Sections 4.2 and 4.3 except as modified by Enclosure 9.9.	______/______
6.9 .1.15	Verify Train "A" Nuclear Service Busses (4A and 4A2) and their associated 480V load centers and motor control centers are energized IAW Operating Procedures A.58, Sections 4.1 and 4.3, and A.59, Sections 4.1, 4.2, and 4.4, except as modified by Enclosure 9.17.	______/______
6.9 .1.16	Verify GEA is in STANDBY IAW Operating Procedure A.31, Section 4.1.	______/______
6.9 .1.17	Verify GEA2 is in STANDBY IAW Operating Procedure A.31B, Section 4.0.	______/______
6.9 .1.18	A pretest briefing using the Test Briefing Checklist has been held with all test participants and properly documented per AP.82. Briefing to include Sections 6.12 if it is to follow immediately.	______/______
6.9 .1.19	Verify continuous communications has been established between the Control Room, diesel generator Control Rooms for GEA and GEA2, the 4.16 KV, 480 VAC, DC busses under test, and the data acquisition computer location.	______/______

PROCEDURE (Continued) Initials/ Date

NOTE: Enclosure 9.18, Final Pretest Lineup, will de-energize buses 3B, 4B, 3B2, and 4B2. These buses will remain de-energized for an extended period of time. The following panels will be powered solely from their respective batteries and/or inverters therefore, the battery voltages will be monitored.

PANEL	BATTERY
125 VDC SON1	"N1"
120 VAC S1GB-1	"GB"
120 VAC S1N1-1	"N1"
125 VDC SOB	"B"
125 VDC SOD	"D"
125 VDC SOB2	"B2"
120 VAC S1B	"B2"
120 VAC S1B2-1	"B2"
125 VDC SOD2	"D2"
120 VAC S1D	"D2"
120 VAC S1D2-1	"D2"

CAUTION: IF BATTERY VOLTAGE SHOULD DROP BELOW 115 VDC, THE SHIFT SUPERVISOR AND TEST DIRECTOR SHALL BE NOTIFIED IMMEDIATELY.

6.9 .1.20 Verify Operations has assigned an operator to monitor Batteries "GB", "N1", "B", "B2", "D", and "D2" voltages during the performance of this test. ________/______

6.9 .1.21 Have operations complete the final pretest lineup on Enclosure 9.18. This step can be marked N/A if Section 6.12 immediately preceded this section and the restoration section for Section 6.12 was not performed. ________/______

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6.9 .2 Train "A" LOOP-SFAS with Train "B" De-energized

NOTE: The following steps will cause busses 4A and 4A2 to become momentarily de-energized and it will cause the diesel generators GEA and GEA2 to start.

6.9 .2.1 Inform plant personnel of the impending LOOP-SFAS actuation to Train "A" over the plant public address (PA) system. ________/________

6.9 .2.2 Verify recorders A-1, A-2, A2-1, and A2-2 are initialized and annotated. ________/________

6.9 .2.3 Verify computer "A" and "B" software loaded and ready to start. ________/________

6.9 .2.4 Step Deleted.

6.9 .2.5 Step Deleted.

6.9 .2.6 Step Deleted.

6.9 .2.7 One to two minutes prior to SFAS actuation countdown per Step 6.9.2.8, START the GEA2 turbocharger bearing prelubrication by opening EGS-837. ________/________

6.9 .2.8 Initiate a countdown from 10 to ZERO over the plant PA. ________/________

6.9 .2.9 At the count of 3, start the Linearcorders A-1, A-2, A2-1, A2-2 and the data acquisition computers. ________/________

NOTE: To prevent an unloading sequence relay race that might possibly block the manual trip of the normal supply breakers, do not initiate the SFAS actuation until the TRIP BLPB indicates that breaker 52-4A01 and 52-4A207 are OPEN, at panels H2ES and H2EW.

6.9 .2.10 At the count of ZERO, OPEN the normal supply breakers to busses 4A (52-4A01) and 4A2 (52-4A207) at panels H2ES and H2EW, and at panel H1RC, initiate an SFAS actuation by depressing the SFAS CHANNEL pushbuttons 1A, 2A, 3A and 4A. ________/________

			Initials/ Date
6.9	.2.11	After the SFAS, CLOSE GEA2 turbocharger prelube oil supply valve EGS-837.	_____/_____
6.9	.2.12	Verify the following after the SFAS actuation, from the data acquisition equipment:	
6.9	.2.12.1	Busses 4A and 4A2 de-energize.	_____/_____
6.9	.2.12.2	52-4A01, Nuclear Services Supply Trans X74 OPEN.	_____/_____
6.9	.2.12.3	52-4A207, NSS XFMR X74 OPEN.	_____/_____
6.9	.2.12.4	GEA STARTS, accelerates to 900 RPM ≤ 10 sec.	_____/_____
6.9	.2.12.5	GEA output breaker (52-4A08) CLOSES.	_____/_____
6.9	.2.12.6	GEA voltage reaches 4160 ±416 VAC ≤10 sec.	_____/_____
6.9	.2.12.7	GEA frequency reaches 60 ±1.2 HZ ≤10 sec.	_____/_____
6.9	.2.12.8	Diesel Generator GEA2 STARTS, accelerates to 450 RPM ≤10 sec.	_____/_____
6.9	.2.12.9	GEA2 output breaker (52-4A202) CLOSES.	_____/_____
6.9	.2.12.10	GEA2 voltage reaches 4160 ±416 VAC ≤10 sec.	_____/_____
6.9	.2.12.11	GEA2 frequency reaches 60 ±1.2 HZ ≤10 sec.	_____/_____
6.9	.2.12.12	The absence of voltage and current on Busses 3B, 3B2, 4B and 4B2.	_____/_____
6.9	.2.13	Verify the sequencing of loads to their respective busses from the data acquisition computer as follows:	

NOTE: Required times listed below are after the respective D.G. Breaker closure, except as noted.

			REQUIRED	ACTUAL	
6.9	.2.13.1	52-4A09 4KV SUPPLY TO SS TRANSFORMER	4.75- 5.25	_____ SEC	_____/_____
6.9	.2.13.2	52-4A05 DECAY HEAT REMOVAL PUMP P-261A	4.75- 5.25	_____ SEC	_____/_____

			REQUIRED	ACTUAL	Initials/ Date
6.9	.2.13.3	52-3A202 480V SUPPLY FROM SS TRANSFORMER	4.75- 5.5	____ SEC	______/______
6.9	.2.13.4	52-4A02 RX M/U PUMP P-236	7.60- 8.40	____ SEC	______/______
6.9	.2.13.5	52-3A10 RB EMERG COOLING UNIT A-500A	14.25-15.75	____ SEC	______/______
6.9	.2.13.6	52-3A14 RB EMERG COOLING UNIT A-500C	14.25-15.75	____ SEC	______/______
6.9	.2.13.7	52-3A18 NUCLEAR SERVICE CLG WTR PP P-482A	14.25-15.75	____ SEC	______/______
6.9	.2.13.8	52-3A215 MCC S2A4	22.50-27.50	____ SEC	______/______
6.9	.2.13.9	52-4A07 NS RAW WATER P-472A	23.50-26.25	____ SEC	______/______
6.9	.13.10	52-3A217 U-503A	27.00-33.00	____ SEC	______/______
6.9	.2.13.11	52-4A205 AUX FW PP P-319	27.00-33.00	____ SEC	______/______
6.9	.2.13.12	52-3A210 U-545A	45.00-55.00	____ SEC	______/______
6.9	.2.13.13	52-3A13 DIESEL GEN RM VENT EXH FAN A-544A	38.00-42.00	____ SEC	______/______
6.9	.2.13.14	52-3A17 DIESEL GEN RM VENT SUP FAN A-544A	38.00-42.00	____ SEC	______/______
6.9	.2.13.15	52-3A09 REACTOR BLDG SPRAY PUMP P-291A (* - This time is after SFAS initiation)	285.00-315.00*	____ SEC	______/______

6.9 .2.14 Record the following information from the recorders after at least 5 minutes from LOOP-SFAS:

PROCEDURE (Continued) Initials/ Date

	GEA	Recorder #__________	
6.9	.2.14.1	Voltage _____ VAC (3744-4576)	________/______
6.9	.2.14.2	Frequency _____ HZ (58.8-61.2)	________/______
6.9	.2.14.3	Kilowatts _____ KW (≤ 2750KW)	________/______
		GEA2 Recorder #__________	
6.9	.2.14.4	Voltage _____ VAC (3744-4576)	________/______
6.9	.2.14.5	Frequency _____ HZ (58.8-61.2)	________/______
6.9	.2.14.6	Kilowatts _____ KW (≤ 3300KW)	________/______
6.9	.2.15	Depress the SFAS CHANNEL RESET pushbuttons 1A, 2A, 3A, and 4A at Control Room panel H1RC.	________/______
6.9	.2.16	The following steps will reset the load sequencing circuit and EFIC logic:	
6.9	.2.16.1	At Control Room panel H2SFA, depress the NS Bus A2 and A UNLOADING RESET A2/A pushbutton.	________/______
6.9	.2.16.2	At EFIC panel H1SSE depress AFW RESET BLPB on EFIC Channel "A" INITIATE/TEST MATRIX.	________/______
6.9	.2.16.3	At EFIC panel H1SSE depress EFIC "A" CONTROL INITIATED BLPB.	________/______
6.9	.2.17	From the Control Room shutdown as required the following equipment as directed by the Shift Supervisor:	
6.9	.2.17.1	52-3A09, REACTOR BUILDING SPRAY PUMP P-291A	________/______
6.9	.2.17.2	52-3A10, RB EMERG COOLING UNIT A-500A	________/______
6.9	.2.17.3	52-3A14 RB EMERG COOLING UNIT A-500C	________/______
6.9	.2.17.4	52-4A02 MAKEUP PUMP P-236	________/______
6.9	.2.17.5	52-4A05 DECAY HEAT REMOVAL PUMP P-261A	________/______
6.9	.2.17.6	52-3A18 NUCLEAR SERVICE CLG WTR PP P-482A	________/______

PROCEDURE (Continued)

		Initials/ Date
6.9 .2.17.7	52-4A205 AUX FEEDWATER PP P-319	______/______
6.9 .2.17.8	52-2A104 RB UPPER DOME CIRC FAN A-532A	______/______
6.9 .2.17.9	52-?' J5 RB UPPER DOME CIRC FAN A-532B	______/______
6.9 .2.17.10	Review SFAS panel and position SFAS valves as directed by the Shift Supervisor.	______/______
CAUTION:	ENSURE THE NORMAL -DROOP SWITCH AT H2DGA IS IN THE DROOP POSITION PRIOR TO SYNCHRONIZING TO PREVENT DAMAGE TO THE DIESEL GENERATOR.	
CAUTION:	IF OFFSITE POWER IS LOST WHEN A DIESEL GENERATOR IS SYNCHRONIZED TO THE GRID, IMMEDIATELY OPEN THE NORMAL SUPPLY TO THE ASSOCIATED NUCLEAR SERVICE BUS.	
6.9 .2.18	Synchronize and shutdown GEA IAW Operating Procedure A.31, Section 6.2.	______/______
CAUTION:	ENSURE THE LOCA RESET PUSHBUTTON IS DEPRESSED PRIOR TO SYNCHRONIZING, SUCH THAT THE GEA2 DIESEL GENERATOR WILL AUTOMATICALLY TRANSFER TO THE DROOP MODE OF OPERATION.	
6.9 .2.18.1	At local panel H2DEA2, depress the LOCA reset pushbutton and verify the Shutdown System Active red light energized.	______/______
6.9 .2.19	Synchronize and shutdown GEA2 IAW Operating Procedure A.31B, Section 5.5, 5.6, and 5.7.	______/______
6.9 .2.20	Place HPI Pump P-238A in normal electrical lineup to replace Makeup Pump P-236 IAW Operating Procedure A.15, Steps 7.12.16, 7.12.17 and 7.12.23 through 25.	______/______
6.9 .2.21	If Section 6.12 will be tested immediately and the Shift Supervisor concurs, N/A Section 6.9.3 and proceed to Section 6.12.1. Section 6.9.4 does not need to be completed to continue.	______/______
6.9 .2.22	Run the data acquisition program "INIT" on the "A" and "B" computers and verify all channels are functioning properly.	______/______

PROCEDURE (Continued) Initials/ Date

6.9 .3 Restoration

6.9 .3.1 Complete Enclosure 9.19. ________/______

6.9 .3.2 Notify the Shift Supervisor that the Train "A" LOOP-SFAS test is complete. ________/______

NOTE: DHR A may be placed in service, if required by the Shift Supervisor, IAW Operating Procedure A.8, Section 4.7. (Valves CBS-045, CBS-046 and CBS-047 MUST BE CLOSED first.)

Q.C. INSPECT

6.9 .4 Acceptance Criteria Review

QC to review after data taken all of section 6.9.4 MRW 1/20/88

6.9 .4.1 Review the data recorded during Section 6.9 and verify the following:

6.9 .4.1.1 At Step 6.9.2.12.6 and 6.9.2.12.7, GEA reached 3744 VAC and 58.8 HZ in ≤10 seconds. Record time at which envelope was entered:

________ SEC (HZ)

________ SEC (VAC)

Data from Recorder #________ ________/______

6.9 .4.1.2 At Step 6.9.2.12.10 and 6.9.2.12.11, GEA2 reached 3744 VAC and 58.8 HZ in ≤10 seconds. Record time at which envelope was entered:

________ SEC (HZ)

________ SEC (VAC)

Data from Recorder #________ ________/______

6.9 .4.1.3 At Step 6.9.2.12.5, verify GEA Output Breaker 52-4A08 closed. ________/______

6.9 .4.1.4 At Step 6.9.2.13, verify Bus 3A and 4A loads sequenced in the specified times. ________/______

6.9 .4.1.5 At Step 6.9.2.12.9, verify GEA2 Output Breaker 52-4A202 closed. ________/______

			Initials/ Date
6.9	.4.1.6	At Step 6.9.2.13, verify Bus 3A2 and 4A2 loads sequenced in the specified times.	____/____
6.9	.4.1.7	During the performance of Step 6.9.2.12.12, the absence of voltage and current on Busses 4B, 4B2, 3B, and 3B2 (from computer analog data).	____/____
6.9	.4.1.8	At Step 6.9.2.14, GEA operated for 5 minutes with loads running, and voltage and frequency were within the limits specified.	____/____
6.9	.4.1.9	At Step 6.9.2.14, GEA2 operated for 5 minutes with loads running, and voltage and frequency were within the limits specified.	____/____
6.9	.4.1.10	At Step 6.9.2.14.3, GEA load did not exceed 2750 KW.	____/____
6.9	.4.1.11	At Step 6.9.2.14.6, DG GEA2 load did not exceed 3300 KW.	____/____

PROCEDURE (Continued) Initials/ Date

6.10 Train B Independence Verification LOOP-SFAS

6.10 .1 Prerequisites

NOTE: During this test section, the following pumps will start automatically and run per the flowpaths described below:

Makeup Pump P-236 - minimum flow thru the seal return line, E-240A and B, thru Make-up Tank V-235, and back to pump suction.

DHR Pump P-261B - minimum flow thru DH Removal Cooler E-260B, thru the minimum flow line and back to pump suction.

RBS Pump P-291B - approximately 1500 gpm thru CBS-046 and CBS-047 (open 3 turns) to BWST. Suction from BWST, thru SFV-25004 to pump suction.

NOTE: During this section of the test both DHR loops will be out of service and incore T.C.s are to be trended. The temperature should not exceed 150°F.

6.10 .1.1 A preliminary briefing has been conducted with the Shift Supervisor and prerequisite lineups can commence. (Formal briefing to occur later.) ________/________

6.10 .1.2 Run the data acquisition program "INIT" on the A and B computers and verify all channels are functioning properly. ________/________

6.10 .1.3 Have operations complete the initial pretest lineup on Enclosure 9.20. This step can be marked N/A if Section 6.14 immediately preceded this section and the restoration section for 6.14 was NOT performed. ________/________

NOTE: The pretest lineup for Sections 6.10 and 6.14 are identical.

6.10 .1.4 CR/TSC Essential Condensing Unit U-545B and its associated support equipment are lined up in STANDBY IAW A.14C, Section 4.2.2. ________/________

PROCEDURE (Continued) Initials/ Date

6.10 .1.5	NSEB Essential Condensing Unit U-503B and its associated support equipment are lined up in STANDBY IAW A.14D, Section 4.2.2.	______/______
6.10 .1.6	Train "B" Nuclear Raw Water System is in SFAS STANDBY IAW A.25, Section 4.6.	______/______
6.10 .1.7	Train "B" Nuclear Service Cooling Water is in SFAS STANDBY IAW A.24, Section 4.5.	______/______
6.10 .1.8	Reactor Building Emergency Cooling Units A-500B/D and Emergency Upper Dome air circulators A-532C/D are available for automatic operation IAW A.14A, Sections 4.1 and 4.2.	______/______
6.10 .1.9	Verify Makeup and Purification system valve lineup IAW Operating Procedure A.15, Steps 4.2.1 to 4.2.10 and 4.3.4, except as modified by Enclosure 9.6	______/______
6.10 .1.9.1	Line up Makeup P-236 and its auxiliaries to replace HPI Pump P-238B IAW Operating Procedure A.15, Steps 4.2.11 through 4.2.14, and 7.13.7.	______/______
6.10 .1.9.2	At H1RC, place the Bailey Hand/Auto Station for the following valves in HAND, and verify the valves are CLOSED:	
6.10 .1.9.2.1	LV-21503 Pressurizer Level	______/______
6.10 .1.9.2.2	FV-23606 RC Pump Seal Injection Flow	______/______
6.10 .1.10	Verify DHR System Lineup IAW A.8 Sections 4.7 and 4.8, except as modified by Enclosure 9.11. Do not start pumps.	______/______
6.10 .1.11	Place or verify in service the SFAS analog and digital system IAW A.70, Sections 4.1 and 4.2.	______/______
6.10 .1.12	Building Spray System B is in STANDBY condition IAW A.7, Section 4.2, Steps 4.2.5 to 4.2.6.4, except as modified by Enclosure 9.8.	______/______

6.10 .1.13 The AFW and EFIC B systems are in STANDBY conditions IAW A.51, Sections 4.2 and 4.3 except as modified by Enclosure 9.9. ________/______

6.10 .1.14 Verify Train "B" Nuclear Service Busses (4B, 4B2,) and their associated 480V load centers and motor control centers are energized IAW Operating Procedures A.58, Sections 4.5 and 4.7, and A.59, Sections 4.1, 4.2, and 4.4 except as modified by Enclosure 9.20. ________/______

6.10 .1.15 Verify GEB is in STANDBY IAW Operating Procedure A.31, Section 4.1. ________/______

6.10 .1.16 Verify GEB2 is in STANDBY IAW Operating Procedure A.31B, Section 4.0. ________/______

6.10 .1.17 A pretest briefing using the Test Briefing Checklist has been held with all test participants and properly documented per AP.82. Briefing to include Section 6.14 if it is to follow immediately. ________/______

6.10 .1.18 Verify continuous communications have been established between the Control Room and applicable locations on Enclosure 9.15, per directions of the Shift Supervisor. ________/______

<u>NOTE</u>: Enclosure 9.21, Final Pretest Lineup, will de-energize buses 3A, 4A, 3A2, and 4A2. These buses will remain de-energized for an extended period of time. The following panels will be powered solely from their respective batteries and/or inverters, therefore, the battery voltages will be monitored.

PANEL	BATTERY
120 VAC S1GA-1	"GA"
120 VAC S1J	"GA"
125 VDC SOA	"A"
125 VDC SOC	"C"
125 VDC SOA2	"A2"
120 VAC S1A	"A2"
120 VAC S1A2-1	"A2"
125 VDC SOC2	"C2"
120 VAC S1C	"C2"
120 VAC S1C2-1	"C2"

CAUTION: IF BATTERY VOLTAGE SHOULD DROP BELOW 115 VDC, THE SHIFT SUPERVISOR AND TEST DIRECTOR SHALL BE NOTIFIED IMMEDIATELY.

6.10 .1.19 Verify Operations has assigned an operator to monitor Batteries "GA", "A", "A2", "C", and "C2" voltages during the performance of this test. ________/______

6.10 .1.20 Have operations complete the final pretest lineup on Enclosure 9.21. This step can be marked N/A if Section 6.14 immediately preceded this section and the restoration section for Section 6.14 was NOT performed. ________/______

6.10 .2 Train "B" LOOP-SFAS with Train "A" De-energized

NOTE: The following steps will cause busses 4B and 4B2 to become momentarily de-energized and it will cause the diesel generators GEB and GEB2 to start.

NOTE: Incore temperatures are to be trended at 15 minute intervals whenever both decay heat removal systems are shutdown. The temperature should not exceed 150°F.

6.10 .2.1 Inform plant personnel of the impending LOOP-SFAS actuation to Train "B" over the plant public address (PA) system. ________/______

6.10 .2.2 Verify recorders B-1, B-2, B2-1, and B2-2 are initialized and annotated. ________/______

6.10 .2.3 Verify computer "A" and "B" software loaded and ready to start. ________/______

6.10 .2.4 Step Deleted.

6.10 .2.5 Step Deleted.

6.10 .2.6 Step Deleted.

6.10 .2.7 One to two minutes prior to SFAS actuation countdown per Step 6.10.2.8, START the GEB2 turbocharger bearing prelubrication by opening EGS-838. ________/______

PROCEDURE (Continued)		Initials/ Date
6.10 .2.8	Initiate a countdown from 10 to ZERO over the plant PA system.	________/______
6.10 .2.9	At the count of 3, start the Linearcorder B-1, B-2, B2-1, B2-2 and the data acquisition computers.	________/______
<u>NOTE</u>:	To prevent an unloading sequence relay race that might possibly block the manual trip of the normal supply breakers, do not initiate the SFAS actuation until the TRIP BLPB indicates that breaker 52-4B01 and 52-4B203 are OPEN, at panels H2ES and H2EW.	
6.10 .2.10	At the count of ZERO, OPEN the normal supply breakers to busses 4B (52-4B01) and 4B2 (52-4B203) at panels H2ES and H2EW, and at panel H1RC, initiate an SFAS actuation by depressing the SFAS CHANNEL pushbuttons 1B, 2B, 3B and 4B.	________/______
6.10 .2.11	After the SFAS, CLOSE GEB2 turbocharger prelube oil supply valve EGS-838.	________/______
6.10 .2.12	Verify the following after the SFAS actuation, from the data acquisition equipment:	
6.10 .2.12.1	Busses 4B and 4B2 de-energize.	________/______
6.10 .2.12.2	52-4B01, Startup Transformer #2 OPEN.	________/______
6.10 .2.12.3	52-4B203, Startup Transformer #2 OPEN.	________/______
6.10 .2.12.4	GEB STARTS, accelerates to 900 RPM $\leq$10 sec.	________/______
6.10 .2.12.5	GEB output breaker (52-4B11) CLOSES.	________/______
6.10 .2.12.6	GEB voltage reaches 4160 $\pm$416 VAC $\leq$10 sec.	________/______
6.10 .2.12.7	GEB frequency reaches 60 $\pm$1.2 HZ $\leq$10 sec.	________/______
6.10 .2.12.8	Diesel Generator GEB2 STARTS, accelerates to 450 RPM $\leq$10 sec.	________/______
6.10 .2.12.9	GEB2 output breaker (52-4B202) CLOSES.	________/______

PROCEDURE (Continued) Initials/ Date

6.10 .2.12.10 GEB2 voltage reaches 4160 ±416 VAC ≤10 sec. ______/______

6.10 .2.12.11 GEB2 frequency reaches 60 ±1.2 HZ ≤10 sec. ______/______

6.10 .2.12.12 The absence of voltage and current on Busses 3A, 3A2, 4A and 4A2. ______/______

6.10 .2.13 Verify the sequencing of loads to their respective busses from the data acquisition computer as follows:

NOTE: Required times listed below after the respective D.G. Breaker closure, except as noted.

		REQUIRED	ACTUAL	Initials/ Date
6.10 .2.13.1	52-4B05 4KV SUPPLY TO SS XFMR X43B2	4.75- 5.25	____ SEC	______/______
6.10 .2.13.2	52-4B09 (DECAY HEAT REMOVAL PUMP P-261B)	4.75- 5.25	____ SEC	______/______
6.10 .2.13.3	52-3B202 480V SUPPLY FROM SS XFMR	4.5 - 5.5	____ SEC	______/______
6.10 .2.13.4	52-4B08 (RX M/U PUMP P-236)	7.60- 8.40	____ SEC	______/______
6.10 .2.13.5	52-3B10 (RB EMERG COOLING UNIT A-500B)	14.25-15.75	____ SEC	______/______
6.10 .2.13.6	52-3B14 (RB EMERG COOLING UNIT A-500D)	14.25-15.75	____ SEC	______/______
6.10 .2.13.7	52-3B18 (NUCLEAR SERVICE CLG WTR PP P-482B)	14.25-15.75	____ SEC	______/______
6.10 .2.13.8	52-3B215 (MCC S2B4)	22.50-27.50	____ SEC	______/______
6.10 .2.13.9	52-4B06 (NS RAW WATER P-472B)	23.50-26.25	____ SEC	______/______
6.10 .2.13.10	52-3B217 (U-503B)	27.00-33.00	____ SEC	______/______
6.10 .2.13.11	52-3B06 (DIESEL GEN RM VENT EXH FAN A-544C)	38.00-42.00	____ SEC	______/______

PROCEDURE (Continued) Initials/ Date

		REQUIRED	ACTUAL	
6.10 .2.13.12	52-3B17 (DIESEL GEN RM VENT SUP FAN A-544D)	38.00-42.00	____ SEC	______/______
6.10 .2.13.13	52-3B210 (U-545B)	45.00-55.00	____ SEC	______/______
6.10 .2.13.14	52-3B09 (REACTOR BLDG SPRAY PUMP P-291B) *(This time is after SFAS initiation)	285.0-315.0*	____ SEC	______/______

6.10 .2.14 Record the following information from the recorders after at least 5 minutes from LOOP-SFAS initiation:

GEB Recorder #__________

6.10 .2.14.1 Voltage ____ VAC (3744-4576) ______/______

6.10 .2.14.2 Frequency ____ HZ (58.8-61.2) ______/______

6.10 .2.14.3 Kilowatts ____ KW (≤ 2750KW) ______/______

GEB2 Recorder #__________

6.10 .2.14.4 Voltage ____ VAC (3744-4576) ______/______

6.10 .2.14.5 Frequency ____ HZ (58.8-61.2) ______/______

6.10 .2.14.6 Kilowatts ____ KW (≤ 3300KW) ______/______

6.10 .2.15 Depress the SFAS CHANNEL RESET pushbuttons 1B, 2B, 3B, and 4B at Control Room panel H1RC. ______/______

6.10 .2.16 The following steps will reset the load sequencing circuit and EFIC logic:

6.10 .2.16.1 At Control Room panel H2SFB, depress the NS Bus B2 and B UNLOADING RESET B2/B pushbutton. ______/______

6.10 .2.16.2 At EFIC panel H1SSE depress AFW RESET BLPB on EFIC Channel "B" INITIATE/TEST MATRIX. ______/______

6.10 .2.16.3 At EFIC panel H1SSE depress EFIC "B" CONTROL INITIATED BLPB. ______/______

		Initials/ Date
6.10 .2.17	From the Control Room shutdown the following equipment as directed by the Shift Supervisor:	
6.10 .2.17.1	52-3B09 REACTOR BUILDING SPRAY PUMP P-291B	______/______
6.10 .2.17.2	52-3B10 RB EMERG COOLING UNIT A-500B	______/______
6.10 .2.17.3	52-3B14 RB EMERG COOLING UNIT A-500D	______/______
6.10 .2.17.4	52-4B08 MAKEUP PUMP P-236	______/______
6.10 .2.17.5	52-4B09 DECAY HEAT REMOVAL PUMP P-261B	______/______
6.10 .2.17.6	52-3B18 NUCLEAR SERVICE CLG WTR PP P-482B	______/______
6.10 .2.17.7	52-2B104 RB UPPER DOME CIRC FAN, A-532C	______/______
6.10 .2.17.8	52-2B105 RB UPPER DOME CIRC FAN, A-532D	______/______
6.10 .2.17.9	Review SFAS Panel and reposition SFAS valves as directed by the Shift Supervisor.	______/______
CAUTION:	ENSURE THE NORMAL -DROOP SWITCH AT H2DGB IS IN THE DROOP POSITION PRIOR TO SYNCHRONIZING TO PREVENT DAMAGE TO THE DIESEL GENERATOR.	
CAUTION:	IF OFFSITE POWER IS LOST WHEN A DIESEL GENERATOR IS SYNCHRONIZED TO THE GRID, IMMEDIATELY OPEN THE NORMAL SUPPLY TO THE ASSOCIATED NUCLEAR SERVICE BUS.	
6.10 .2.18	Synchronize and shutdown GEB IAW Operating Procedure A.31, Section 6.2.	______/______
CAUTION:	ENSURE THE LOCA RESET PUSHBUTTON IS DEPRESSED PRIOR TO SYNCHRONIZING, SO THAT DIESEL GENERATOR GEB2 WILL AUTOMATICALLY TRANSFER TO THE DROOP MODE OF OPERATION.	
6.10 .2.18.1	At local panel H2DEB2, depress the LOCA RESET pushbutton and verify the Shutdown System Active RED light energized.	______/______
6.10 .2.19	Synchronize and shutdown GEB2 IAW Operating Procedure A.31B, Section 5.5 through 5.7.	______/______
6.10 .2.20	Step Deleted	
6.10 .2.20.1	Step Deleted	

PROCEDURE (Continued) | Initials/ Date

6.10 .2.20.2 Step Deleted

6.10 .2.21 If Section 6.14 will be tested immediately and the Shift Supervisor concurs, N/A Section 6.10.3 and proceed to Section 6.14.1. Section 6.10.4 does not need to be completed to continue. ______/______

6.10 .2.22 Run the data acquisition program "INIT" on the "A" and "B" computers and verify all channels are functioning properly. ______/______

NOTE: DHR B may be placed in service, as required by the Shift Supervisor, IAW Operating Procedure A.8, Section 4.8. (Valves CBS-045, CBS-046 and CBS-047 MUST BE CLOSED first.)

6.10 .3 Restoration

6.10 .3.1 Complete Enclosure 9.22. ______/______

6.10 .3.2 Notify the Shift Supervisor that the Train "B" LOOP-SFAS test is complete. ______/______

Q.C. INSPECT

6.10 .4 Acceptance Criteria Review

QC to review after data taken all of section 6.10.4 MRW 1/20/88

6.10 .4.1 Review the data recorded during Section 6.10 and verify the following:

6.10 .4.1.1 At Step 6.10.2.12.6 and 6.10.2.12.7, GEB reached 3744 VAC and 58.8 HZ in ≤10 seconds. Record time at which envelope was entered:

______ SEC (HZ)

______ SEC (VAC)

Data from Recorder #______ ______/______

6.10 .4.1.2 At Step 6.10.2.12.10 and 6.10.2.12.11, GEB2 reached 3744 VAC and 58.8 HZ in ≤10 seconds. Record time at which envelope was entered:

______ SEC (HZ)

______ SEC (VAC)

Data from Recorder #______ ______

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PROCEDURE (Continued) Initials/ Date

6.10 .4.1.3	At Step 6.10.2.12.5, verify GEB Output Breaker 52-4B11 closed.	______/______
6.10 .4.1.4	At Step 6.10.2.13, verify Bus 3B and 4B loads sequenced in the specified times.	______/______
6.10 .4.1.5	At Step 6.10.2.12.9, verify GEB2 Output Breaker 52-4B202 closed.	______/______
6.10 .4.1.6	At Step 6.10.2.13, verify Bus 3B2 and 4B2 loads sequenced in the specified times.	______/______
6.10 .4.1.7	During the performance of Step 6.10.2.12.12, the absence of voltage and current on Busses 4A, 4A2, 3A, and 3A2 (from computer analog data).	______/______
6.10 .4.1.8	At Step 6.10.2.14, GEB operated for 5 minutes with loads running, and voltage and frequency were within the limits specified.	______/______
6.10 .4.1.9	At Step 6.10.2.14, GEB2 operated for 5 minutes with loads running, and voltage and frequency were within the limits specified.	______/______
6.10 .4.1.10	At Step 6.10.2.14.3 GEB load did not exceed 2750 KW.	______/______
6.10 .4.1.11	At Step 6.10.2.14.6 GEB2 load did not exceed 3300 KW.	______/______

6.11	Train "A" and Train "B" LOOP-SFAS (Selected BKRs in TEST position).		
6.11 .1	Prerequisites.		
6.11 .1.1		A preliminary briefing has been conducted with the Shift Supervisor and prerequisite lineups can commence. Formal briefing to occur later.	______/______
6.11 .1.2		Run the data acquisition program "INIT" in the "A" and "B" computer and verify all channels are functioning properly.	______/______
NOTE:		During this test section of the test, both DHR loops will be out of service and incore TCs are to be trended. Temperature should not exceed 150°F.	
6.11 .1.2.1		Shutdown the operating DHR Loop(s) IAW Operating Procedure A.8, Section 6.1 and/or 6.2.	______/______
6.11 .1.3		Verify the following CKT BKRs are RACKED OUT:	
6.11 .1.3.1		52-3A21, TIE BREAKER TO LOAD CENTER S3A2	______/______
6.11 .1.3.2		52-3B21, TIE BREAKER TO LOAD CENTER S3B2	______/______
6.11 .1.3.3		52-3A203, TIE TO BUS S3A	______/______
6.11 .1.3.4		52-3B203, TIE TO BUS S3B	______/______
6.11 .1.3.5		52-4C01, STARTUP TRANS NO. 2 X94	______/______
6.11 .1.3.6		52-4D01, STARTUP TRANS NO. 2 X94	______/______
6.11 .1.3.7		52-4E06, STARTUP XFMR NO. 2	______/______
6.11 .1.3.8		52-4E13, STARTUP XFMR NO. 2	______/______
6.11 .1.3.9		52-6A04, STARTUP XFMR NO. 1-X976	______/______
6.11 .1.3.10		52-6B04, STARTUP XFMR NO. 1-X976	______/______
6.11 .1.4		Verify the following CKT BKRs are CLOSED:	
6.11 .1.4.1		52-4A01, NUCLEAR SERVICES SUPPLY TRANS X74	______/______
6.11 .1.4.2		52-4A09, STATION SERVICE TRANSFORMER X43A	______/______
6.11 .1.4.3		52-3A05, STATION SERVICE XFMR X43A	______/______

PROCEDURE (Continued)

		Initials/ Date
6.11 .1.4.4	52-4A207, NSS XFMR X74	____/____
6.11 .1.4.5	52-4A204, 480 VOLT LOAD CENTER S3A2	____/____
6.11 .1.4.6	52-3A202, MAIN BREAKER	____/____
6.11 .1.4.7	52-4B01, 4B NORM SPLY BKR	____/____
6.11 .1.4.8	52-4B05, STATION SERVICE TRANSFORMER X43B2	____/____
6.11 .1.4.9	52-3B05, STATION SERVICE TRANSFORMER X43B2	____/____
6.11 .1.4.10	52-4B203, STARTUP XFMR NO. 2	____/____
6.11 .1.4.11	52-4B204, 480V LOAD CENTER S3B2	____/____
6.11 .1.4.12	52-3B202, MAIN BREAKER	____/____
6.11 .1.4.13	52-3A22, MCC 2A1	____/____
6.11 .1.4.14	52-3A206, MCC 2A2	____/____
6.11 .1.4.15	52-3A21, MCC 2A3	____/____
6.11 .1.4.16	52-3A215, MCC 2A4	____/____
6.11 .1.4.17	52-3B22, MCC 2B1	____/____
6.11 .1.4.18	52-3B206, MCC 2B2	____/____
6.11 .1.4.19	52-3B211, MCC 2B3	____/____
6.11 .1.4.20	52-3B215, MCC 2B4	____/____
6.11 .1.5	Verify GEA is in STANDBY IAW Operating Procedure A.31, Section 4.1.	____/____
6.11 .1.6	Verify GEA2 is in STANDBY per Operating Procedure A.31B, Section 4.0.	____/____
6.11 .1.7	Verify GEB is in STANDBY per Operating Procedure A.31, Section 4.1.	____/____
6.11 .1.8	Verify GEB2 is in STANDBY per Operating Procedure A.31B, Section 4.0..	____/____
6.11 .1.9	Place the following circuit breakers in the TEST (OPEN) position:	
6.11 .1.9.1	52-3A09, REACTOR BLDG SPRAY PUMP P-291A	____/____
6.11 .1.9.2	52-3A10, RB EMERG COOLING UNIT A-500A	____/____

PROCEDURE (Continued) Initials/ Date

6.11 .1.9.3	52-3A14,	RB EMERG COOLING UNIT A-500C	_____/_____
6.11 .1.9.4	52-3A18,	NUCLEAR SERVICE CLG WTR PP P-482A	_____/_____
6.11 .1.9.5	52-4A04,	HP INJECTION PUMP P-238A	_____/_____
6.11 .1.9.6	52-4A05,	DECAY HEAT REMOVAL PUMP P-261A	_____/_____
6.11 .1.9.7	52-4A205,	AUX FEEDWATER PP P-319	_____/_____
6.11 .1.9.8	52-3B09,	REACTOR BLDG SPRAY PUMP P-291B	_____/_____
6.11 .1.9.9	52-3B10,	RB EMERG COOLING UNIT A-500B	_____/_____
6.11 .1.9.10	52-3B14,	RB EMERG COOLING UNIT A-500D	_____/_____
6.11 .1.9.11	52-3B18,	NUCLEAR SERVICE CLG WTR PP P-482B	_____/_____
6.11 .1.9.12	52-4B07,	HP INJECTION PUMP P-238B	_____/_____
6.11 .1.9.13	52-4B09,	DECAY HEAT REMOVAL PUMP P-261B	_____/_____
6.11 .1.9.14	52-3A210	U-545A feeder.	_____/_____
6.11 .1.9.15	52-3A217	U-503A feeder.	_____/_____
6.11 .1.9.16	52-3B210	U-545B feeder.	_____/_____
6.11 .1.9.17	52-3B217	U-503B feeder.	_____/_____
6.11 .1.9.18	52-4B08	RX M/U Pump P-236	_____/_____

6.11 .1.10 Verify Nuclear Service Raw Water Pumps P-472A & B is in STANDBY IAW Operating Procedure A.25, Sections 4.5 and 4.6. _____/_____

6.11 .1.11 A pretest briefing using the Test Briefing Checklist has been held with all test participants and properly documented per AP.82. _____/_____

6.11 .1.12 Verify continuous communications has been established between the Control Room, diesel generator Control Rooms for GEA, GEB, GEB2, and GEA2, the 4.16 KV, 480 VAC, DC buses under test, and the data acquisition computer location per Enclosure 9.15. _____/_____

6.11 .1.13 Inform plant personnel of the impending LOOP-SFAS actuation to Train "A" and "B" over the plant public address (PA) system. _____/_____

PROCEDURE (Continued) Initials/ Date

6.11 .2 Train "A" and Train "B" LOOP-SFAS (Selected BKRs in TEST position)

<u>NOTE</u>: The following steps will cause buses 3A, 4A, 3B, 4B, 3A2, 4A2, 3B2, and 4B2 to become momentarily de-energized and it will cause the diesel generators GEA, GEB, GEA2 and GEB2 to start.

<u>NOTE</u>: Incore temperatures are to be trended at 15 minute intervals whenever both Decay Heat Removal Systems are shutdown. Temperature should not exceed 150°F.

<u>NOTE</u>: To prevent an unloading sequence relay race that might possibly block the manual trip of the normal supply breakers, do not initiate the SFAS actuation until the TRIP BLPB'S indicate that 52-4A207, 52-4B203, 4A01, and 4B01 are OPEN.

6.11 .2.1	Verify recorders A-1, A-2, A2-1, A2-2, B-1, B-2, B2-1 and B2-2 are initialized and annotated.	____/____
6.11 .2.2	Verify computer "A" and "B" software loaded and ready to start.	____/____
6.11 .2.3	One to two minutes prior to LOOP-SFAS actuation countdown per step 6.11.2.4, START the turbocharger bearing prelubrication by opening the following valves:	
6.11 .2.3.1	GEA2 EGS-837	____/____
6.11 .2.3.2	GEB2 EGS-838	____/____
6.11 .2.4	Initiate a countdown from 10 to zero over the plant PA system.	____/____
6.11 .2.5	At the count of 3, start the Linearcorders A-1, A-2, A2-1, A2-2, B-1, B-2, B2-1, and B2-2 and the data acquisition computers.	____/____
6.11 .2.6	At the count of ZERO, perform the following substeps:	
6.11 .2.6.1	OPEN circuit breaker 52-4A01 at panel H2ES.	____/____
6.11 .2.6.2	OPEN circuit breaker 52-4A207 at panel H2EW.	

PROCEDURE (Continued) Initials/ Date

6.11 .2.6.3	OPEN circuit breaker 52-4B01 at panel H2ES.	______/______
6.11 .2.6.4	OPEN circuit breaker 52-4B203 at panel H2EW.	______/______
6.11 .2.6.5	At panel H1RC depress SFAS CHANNEL Pushbuttons 1A, 2A, 3A, 4A, 1B, 2B, 3B, and 4B.	______/______
6.11 .2.7	Verify the following buses de-energize using the data acquisition equipment:	
6.11 .2.7.1	Bus 3A	______/______
6.11 .2.7.2	Bus 3A2	______/______
6.11 .2.7.3	Bus 3B	______/______
6.11 .2.7.4	Bus 3B2	______/______
6.11 .2.7.5	Bus 4A	______/______
6.11 .2.7.6	Bus 4A2	______/______
6.11 .2.7.7	Bus 4B	______/______
6.11 .2.7.8	Bus 4B2	______/______
6.11 .2.7.9	After the LOOP-SFAS actuation, CLOSE turbocharger prelube oil supply valves:	
6.11 .2.7.9.1	GEA2 EGS-837	______/______
6.11 .2.7.9.2	GEB2 EGS-838	______/______
6.11 .2.8	Verify, from data acquisition equipment, the following after the LOOP-SFAS actuation:	
6.11 .2.8.1	GEA STARTS, accelerates to 900 RPM in $\leq$10 sec.	______/______
6.11 .2.8.2	GEA output breaker (52-4A08) CLOSES.	______/______
6.11 .2.8.3	GEA voltage reaches 4160 $\pm$416 VAC in $\leq$10 sec.	______/______
6.11 .2.8.4	GEA frequency reaches 60 $\pm$1.2 HZ in $\leq$10 sec.	______/______
6.11 .2.8.5	Diesel Generator GEA2 STARTS, accelerates to 450 RPM in $\leq$10 sec.	______/______

PROCEDURE (Continued) Initials/ Date

6.11 .2.8.6	GEA2 output breaker (52-4A202) CLOSES.	______/______
6.11 .2.8.7	GEA2 voltage reaches 4150 ±416 VAC in $\leq$10 sec.	______/______
6.11 .2.8.8	GEA2 frequency reaches 60 ±1.2.HZ in $\leq$10 sec.	______/______
6.11 .2.8.9	GEB STARTS, accelerates to 900 RPM in $\leq$10 sec.	______/______
6.11 .2.8.10	GEB output breaker (52-4B11) CLOSES.	______/______
6.11 .2.8.11	GEB voltage reaches 4160 ±416 VAC in $\leq$10 sec.	______/______
6.11 .2.8.12	GEB frequency reaches 60 ±1.2 HZ in $\leq$10 sec.	______/______
6.11 .2.8.13	Diesel Generator GEB2 STARTS, accelerates to 450 RPM in $\leq$10 sec.	______/______
6.11 .2 . 14	GEB2 output breaker (52-4B202) CLOSES.	______/______
6.11 .2.8.15	GEB2 voltage reaches 4160 ±416 VAC in $\leq$10 sec.	______/______
6.11 .2.8.16	GEB2 frequency reaches 60 ±1.2 HZ in $\leq$10 sec.	______/______

6.11 .2.9 Verify the sequencing of load breakers from the data acquisition computer as follows:

		Required	Actual
6.11 .2.9.1	52-3A202 (3A2 Main Feed)	4.5-5.5	_____SEC_____/_____
6.11 .2.9.2	52-3B202 (3B2 Main Feed)	4.5-5.5	_____SEC____/_____
6.11 .2.9.3	52-4A05, DECAY HEAT REMOVAL PUMP P-261A (In Test)	4.75-5.25	______SEC____/_____
6.11 .2.9.4	52-4B09, DECAY HEAT REMOVAL PUMP P-261B (In Test)	4.75-5.25	______SEC____/_____

PROCEDURE (Continued)

		Initials/ Date Required	Actual
6.11 .2.9.5	52-4A09 4KV SUPPLY TO SS TRANSFORMER	4.75-5.25	______SEC____/_____
6.11 .2.9.6	52-4B05 4KV SUPPLY TO SS XFMR X43B2	4.75-5.25	______SEC____/_____
6.11 .2.9.7	52-4A04, HP INJECTION PUMP, P-238A (In Test)	7.6-8.4	______SEC____/_____
6.11 .2.9.8	52-4B07, HP INJECTION PUMP P-238B (In Test)	7.6-8.4	______SEC____/_____
6.11 .2.9.9	52-3A18 NUCLEAR SERVICE CLG WTR PP P-482A (In Test)	14.25-15.75	______SEC____/_____
6.11 .2.9.10	52-3B18, NUCLEAR SERVICE CLG WTR PP P-482B (In Test)	14.25-15.75	______SEC____/_____
6.11 .2.9.11	52-3A10, RB EMERG COOLING UNIT A-500A (In Test)	14.25-15.75	______SEC____/_____
6.11 .2.9.12	52-3B10, RB EMERG COOLING UNIT A-500B (In Test)	14.25-15.75	______SEC____/_____
6.11 .2.9.13	52-3A14, RB EMERG COOLING UNIT A-500C (In Test)	14.25-15.75	______SEC____/_____
6.11 .2.9.14	52-3B14, RB EMERG COOLING UNIT A-500D (In Test)	14.25-15.75	______SEC____/_____
6.11 .2.9.15	52-3A215, MCC S2A4	22.5-27.5	______SEC____/_____
6.11 .2.9.16	52-3B215, MCC S2B4	22.5-27.5	______SEC____/_____
6.11 .2.9.17	52-4A07, NSRW PUMP P-472A	23.75-26.25	______SEC____/_____

PROCEDURE (Continued)

		Required	Initials/ Date Actual
6.11 .2.9.18	52-4B06 NSRW PUMP, P-472B	23.75-26.25	____SEC____/____
6.11 .2.9.19	52-4A205, AUX FEEDWATER PP P-319 (In Test)	27.0-33.0	____SEC____/____
6.11 .2.9.20	52-3A217 (U-503A Feeder) (In Test)	27.0-33.0	____SEC____/____
6.11 .2.9.21	52-3B217 (U-503B) (In Test)	27.0-33.0	____SEC____/____
6.11 .2.9.22	52-3A13, DIESEL GEN RM VENT EXH FAN A-544A	38.-42.	____SEC____/____
6.11 .2.9.23	52-3A17, DIESEL GEN RM VENT SUP FAN A-544B	38.-42.	____SEC____/____
6.11 .2.9.24	52-3B06 DG RM EXH FAN, A-544C	38.-42.	____SEC____/____
6.11 .2.9.25	52-3B17, DG RM VENT SUP FAN A-544D	38.-42.	____SEC____/____
6.11 .2.9.26	52-3A210 (U-545A Feed) (In Test)	45.0-55.0	____SEC____/____
6.11 .2.9.27	52-3B210 (U-545B Feed) (In Test)	45.0-55.0	____SEC____/____
6.11 .2.9.28	52-3A09, REACTOR BLDG SPRAY PUMP P-291A (In Test)	285-315.	____SEC____/____
6.11 .2.9.29	52-3B09, REACTOR BLDG SPRAY PUMP P-291B (In Test)	285-315	____SEC____/____

6.11 .2.10	Record the following information from the computer data acquisition equipment after at least 5 minutes from LOOP-SFAS initiate:		
	GEA		
6.11 .2.10.1	Voltage	________ VAC (3744-4576)	______/______
6.11 .2.10.2	Frequency	________ HZ (58.8-61.2)	______/______
	GEA2		
6.11 .2.10.3	Voltage	________ VAC (3744-4576)	______/______
6.11 .2.10.4	Frequency	________ HZ (58.8-61.2)	______/______
	GEB		
6.11 .2.10.5	Voltage	________ VAC (3744-4576)	______/______
6.11 .2.10.6	Frequency	________ HZ (58.8-61.2)	______/______
	GEB2		
6.11 .2.10.7	Voltage	________ VAC (3744-4576)	______/______
6.11 .2.10.8	Frequency	________ HZ (58.8-61.2)	______/______
6.11 .2.11	Depress the SFAS CHANNEL RESET pushbuttons 1A, 2A, 3A, 4A, 1B, 2B, 3B, and 4B at Control Room panel H1RC.		______/______
6.11 .2.12	The following steps will reset the load sequencing circuit and EFIC "A" logic:		
6.11 .2.12.1	At Control Room panel H2SFA, depress the NS Bus A2 and A UNLOADING RESET A2/A pushbutton.		______/______
6.11 .2.12.2	At EFIC panel H1SSE depress AFW RESET BLPB on EFIC CHANNEL "A" INITIATE/TEST MATRIX.		______/______
6.11 .2.12.3	At EFIC panel H1SSE depress EFIC "A" CONTROL INITIATED BLPB.		______/______
6.11 .2.13	The following steps will reset the load sequencing circuit and EFIC "B" logic:		
6.11 .2.13.1	At Control Room panel H2SFB, depress the NS Bus B2 and B UNLOADING RESET B2/B pushbutton.		______/______

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Initials/ Date

6.11 .2.13.2 At EFIC panel H1SSE depress AFW RESET BLPB on EFIC CHANNEL "B" INITIATE/TEST MATRIX. _____/_____

6.11 .2.13.3 At EFIC panel H1SSE depress EFIC "B" CONTROL INITIATED BLPB. _____/_____

NOTE: Equipment started during SFAS initiation may now be stopped to eliminate unnecessary running of emergency equipment. This includes RB Upper Dome Air Circulators, and RB Emergency Coolers. SFAS valves may be positioned as directed by the Shift Supervisor.

CAUTION: ENSURE THE NORMAL-DROOP SWITCH AT H2DGA IS IN THE DROOP POSITION PRIOR TO SYNCHRONIZING TO PREVENT DAMAGE TO THE DIESEL GENERATOR.

CAUTION: IF OFFSITE POWER IS LOST WHEN A DIESEL GENERATOR IS SYNCHRONIZED TO THE GRID, IMMEDIATELY OPEN THE NORMAL SUPPLY TO THE ASSOCIATED NUCLEAR SERVICE BUS.

6.11 .2.13.4 Synchronize and shutdown GEA IAW Operating Procedure A.31, Section 6.2. _____/_____

6.11 .2.13.5 At local panel H2DEA2, depress the LOCA RESET pushbutton and verify the Shutdown System Active RED light energized. _____/_____

6.11 .2.14 Synchronize and shutdown GEA2 IAW Operating Procedure A.31B, Sections 5.5 thru 5.7. _____/_____

CAUTION: ENSURE THE NORMAL-DROOP SWITCH AT H2DGB IS IN THE DROOP POSITION PRIOR TO SYNCHRONIZING TO PREVENT DAMAGE TO THE DIESEL GENERATOR.

6.11 .2.15 Synchronize and shutdown GEB IAW Operating Procedure A.31, Section 6.2. _____/_____

PROCEDURE (Continued)

Step	Action	Initials/ Date
6.11 .2.16	At local panel H2DEB2, depress the LOCA reset pushbutton and verify the Shutdown System Active red light energized.	________/______
6.11 .2.16.1	Synchronize and shutdown GEB2 IAW Operating Procedure A.31B, Section 5.5 through 5.7.	________/______
6.11 .3	Restoration	
6.11 .3.1	Trip and then Place the following circuit breakers in the CONNECTED position or as directed by the Shift Supervisor:	
6.11 .3.1.1	52-3A09 REACTOR BUILDING SPRAY PUMP P-291A	________/______
6.11 .3.1.2	52-3A10 RB EMERG COOLING UNIT A-500A	________/______
6.11 .3.1.3	52-3A14 RB EMERG COOLING UNIT A-500C	________/______
6.11 .3.1.4	52-3A18 NUCLEAR SERVICE CLG WTR PP P-482A	________/______
6.11 .3.1.5	52-4A04 HP INJECTION PUMP P-238A	________/______
6.11 .3.1.6	52-4A05 DECAY HEAT REMOVAL PUMP P-261A	________/______
6.11 .3.1.7	52-4A205 AUX FEEDWATER PP P-319	________/______
6.11 .3.1.8	52-3B09 REACTOR BLDG SPRAY PUMP P-291B	________/______
6.11 .3.1.9	52-3B10 RB EMERG COOLING UNIT A-500B	________/______
6.11 .3.1.10	52-3B14 RB EMERG COOLING UNIT A-500D	________/______
6.11 .3.1.11	52-3B18 NUCLEAR SERVICE CLG WTR PP P-482B	________/______
6.11 .3.1.12	52-4B08 REACTOR MAKE-UP PUMP P-236 NORM	________/______
6.11 .3.1.13	52-4B07 HP INJECTION PUMP P-238B	________/______
6.11 .3.1.14	52-4B09 DECAY HEAT REMOVAL PUMP P-261B	________/______
6.11 .3.1.15	52-3A210 U-545A FEEDER	________/______
6.11 .3.1.16	52-3A217 U-503A FEEDER	________/______
6.11 .3.1.17	52-3B210 U-545B FEEDER	________/______
6.11 .3.1.18	52-3B217 U-503B FEEDER	________/______

6.11 .3.2 Notify the Shift Supervisor that the Train "A" and "B" LOOP-SFAS test is complete. ________/________

NOTE: DHR A or B may be placed in service, as required by the Shift Supervisor, IAW Operating Procedure A.8, Section 4.7 or 4.8 (Valves CBS-045, CBS-046, and CBS-047 MUST BE CLOSED FIRST).

Q.C. INSPECT

6.11 .4 Acceptance Criteria Review
Review the data recorded during Section 6.11.2 and verify the following:

QC to review after data taken all of section 6 11.4 MRW 1/20/88

6.11 .4.1 At Step 6.11.2.8 GEA, GEA2, GEB, and GEB2 reached 3744 VAC and 58.8HZ in ≤10 seconds. Record time at which envelope was entered:

		3744 VAC	58.8HZ	RECORDER #	
6.11 .4.1.1	GEA	________ Sec	________ Sec	________	________/________
6.11 .4.1.2	GEA2	________ Sec	________ Sec	________	________/________
6.11 .4.1.3	GEB	________ Sec	________ Sec	________	________/________
6.11 .4.1.4	GEB2	________ Sec	________ Sec	________	________/________

6.11 .4.2 At Step 6.11.2.8 GEA, GEA2, GEB, and GEB2 output breakers closed (GEA 52-4A08, GEA2 52-4A202, GEB-52-4B11, GEB2 52-4B202. ________/________

6.11 .4.3 At Step 6.11.2.7 and 6.11.2.8, GEA and GEB reached a nominal speed of 900 rpm in ≤ 10 seconds. ________/________

6.11 .4.4 At Step 6.11.2.7 and 6.11.2.8, GEA2 and GEB2 reached a nominal speed of 450 rpm in ≤ 10 seconds. ________/________

6.11 .4.5 At Step 6.11.2.9, all GEA, GEA2, GEB, and GEB2 loads sequenced in the specified time frame. ________/________

6.11 .4.6 At Step 6.11.2.10, GEA, GEA2, GEB, and GEB2 operated for at least 5 minutes with loads connected. (Most breakers in the test position) ________/________

6.12 Train "A" Independence Verification SFAS/LOOP

NOTE: During this test section, the following pumps will start automatically and run per the flowpaths described below:

HPI Pump P-238A - minimum flow thru the seal return line, E-240A and B, thru Make-up Tank V-235, and back to pump suction.

DHR Pump P-261A - minimum flow thru DH Removal Cooler E-260A, thru the minimum flow line and back to pump suction.

RBS Pump P-291A - approximately 1500 gpm thru CBS-045 and CBS-047 (open 3 turns) to BWST. Suction from BWST, thru SFV-25003 to pump suction.

AFW Pump P-319 - minimum flow suction from CST. Discharge thru mi·mum flow line to condenser

6.12 .1 Prerequisites

6.12 .1.1 A preliminary briefing has been conducted with the Shift Supervisor and prerequisite lineups can commence. Formal briefing to occur later ______/______

6.12 .1.2 Run the data acquisition program "INIT" on the A and B computers and verify all channels are functioning properly. ______/______

NOTE: The pretest lineup for Sections 6.9 and 6.12 are identical.

6.12 .1.3 Have operations complete the initial pretest lineup on Enclosure 9.17. This step can be marked N/A if Section 6.9 immediately preceded this section and the restoration section for 6.9 was not performed. ______/______

6.12 .1.4 Verify the System Dispatcher has been notified 24 hours in advance to inform him of the impending action to de-energize Startup Transformer #1 and #2. ______

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PROCEDURE (Continued)		Initials/ Date
6.12 .1.5	Inform the System Dispatcher that OCBs 240 and 250 will be opened under loaded conditions at Step 6.12.2.19.	______/______
6.12 .1.6	Makeup and Purification system is aligned IAW A.15 Steps 4.2.1 through 4.2.9, except as modified by Enclosure 9.6.	______/______
6.12 .1.6.1	HPI Pump P-238A breaker 52-4A04 is racked in.	______/______
6.12 .1.6.2	At HIRC, place the Bailey Hand/Auto Station for the following valves in HAND, and verify the valves are CLOSED:	
6.12 .1.6.2.1	LV-21503 Pressurizer Level	______/______
6.12 .1.6.2.2	FV-23606 RC Pump Seal Injection Flow	______/______
6.12 .1.7	Train "A" Nuclear Raw Water System is in SFAS STANDBY IAW A.25, Section 4.5.	______/______
6.12 .1.8	Train "A" Nuclear Service Cooling Water is in SFAS STANDBY IAW A. 24, Section 4.2.	______/______
6.12 .1.9	Reactor Building Emergency Cooling units A-500 A/C and Reactor Building Emergency Upper Dome air circulators A-532 A/B are available for automatic operation IAW A.14A, Sections 4.1 and 4.2.	______/______
6.12 .1.10	CR/TSC Essential Condensing Unit U-545A and its associated support equipment are lined up in STANDBY IAW A.14C, Section 4.2.1.	______/______
6.12 .1.11	NSEB Essential Condensing Unit U-503A and its associated support equipment are lined up in STANDBY IAW A.14D, Section 4.2.1.	______/______
6.12 .1.12	Verify GEA is in STANDBY IAW operating procedure A.31, Section 4.1.	______/______
6.12 .1.13	Verify GEA2 is in STANDBY IAW operating procedure A.31B, Section 4.0.	______/______

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PROCEDURE (Continued) Initials/ Date

6.12 .1.14 Verify Train "A" Nuclear Service busses (4A, 4A2) and their associated 480V Load Centers and Motor Control Centers are energized IAW operating procedures A.58, Sections 4.1 and 4.3 and A.59, Sections 4.1, 4.2, and 4.4, except as modified by Enclosure 9.17. ________/________

6.12 .1.14.1 Rack breaker 52-4A10 (Bus 4A Stby Supply) to the TEST position and CLOSE it. ________/________

NOTE: During this section of the test both DHR loops will be out of service and incore T.C.s are to be Trended. Temperature should not exceed 150°F.

6.12 .1.15 Verify DHR System Lineup IAW A.8, Sections 4.7 and 4.8, except as modified by Enclosure 9.11. Do not start pumps. ________/________

6.12 .1.16 Place or verify in service the SFAS analog and digital system, IAW A.70 Sections 4.1 and 4.2. ________/________

6.12 .1.17 Building Spray System A is in STANDBY condition IAW A.7 Section 4.1 Steps 4.1.5 to 4.1.6.4 except as modified by Enclosure 9.8. ________/________

6.12 .1.18 The AFW and EFIC systems are in STANDBY condition IAW A.51 Sections 4.2 and 4.3 except as modified by Enclosure 9.9. ________/________

NOTE: Engineering Action Request SY-87-156 allows AFW Pump P-319 to be started in excess of limitations of Process Standard AP.152 for this test section.

6.12 .1.19 A pretest briefing using the Test Briefing Checklist has been held with all test participants and properly documented per AP.82. Briefing to include Sections 6.16, 6.17, and/or 6.9 if they are to follow immediately. ________/________

PROCEDURE (Continued) Initials/ Date

NOTE: Enclosure 9.18 Final Pretest Lineup will de-energize busses 3B, 4B, 3B2, and 4B2. These busses will remain de-energized for an extended period of time. The following panels will be powered solely from their respective batteries, therefore the battery voltages will be monitored:

Panel	Battery
120VAC S1GB-1	"GB"
120VAC S1N1-1	"N1"
125VDC SOB	"B"
125VDC SOD	"D"
125VDC SOB2	"B2"
120VAC S1B	"B2"
120VAC S1B2-1	"B2"
125VDC SOD2	"D2"
120VAC S1D	"D2"
120VAC S1D2-1	"D2"

CAUTION: IF BATTERY VOLTAGE SHOULD DROP BELOW 115VDC, THE SHIFT SUPERVISOR AND TEST DIRECTOR SHALL BE NOTIFIED IMMEDIATELY.

6.12 .1.20 Verify operations has assigned an operator to monitor batteries "GB", "N1", "B", "B2", "D", and "D2" voltages during the performance of this test. ________/________

6.12 .1.21 Have operations complete the final pretest lineup in Enclosure 9.18. This step can be marked N/A if Section 6.9 immediately preceded this section and the restoration section for Section 6.9 was not performed. ________/________

6.12 .1.22 Verify continuous communications has been established between the Control Room and applicable locations on Enclosure 9.15, per directions of the Shift Supervisor. ________/________

6.12 .2 Train "A" SFAS/LOOP (BKRs connected)

6.12 .2.1 Verify recorders A-1, A-2, A2-1, and A2-2 are initialized and annotated. ______/______

6.12 .2.2 Verify computers "A" and "B" software loaded and ready to start. ______/______

6.12 .2.3 Inform plant personnel of the impending SFAS/LOOP actuation to train "A" over the plant (PA) system. ______/______

6.12 .2.4 One to two minutes prior to SFAS/LOOP actuation countdown per Step 6.12.2.5, START the GEA2 turbocharger bearing prelubrication by opening EGS-837. ______/______

<u>NOTE</u>: The following steps will cause the diesel generators GEA and GEA2 to start.

<u>CAUTION</u>: WHEN AFW PUMP P-319 STARTS AUTOMATICALLY IN STEP 6.12.2.11.8, IT MUST NOT BE RUN FOR MORE THAN 11 MINUTES. RUNNING THE PUMP IN EXCESS OF THIS TIME WILL VIOLATE THE LIMITATIONS OF EAR SY-87-156.

<u>CAUTION</u>: THE BRUCE-GM DIESEL GENERATOR GEA SHALL NOT BE RESTARTED IF THE UNIT HAS BEEN SHUTDOWN FOR MORE THAN 15 MINUTES AFTER A LOADED OPERATION. DUE TO LUBRICATION RESTRICTIONS THE ENGINE CANNOT BE RESTARTED UNTIL 3 HOURS HAVE ELAPSED.

6.12 .2.5 Initiate a countdown from 10 to ZERO over the plant PA system. ______/______

6.12 .2.5.1 At the count of 5 open 52-3A05, Bus 3A Supply Breaker. ______/______

6.12 .2.6 At the count of 3 start the Linearcorder A-1, A-2, A2-1 and A2-2 and the data acquisition computers. ______/______

6.12 .2.7 At the count of ZERO, at panel H1RC, initiate an SFAS actuation by depressing the SFAS CHANNEL pushbuttons 1A, 2A, 3A and 4A. ______/______

PROCEDURE (Continued) Initials/ Date

6.12 .2.8	After the SFAS actuation, close GEA2 turbocharger prelube oil supply valve EGS-837.	________/______
6.12 .2.8.1	At panel H4SDA5, visually verify CO2 interlock relays CO2AX and CO2AY are energized.	________/______
6.12 .2.8.2	Verify 52-4A10 Bus 4A STBY Supply Breaker did not trip.	________/______
6.12 .2.9	Verify the following after the SFAS actuation from the data acquisition computer:	
6.12 .2.9.1	GEA STARTS, accelerates to 900 RPM ≤10 sec.	________/______
6.12 .2.9.2	GEA Voltage reaches 4160 ±416 VAC ≤10 sec.	________/______
6.12 .2.9.3	GEA frequency reaches 60 ±1.2 HZ ≤10 sec.	________/______
6.12 .2.9.4	52-4A08 GEA output breaker DOES NOT <u>CLOSE</u>.	________/______
6.12 .2.9.5	Diesel Generator GEA2 STARTS, accelerates to 450 RPM ≤10 sec.	________/______
6.12 .2.9.6	GEA2 voltage reaches 4160 ± 416 VAC ≤10 sec.	________/______
6.12 .2.9.7	GEA2 frequency reaches 60 ±1.2 HZ ≤10 sec.	________/______
6.12 .2.9.8	52-4A202 GEA2 output breaker DOES NOT <u>CLOSE</u>.	________/______
6.12 .2.9.9	Step Deleted	
6.12 .2.9.10	The absence of voltage and current on Buses 3B and 4B.	________/______
6.12 .2.9.11	The absence of voltage and current on Buses 3B2 and 4B2.	________/______
6.12 .2.9.12	Verify 52-3A05, Bus 3A Supply Breaker CLOSED.	________/______
6.12 .2.10	Verify the following loads, from the data acquisition computer, DID NOT TRIP:	
6.12 .2.10.1	Step Deleted	
6.12 .2.10.2	52-4A01 NUCLEAR SERVICES SUPPLY TRANS X74.	________/______
6.12 .2.10.3	52-4AC9 4160 VAC feed breaker to XFMR K4BA1	________/______

PROCEDURE (Continued) Initials/ Date

6.12 .2.10.4 52-3A202 480 VAC feeder breaker to bus 3A2. ____/____

6.12 .2.10.5 52-4A207 normal supply to bus 4A2. ____/____

6.12 .2.10.6 52-4A204 4160 VAC feed breaker to XFMR X43A2. ____/____

NOTE: The SFAS signal will cause breakers to trip prior to resequencing. This function has already been tested and will not be reverified in this section.

6.12 .2.11 Verify the sequencing of loads, from the data acquisition computer, to their respective buses as follows:

Step	Load	Required	Actual	Initials/ Date
6.12 .2.11.1	52-4A05 DECAY HEAT REMOVAL PUMP P-261A	0	____ SEC	____/____
6.12 .2.11.2	52-4A04 HP INJECTION PUMP P-238A	2.85-3.15	____ SEC	____/____
6.12 .2.11.3	52-3A10 RB EMERG COOLING UNIT A-500A	15.2-16.8	____ SEC	____/____
6.12 .2.11.4	52-3A14 RB EMERG COOLING UNIT A-500C	15.2-16.8	____ SEC	____/____
6.12 .2.11.5	52-3A18 NUCLEAR SERVICE CLG WTR PP P-482A	15.2-16.8	____ SEC	____/____
6.12 .2.11.6	52-3A215 (MCC S2A4)	23.4-28.6	____ SEC	____/____
6.12 .2.11.7	52-4A07 NS RAW WATER PUMP P-472A	24.7-27.3	____ SEC	____/____
6.12 .2.11.8	52-4A205 AFW PUMP P-319 Record Clock Time ____________	27.9-34.1	____ SEC	____/____
6.12 .2.11.9	52-3A217 (U-503A)	27.9-34.1	____ SEC	____/____
6.12 .2.11.10	52-3A17 DIESEL GEN RM VENT SUP FAN A-544B	38.95-43.05	____ SEC	____/____

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PROCEDURE (Continued)

		Required	Actual	Initials/ Date
6.12 .2.11.11	52-3A13 DIESEL GEN RM VENT EXH FAN A-544A	38.95-43.05	____ SEC	______/______
6.12 .2.11.12	52-3A210 (U-545A)	45.9-56.1	____ SEC	______/______
6.12 .2.11.13	52-3A09 RBS PUMP P-291A	285.0-315.0	____ SEC	______/______
6.12 .2.12	Verify from Control Room indication that the following equipment is operating:			
6.12 .2.12.1	52-2A104 RB UPPER DOME CIRC FAN A-532A.			______/______
6.12 .2.12.2	52-2A105 RB UPPER DOME CIRC FAN A-532B.			______/______
6.12 .2.13	Verify that the following breakers can NOT be opened from the Control Room:			
6.12 .2.13.1	52-4A10 Bus 4A STBY SUPPLY			______/______
6.12 .2.13.2	~~52-4A01 Bus 4A NORM SUPPLY~~			______/______
6.12 .2.13.3	52-4A09 SS XFMR 43A1			______/______
6.12 .2.13.4	52-3A05 Bus 3A Supply Breaker			______/______
6.12 .2.14	Record the following information from the recorders after at least 5 minutes from SFAS initiation:			

GEA Recorder # ____________

6.12 .2.14.1	Voltage	__________ VAC	(3744-4576)	______/______
6.12 .2.14.2	Frequency	__________ HZ	(58.8-61.2)	______/______
6.12 .2.14.3	Kilowatts	__________ KW	(≤2750 KW)	______/______

GEA2 Recorder # ____________

6.12 .2.14.4	Voltage	__________ VAC	(3744-4576)	______/______
6.12 .2.14.5	Frequency	__________ HZ	(58.8-61.2)	______/______
6.12 .2.14.6	Kilowatts	__________ KW	(≤3300 KW)	______/______

6.12 .2.15 Contact the System Dispatcher to receive permission to OPEN OCBs 240 and 250. ______/______

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PROCEDURE (Continued) Initials/ Date

NOTE: The following steps will cause 4A and 4A2 and their associated 480V Load Centers and Motor Control Centers to be momentarily de-energized.

CAUTION: STEP 6.12.2.19, WHICH TRIPS AFW PUMP P-319, MUST BE COMPLETED WITHIN 11 MINUTES OF STEP 6.12.2.11.8 IN ORDER TO COMPLY WITH THE LIMITATIONS OF EAR-SY-87-156.

6.12 .2.16 Verify computers "A" & "B" software loaded and ready to Start. ________/______

6.12 .2.17 Initiate a countdown from 10 to ZERO over the plant PA system. ________/______

6.12 .2.18 At the count of 3, start recorders A-1, A-2, A2-1, and A2-2 and the data acquisition computers. ________/______

6.12 .2.19 At the count of ZERO, at panel H2ES, OPEN OCBs 240 and 250. ________/______

Record Clock Time ____________

6.12 .2.19.1 After the LOOP, verify 52-4A10 (Bus 4A STBY SPLY) OPENS. ________/______

6.12 .2.19.2 Begin recording AFW Pump P-319 motor temperatures per Enclosure 9.23 after pump starts following Step 6.12.2.19. ________/______

6.12 .2.20 Verify the following from the data acquisition equipment:

6.12 .2.20.1 52-4A01 Nuclear Service Supply Trans OPENED. ________/______

6.12 .2.20.2 52-4A207 NSS XFMR X74 OPENED. ________/______

6.12 .2.20.3 52-4A08 GEA output breaker CLOSED. ________/______

6.12 .2.20.4 52-4A202 GEA2 output breaker CLOSED. ________/______

6.12 .2.20.5 The absence of voltage and current on Buses 3B and 4B. ________/______

6.12 .2.20.6 The absence of voltage and current on Buses 3B2 and 4B2. ________/______

PROCEDURE (Continued) Initials/ Date

6.12 .2.21 Verify the sequencing of loads to their respective buses as follows, from the data acquisition equipment:

		Required	Actual	Initials/ Date
6.12 .2.21.1	52-3A202 480 VAC FDR BKR BUS 3A2	4.5-5.5	_____ SEC	________/______
6.12 .2.21.2	52-4A05 DECAY HEAT REMOVAL PUMP P-216A	4.75-5.25	_____ SEC	________/______
6.12 .2.21.3	52-4A09 4160 KV FEEDER TO BUS 3A	4.75-5.25	_____ SEC	________/______
6.12 .2.21.4	52-4A04 HP INJECTION PUMP P-238A	7.6-8.4	_____ SEC	________/______
6.12 .2.21.5	52-3A10 RB EMERG AC A-500A	14.25-15.75	_____ SEC	________/______
6.12 .2.21.6	52-3A18 NSCW ~~PUMP P-482A~~	14.25-15.75	_____ SEC	________/______
6.12 .2.21.7	52-3A14 RB EM. CLG UNIT A-500C	14.25-15.75	_____ SEC	________/______
6.12 .2.21.8	52-3A215 MCC 2A4	22.5-27.5	_____ SEC	________/______
6.12 .2.21.9	52-3A09 RBS PUMP P-291A	23.75-26.25	_____ SEC	________/______
6.12 .2.21.10	52-4A07 NRW PUMP P-472A	23.75-26.25	_____ SEC	________/______
6.12 .2.21.11	52-3A217 U-503A	27.0-33.0	_____ SEC	________/______
6.12 .2.21.12	52-4A205 AFW PUMP P-319	27.0-33.0	_____ SEC	________/______
6.12 .2.21.13	52-3A17 DIESEL GEN RM VENT SUP FAN A-544B	38.0-42.0	_____ SEC	________/______
6.12 .2.21.14	52-3A13 DIESEL GEN RM VENT EXH FAN A-544A	38.0-42.0	_____ SEC	________/______
6.12 .2.21.15	52-3A210 U-545A	45.0-55.0	_____ SEC	________/______

PROCEDURE (Continued) Initials/ Date

Step	Action	Initials/ Date
6.12 .2.22	Verify from Control Room indication that the following equipment is operating:	
6.12 .2.22.1	52-2A104 RB UPPER DOME CIRC FAN, A-532A	____/____
6.12 .2.22.2	52-2A105 RB UPPER DOME CIRC FAN, A-532B.	____/____
6.12 .2.23	Record the following information from the recorders after at least 5 minutes:	
	GEA Recorder # ________	
6.12 .2.23.1	Voltage ________ VAC (3744-4576)	____/____
6.12 .2.23.2	Frequency ________ HZ (58.8-61.2)	____/____
6.12 .2.23.3	Kilowatts ________ KW (≤2750 KW)	____/____
	GEA2 Recorder # ________	
6.12 .2.23.4	Voltage ________ VAC (3744-4576)	____/____
6.12 .2.23.5	Frequency ________ HZ (58.8-61.2)	____/____
6.12 .2.23.6	Kilowatts ________ KW (≤3300 KW)	____/____
6.12 .2.24	Depress the SFAS CHANNEL RESET pushbuttons 1A, 2A, 3A, and 4A at Control Room panel H1RC.	____/____
6.12 .2.25	At Control Room panel H2SFA, depress the NS BUS A2 & A UNLOADING RESET A2/A pushbutton to RESET the load sequencing circuit.	____/____
6.12 .2.26	At local panel H2DEA2, depress the LOCA Reset pushbutton and verify the Shutdown System Active Red light energizes.	____/____
6.12 .2.27	Verify computer "A" software loaded and ready to start.	____/____
6.12 .2.28	Initiate a countdown from 10 to zero over the Plant PA System.	____/____
6.12 .2.29	At the count of 3, start recorders A-1 and A-2 and the data acquisition computer.	____/____

NOTE: The following step will simulate the largest single load rejection for the GEA diesel generator.

6.12 .2.30 At the count of ZERO, at Control Room panel H2SFA, OPEN the following circuit breakers simultaneously:

6.12 .2.30.1 52-4A04 HP INJECTION PUMP P-238A ______/______

6.12 .2.30.2 52-4A05 DECAY HEAT REMOVAL PUMP P-261A ______/______

6.12 .2.30.3 Verify, from the data acquisition equipment, the diesel engine GEA does not trip on overspeed.

Record speed peak: ______ rpm ($\leq$1005 rpm) ______/______

6.12 .2.30.4 Restart HPI Pump P-238A ______/______

6.12 .2.30.5 Restart DHR Pump P-261A ______/______

NOTE: The following steps will reset EFIC logic and load AFW pump P-319.

6.12 .2.31 At EFIC panel H1SSE depress AFW RESET BLPB on EFIC CHANNEL "A" Initiate/Test Matrix. ______/______

6.12 .2.31.1 At EFIC panel H1SSE depress EFIC "A" CONTROL INITIATED BLPB, and verify AFW Pump P-319 running. ______/______

6.12 .2.31.2 Prior to stopping AFW Pump P-319 in Step 6.12.2.35, verify the requirements of Enclosure 9.23 for Pump Start #2 have been satisfied. ______/______

6.12 .2.32 Verify computer "A" software loaded and ready to start. ______/______

NOTE: Proceed with Step 6.12.2.33 as soon as flow is established in Step 6.12.2.32.1.

6.12 .2.32.1 At FV-31855, take local manual control of FV-31855, and slowly open the valve, adjusting flow to 510-550 gpm. ______/______

6.12 .2.33 Initiate a countdown from 10 to zero over the Plant PA System. ______/______

PROCEDURE (Continued) Initial / Date

6.12 .2.34	At the count of 3, start recorder A2-1 and A2-2 and the data acquisition computer.	_____ / _____
NOTE:	The following step will simulate the largest single load rejection for the GEA2 diesel generator.	
6.12 .2.35	At the count of 0, at EFIC panel H1SSE, depress the STOP BLPB to stop AFW Pump P-319.	_____ / _____
6.12 .2.35.1	Verify, from the data acquisition equipment, that the diesel engine GEA2 does not trip on overspeed.	_____ / _____
	Record speed peak: _______ rpm (≤501 rpm)	
6.12 .2.35.2	Close flow test valve FV-31855.	_____ / _____
6.12 .2.35.3	Restart AFW Pump P-319.	_____ / _____
6.12 .2.36	Contact the System Dispatcher to receive permission to close OCBs 2?0 and 250.	_____ / _____
6.12 .2.37	At panel H2ES, CLOSE OCB's 240 and 250.	_____ / _____
CAUTION:	ENSURE THE NORMAL-DROOP SWITCH AT H2DGA IS IN THE DROOP POSITION PRIOR TO SYNCHRONIZING TO PREVENT DAMAGE TO THE DIESEL GENERATOR.	
CAUTION:	IF OFFSITE POWER IS LOST WHEN A DIESEL GENERATOR IS SYNCHRONIZED TO THE GRID, IMMEDIATELY OPEN THE NORMAL SUPPLY TO THE ASSOCIATED NUCLEAR SERVICE BUS.	
6.12 .2.38	Synchronize and shutdown GEA IAW Operating Procedure A.31, Section 6.2.	_____ / _____
6.12 .2.38.1	From the Control Room Shutdown the following equipment as directed by the Shift Supervisor:	
6.12 .2.38.1.1	52-3A09 RBS PUMP P-291A	_____ / _____
6.12 .2.38.1.2	52-3A10 RB EMERG AC A-500A	_____ / _____
6.12 .2.38.1.3	52-3A14 RB EMERG AC A-500C	_____ / _____
6.12 .2.38.1.4	52-4A05 DECAY HEAT REMOVAL PUMP P-261A	_____ / _____
6.12 .2.38.1.5	52-3A18 NSCW PUMP P-482A	_____ / _____

PROCEDURE (Continued) Initials/ Date

6.12 .2.38.1.6	52-2A104 RB UPPER DOME CIRC FAN, A-532A	______/______
6.12 .2.38.1.7	52-2A105 RB UPPER DOME CIRC FAN, A-532B	______/______
6.12 .2.38.1.8	52-4A04 HP Injection Pump P-238A	______/______
6.12 .2.38.1.9	Review SFAS Panels and position SFAS valves as directed by the Shift Supervisor.	______/______
6.12 .2.39	Synchronize and shutdown GEA2 IAW Operating Procedure A.31B, Sections 5.5 through 5.7.	______/______
6.12 .2.39.1	From the Control Room, shutdown AFW Pump P-319 as directed by the Shift Supervisor.	______/______
6.12 .2.40	Run the data acquisition program "INIT" on the "A" and "B" computers and verify all channels are functioning properly.	______/______
6.12 .2.41	IF Section 6.9 will be tested immediately and the Shift Supervisor concurs; N/A Section 6.12.3 and proceed to Section 6.9.1 otherwise N/A this step and continue.	______/______

6.12 .3 Restoration

<u>NOTE</u>: DHR System A may be placed in service IAW Operating Procedure A.8, Section 4.7 (valves CBS-045, CBS-046 and CBS-047 <u>MUST BE CLOSED FIRST</u>.

6.12 .3.1	Complete Enclosure 9.19.	______/______
6.12 .3.1.1	Verify FV-31855 returned to AUTO status.	______/______
6.12 .3.2	Notify the Shift Supervisor that the Train "A" SFAS/LOOP test is complete.	______/______

Q.C. INSPECT

6.12 .4 Acceptance Criteria Review

QC to review after data taken all of section 6.12.4 MRW 1/20/88

Review the data recorded during Section 6.12.2 and verify the following:

6.12 .4.1 At Step 6.12.2.9.2 and .3, GEA reached 3744VAC and 58.8HZ in ≤10 seconds: Record time at which envelope was entered:

__________ Sec (HZ)
__________ Sec (VAC)

Data from Recorder # ________ ______/______

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PROCEDURE (Continued) Initials/ Date

6.12 .4.2	At step, 6.12.2.9.6 and .7, GEA2 reached 3744VAC and 58.8HZ in $\leq$ 10 seconds. Record time at which envelope was entered: __________ Sec (HZ) __________ Sec (VAC) Data from Recorder # ________	______/______
6.12 .4.3	At step, 6.12.2.20 and 21, GEA output breaker closed and load breakers were loaded per the sequencer in the specified times.	______/______
6.12 .4.4	At step, 6.12.2.20 and 21, GEA2 output breaker closed and load breakers were loaded per the sequencer in the specified times.	______/______
6.12 .4.5	At step, 6.12.2.23 GEA and GEA2 operated for 5 minutes while loaded with sequenced loads and the voltage and frequency were within the specified limits.	______/______
6.12 .4.6	At step, 6.12.2.30.3 upon tripping of a simulated largest load (HPI Pump P-238A and DHR Pump P261A), GEA speed did not exceed 1005 rpm.	______/______
6.12 .4.7	At step, 6.12.2.38 GEA was synchronized to offsite power with sequenced loads operating.	______/______
6.12 .4.8	At step, 6.12.2.35.1 upon tripping of a simulated largest load (AFW Pump P-319), GEA2 speed did not exceed 501' rpm.	______/______
6.12 .4.9	At step, 6.12.2.39 GEA2 was synchronized to offsite power with sequenced loads operating.	______/______
6.12 .4.10	At steps 6.12.2.14.3 and 6.12.2.23.3 DG GEA loads do not exceed 2750KW.	______/______
6.12 .4.11	At steps 6.12.2.14.6 and 6.12.2.23.6 DG GEA2 loads do not exceed 3300KW.	______/______
6.12 .4.12	During steps 6.12.2.9.10, and .11, and 6.12.2.20.5 and .6, the absence of voltage and current on busses 3B, 3B2, 4B, and 4B2.	______/______

PROCEDURE (Continued) Initials/ Date

6.12 .4.13 At no time during the loading sequence did GEA or GEA2 frequency and voltage decrease to less than 95% (57Hz) of nominal (60Hz) and 75% (3120V) of nominal (4160V) respectively. ______/______

6.12 .4.14 GEA frequency and voltage was restored to within ±2% (58.8-61.2Hz) of nominal (60Hz) and ±10% (3744-4576V) of nominal (4160V), within 40% of each load sequence time interval. ______/______

6.12 .4.15 GEA2 frequency and voltage was restored to within ±2% (58.8-61.2Hz) of nominal (60Hz) and ±10% (3744-4576V) of nominal (4160V), within 60% of each load sequence time interval. ______/______

PROCEDURE (Continued)

6.13 Subsection Deleted

PROCEDURE (Continued) Initials/ Date

6.14 Train "B" Independence Verification SFAS/LOOP

6.14 .1 Prerequisites

NOTE: During this test section, the following pumps will start automatically and run per the flowpaths described below:

HPI Pump P-238B - Minimum flow through the seal return line, E-240 A and B, through Make-Up Tank V-235, and back to pump suction.

DHR Pump P-261B - Minimum flow through DH Removal Cooler E-260B, through the minimum flow line and back to pump suction.

RBS Pump P-291B - Approximately 1500 gpm through CBS-046 and CBS-047 (open 3 turns), to BWST. Suction from BWST, through SFV-25004 to pump suction.

AFW Pump P-318 - Minimum flow suction from CST. Discharge through minimum flow line to the condenser. This pump will be manually started and loaded.

6.14 .1.1 A preliminary briefing has been conducted with the Shift Supervisor and prerequisite lineups can commence. Formal briefing to occur later. ________/______

6.14 .1.2 Run the data acquisition program "INIT" on the A and B computers and verify all channels are functioning properly. ________/______

NOTE: The pretest lineup for Sections 6.10 and 6.14 are identical.

6.14 .1.3 Have operations complete the initial pretest lineup on Enclosure 9.20. This step can be marked N/A if Section 6.10 immediately preceded this section and the restoration section for 6.10 was NOT performed. ________/______

6.14 .1.4 Verify the System Dispatcher has been notified 24 hours in advance to inform him of the impending action to de-energize Startup Transformer #1 and #2. ________/______

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PROCEDURE (Continued)

		Initials/ Date
6.14 .1.4.1	Inform the System Dispatcher that OCBs 200 and 210 will be opened under loaded conditions at Step 6.14.2.19.	____/____
6.14 .1.5	Makeup and Purification System is aligned IAW A.15 Steps 4.2.1 through 4.2.13, except as modified by Enclosure 9.6.	____/____
6.14 .1.5.1	At HIRC, place the Bailey Hand/Auto Station for the following valves in HAND, and verify the valves are CLOSED:	
6.14 .1.5.1.1	LV-21503 Pressurizer Level	____/____
6.14 .1.5.1.2	FV-23606 RC Pump Seal Injection Flow	____/____
6.14 .1.5.3	Rack in HPI Pump P-238B breaker 52-4B07.	____/____
6.14 .1.6	Train "B" Nuclear Raw Water System is in SFAS STANDBY IAW A.25, Section 4.6.	____/____
6.14 .1.7	Train "B" Nuclear Service Cooling Water is in SFAS STANDBY IAW A.24, Section 4.5.	____/____
6.14 .1.8	Reactor Building Emergency Cooling units A-500 B/D and Reactor Building Emergency Upper Dome air circulators A-532 C/D are available for automatic operation IAW A.14A, Sections 4.1 and 4.2.	____/____
6.14 .1.9	CR/TSC Essential Condensing Unit U-545B and its associated support equipment are lined up in STANDBY IAW A.14C, Section 4.2.2.	____/____
6.14 .1.10	NSEB Essential Condensing Unit U-503B and its associated support equipment are lined up in STANDBY IAW A.14D, Section 4.2.2.	____/____
6.14 .1.11	Verify GEB is in STANDBY IAW operating procedure A.31, Section 4.1.	____/____
6.14 .1.12	Verify GEB2 is in STANDBY IAW operating procedure A.31B, Section 4.0.	____/____

Initials/ Date

6.14 .1.13	Verify Train "B" Nuclear Service busses 4B and 4B2, and their associated 480V Load Centers and Motor Control Centers are energized IAW operating procedures A.58, Sections 4.5 and 4.7 and A.59, Sections 4.1, 4,2, and 4.4, except as modified by Enclosure 9.20.	______/______
6.14 .1.13.1	Rack breaker 52-4B04 bus 4B Alt Supply to the TEST position and CLOSE it.	______/______
NOTE:	During this section of the test both DHR loops will be out of service and incore T.C.s are to be Trended. Temperature should not exceed 150°F.	
6.14 .1.14	Verify DHR System Lineup IAW A.8, Sections 4.7 and 4.8, except as modified by Enclosure 9.11. Do not start pumps.	______/______
6.14 .1.15	Place or verify in service the SFAS analog and digital system, IAW A.70, Sections 4.1 and 4.2	______/______
6.14 .1.16	Building Spray System B is in STANDBY condition IAW A.7, Step 4.2.5 to 4.2.6.4 except as modified by Enclosure 9.8.	______/______
6.14 .1.17	The AFW and EFIC systems are in STANDBY condition IAW A.51, Sections 4.2 and 4.3 except as modified by Enclosure 9.9.	______/______
6.14 .1.18	A pretest briefing using the Test Briefing Checklist has been held with all test participants and properly documented per AP.82. Briefing to include Section 6.15 and/or 6.10 if they are to follow immediately.	______/______

NOTE: Enclosure 9.21 Final Pretest Lineup will de-energize busses 3A, 4A, 3A2, and 4A2. These busses will remain de-energized for an extended period of time. The following panels will be powered solely from their respective batteries, therefore the battery voltages will be monitored:

Panel	Battery
120VAC SIGA-1	"GA"
120VAC SIJ	"GA"
125VDC SOA	"A"
125VDC SOC	"C"
125VDC SOA2	"A2"
120VAC S1A	"A2"
120VAC S1A2-1	"A2"
125VDC SOC2	"C2"
120VAC S1C	"C2"
120VAC S1C2-1	"C2"

CAUTION: IF BATTERY VOLTAGE SHOULD DROP BELOW 115VDC, THE SHIFT SUPERVISOR AND TEST DIRECTOR SHALL BE NOTIFIED IMMEDIATELY.

6.14 .1.19 Verify operations has assigned an operator to monitor batteries "GA", "A", "A2", "C", and "C2" voltages during the performance of this test. ________/______

6.14 .1.20 Have operations complete the Final Pretest Lineup on Enclosure 9.21. This step can be marked N/A if Section 6.10 immediately preceded this section and the restoration section for Section 6.10 was NOT performed. ________/______

6.14 .1.21 Verify continuous communications has been established between the Control Room and applicable locations on Enclosure 9.15, per directions of the Shift Supervisor. ________/______

6.14 .2 Train "B" SFAS/LOOP (BKRs connected)

6.14 .2.1 Verify recorders B-1, B-2, B2-1, and B2-2 are initialized and annotated. ________/______

PROCEDURE (Continued) Initials/ Date

6.14 .2.2		Verify computers "A" and "B" software loaded and ready to start.	______/______
6.14 .2.3		Inform plant personnel of the impending SFAS/LOOP actuation to train "B" over the plant (PA) system.	______/______
6.14 .2.4		One to two minutes prior to SFAS/LOOP actuation countdown per Step 6.14.2.5, START the GEB2 turbocharger bearing prelubrication by opening EGS-838.	______/______
	<u>NOTE</u>:	The following steps will cause buses 4B and 4B2 to become momentarily de-energized and it will cause the diesel generators GEB and GEB2 to start.	
	<u>CAUTION</u>:	THE BRUCE-GM DIESEL GENERATOR GEB SHALL NOT BE RESTARTED IF THE UNIT HAS BEEN SHUTDOWN FOR MORE THAN 15 MINUTES AFTER A LOADED OPERATION. DUE TO LUBRICATION RESTRICTIONS THE ENGINE CANNOT BE ~~RESTARTED UNTIL 3 HOURS HAVE ELAPSED~~.	
6.14 .2.5		Initiate a countdown from 10 to ZERO over the plant PA system.	______/______
6.14 .2.5.1		At the count of 5, OPEN 52-3B05 (Bus 3B Supply BKR)	______/______
6.14 .2.6		At the count of 3 start the Linearcorders B-1, B-2, B2-1 and B2-2 and the data acquisition computers.	______/______
6.14 .2.7		At the count of ZERO, at panel H1RC, initiate an SFAS actuation by depressing the SFAS CHANNEL pushbuttons 1B, 2B, 3B and 4B.	______/______
6.14 .2.8		After the SFAS actuation, close GEB2 turbocharger prelube oil supply valve EGS-838.	______/______
6.14 .2.8.1		At H4SDBO, visually verify CO2 interlock relays CO2BX and CO2BY are energized.	______/______
6.14 .2.8.2		Verify 52-4B04 Bus 4B STBY Supply Breaker did not trip.	______/______

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PROCEDURE (Continued) Initials/ Date

6.14 .2.9	Verify the following after the SFAS actuation from the data acquisition computer:	
6.14 .2.9.1	GEB STARTS, accelerates to 900 RPM ≤10 sec.	______/______
6.14 .2.9.2	GEB Voltage reaches 4160 ±416 VAC ≤10 sec.	______/______
6.14 .2.9.3	GEB frequency reaches 60 ±1.2 HZ ≤10 sec.	______/______
6.14 .2.9.4	52-4B11 GEB output breaker DOES NOT close.	______/______
6.14 .2.9.5	Diesel Generator GEB2 STARTS, accelerates to 450 RPM ≤10 sec.	______/______
6.14 .2.9.6	GEB2 voltage reaches 4160 ± 416 VAC ≤10 sec.	______/______
6.14 .2.9.7	GEB2 frequency reaches 60 ±1.2 HZ ≤10 sec.	______/______
6.14 .2.9.8	52-4B202 GEB2 output breaker DOES NOT close.	______/______
6.14 .2.9.9	~~Step Deleted~~	
6.14 .2.9.10	The absence of voltage and current on Buses 3A and 4A.	______/______
6.14 .2.9.11	The absence of voltage and current on Buses 3A2 and 4A2.	______/______
6.14 .2.9.12	Verify 52-3B05 Bus 3B Supply Breaker CLOSED.	______/______
6.14 .2.10	Verify the following loads, from the data acquisition computer, DID NOT TRIP:	
6.14 .2.10.1	STEP DELETED	______/______
6.14 .2.10.2	52-4B01 Bus 4B NORMAL SUPPLY.	______/______
6.14 .2.10.3	52-4B05 4160 VAC feeder breaker to XFMR X43B2.	______/______
6.14 .2.10.4	52-3B202 480 VAC feeder breaker to bus 3B2.	______/______
6.14 .2.10.5	52-4B203 normal supply to bus 4B2.	______/______
6.14 .2.10.6	52-4B204 4160 VAC feeder breaker to XFMR X43B2A.	______/______

PROCEDURE (Continued)   Initials/ Date

NOTE: The SFAS signal will cause breakers to trip prior to resequencing. This function has already been tested and will not be reverified in this section.

6.14 .2.11 Verify the sequencing of loads, from the data acquisition computer, to their respective buses as follows:

Step	Load	Required	Actual	Initials/ Date
6.14 .2.11.1	52-4B09 DECAY HEAT REMOVAL PUMP P-261B	0	______ SEC	________/_______
6.14 .2.11.2	52-4B07 HP INJECTION PUMP P-238B	2.85-3.15	______ SEC	________/_______
6.14 .2.11.3	52-3B10 RB EMERG COOLING UNIT A-500B	15.2-16.8	______ SEC	________/_______
6.14 .2.11.4	52-3B14 RB EMERG COOLING UNIT A-500D	15.2-16.8	______ SEC	________/_______
6.14 .2.11.5	52-3B18 NUCLEAR SERVICE CLG WTR PP P-482B	15.2-16.8	______ SEC	________/_______
6.14 .2.11.6	52-3B215 MCC S2B4	23.4-28.6	______ SEC	________/_______
6.14 .2.11.7	52-4B06 NS RAW WATER PUMP P-472B	24.7-27.3	______ SEC	________/_______
6.14 .2.11.8	52-3B217 U-503B	27.9-34.1	______ SEC	________/_______
6.14 .2.11.9	52-3B17 DIESEL GEN RM VENT SUP FAN A-544D	38.95-43.05	______ SEC	________/_______
6.14 .2.11.10	52-3B06 DIESEL GEN RM VENT EXH FAN A-544C	38.95-43.05	______ SEC	________/_______
6.14 .2.11.11	52-3B210 U-545B	45.9-56.1	______ SEC	________/_______
6.14 .2.11.12	52-3B09 RBS Pump P-291B	285-315	______ SEC	________/_______

PROCEDURE (Continued) Initials/ Date

6.14 .2.12	Verify from Control Room indication that the following equipment is operating:	
6.14 .2.12.1	52-2B104 RB UPPER DOME CIRC FAN, A-532C.	______/______
6.14 .2.12.2	52-2B105 RB UPPER DOME CIRC FAN, A-532D.	______/______
6.14 .2.13	Verify that the following breakers CANNOT be opened from the Control Room:	
6.14 .2.13.1	52-4B04, Bus 4B Stby Supply	______/______
6.14 .2.13.2	52-4B01, Bus 4B Norm Supply	______/______
6.14 .2.13.3	52-4B05, SS XFMR X43B1	______/______
6.14 .2.13.4	52-3B05, Bus 3B Supply Breaker	______/______
6.14 .2.14	Record the following information from the recorders after at least 5 minutes from SFAS actuation:	
	GEB Recorder #________	
6.14 .2.14.1	Voltage ________ VAC (3744-4576)	______/______
6.14 .2.14.2	Frequency ________ HZ (58.8-61.2)	______/______
6.14 .2.14.3	Kilowatts ________ KW (≤2750KW)	______/______
	GEB2 Recorder #________	
6.14 .2.14.4	Voltage ________ VAC (3744-4576)	______/______
6.14 .2.14.5	Frequency ________ HZ (58.8-61.2)	______/______
6.14 .2.14.6	Kilowatts ________ KW (≤3300KW)	______/______
6.14 .2.15	Contact the System Dispatcher to receive permission to OPEN OCBs 200 and 210.	______/______
NOTE:	The following steps will cause 4B and 4B2 and their associated 480V Load Centers and Motor Control Centers to be momentarily de-energized.	
6.14 .2.16	Verify computers "A" and "B" software loaded and ready to Start	______/______
6.14 .2.17	Initiate a countdown from 10 to ZERO over the plant PA system.	______/______

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PROCEDURE (Continued) Initials/ Date

6.14 .2.18 At the count of 3, start recorders B-1, B-2, B2-1, and B2-2 and the data acquisition computers. ________/______

6.14 .2.19 At the count of ZERO, at panel H2ES, OPEN OCBs 200 and 210. ________/______

6.14 .2.19.1 After the LOOP, verify 52-4B04 (Bus 4B STANDBY SUPPLY) OPEN. ________/______

6.14 .2.20 Verify the following from the data acquisition equipment:

6.14 .2.20.1 52-4B01 4B NORM SPLY BKR OPENED. ________/______

6.14 .2.20.2 52-4B203 STARTUP XFMR NO.2 OPENED. ________/______

6.14 .2.20.3 52-4B11 GEB output breaker CLOSED. ________/______

6.14 .2.20.4 52-4B202 GEB2 output breaker CLOSED. ________/______

6.14 .2.20.5 The absence of voltage and current on buses 3A and 4A. ________/______

6.14 .2.20.6 The absence of voltage and current on Buses 3A2 and 4A2. ________/______

6.14 .2.21 Verify the sequencing of loads to their respective buses as follows, from the data acquisition equipment:

Step	Load	Required	Actual	Initials/ Date
6.14 .2.21.1	52-3B202 480 VAC FDR BKR BUS 3B2	4.5-5.5	____ SEC	________/______
6.14 .2.21.2	52-4B09 DECAY HEAT REMOVAL PUMP P-261B	4.75-5.25	____ SEC	________/______
6.14 .2.21.3	52-4B05 4160V FEEDER TO BUS 3B	4.75-5.25	____ SEC	________/______
6.14 .2.21.4	52-4B07 HP INJECTION PUMP P-238B	7.6-8.4	____ SEC	________/______
6.14 .2.21.5	52-3B10 RB EMERG AC A-500B	14.25-15.75	____ SEC	________/______
6.14 .2.21.6	52-3B18 NSCW PUMP P482B	14.25-15.75	____ SEC	________/______

PROCEDURE (Continued)

		Required	Actual	Initials/ Date
6.14 .2.21.7	52-3B14 RB EM. CLG UNIT A-500D	14.25-15.75	_____ SEC	______/______
6.14 .2.21.8	52-3B215 MCC 2B4	22.5-27.5	_____ SEC	______/______
6.14 .2.21.9	52-3B09 RBS PUMP P-291B	23.75-26.25	_____ SEC	______/______
6.14 .2.21.10	52-4B06 NRW PUMP P-472B	23.75-26.25	_____ SEC	______/______
6.14 .2.21.11	52-3B217 U-503B	27.0-33.0	_____ SEC	______/______
6.14 .2.21.12	52-3B17 DIESEL GEN RM VENT SUP FAN A-544D	38.0-42.0	_____ SEC	______/______
6.14 .2.21.13	52-3B06 DIESEL GEN RM VENT EXH FAN A-544C	38.0-42.0	_____ SEC	______/______
6.14 .2.21.14	52-3B210 U-545B	45.0-55.0	_____ SEC	______/______

6.14 .2.22 Verify from Control Room indication that the following equipment is operating:

6.14 .2.22.1 52-2B104 RB UPPER DOME CIRC FAN, A-532C ______/______

6.14 .2.22.2 52-2B105 RB UPPER DOME CIRC FAN, A-532D ______/______

6.14 .2.23 Record the following information from the recorders after at least 5 minutes from LOOP initiation:

	GEB		Recorder # ______	
6.14 .2.23.1	Voltage	__________	VAC (3744-4576)	______/______
6.14 .2.23.2	Frequency	__________	HZ (58.8-61.2)	______/______
6.14 .2.23.3	Kilowatts	__________	KW (≤2750KW)	______/______
	GEB2		Recorder # ______	
6.14 .2.23.4	Voltage	__________	VAC (3744-4576)	______/______
6.14 .2.23.5	Frequency	__________	HZ (58.8-61.2)	______/______
6.14 .2.23.6	Kilowatts	__________	KW (≤3300KW)	______/______

PROCEDURE (Continued) Initials/ Date

6.14 .2.24	Depress the SFAS CHANNEL RESET pushbuttons 1B, 2B, 3B, and 4B at Control Room panel H1RC.	______/______
6.14 .2.25	At Control Room panel H2SFB, depress the NS BUS B2 & B UNLOADING RESET B2/B pushbutton to RESET the load sequencing circuit.	______/______
6.14 .2.26	At local panel H2DEB2, depress the LOCA Reset pushbutton and verify the Shutdown System Active Red light energizes.	______/______
6.14 .2.27	Verify computer "B" software loaded and ready to start.	______/______
6.14 .2.28	Initiate a countdown from 10 to zero over the Plant PA System.	______/______
6.14 .2.29	At the count of 3, start recorders B-1 and B-2 and the data acquisition computer.	______/______
NOTE:	The following step will simulate the largest single load rejection for the GEB diesel generator.	
6.14 .2.30	At the count of ZERO, at Control Room panel H2SFB, OPEN the following circuit breakers simultaneously:	
6.14 .2.30.1	52-4B07 (HP INJECTION PUMP P-238B)	______/______
6.14 .2.30.2	52-4B09 (DECAY HEAT REMOVAL PUMP P-261B)	______/______
6.14 .2.30.3	Verify from the data acquisition equipment that diesel engine GEB does NOT trip on overspeed.	______/______
	Record speed peak: ________ rpm ($\leq$1005 rpm)	
6.14 .2.30.4	Restart HPI Pump P-238B	______/______
6.14 .2.30.5	Restart DHR Pump P-261B	______/______
6.14 .2.31	Verify computer "B" software loaded and ready to start.	______/______

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	NOTE:	The following steps will reset EFIC logic and permit AFW pump P-318 to be started.	
6.14 .2.32		At EFIC panel H1SSE depress AFW RESET BLPB on EFIC CHANNEL "B" INITIATE/TEST MATRIX.	____/____
6.14 .2.32.1		At EFIC panel H1SSE depress EFIC "B" CONTROL INITIATED BLPB.	____/____
	NOTE:	Steps 6.14.2.32.2 thru 6.14.2.35 must be completed within 2 minutes to allow AFW Pump P-318 restart following coastdown.	
6.14 .2.32.2		START AFW Pump P-318.	____/____
6.14 .2.32.3		At EFIC panel H1SSE, using the BLPB, JOG OPEN FV-31855 until desired flow is achieved (510-550 gpm).	____/____
6.14 .2.33		Initiate a countdown from 10 to zero over the Plant PA System	____/____
6.14 .2.34		At the count of 3, start recorder B2-1 and B2-2 and the data acquisition computer.	____/____
	NOTE:	The following step will simulate the largest single load rejection for the GEB2 diesel generator.	
6.14 .2.35		At the count of 0, at EFIC panel H1SSE, STOP AFW Pump P-318.	____/____
6.14 .2.35.1		Verify from the data acquisition equipment that diesel engine GEB2 does NOT trip on overspeed.	____/____
		Record speed peak: _______ rpm ($\leq$501 rpm)	
6.14 .2.35.2		Close flow test valve FV-31855.	____/____
6.14 .2.35.3		Restart AFW Pump P-318.	____/____
6.14 .2.36		Contact the System Dispatcher to receive permission to close OCBs 200 and 210.	____/____
6.14 .2.37		At panel H2ES, CLOSE OCBs 200 and 210.	____/____

Initials/ Date

CAUTION: ENSURE THE NORMAL-DROOP SWITCH AT H2DGB IS IN THE DROOP POSITION PRIOR TO SYNCHRONIZING TO PREVENT DAMAGE TO THE DIESEL GENERATOR.

CAUTION: IF OFFSITE POWER IS LOST WHEN A DIESEL GENERATOR IS SYNCHRONIZED TO THE GRID, IMMEDIATELY OPEN THE NORMAL SUPPLY TO THE ASSOCIATED NUCLEAR SERVICE BUS.

6.14 .2.38	Synchronize and shutdown GEB IAW Operating Procedure A.31, Section 6.2.	______/______
6.14 .2.38.1	From the Control Room, shutdown the following equipment as directed by the Shift Supervisor:	
6.14 .2.38.1.1	52-3B09 (RBS PUMP P-291B)	______/______
6.14 .2.38.1.2	52-3B10 (RB EMERG AC A-500B)	______/______
6.14 .2.38.1.3	52-3B14 (RB EMERG AC A-500D)	______/______
6.14 .2.38.1.4	52-4B07 HP INJECTION PUMP P-238B	______/______
6.14 .2.38.1.5	52-4B09 DECAY HEAT REMOVAL PUMP P-261B	______/______
6.14 .2.38.1.6	52-3B18 (NSCW PUMP P482B)	______/______
6.14 .2.38.1.7	52-2B104 (RB UPPER DOME CIRC FAN, A-532C)	______/______
6.14 .2.38.1.8	52-2B105 (RB UPPER DOME CIRC FAN, A-532D)	______/______
6.14 .2.38.1.9	Review SFAS Panels and position valves as directed by the Shift Supervisor.	______/______
6.14 .2.39	Synchronize and shutdown GEB2 IAW Operating Procedure A.31B, Sections 5.5 through 5.7.	______/______
6.14 .2.39.1	From the Control Room shutdown AFW Pump P-318 as directed by the Shift Supervisor.	______/______
6.14 .2.40	Run the data acquisition program "INIT" on the "A" and "B" computers and verify all channels are functioning properly.	______/______
6.14 .2.41	IF Section 6.10 will be tested immediately and the Shift Supervisor concurs; N/A Section 6.14.3 and proceed to Section 6.10.1 otherwise N/A this step and continue.	______/______

PROCEDURE (Continued) Initials/ Date

NOTE: DHR System B may be placed in service IAW Operating Procedure A.8, Section 4.8 (valves CBS-045, CBS-046 and CBS-047 MUST BE CLOSED FIRST).

6.14 .3 Restoration

6.14 .3.1 Complete enclosure 9.22. ______/______

6.14 .3.2 Notify the Shift Supervisor that the Train "B" SFAS/LOOP test is complete. ______/______

Q.C. INSPECT → 6.14 .4 Acceptance Criteria Review

QC to review after data taken all of section 6.14.4 MRW 1/20/88

Review the data recorded during section 6.14.2 and verify the following:

6.14 .4.1 At step 6.14.2.9.2 and .3, GEB reached 3744 VAC and 58.8 HZ in $\leq$ 10 seconds. Record time at which envelope was entered:
____ . ______ Sec (HZ)
____ . ______ Sec (VAC)
Data from Recorder #________ ______/______

6.14 .4.2 At step, 6.14.2.9.6 and .7, GEB2 reached 3744 VAC and 58.8 HZ in $\leq$ 10 seconds. Record time at which envelope was entered:
________ Sec (HZ)
________ Sec (VAC)
Data from Recorder #________ ______/______

6.14 .4.3 At step, 6.14.2.20 and 6.14.2.21, GEB output breaker closed and load breakers were loaded per the sequencer in the specified times. ______/______

6.14 .4.4 At step, 6.14.2.20 and 6.14.2.21 GEB2 output breaker closed and load breakers were loaded per the sequencer in the specified times. ______/______

6.14 .4.5 At step, 6.14.2.23 GEB and GEB2 operated for 5 minutes while loaded with sequenced loads and the voltage and frequency were within the specified limits. ______/______

6.14 .4.6 At step, 6.14.2.30.3 upon tripping of a simulated largest load (HPI Pump P-238B and DHR Pump P261B, GEB speed did not exceed 1005 rpm. ______/______

PROCEDURE (Continued) Initials/ Date

6.14 .4.7	At step, 6.14.2.38 GEB was synchronized to offsite power with sequenced loads operating.	______/______
6.14 .4.8	At step, 6.14.2.35.1 upon tripping of a simulated largest load (AFW Pump P-318), GEB2 speed did not exceed 501 rpm.	______/______
6.14 .4.9	At step, 6.14.2.39 GEB2 was synchronized to offsite power with sequenced loads operating.	______/______
6.14 .4.10	At steps 6.14.2.14.3 and 6.14.2.23.3 DG GEB loads do not exceed 2750 KW.	______/______
6.14 .4.11	At steps 6.14.2.14.6 and 6.14.2.23.6 DG GEB2 loads do not exceed 3300 KW.	______/______
6.14 .4.12	During steps 6.14.2.9.10, .11, and 6.14.2.20.5, and .6 the absence of voltage and current on buses 3A, 3A2, 4A and 4A2.	______/______
6.14 .4.13	At no time during the loading sequence did GEB or GEB2 frequency and voltage decrease to less than 95% (57Hz) of nominal (60Hz) and 75% (3120V) of nominal (4160V) respectively.	______/______
6.14 .4.14	GEB frequency and voltage was restored to within ±2% (58.8-61.2Hz) of nominal (60Hz) and ±10% (3744-4576V) of nominal (4160V), within 40% of each load sequence time interval.	______/______
6.14 .4.15	GEB2 frequency and voltage was restored to within ±2% (58.8-61.2Hz) of nominal (60Hz) and ±10% (3744-4576V) of nominal (4160V), within 60% of each load sequence time interval.	______/______

PROCEDURE (Continued)

6.15 Subsection Deleted

6.16 Diesel Generator "A" Hot Restart - LOOP-SFAS

NOTE: During this test section, the following pumps will start automatically and run per flowpaths described below:

HPI Pump P-238A - Minimum flow thru the seal return line, E-240A and B, thru Make-up Tank V-235, and back to pump suction.

DHR Pump P-261A - Minimum flow thru DH Removal Cooler E-260A, thru the minimum flow line and back to pump suction.

RBS Pump P-291A - Approximately 1500 gpm thru CBS-045 and CBS-047 (open 3 turns), to BWST. Suction from BWST, thru SFV-25003 to pump suction.

6.16 .1 Prerequisites

6.16 .1.1 A ~~preliminary briefing~~ has ~~been conducted~~ with the Shift Supervisor and prerequisite lineups can commence. (Formal briefing to occur later.) ______/______

6.16 .1.2 Run the data acquisition program "INIT" on the A computer and verify all channels are functioning properly. ______/______

6.16 .1.3 Train "A" Nuclear Raw Water System is in SFAS STANDBY IAW A.25, Section 4.5. ______/______

6.16 .1.4 Train "A" Nuclear Service Cooling Water is in SFAS STANDBY IAW A.24, Section 4.2. ______/______

6.16 .1.5 Reactor Building Emergency Cooling Units A-500A/C and Reactor Building Emergency Upper Dome air circulators A-532A/B are available for automatic operation IAW A.14A, Section 4.1 and 4.2. ______/______

NOTE:: During this section of the test both DHR loops will be out of service and incore T.C.s are to be trended. The temperature should not exceed 150°F.

6.16 .1.6 Lineup Makeup and Purification System IAW A.15 Steps 4.2.1 through 4.2.9, except as modified by Enclosure 9.6.

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PROCEDURE (Continued)

		Initials/ Date
6.16 .1.6.1	HPI Pump P-238A breaker 52-4A04 is racked in	______/______
6.16 .1.7	At H1RC, place the Bailey Hand/Auto Station for the following valves in HAND, and verify the valves are CLOSED:	
6.16 .1.7.1	LV-21503 Pressurizer Level	______/______
6.16 .1.7.2	FV-23606 RC Pump Seal Injection Flow.	______/______
6.16 .1.8	Verify DHR System Lineup IAW A.8 Section 4.7 and 4.8 except as modified by Enclosure 9.11. Do not start pumps.	______/______
6.16 .1.9	Place or verify in service the SFAS analog and digital system IAW A.70, Sections 4.1 and 4.2.	______/______
6.16 .1.10	Reactor Building Spray Loop A is in STANDBY condition IAW A.7, Section 4.1, Steps 4.1.5 through 4.1.6.4, except as modified by Enclosure 9.8.	______/______
6.16 .1.11	The AFW and EFIC systems are in STANDBY conditions IAW A.51, Sections 4.2 and 4.3 except as modified by Enclosure 9.9.	______/______
6.16 .1.12	A pretest briefing using the Test Briefing Checklist has been held with all test participants and properly documented per AP.82.	______/______
6.16 .1.13	Verify continuous communications have been established between the Control Room and applicable locations on Enclosure 9.15, per directions of the Shift Supervisor.	______/______
6.16 .1.14	Verify Subtrain "A" NS Busses 3A and 4A and their associated Motor Control Centers are energized IAW Operating Procedure A.58 Section 4.1 and A.59, Section 4.1 and 4.2.	______/______

PROCEDURE (Continued) Initials/ Date

CAUTION: THE BRUCE-GM DIESEL GENERATOR GEA SHALL NOT BE RESTARTED IF THE UNIT HAS BEEN SHUTDOWN FOR MORE THAN 15 MINUTES AFTER A LOADED OPERATION. DUE TO LUBRICATION RESTRICTIONS THE ENGINE CANNOT BE RESTARTED UNTIL 3 HOURS HAVE ELAPSED.

6.16 .1.15 Start and synchronize Diesel Generator GEA IAW Operating Procedure A.31, Section 4.2 establish load at 2650-2750 KW.

____
Time Loaded ________/______

6.16 .2 Diesel Generator "A" Hot Restart LOOP-SFAS

NOTE: The following steps will cause bus 4A to become momentarily de-energized and it will cause the diesel generator GEA to start.

6.16 .2.1 Inform plant personnel of the impending LOOP-SFAS actuation to SubTrain "A" over the plant public address (PA) system. ________/______

6.16 .2.2 Verify recorders A-1 and A-2 are initialized and annotated. ________/______

6.16 .2.3 Verify computer "A" software loaded and ready to start. ________/______

NOTE: The step listed below will isolate the bus 4A2 sequencer so that when the LOOP-SFAS is initiated, only the 4A bus will see it. The start of GEA2 is blocked. The undervoltage function of the 4A2 sequencer will NOT function.

6.16 .2.4 At 125VDC panel SOA2, open breaker 72-A207 4.16 KV SWGR 4A2 SEQ and UV Relays. ________/______

6.16 .2.5.1 Verify the diesel generator GEA has been operated for at least one hour at 2650-2750 KW. ________/______

6.16 .2.5.2 Verify diesel generator GEA Lube Oil and Jacket Water temperatures have stabilized. (NOTE: Stable shall be defined as 2 readings taken 10 minutes apart that differ by no more than 2°F. A Test Log Entry shall be made to record the temperatures). ________/______

6.16 .2.5.3 Shutdown Diesel Generator GEA IAW Operating Procedure A.31, Section 6.1. (NOTE: Shutdown time shall be defined as when the diesel generator shaft stops following the normal cooldown cycle.) ________/______

________________ Clock Time Shutdown ________/______

NOTE: Step 6.16.2.6 MUST BE STARTED within 5 minutes of shutting down GEA.

CAUTION: THE BRUCE-GM DIESEL GENERATORS GEA/GEB SHALL NOT BE RESTARTED IF THE UNIT HAS BEEN SHUTDOWN FOR MORE THAN 15 MINUTES AFTER A LOADED OPERATION. DUE TO LUBRICATION RESTRICTIONS THE ENGINE CANNOT BE RESTARTED UNTIL 3 HOURS HAVE ELAPSED.

6.16 .2.6 Initiate a countdown from 10 to ZERO over the plant PA system within 5 minutes of Diesel Generator GEA shutdown. ________/______

Clock Time ________

6.16 ·.7 At the count of 3, start the Linearcorders A-1 and A-2 and the data acquisition computer. ________/______

NOTE: To prevent an unloading sequence relay race that might possibly block the manual trip of the normal supply breakers, do not initiate the SFAS actuation until the TRIP BLPB at panel H2ES indicates that breaker 52-4A01 is OPEN.

6.16 .2.8 At the count of ZERO, OPEN the normal supply breaker to bus 4A (52-4A01) at panel H2ES, and at panel H1RC, initiate an SFAS actuation by depressing the SFAS CHANNEL pushbuttons 1A, 2A, 3A and 4A. ________/______

6.16 .2.9 Verify the following after the SFAS actuation, from the data acquisition equipment:

6.16 .2.9.1 Bus 4A de-energizes. ________/______

6.16 .2.9.2 52-4A01, NSS XFMR X74 OPEN. ________/______

6.16 .2.9.3 GEA STARTS, accelerates to 900 RPM ≤10 sec. ________/______

6.16 .2.9.4 GEA output breaker 52-4A08 CLOSES. ________/______

PROCEDURE (Continued) Initials/ Date

6.16 .2.9.5	GEA voltage reaches 4160 ±416 VAC ≤10 sec.			____/____
6.16 .2.9.6	GEA frequency reaches 60 ±1.2 HZ ≤10 sec.			____/____
6.16 .2.10	Verify the sequencing of loads to their respective busses from the data acquisition computer as follows:			

NOTE: Required times given are after BKR 52-4A08 closure.

NOTE: Breakers will shed automatically on undervoltage and/or SFAS signal. This has been tested previously and will not be reverified.

		REQUIRED	ACTUAL	
6.16 .2.10.1	52-4A09 4KV SUPPLY TO SS TRANS	4.75-5.25	____ SEC	____/____
6.16 .2.10.2	52-4A05 DECAY HEAT REMOVAL PUMP P-261A	4.75- 5.25	____ SEC	____/____
6.16 .2.10.3	52-4A04 HPI PUMP P-238A	7.60- 8.40	____ SEC	____/____
6.16 .2.10.4	52-3A10 RB EMERG COOLING UNIT A-500A	14.25-15.75	____ SEC	____/____
6.16 .2.10.5	52-3A14 RB EMERG COOLING UNIT A-500C	14.25-15.75	____ SEC	____/____
6.16 .2.10.6	52-3A18 NUCLEAR SERVICE CLG WTR PP P-482A	14.25-15.75	____ SEC	____/____
6.16 .2.10.7	52-4A07 NS RAW WATER P-472A	23.50-26.25	____ SEC	____/____
6.16 .2.10.8	52-3A13 DIESEL GEN RM VENT EXH FAN A-544A	38.00-42.00	____ SEC	____/____
6.16 .2.10.9	52-3A17 DIESEL GEN RM VENT SUP FAN A-544A	38.00-42.00	____ SEC	____/____
6.16 .2.10.10	52-3A09 REACTOR BLDG SPRAY PUMP P-291A	285.00-315.00	____ SEC	____/____

PROCEDURE (Continued) Initials/ Date

6.16 .2.11	Record the following information from the recorders after at least 5 minutes from LOOP-SFAS initiation:	
	GEA Recorder # ____________	
6.16 .2.11.1	Voltage _____ VAC (3744-4576)	_____/_____
6.16 .2.11.2	Frequency _____ HZ (58.8-61.2)	_____/_____
6.16 .2.11.3	Kilowatts ______ KW (≤ 2750 KW)	_____/_____
6.16 .2.12	Depress the SFAS CHANNEL RESET pushbuttons 1A, 2A, 3A, and 4A at Control Room panel H1RC.	_____/_____
6.16 .2.13	The following steps will reset the load sequencing circuit and EFIC logic:	
6.16 .2.13.1	At Control Room panel H2SFA, depress the NS Bus A2 and A UNLOADING RESET A2/A pushbutton.	_____/_____
6.16 .2.13.2	At EFIC panel H1SSE depress AFW RESET BLPB on EFIC CHANNEL "A" INITIATE/TEST MATRIX.	_____/_____
6.16 .2.13.3	At EFIC panel H1SSE depress EFIC "A" CONTROL INITIATED BLPB.	_____/_____
6.16 .2.14	From the Control Room, shutdown the following equipment as directed by the Shift Supervisor:	
6.16 .2.14.1	52-3A09 REACTOR BUILDING SPRAY PUMP P-291A	_____/_____
6.16 .2.14.2	52-3A10 RB EMERG COOLING UNIT A-500A	_____/_____
6.16 .2.14.3	52-3A14 RB EMERG COOLING UNIT A-500C	_____/_____
6.16 .2.14.4	52-4A04 HP INJECTION PUMP P-238A	_____/_____
6.16 .2.14.5	52-4A05 DECAY HEAT REMOVAL PUMP P-261A	_____/_____
6.16 .2.14.6	52-3A18 NUCLEAR SERVICE CLG WTR PP P-482A	_____/_____
6.16 .2.14.7	52-2A104 RB UPPER DOME CIRC FAN A-532A	_____/_____
6.16 .2.14.8	52-2A105 RB UPPER DOME CIRC FAN A-532B	_____/_____
6.16 .2.14.9	Review SFAS Panels and position valves as directed by the Shift Supervisor.	_____/_____

PROCEDURE (Continued) Initials/ Date

CAUTION: ENSURE THE NORMAL -DROOP SWITCH AT H2DGA IS IN THE DROOP POSITION PRIOR TO SYNCHRONIZING TO PREVENT DAMAGE TO THE DIESEL GENERATOR.

CAUTION: IF OFFSITE POWER IS LOST WHEN A DIESEL GENERATOR IS SYNCHRONIZED TO THE GRID, IMMEDIATELY OPEN THE NORMAL SUPPLY TO THE ASSOCIATED NUCLEAR SERVICE BUS.

6.16 .2.15 Synchronize and shutdown GEA IAW Operating Procedure A.31, Section 6.2. ______/______

6.16 .2.16 Run the data acquisition program "INIT" on the "A" computer and verify all channels are functioning properly. ______/______

6.16 .3 Restoration

6.16 .3.1 Restore the Bus 4A2 sequencer to service by closing the circuit breaker 72-A207 4.16 KV SWGR 4A2 SEQ AND V Relays. ______/______

6.16 .3.2 Restore the DHR system to normal IAW A.8 Section 4.7 (4.8) or as directed by the Shift Supervisor (Valves CBS-045, CBS-046, and CBS-047 MUST BE CLOSED first.) ______/______

6.16 .3.3 Restore the HPI Systems A&B to normal IAW A.15 Section 4.2, or as directed by the Shift Supervisor. ______/______

6.16 .3.4 Restore the RBS System IAW A.7 Section 4.1, or as directed by the Shift Supervisor. ______/______

6.16 .3.5 Restore the AFW and EFIC Systems IAW A.51, Sections 4.1 and 4.2 or as directed by the Shift Supervisor. ______/______

6.16 .3.6 Notify the Shift Supervisor that the SubTrain "A" LOOP-SFAS test is complete. ______/______

Q.C. INSPECT 6.16 .4 Acceptance Criteria Review

6.16 .4.1 Review the data recorded during Section 6.16 and verify the following:

QC to review after data taken all of section 6.16.4 MRW 1/20/88

PROCEDURE (Continued) Initials/ Date

6.16 .4.1.1	At Step 6.16.2.9.5 and 6.16.2.9.6, GEA reached 3744 VAC and 58.8 HZ in ≤10 seconds. Record time at which envelope was entered: _________ SEC (HZ) _________ SEC (VAC) Data from Recorder #_________	________/______
6.16 .4.1.2	At Step 6.16.2.9.4, verify GEA Output Breaker 52-4A08 closed.	________/______
6.16 .4.1.3	At Step 6.16.2.10, verify Bus 3A and 4A loads sequenced in the required times.	________/______
6.16 .4.1.4	At Step 6.16.2.11, GEA operated for 5 minutes with loads running, and voltage and frequency were within the limits specified.	________/______
6.16 .4.1.5	At Step 6.16.2.11.3, GEA load did not exceed 2750 KW.	________/______
6.16 .4.1.6	Step 6.16.2.6 was started within 5 minutes of step 6.16.2.5.3.	________/______

6.17 Diesel Generator "A2" Hot Restart

NOTE: During this test section, the following pump will start automatically and run per flowpath described below.

AFW Pump P-319 - Minimum flow suction from CST. Discharge thru minimum flow line to the condenser.

6.17 .1 Prerequisites

6.17 .1.1	A preliminary briefing has been conducted with the Shift Supervisor and prerequisite lineups can commence. Formal briefing to occur later.	______/______
6.17 .1.2	Run the data acquisition program "INIT" on the A computer and verify all channels are functioning properly.	______/______
6.17 .1.3	CR/TSC Essential Condensing Unit U-545A and its associated support equipment are lined up in STANDBY IAW A.14C, Section 4.2.1.	______/______
6.17 .1.4	NSEB Essential Condensing Unit U-503A and its associated support equipment are lined up in STANDBY IAW A.14D, Section 4.2.1.	______/______
6.17 .1.5	Place or verify in service the SFAS analog and digital system IAW A.70, Sections 4.1 and 4.2.	______/______
6.17 .1.6	The AFW and EFIC systems are in STANDBY conditions IAW A.51, Sections 4.2 and 4.3 except as modified by Enclosure 9.9.	______/______
6.17 .1.7	Verify SubTrain "A2" Nuclear Service Bus 4A2 and its associated 480V load center and motor control centers are energized IAW Operating Procedures A.58, Section 4.3, and A.59, Sections 4.1, 4.2, and 4.4.	______/______
6.17 .1.8	A pretest briefing using the Test Briefing Checklist has been held with all test participants and properly documented per AP.82.	______/______

PROCEDURE (Continued) Initials/ Date

6.17 .1.9 Verify continuous communications have been established between the Control Room and applicable locations on Enclosure 9.15, per directions of the Shift Supervisor. ________/________

6.17 .1.10 Start and synchronize Diesel Generator GEA2 IAW Operating Procedure A.31B, Sections 5.2 and 5.3. Establish load at 3200-3300 KW.

____
Time Loaded ________/________

6.17 .2 Diesel Generator "A2" Hot Restart LOOP-SFAS

NOTE: The following steps will cause bus 4A2 to become momentarily de-energized and it will cause the diesel generator GEA2 to start.

6.17 .2.1 Inform plant personnel of the impending LOOP-SFAS actuation to SubTrain "A2" over the plant public address (PA) system. ________/________

6.17 .2.2 Verify recorders A2-1 and A2-2 are initialized and annotated. ________/________

6.17 .2.3 Verify computer "A" software loaded and ready to start. ________/________

NOTE: The step listed below will isolate the bus 4A sequencer so that when the LOOP-SFAS is initiated, only the 4A2 bus will see it. The start of GEA is blocked. The under voltage function of the 4A sequencer will NOT function.

6.17 .2.4 At S4A00, open circuit breaker labeled "DC CONTROL POWER TO NS BUS UNLOADING". ________/________

6.17 .2.4.1 Open the following test switches to isolate the SFAS auto-start signal to the equipment:

	Equipment	Breaker	Relay	Test Sw.	Test Sw. Location	Initials/ Date
6.17 .2.4.1.1	M/U Pump P236	52-4A02	4AL1	TS-13	S4A00	________/________
6.17 .2.4.1.2	HPI Pump P238A	52-4A04	4AL1	TS-15	S4A00	________/________

PROCEDURE (Continued)

Initials/ Date

	Equipment	Breaker	Relay	Test Sw.	Test Sw. Location	Initials/ Date
6.17 .2.4.1.3	DHR Pump P261A	52-4A05	4AL1	TS-17	S4A00	_____/_____
6.17 .2.4.1.4	NSRW Pump P472A	52-4A07	4AL3	TS-19	S4A00	_____/_____
6.17 .2.4.1.5	RBS Pump P291A	52-3A09	4AL3	TS-17	S4A00	_____/_____
6.17 .2.4.1.6	RB Cooler A500A	52-3A10	4AL2	TS-13	S4A00	_____/_____
6.17 .2.4.1.7	DG Fan A544A	52-3A13	4AL4	TS-2	S4A00	_____/_____
6.17 .2.4.1.8	RB Cooler A500C	52-3A14	4AL2	TS-15	S4A00	_____/_____
6.17 .2.4.1.9	DG Fan A544B	52-3A17	4AL4	TS-15	S4A00	_____/_____
6.17 .2.4.1.10	NSCW Pump P482A	52-3A18	4AL2	TS-17	S4A00	_____/_____

6.17 .2.5 Verify the diesel generator GEA2 has been operated for at least one hour at 3200-3300 KW. _____/_____

6.17 .2.5.1 Verify diesel generator GEA2 Lube Oil and Jacket Water temperatures have stabilized. (Stable shall be defined as 2 readings taken 10 minutes apart differ by no more than 2°F. A Test Log Entry shall be made to record the temperature.) _____/_____

6.17 .2.5.2 Shutdown Diesel Generator GEA2 IAW Operating Procedure A.31B, Section 5.6 and 5.7. (Shutdown time shall be defined as when the diesel generator shaft stops following the normal cooldown cycle.) _____/_____

____
Clock Time Shutdown

6.17 .2.6 One to two minutes prior to SFAS actuation countdown per Step 6.17.2.7, START the GEA2 turbocharger bearing prelubrication by opening valve EGS-837. _____/_____

NOTE: Step 6.17.2.9 MUST BE STARTED within 5 minutes of shutting down GEA2.

6.17 .2.7 Initiate a countdown from 10 to ZERO over the plant PA system within 5 minutes of Diesel Generator GEA2 shutdown. _____/_____

Clock Time _________

PROCEDURE (Continued) Initials/ Date

6.17 .2.8 At the count of 3, start the Linearcorder A2-1 and A2-2 and the data acquisition computer. ______/______

NOTE: To prevent an unloading sequence relay race that might possibly block the manual trip of the normal supply breakers, do not initiate the SFAS actuation until the TRIP BLPB at panel H2EW indicates that breaker 52-4A207 is OPEN,.

6.17 .2.9 At the count of ZERO, OPEN the normal supply breaker to buss 4A2 (52-4A207) at panel H2EW, and at panel H1RC, initiate an SFAS actuation by depressing the SFAS CHANNEL pushbuttons 1A, 2A, 3A, and 4A. ______/______

6.17 .2.10 After the SFAS initiation, CLOSE GEA2 turbocharger prelube oil supply valve EGS-837. ______/______

6.17 .2.11 Verify the following a. .er the SFAS actuation, from the data acquisition equipment:

6.17 .2.11.1 Bus 4A2 de-energizes. ______/______

6.17 .2.11.2 52-4A207, NSS XFMR X74 OPEN. ______/______

6.17 .2.11.3 Diesel Generator GEA2 STARTS, accelerates to 450 RPM ≤10 sec. ______/______

6.17 .2.11.4 GEA2 output breaker 52-4A202 CLOSES. ______/______

6.17 .2.11.5 GEA2 voltage reaches 4160 ±416 VAC ≤10 sec. ______/______

6.17 .2.11.6 GEA2 frequency reaches 60 ±1.2 HZ ≤10 sec. ______/______

6.17 .2.12 Verify the sequencing of loads to their respective busses from the data acquisition computer as follows:

PROCEDURE (Continued) Initials/ Date

NOTE: Required times are after D.G. breaker closure.

NOTE: Breakers will shed automatically on undervoltage and/or SFAS signal. This has been tested previously and will not be reverified.

		REQUIRED	ACTUAL	
6.17 .2.12.1	52-3A202 LC S3A2	4.5-5.5	____ SEC	________/______
6.17 .2.12.2	52-3A215 MCC S2A4	22.50-27.50	____ SEC	________/______
6.17 .2.12.3	52-3A217 U-503A	27.00-33.00	____ SEC	________/______
6.17 .2.12.4	52-4A205 Aux Feedwater PP P-319	27.00-33.00	____ SEC	________/______
6.17 .2.12.5	52-3A210 U-545A	45.00-55.00	____ SEC	________/______

6.17 .2.13 Record the following information from the recorders after at least 5 minutes:

GEA2 Recorder #__________

6.17 .2.13.1 Voltage _____ VAC (3744-4576) ________/______

6.17 .2.13.2 Frequency _____ HZ (58.8-61.2) ________/______

6.17 .2.13.3 Kilowatts ______ KW (≤3300 KW) ________/______

6.17 .2.14 Depress the SFAS CHANNEL RESET pushbuttons 1A, 2A, 3A, and 4A at Control Room panel H1RC. ________/______

6.17 .2.15 The following steps will reset the load sequencing circuit and EFIC logic:

6.17 .2.15.1 At Control Room panel H2SFA, depress the NS Bus A2 and A UNLOADING RESET A2/A pushbutton. ________/______

6.17 .2.15.2 At EFIC panel H1SSE depress AFW RESET BLPB on EFIC CHANNEL "A" INITIATE/TEST MATRIX. ________/______

6.17 .2.15.3 At EFIC panel H1SSE depress EFIC "A" CONTROL INITIATED BLPB. ________/______

PROCEDURE (Continued) Initials/ Date

6.17 .2.16 From the Control Room shutdown the following equipment as directed by the Shift Supervisor:

6.17 .2.16.1 52-4A205 AUX FEEDWATER PP P-319 ________/______

6.17 .2.16.1.1 Review SFAS Panels and position valves as directed by the Shift Supervisor. ________/______

CAUTION: IF OFFSITE POWER IS LOST WHEN A DIESEL GENERATOR IS SYNCHRONIZED TO THE GRID, IMMEDIATELY OPEN THE NORMAL SUPPLY TO THE ASSOCIATED NUCLEAR SERVICE BUS.

CAUTION: ENSURE THE LOCA RESET PUSHBUTTON IS DEPRESSED PRIOR TO SYNCHRONIZING, SUCH THAT THE DIESEL GENERATOR WILL AUTOMATICALLY TRANSFER TO THE DROOP MODE OF OPERATION.

6.17.2.16.2 At local panel H2DEA2, depress the LOCA reset pushbutton and verify the Shutdown System Active red light energized. ________/______

6.17 .2.17 Synchronize and shutdown GEA2 IAW Operating Procedure A.31B, Sections 5.5, 5.6, and 5.7. ________/______

6.17 .2.18 Run the data acquisition program "INIT" on the "A" computer and verify all channels are functioning properly. ________/______

6.17 .3 Restoration

6.17 .3.1 Restore the Bus 4A sequencer to service by closing the circuit breaker labeled "DC CONTROL POWER TO NS BUS UNLOADING" in S4A00. ________/______

6.17 .3.2 Close the following test switches to restore the SFAS auto-start signal to the equipment:

	Equipment	Breaker	Relay	Test Sw.	Test Sw. Location	Initials/ Date
Q.C. H.P. 6.17 .3.2.1	M/U Pump P236	52-4A02	4AL1	TS-13	S4A00	________/______
Q.C. H.P. 6.17 .3.2.2	HPI Pump P238A	52-4A04	4AL1	TS-15	S4A00	________/______
Q.C. H.P. 6.17 .3.2.3	DHR Pump P261A	52-4A05	4AL1	TS-17	S4A00	________/______

Initials/ Date

	Equipment	Breaker	Relay	Test Sw.	Test Sw. Location	Initials/ Date
QC HP 6.17 .3.2.4	NSRW Pump P472A	52-4A07	4AL3	TS-19	S4A00	____/____
6.17 .3.2.5	RBS Pump P291A	52-3A09	4AL3	TS-17	S4A00	____/____
QC HP 6.17 .3.2.6	RB Cooler A500A	52-3A10	4AL2	TS-13	S4A00	____/____
6.17 .3.2.7	DG Fan A544A	52-3A13	4AL4	TS-2	S4A00	____/____
QC HP 6.17 .3.2.8	RB Cooler A500C	52-3A14	4AL2	TS-15	S4A00	____/____
QC HP 6.17 .3.2.9	DG Fan A544B	52-3A17	4AL4	TS-15	S4A00	____/____
QC HP 6.17 .3.2.10	NSCW Pump P482A	52-3A18	4AL2	TS-17	S4A00	____/____

6.17 .3.3 Restore the DHR System to normal IAW A.8 Section 4.7 or as directed by the Shift Supervisor (Valves CBS-045, CBS-046, and CBS-047 MUST BE CLOSED first.) ____/____

6.17 .3.4 Step Deleted

6.17 .3.5 Step Deleted

6.17 .3.6 Restore the AFW and EFIC Systems IAW A.51, Sections 4.1 and 4.2, or as directed by the Shift Supervisor. ____/____

6.17 .3.7 Close or verify closed the breaker located on the front panel of transformer X31A3. ____/____

6.17 .3.8 Close or verify closed 52-2A310 (X31A3). ____/____

6.17 .3.9 Close or verify closed the breaker located on the front panel of transformer X31A4. ____/____

6.17 .3.10 Close or verify closed 52-2A418 transformer X31A4. ____/____

6.17 .3.11 Notify the Shift Supervisor that the SubTrain "A2" LOOP-SFAS test is complete. ____/____

Q.C. INSPECT — 6.17 .4 Acceptance Criteria Review

6.17 .4.1 Review the data recorded during Section 6.17.2 and verify the following:

QC to review after data taken all of section 6.17.4 MRW 1/20/88

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PROCEDURE (Continued) Initials/ Date

6.17 .4.1.1	At Step 6.17.2.11.5 and 6.17.2.11.6, GEA2 reached 3744 VAC and 58.8 HZ in ≤10 seconds. Record time at which envelope was entered: _________ SEC (HZ) _________ SEC (VAC) Data from Recorder #_________	________/______
6.17 .4.1.2	At Step 6.17.2.11.4, verify GEA2 Output Breaker 52-4A202 closed.	________/______
6.17 .4.1.3	At Step 6.17.2.12, verify Bus 3A2 and 4A2 loads sequenced in the required times.	________/______
6.17 .4.1.4	At Step 6.17.2.13, GEA2 operated for 5 minutes with loads running, and voltage and frequency were within the limits specified.	________/______
6.17 .4.1.5	At step 6.17.2.13.3 GEA2 load did not exceed 3300 KW.	________/______
6.17 .4.1.6	Step 6.17.2.7 was started within 5 minutes of step 6.17.2.5.	________/______

6.18 Diesel Generator "B" Hot Restart

6.18 .1 Prerequisites

NOTE: During this test section, the following pumps will start automatically and run per flowpaths described below:

HPI Pump P-238B - Minimum flow thru the seal return line, E-240A and B, thru Make-up Tank V-235, and back to pump suction.

DHR Pump P-261B - Minimum flow thru DH Removal Cooler E-260B, thru the minimum flow line and back to pump suction.

RBS Pump P-291B - Approximately 1500 gpm thru CBS-046 and CBS-047 (open 3 turns), to BWST. Suction from BWST, thru SFV-25004 to pump suction.

6.18 .1.1 A preliminary briefing has been conducted with the Shift Supervisor and prerequisite lineups can commence. Formal briefing to occur later. ________/______

6.18 .1.2 Run the data acquisition program "INIT" on the B computer and verify all channels are functioning properly. ________/______

6.18 .1.3 Train "B" Nuclear Raw Water System is in SFAS STANDBY IAW A.25, Section 4.6. ________/______

6.18 .1.4 Train "B" Nuclear Service Cooling Water is in SFAS STANDBY IAW A.24, Section 4.5. ________/______

6.18 .1.5 Reactor Building Emergency Cooling Units A-500B/D and Reactor Building Emergency Upper Dome air circulators A-532C/D are available for automatic operation IAW A.14A, Section 4.1 and 4.2. ________/______

NOTE:: During this section of the test both DHR loops will be out of service and incore T.C.s are to be trended. The temperature should not exceed 150°F.

6.18 .1.6 Lineup Makeup and Purification System IAW A.15 Steps 4.2.1 through 4.2.13, except as modified by Enclosure 9.6. ________/______

PROCEDURE (Continued) Initials/ Date

6.18 .1.6.1	HPI Pump P-238B breaker 52-4B07 is racked in.	______/______
6.18 .1.7	At HIRC, place the Bailey Hand/Auto Station for the following valves in HAND, and verify the valves are CLOSED:	
6.18 .1.7.1	LV-21503 Pressurizer Level	______/______
6.18 .1.7.2	FV-23606 RC Pump Seal Injection Flow.	______/______
6.18 .1.8	Verify DHR System Lineup IAW A.8 Section 4.7 and 4.8 except as modified by Enclosure 9.11. Do not start pumps.	______/______
6.18 .1.9	Place or verify in service the SFAS analog and digital system IAW A.70, Sections 4.1 and 4.2.	______/______
6.18 .1.10	Reactor Building Spray Loop B is in STANDBY condition IAW A.7, Steps 4.2.5 through 4.2.6.4 except as modified by Enclosure 9.8.	______/______
6.18 .1.11	Step Deleted	
6.18 .1.12	Verify Train "B" Nuclear Service Busses (4B and 3B) and their associated 480V motor control centers are energized IAW Operating Procedures A.58, Sections 4.5 and A.59, Sections 4.1 and 4.2.	______/______
6.18 .1.13	A pretest briefing using the Test Briefing Checklist has been held with all test participants and properly documented per AP.82.	______/______
6.18 .1.14	Verify continuous communications have been established between the Control Room and applicable locations on Enclosure 9.15 per directions of the Shift Supervisor.	______/______

CAUTION: THE BRUCE GM DIESEL GENERATORS GEA/GEB SHALL NOT BE RESTARTED IF THE UNIT HAS BEEN SHUTDOWN FOR MORE THAN 15 MINUTES AFTER A LOADED OPERATION. DUE TO LUBRICATION RESTRICTIONS THE ENGINE CANNOT BE RESTARTED UNTIL 3 HOURS HAVE ELAPSED.

6.18 .1.15 Start and synchronize Diesel Generator GEB IAW Operating Procedure A.31, Section 4.2. Establish load at 2650-2750 KW.

____
Clock Time Loaded ________/______

6.18 .2 Diesel Generator "B" Hot Restart

NOTE: The following steps will cause bus 4B to become momentarily de-energized and it will cause the diesel generator GEB to start.

NOTE: Incore temperatures are to be trended at 15 minute intervals whenev... both decay heat removal systems are shutdown. The temperature should not exceed 150°F.

6.18 .2.1 Inform plant personnel of the impending LOOP-SFAS actuation to SubTrain "B" over the plant public address (PA) system. ________/______

6.18 .2.2 Verify recorders B-1 and B-2 are initialized and annotated. ________/______

6.18 .2.3 Verify computer "B" software loaded and ready to start. ________/______

NOTE: The step listed below will isolate the bus 4B2 sequencer so that when the LOOP-SFAS is initiated, only the 4B bus will see it. The start of GEB2 is blocked. The undervoltage function of the 4B2 sequencer will NOT function.

6.18 .2.4 At 125VDC panel SOB2, open breaker 72-B207 4.16 KV SWGR 4B2 SEQ and UV Relays. ________/______

6.18 .2.5 Verify the diesel generator GEB has been operated for at least one hour at 2650-2750 KW. ________/______

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PROCEDURE (Continued) Initials/ Date

6.18 .2.5.1 Verify diesel generator GEB Jacket Water and Lube Oil temperatures have stabilized. (Stable shall be defined as 2 readings taken 10 minutes apart differ by no more than 2°F. A Test Log Entry shall be made to record the temperature.) ________/________

6.18 .2.5.2 Shutdown Diesel Generator GEB IAW Operating Procedure A.31, Section 6.1. (Shutdown time shall be defined as when the diesel generator shaft stops following the normal cooldown cycle. ________/________

____
Clock Time Shutdown

NOTE: Step 6.18.2.6 MUST BE STARTED within 5 minutes of shutting down GEB.

CAUTION: THE BRUCE-GM DIESEL GENERATORS GEA/GEB SHALL NOT BE RESTARTED IF THE UNIT HAS BEEN SHUTDOWN FOR MORE THAN 15 MINUTES AFTER A LOADED OPERATION. DUE TO LUBRICATION RESTRICTIONS THE ENGINE CANNOT BE RESTARTED UNTIL 3 HOURS HAVE ELAPSED.

6.18 .2.6 Initiate a countdown from 10 to ZERO over the plant PA system within 5 minutes of Diesel Generator GEB shutdown. ________/________

Clock Time __________

6.18 .2.7 At the count of 3, start the Linearcorders B-1 and B-2 and the data acquisition computer. ________/________

NOTE: To prevent an unloading sequence relay race that might possibly block the manual trip of the normal supply breakers, do not initiate the SFAS actuation until the TRIP BLPB at panel H2ES indicates that breaker 52-4B01 is OPEN.

6.18 .2.8 At the count of ZERO, OPEN the normal supply breaker to bus 4B (52-4B01) at panel H2ES, and at panel H1RC, initiate an SFAS actuation by depressing the SFAS CHANNEL pushbuttons 1B, 2B, 3B and 4B. ________/________

PROCEDURE (Continued) Initials/ Date

6.18 .2.9 Verify the following after the SFAS actuation, from the data acquisition equipment:

6.18 .2.9.1 Bus 4B de-energizes. ________/______

6.18 .2.9.2 52-4B01, Startup Transformer #2 OPEN. ________/______

6.18 .2.9.3 GEB STARTS, accelerates to 900 RPM $\leq$10 sec. ________/______

6.18 .2.9.4 GEB output breaker 52-4B11 CLOSES. ________/______

6.18 .2.9.5 GEB voltage reaches 4160 ±416 VAC $\leq$10 sec. ________/______

6.18 .2.9.6 GEB frequency reaches 60 ±1.2 HZ $\leq$10 sec. ________/______

6.18 .2.10 Verify the sequencing of loads to their respective busses from the data acquisition computer as follows:

NOTE: Required times are after Diesel Generator Breaker closure.

NOTE: Breakers will shed automatically on undervoltage and/or SFAS signal. This has been tested previously and will not be reverified.

		REQUIRED	ACTUAL	
6.18 .2.10.1	52-4B05 L.C. XFMR SUPPLY BKR	4.75- 5.25	_____ SEC	________/______
6.18 .2.10.2	52-4B09 DECAY HEAT REMOVAL PUMP P-261B	4.75- 5.25	_____ SEC	________/______
6.18 .2.10.3	52-4B07 HPI PUMP P-238B	7.60- 8.40	_____ SEC	________/______
6.18 .2.10.4	52-3B10 RB EMERG COOLING UNIT A-500B	14.25-15.75	_____ SEC	________/______
6.18 .2.10.5	52-3B14 RB EMERG COOLING UNIT A-500D	14.25-15.75	_____ SEC	________/______
6.18 .2.10.6	52-3B18 NUCLEAR SERVICE CLG WTR PP P-482B	14.25-15.75	_____ SEC	________/______
6.18 .2.10.7	52-4B06 NS RAW WATER P-472B	23.50-26.25	_____ SEC	________/______

PROCEDURE (Continued)

		REQUIRED	ACTUAL	Initials/ Date
6.18 .2.10.8	52-3B06 DIESEL GEN RM VENT EXH FAN A-544C	38.00-42.00	_____ SEC	________/_______
6.18 .2.10.9	52-3B17 DIESEL GEN RM VENT SUP FAN A-544D	38.00-42.00	_____ SEC	________/_______
6.18 .2.10.10	52-3B09 REACTOR BLDG SPRAY PUMP P-291B	285.0-315.0	_____ SEC	________/_______

6.18 .2.11 Record the following information from the recorders after at least 5 minutes:

GEB Recorder #__________

		Initials/ Date
6.18 .2.11.1	Voltage _____ VAC (3744-4576)	________/_______
6.18 .2.11.2	Frequency _____ HZ (58.8-61.2)	________/_______
6.18 .2.11.3	Kilowatts _______ KW (≤ 2750)	________/_______
6.18 .2.12	Depress the SFAS CHANNEL RESET pushbuttons 1B, 2B, 3B, and 4B at Control Room panel H1RC.	________/_______
6.18 .2.13	The following steps will reset the load sequencing circuit and EFIC logic:	
6.18 .2.13.1	At Control Room panel H2SFB, depress the NS Bus B2 and B UNLOADING RESET B2/B pushbutton.	________/_______
6.18 .2.13.2	At EFIC panel H1SSE depress AFW RESET BLPB on EFIC CHANNEL "B" INITIATE/TEST MATRIX.	________/_______
6.18 .2.13.3	At EFIC panel H1SSE depress EFIC "B" CONTROL INITIATED BLPB.	________/_______
6.18 .2.14	From the Control Room, shutdown the following equipment as directed by the Shift Supervisor:	
6.18 .2.14.1	52-3B09 REACTOR BUILDING SPRAY PUMP P-291B	________/_______
6.18 .2.14.2	52-3B10 RB EMERG COOLING UNIT A-500B	________/_______
6.18 .2.14.3	52-3B14 RB EMERG COOLING UNIT A-500D	________/_______

PROCEDURE (Continued) Initials/ Date

6.18 .2.14.4	52-4B07 HP INJECTION PUMP P-238B	______/______
6.18 .2.14.5	52-4B09 DECAY HEAT REMOVAL PUMP P-261B	______/______
6.18 .2.14.6	52-3B18 NUCLEAR SERVICE CLG WTR PP P-482B	______/______
6.18 .2.14.7	52-2B104 RB UPPER DOME CIRC FAN, A-532C	______/______
6.18 .2.14.8	52-2B105 RB UPPER DOME CIRC FAN, A-532D	______/______
6.18 .2.14.9	Review SFAS Panels and position SFAS valves as directed by the Shift Supervisor.	______/______

CAUTION: ENSURE THE NORMAL DROOP SWITCH AT H2DGB IS IN THE DROOP POSITION PRIOR TO SYNCHRONIZING TO PREVENT DAMAGE TO THE DIESEL GENERATOR.

CAUTION: IF OFFSITE POWER IS LOST WHEN A DIESEL GENERATOR IS SYNCHRONIZED TO THE GRID, IMMEDIATELY OPEN THE NORMAL SUPPLY TO THE ASSOCIATED NUCLEAR SERVICE BUS.

6.18 .2.15	Synchronize and shutdown GEB IAW Operating Procedure A.31, Section 6.2.	______/______
6.18 .2.16	Run the data acquisition program "INIT" on the "B" computer and verify all channels are functioning properly.	______/______

6.18 .3 Restoration

6.18 .3.1	Restore the Bus 4B2 sequencer to service by closing circuit breaker 72-B207 4.16 KV SWGR 4B2 SEQ AND UV Relays.	______/______
6.18 .3.2	Restore the DHR System to normal IAW A.8 Section 4.7 (4.8) or as directed by the Shift Supervisor (Valves CBS-045, CBS-046, and CBS-047 MUST BE CLOSED FIRST.)	______/______
6.18 .3.3	Restore the HPI Systems A&B to normal IAW A.15 Section 4.2, or as directed by the Shift Supervisor.	______/______
6.18 .3.4	Restore the RBS System IAW A.7 Section 4.1, or as directed by the Shift Supervisor.	______/______

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PROCEDURE (Continued) Initials/ Date

6.18 .3.5 Step Deleted

6.18 .3.6 Notify the Shift Supervisor that the SubTrain "B" LOOP-SFAS test is complete. ________/________

Q.C. INSPECT — 6.18 .4 Acceptance Criteria Review

QC to review after data taken all of section 6.18.4 mRW 1/20/88

6.18 .4.1 Review the data recorded during Section 6.18.2 and verify the following:

6.18 .4.1.1 At Step 6.18.2.9.5 and 6.18.2.9.6, GEB reached 3744 VAC and 58.8 HZ in ≤10 seconds. Record time at which envelope was entered:

__________ SEC (HZ)

__________ SEC (VAC)

Data from Recorder #__________ ________/________

6.18 .4.1.2 At Step 6.18.2.9.4, verify GEB Output Breaker 52-4B11 CLOSED. ________/________

6.18 .4.1.3 At Step 6.18.2.10, verify Bus 3B and 4B loads sequenced in the specified times. ________/________

6.18 .4.1.4 At Step 6.18.2.11, GEB operated for 5 minutes with loads running, and voltage and frequency were within the limits specified. ________/________

6.18 .4.1.5 At step 6.18.2.11.3 GEB load did not exceed 2750 KW. ________/________

6.18 .4.1.6 Step 6.18.2.6 was started within 5 minutes of Step 6.18.2.5.2. ________/________

PROCEDURE (Continued) Initials/ Date

6.19 Diesel Generator "B2" Hot Restart

6.19 .1 Prerequisites

6.19 .1.1 A preliminary briefing has been conducted with the Shift Supervisor and prerequisite lineups can commence. Formal briefing to occur later. ______/______

6.19 .1.2 Run the data acquisition program "INIT" on the B computer and verify all channels are functioning properly. ______/______

6.19 .1.3 CR/TSC Essential Condensing Unit U-545B and its associated support equipment are lined up in STANDBY IAW A.14C, Section 4.2.2. ______/______

6.19 .1.4 NSEB Essential Condensing Unit U-503B and its associated support equipment are lined up in STANDBY IAW A.14D, Section 4.2.2. ______/______

6.19 .1.5 Place or verify in service the SFAS analog and digital system IAW A.70, Sections 4.1 and 4.2. ______/______

6.19 .1.6 The AFW and EFIC systems are in STANDBY conditions IAW A.51, Sections 4.2 and 4.3 except as modified by Enclosure 9.9. ______/______

6.19 .1.7 Verify Train "B" Nuclear Service Bus 4B2 and its associated 480V load centers and motor control centers are energized IAW Operating Procedures A.58, Sections 4.7 and A.59, Sections 4.1, 4.2, and 4.4. ______/______

6.19 .1.8 A pretest briefing using the Test Briefing Checklist has been held with all test participants and properly documented per AP.82. ______/______

PROCEDURE (Continued) Initials/ Date

6.19 .1.9 Verify continuous communications has been established between the Control Room, diesel generator Control Room for GEB2, the 4.16 KV, 480 VAC, and the data acquisition computer location. ________/________

6.19 .1.10 Start and synchronize Diesel Generator GEB2 IAW Operating Procedure A.31B, Sections 5.2 and 5.3. Establish load 3200-3300 KW.

____
Clock Time Loaded ________/________

6.19 .2 Diesel Generator "B2" Hot Restart

NOTE: The following steps will cause bus 4B2 to become momentarily de-energized and it will cause the diesel generator GEB2 to start.

6.19 .2.1 Inform plant personnel of the impending LOOP-SFAS actuation to Train "B" over the plant public address (PA) system. ________/________

6.19 .2.2 Verify recorders B2-1 and B2-2 are initialized and annotated. ________/________

6.19 .2.3 Verify computer "B" software is loaded and ready to start. ________/________

NOTE: The step listed below will isolate the bus 4B sequencer so that when the LOOP-SFAS is initiated, only the 4B2 bus will see it. The start of GEB is blocked. The undervoltage function of the 4B sequencer will NOT function.

6.19 .2.4 At S4B00, open the circuit breaker labeled "DC CONTROL POWER TO NS BUS UNLOADING". ________/________

6.19 .2.4.1 Open the following test switches to isolate the SFAS auto-start signal to the equipment:

PROCEDURE (Continued) Initials/ Date

	Equipment	Breaker	Relay	Test Sw.	Test Sw. Location	
6.19 .2.4.1.1	M/U Pump P236	52-4B08	4BL1	TS-13	S4B03	______/______
6.19 .2.4.1.2	HPI Pump P238B	52-4B07	4BL1	TS-15	S4B03	______/______
6.19 .2.4.1.3	DHR Pump P261B	52-4B09	4BL1	TS-17	S4B03	______/______
6.19 .2.4.1.4	NSRW Pump P472B	52-4B06	4BL3	TS-19	S4B03	______/______
6.19 .2.4.1.5	RBS Pump P291B	52-3B09	4BL3	TS-17	S4B03	______/______
6.19 .2.4.1.6	RB Cooler A500B	52-3B10	4BL2	TS-13	S4B03	______/______
6.19 .2.4.1.7	DG Fan A544C	52-3B06	4BL4	TS-1 17/18	S4B03	______/______
6.19 .2.4.1.8	RB Cooler A500D	52-3B14	4BL2	TS-15	S4B03	______/______
6.19 .2.4.1.9	DG Fan A544D	52-3B17	4BL4	TS-1- 13/14	S4B03	______/______
6.19 .2.4.1.10	NSCW Pump P482B	52-3B18	4BL2	TS-17	S4B03	______/______

6.19.2.5 Verify the diesel generator GEB2 has been operated for at least one hour at 3200-3300 KW. ______/______

6.19 .2.5.1 Verify the diesel generator GEB2 Lube Oil and Jacket Water temperatures have stabilized. (Stable shall be defined as 2 readings taken 10 minutes apart differ by no more than 2°F. A Test Log Entry shall be made to record the temperature.) ______/______

6.19 .2.5.2 Shutdown Diesel Generator GEB2 IAW Operating Procedure A.31B, Sections 5.6 and 5.7. (Shutdown time shall be defined as when the diesel generator shaft stops following the normal cooldown cycle.) ______/______

____
Clock Time Shutdown ______/______

6.19 .2.6 One to two minutes prior to SFAS actuation countdown per Step 6.19.2.7, START the GEB2 turbocharger bearing prelubrication by opening valve EGS-838. ______/______

PROCEDURE (Continued) Initials/ Date

NOTE: Step 6.19.2.7 must be started within 5 minutes of shutting down GEB2.

6.19 .2.7	Initiate a countdown from 10 to ZERO over the plant PA system within 5 minutes of Diesel Generator GEB2 shutdown. Clock Time ________	______/______
6.19 .2.8	At the count of 3, start the Linearcorders B2-1 and B2-2 and the data acquisition computer.	______/______
NOTE:	To prevent an unloading sequence relay race that might possibly block the manual trip of the normal supply breaker, do not initiate the SFAS actuation until the TRIP BLPB at panel H2EW indicates that breaker 52-4B203 is OPEN.	
6.19 .2.9	At the count of ZERO, OPEN the normal supply breakers to bus 4B2 (52-4B203) at panel H2EW, and at panel H1RC, initiate an SFAS actuation by depressing the SFAS CHANNEL pushbuttons 1B, 2B, 3B and 4B.	______/______
6.19 .2.10	After the SFAS initiation, CLOSE GEB2 turbocharger prelube oil supply valve EGS-838.	______/______
6.19 .2.11	Verify the following after the SFAS actuation, from the data acquisition equipment:	
6.19 .2.11.1	Bus 4B2 de-energizes.	______/______
6.19 .2.11.2	52-4B203, Startup Transformer #2 OPEN.	______/______
6.19 .2.11.3	Diesel Generator GEB2 STARTS, accelerates to 450 RPM $\leq$10 sec.	______/______
6.19 .2.11.4	GEB2 output breaker 52-4B202 CLOSES.	______/______
6.19 .2.11.5	GEB2 voltage reaches 4160 ±416 VAC $\leq$10 sec.	______/______
6.19 .2.11.6	GEB2 frequency reaches 60 ±1.2 HZ $\leq$10 sec.	______/______

PROCEDURE (Continued) Initials/ Date

6.19 .2.12 Verify the sequencing of loads to their respective busses from the data acquisition computer as follows:

NOTE: Required times are after D.G. breaker closure.

NOTE: Breakers will shed automatically on undervoltage and/or SFAS signal. This has been tested previously and will not be reverified.

			REQUIRED	ACTUAL	Initials/ Date
6.19 .2.12.1	52-3B202 LC S3B2		4.5 - 5.5	____ SEC	________/______
6.19 .2.12.2	52-3B215 MCC S2B4		22.50-27.50	____ SEC	________/______
6.19 .2.12.3	52-3B217 U-503B		27.00-33.00	____ SEC	________/______
6.19 .2.12.4	52-3B210 U-545B		45.00-55.00	____ SEC	________/______

6.19 .2.13 Record the following information from the recorders after at least 5 minutes:

GEB2 Recorder #________

6.19 .2.13.1 Voltage ____ VAC (3744-4576) ________/______

6.19 .2.13.2 Frequency ____ HZ (58.8-61.2) ________/______

6.19 .2.13.3 Kilowatts ____ KW ($\leq$ 3300KW) ________/______

6.19 .2.14 Depress the SFAS CHANNEL RESET pushbuttons 1B, 2B, 3B, and 4B at Control Room panel H1RC. ________/______

6.19 .2.14.1 Review SFAS Panels and position SFAS valves as directed by the Shift Supervisor. ________/______

6.19 .2.15 The following steps will reset the load sequencing circuit and EFIC logic:

6.19 .2.15.1 At Control Room panel H2SFB, depress the NS Bus B2 and B UNLOADING RESET B2/B pushbutton. ________/______

PROCEDURE (Continued) Initials/ Date

6.19 .2.15.2 At EFIC panel H1SSE depress AFW RESET BLPB on EFIC CHANNEL "B" INITIATE/TEST MATRIX. ______/______

6.19 .2.15.3 At EFIC panel H1SSE depress EFIC "B" CONTROL INITIATED BLPB. ______/______

CAUTION: IF OFFSITE POWER IS LOST WHEN A DIESEL GENERATOR IS SYNCHRONIZED TO THE GRID, IMMEDIATELY OPEN THE NORMAL SUPPLY TO THE ASSOCIATED NUCLEAR SERVICE BUS.

6.19 .2.15.4 At local panel H2DEB2, depress the LOCA reset pushbutton and verify the Shutdown System Active red light energized. ______/______

CAUTION: ENSURE THE LOCA RESET PUSHBUTTON IS DEPRESSED PRIOR TO SYNCHRONIZING, SO THAT THE DIESEL GENERATOR WILL AUTOMATICALLY TRANSFER TO THE DROOP MODE OF OPERATION.

6.19 .2.16 Synchronize and shutdown GEB2 IAW Operating Procedure A.31B, Sections 5.5 through 5.7. ______/______

6.19 .2.17 Run the data acquisition program "INIT" on the "B" computer and verify all channels are functioning properly. ______/______

6.19 .3 Restoration

6.19 .3.1 Restore the bus 4B sequencer to service by closing the circuit breaker labeled "DC CONTROL POWER TO NS BUS UNLOADING" in S4B00. ______/______

6.19 .3.2 Close the following test switches to restore the SFAS auto-start signal to the equipment:

	Equipment	Breaker	Relay	Test Sw.	Test Sw. Location	Initials/ Date
Q.C. H.P. 6.19 .3.2.1	M/U Pump P236	52-4B08	4BL1	TS-13	S4B03	______/______
Q.C. H.P. 6.19 .3.2.2	HPI Pump P238B	52-4B07	4BL1	TS-15	S4B03	______/______
Q.C. H.P. 6.19 .3.2.3	DHR Pump P261B	52-4B09	4BL1	TS-17	S4B03	______/______
Q.C. H.P. 6.19 .3.2.4	NSRW Pump P472B	52-4B06	4BL3	TS-19	S4B03	______/______

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		Equipment	Breaker	Relay	Test Sw.	Test Sw. Location	Initials/ Date
Q.C. H.P.	6.19 .3.2.5	RBS Pump P291B	52-3B09	4BL3	TS-17	S4B03	/
Q.C. H.P.	6.19 .3.2.6	RB Cooler A500B	52-3B10	4BL2	TS-13	S4B03	/
Q.C. H.P.	6.19 .3.2.7	DG Fan A544C	52-3B06	4BL4	TS-1 17/18	S4B03	/
Q.C. H.P.	6.19 .3.2.8	RB Cooler A500D	52-3B14	4BL2	TS-15	S4B03	/
Q.C. H.P.	6.19 .3.2.9	DG Fan A544D	52-3B17	4BL4	TS-1-13/14	S4B03	/
Q.C. H.P.	6.19 .3.2.10	NSCW Pump P482B	52-3B18	4BL2	TS-17	S4B03	/

6.19 .3.3 Restore the DHR System to normal IAW A.8 Section 4.8 or as directed by the Shift Supervisor (Valves CBS-045, CBS-046, and CBS-047 MUST BE CLOSED first.) ________/________

6.19 .3.4 Step Deleted

6.19 .3.5 Step Deleted

6.19 .3.6 Restore the AFW and EFIC Systems IAW A.51, Sections 4.1 and 4.2, or as directed by the Shift Supervisor. ________/________

6.19 .3.7 Close or verify closed the breaker located on the front panel of transformer X31B3. ________/________

6.19 .3.8 Close or verify closed 52-2B310 voltage regulating transformer X31B3. ________/________

6.19 .3.9 Close or verify closed the breaker located on the front panel of transformer X31B4. ________/________

6.19 .3.10 Close or verify closed 52-2B418 Voltage Regulating transformer X31B4. ________/________

6.19 .3.11 Notify the Shift Supervisor that the Subtrain "B2" LOOP-SFAS test is complete. ________/________

Q.C. INSPECT — 6.19 .4 Acceptance Criteria Review

QC to review after data taken all of section 6.19.4 MRW 1/20/88

6.19 .4.1 Review the data recorded during Section 6.19 and verify the following:

PROCEDURE (Continued) Initials/ Date

6.19 .4.1.1 At Step 6.19.2.11.5 and 6.19.2.11.6, GEB2 reached 3744 VAC and 58.8 HZ in ≤10 seconds. Record time at which envelope was entered:

__________ SEC (HZ)

__________ SEC (VAC)

Data from Recorder #__________ ________/______

6.19 .4.1.2 At Step 6.19.2.11.4, verify GEB2 Output Breaker 52-4B202 closed. ________/______

6.19 .4.1.3 At Step 6.19.2.12, verify Bus 3B2 and 4B2 loads sequenced in the required times. ________/______

6.19 .4.1.4 At Step 6.19.2.13, GEB2 operated for 5 minutes with loads running, and voltage and frequency were within the limits specified. ________/______

6.19 .4.1.5 At Step 6.19.2.13.3, GEB2 load does not exceed 3300 KW. ________/______

6.19 .4.1.6 Step 6.19.2.7 was started within 5 minutes of step 6.19.2.5.2. ________/______

PROCEDURE (Continued) Initials/ Date

6.20 RESTORATION

6.20 .1 Reactor Building Purge System ________/________

6.20 .1.1 Terminate the following field cables:

Q.C. INSPECT 6.20 .1.1.1 SFV-53605, Cabinet H4SDA3 wire X1 at location 9-5-7 ________/________

Q.C. INSPECT 6.20 .1.1.2 SFV-53504, Cabinet H4SDA3 wire X1 at location 9-5-5 ________/________

Q.C. INSPECT 6.20 .1.1.3 SFV-53603, Cabinet H4SDA3 wire X1 at location 9-5-9 ________/________

Q.C. INSPECT 6.20 .1.1.4 SFV-53604, Cabinet H4SDB1 wire P11 at location 1-5-5 ________/________

Q.C. INSPECT 6.20 .1.1.5 SFV-53503, Cabinet H4SDB1 wire P11 at location 1-5-3 ________/________

Q.C. INSPECT 6.20 .1.1.6 SFV-53610, Cabinet H4SDB1 wire P11 at location 1-5-23 ________/________

6.20 .2 Reactor Building Radiation Monitoring System

6.20 .2.1 Terminate the following field cables:

Q.C. INSPECT 6.20 .2.1.1 SFV-53612, Cabinet H4SDB1 wire P11 at location 1-6-5 ________/________

Q.C. INSPECT 6.20 .2.1.2 SFV-53613, Cabinet H4SDA2 wire P11 at location 9-6-7 ________/________

Q.C. INSPECT 6.20 .2.1.3 SFV-53615, Cabinet H4SDA3 wire X1 at location 9-6-5 ________/________

Q.C. INSPECT 6.20 .2.1.4 SFV-53616, Cabinet H4SDB1 wire X1 at location 1-6-3 ________/________

6.20 .3 Rack the following breakers to the connected position position, or as directed by the Shift Supervisor.

6.20 .3.1 52-3A21, (TIE BREAKER TO LOAD CENTER S3A2) ________/________

6.20 .3.2 52-3B21, (TIE BREAKER TO LOAD CENTER S3B2) ________/________

6.20 .3.3 52-3A203, (TIE TO BUS S3A) ________/________

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PROCEDURE (Continued) Initials/ Date

6.20 .3.4 52-3B203, (TIE TO BUS S3A) ________/______

6.20 .3.5 52-4C01, (STARTUP TRANS NO. 2 X94) ________/______

6.20 .3.6 52-4D01, (STARTUP TRANS NO. 2 X94) ________/______

6.20 .3.7 52-4E06, (STARTUP XFMR NO. 2) ________/______

6.20 .3.8 52-4E13, (STARTUP XFMR NO. 2) ________/______

6.20 .3.9 52-6A04, (STARTUP XMR NO. 1-X976) ________/______

6.20 .3.10 52-6B04, (STARTUP XFMR NO. 1-X976) ________/______

6.20 .4 Restore the DHR System to normal IAW A.8 Sections 4.7 and 4.8 or as directed by the Shift Supervisor. ________/______

6.20 .5 Restore the HPI System A and B to normal IAW A.15 Section 4.2, or as directed by the Shift Supervisor. ________/______

6.20 .6 Restore the RBS System IAW A.7 Steps 4.1.5 through 4.1.6.4 and 4.2.5 through 4.2.6.4 or as directed by the Shift Supervisor ________/______

6.20 .7 Restore the AFW and EFIC systems IAW A.51, Sections 4.1 and 4.2, or as directed by the Shift Supervisor. ________/______

Q.C. INSPECT

6.20 .8 Verify all temporary wiring, transducers, and terminal boards have been disconnected and removed. ________/______

6.20 .9 Notify the Shift Supervisor that restoration for STP.961 is complete. ________/______

6.20 .10 Release all plant equipment affected by this test to Operations. ________/______

6.20 .11 Attach a copy of test connection wiring diagrams to test results. ________/______

6.20 .12 Verify that all timing data has been entered into the procedure steps from the data acquisition computer. ________/______

6.20 .13 Ensure that all test participants have signed and initialed Enclosure 9.2. ________/______

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6.20 .14 Notify Shift Supervisor that the LOOP test is complete. ________/______

7.0 ACCEPTANCE CRITERIA

NOTE: The below listed references form the basis for the acceptance criteria in this section.

Safety Guide 9, 1971
Regulatory Guide 1.9, 1979
Regulatory Guide 1.108, 1977
Technical Specification Proposed Amendment 147, Rev. 2, Sup. 2

7.1 Demonstrate diesel generator capability to reject a load equivalent to or greater than the HPI pump for A and B and the AFW pump for A2 and B2 while maintaining engine speed less than or equal to 75% of the difference between nominal speed and the overspeed trip setpoint, or 15% above nominal whichever is less. (Technical Specification 4.6.3-C.2, Regulatory Guide 1.108, C.2.a.4, R.G. 1.9, C.4, S.G. 9, C.4)

For A and B D/G, speed $\leq$1005 rpm.

For A2 and B2 D/G, speed $\leq$ 501 rpm.

7.1 .1 Diesel Generator GEA. For this test HPI Pump P-238A and DHR Pump P-261A will be used to simulate the largest load. (Step 6.12.4.6)

7.1 .2 Diesel Generator GEA2. AFW Pump P-319 is used to simulate the largest load. (Step 6.12.4.8)

7.1 .3 Diesel Generator GEB. For this test, HPI Pump P-238B and DHR Pump P-261B. (Step 6.14.4.6)

7.1 .4 Diesel Generator GEB2, AFW Pump P-318 is used to simulate the largest load. (Step 6.14.4.8)

7.2 Simulating a loss of offsite power in conjunction with a safety features actuation signal, and: (Technical Specification 4.6.3-C.4) (Enclosure 9.16)

7.2 .1 Verifying de-energization of the nuclear service buses and operation of the load shedding circuitry: (Technical Specification 4.6.3-C.4.a)

7.2 .1.1 Buses 3A and 4A (Step 6.11.4.3)

ACCEPTANCE CRITERIA (Continued)

7.2 .1.2 Buses 3A2 and 4A2 (Step 6.11.4.3)

7.2 .1.3 Buses 3B and 4B (Step 6.11.4.3)

7.2 .1.4 Buses 3B2 and 4B2 (Step 6.11.4.3)

7.2 .2 Verifying the diesel starts on the auto-start signal, energizes the nuclear service buses with permanently connected loads, loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization, the steady state voltage and frequency of the emergency buses shall be maintained at 4160 (±416) volts and 60 (±1.2) Hz during this test. (Technical Specification 4.6.3-C.4.b) (Regulatory Guide 1.108, C.2.a.2 and 4) (Regulatory Guide 1.9, C.4, S.G. 9. C.4)

7.2 .2.1 D/G GEA and buses 3A and 4A. (Step 6.11.4)

7.2 .2.2 D/G GEA2 and buses 3A2 and 4A2. (Step 6.11.4)

7.2 .2.3 D/G GEB and buses 3B and 4B. (Step 6.11.4)

7.2 .2.4 D/G GEB2 and buses 3B2 and 4B2. (Step 6.11.4)

7.2 .3 Verifying for the A and B diesel generators that all automatic diesel generator system trips, except engine overspeed, ground fault and generator differential, are automatically bypassed with an SFAS. (Technical Specification 4.6.3-C.4.c)

7.2 .3.1 D/G GEA (Step 6.2.2.10 thru 6.2.2.17.1)

7.2 .3.2 D/G GEB (Step 6.6.2.10 thru 6.6.2.17.1)

7.2 .4 Verifying for the A2 and B2 diesel generators that all automatic diesel generator trips, except engine overspeed, low lube oil pressure and generator differential, are automatically bypassed with an SFAS. (Technical Specification 4.6.3-C.4.c, R.G. 1.9 C.7)

7.2 .4.1 D/G GEA2 (Step 6.4.4.2.6)

7.2 .4.2 D/G GEB2 (Step 6.8.4.2 5)

7.3 Simulating a loss of offsite power and verifying that on interruption of the emergency power sources the loads are shed from the nuclear services buses in accordance with design requirements and that subsequent loading of the emergency power sources is through the automatic load sequencing circuitry. The diesel generator will be operated for at least 5 minutes in this condition. (Technical Specification 4.6.3-C.5) (Enclosure 9.16)

ACCEPTANCE CRITERIA (Continued)

7.3 .1 D/G GEA and buses 3A and 4A (Step 6.1.2.24, 6.1.2.25)

7.3 .2 D/G GEA2 and buses 3A2 and 4A2 (Step 6.4.4.1.5, 6.4.4.1.7)

7.3 .3 D/G GEB and buses 3B and 4B (Step 6.5.2.24, 6.5.2.25)

7.3 .4 D/G GEB2 and buses 3B2 and 4B2 (Step 6.8.4.1.5, 6.8.4.1.7)

7.4 Following a 24-hour loaded run (simulated by running loaded for 1 hour or until temperatures stabilize), verifying that with 5 minutes of shutting down, the diesels start on the auto-start signal, energizes the nuclear service buses with permanently connected loads, loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization, the steady state voltage and frequency of the emergency buses shall be maintained at 4160 (±416) volts and 60 (±1.2) Hz during this test. (Technical Specification 4.6.3-C.6)

7.4 .1 GEA and buses 3A and 4A (Step 6.16.4)

7.4 .2 GEA2 and buses 3A2 and 4A2 (Step 6.17.4)

7.4 .3 GEB and buses 3B and 4B (Step 6.18.4)

7.4 .4 GEB2 and buses 3B2 and 4B2 (Step 6.19.4)

7.5 At least once per 10 years or after any modifications which could affect interdependence, by starting all four diesel generators simultaneously and verifying that they accelerate to a nominal 900 rpm for A and B and a nominal 450 rpm for A2 and B2 within 10 seconds after the start signal. The generator voltage and frequency shall be 4160 (±416) volts and 60 (±1.2) Hz within 10.0 seconds after the start signal. (Technical Specification 4.6.3-D, R.G. 1.108, C.2.b)

7.5 .1 GEA (Step 6.11.4)

7.5 .2 GEA2 (Step 6.11.4)

7.5 .3 GEB (Step 6.11.4)

7.5 .4 GEB2 (Step 6.11.4)

7.6 Verifying that the auto-connected loads to each diesel generator do not exceed the 2000-hour rating of 2750 KW for A and B and 3300 KW for A2 and B2. (Technical Specification 4.6.3-C.7, S.G. 9.C.2, R.G. 1.9 C.2)

7.6 .1 GEA (Steps 6.9.4.1.10, 6.12.4.10)

7.6 .2 GEA2 (Steps 6.9.4.1.11, 6.12.4.11)

ACCEPTANCE CRITERIA (Continued)

7.6 .3 GEB (Steps 6.10.4.1.10, 6.14.4.10)

7.6 .4 GEB2 (Steps 6.10.4.1.11, 6.14.4.11)

7.7 Demonstrate the capability to test each diesel generator unit independently of redundant units. (Regulatory Guide 1.108, C.1.b.1)

7.7 .1 GEA (Step 6.1/6.2)

7.7 .2 GEA2 (Step 6.4.4)

7.7 .3 GEB (Step 6.5/6.6)

7.7 .4 GEB2 (Step 6.8.4)

7.8 During pre-operational testing, or periodic power systems tests, verify that the diesel generators can automatically start and assume their emergency loads in the specified time sequence and attain the required voltage and frequency within acceptable limits and time for the following. The diesel generators will be operated for at least 5 minutes in the below listed conditions. (Regulatory Guide 1.108, C.2.a.1, 2) (Enclosure 9.16) (Regulatory Guide 1.9, C, 4)

7.8 .1 SFAS followed by LOOP.

7.8 .1.1 GEA and buses 3A and 4A (Step 6.1, 6.12.4)

7.8 .1.2 GEA2 and buses 3A2 and 4A2 (Step 6.4.4.1, 6.12.4)

7.8 .1.3 GEB and buses 3B and 4B (Step 6.5, 6.14.4)

7.8 .1.4 GEB2 and buses 3B2 and 4B2 (Step 6.8.4.1, 6.14.4)

7.8 .2 LOOP with simultaneous SFAS.

7.8 .2.1 GEA and buses 3A and 4A (Steps 6.2, 6.16.4)

7.8 .2.2 GEA2 and buses 3A2 and 4A2 (Steps 6.4.4, 6.17.4)

7.8 .2.3 GEB and buses 3B and 4B (Steps 6.6, 6.18.4)

7.8 .2.4 GEB2 and buses 3B2 and 4B2 (Steps 6.8.4, 6.19.4)

7.9 Demonstrate the ability to synchronize the diesel generator unit with offsite power while the unit is connected to the emergency loads, transfer this load to offsite power, isolate the diesel generator unit and restore it to standby status. (Regulatory Guide 1.108, C.2.a.6)

ACCEPTANCE CRITERIA (Continued)

7.9 .1 GEA and Buses 4A (Step 6.12.4.7)

7.9 .2 GEA2 and Buses 4A2 (Step 6.12.4.9)

7.9 .3 GEB and Buses 4B (Step 6.14.4.7)

7.9 .4 GEB2 and Buses 4B2 (Step 6.14.4.9)

7.10 Demonstrate the independence of each subtrain and train by isolating, to the extent practical, the A-C and D-C sources to a subtrain or train, simulating a LOOP and SFAS signal to the energized train or subtrain, and verifying the diesel generator attains 4160 (±416)V and 60 (±1.2) Hz in ≤10 seconds and loads the bus per the design sequence. The absence of voltage on the de-energized train or subtrain during this test is verified. The diesel generator will be operated for at least 5 minutes in this condition. (Enclosure 9.16)

7.10 .1 GEA and GEA2 independence (Steps 6.1, 6.2, 6.4.4)

7.10 .2 GEB and GEB2 independence (Steps 6.5, 6.6, 6.8.4)

7.10 .3 GEA and GEA2 independence from GEB and GEB2 (Steps 6.9.4, 6.10.4, 6.12.4, & 6.14.4)

7.11 At no time during the loading sequence did the diesel generator frequency and voltage decrease to less than 95% (57 Hz) of nominal (60 Hz) and 75% (3120V) of nominal (4160V) respectively. (Regulatory Guide 1.9, C.4)

7.11 .1 GEA (Step 6.12.4.13)

7.11 .2 GEA2 (Step 6.12.4.13)

7.11 .3 GEB (Step 6.14.4.13)

7.11 .4 GEB2 (Step 6.14.4.13)

7.12 The diesel generator frequency and voltage was restored to within ±2% (58.8-61.2 Hz) of nominal (60 Hz) and ±10% (3744-4576V) of nominal (4160V), within 60% of each load sequence time interval. (Regulatory Guide 1.9, C.4)

7.12 .1 GEA2 (Step 6.12.4.15)

7.12 .2 GEB2 (Step 6.14.4.15)

7.13 The diesel generator frequency and voltage was restored to within ±2% (58.8 -61.2Hz) of nominal (60 Hz) and ±10% (3744-4576V) of nominal (4160V), within 40% of each load sequence time interval. (Safety Guide 1.9 C.4)

ACCEPTANCE CRITERIA (Continued)

7.13 .1 GEA (Step 6.12.4.14)

7.13 .2 GEB (Step 6.14.4.14)

8.0 REFERENCES

8.1 PIPING & INSTRUMENTATION DIAGRAMS

8.1 .1 M-583 Sh. 1, Emergency Diesel Generator (GM), Rev. 14

8.1 .2 M-585 Sh. 1, Diesel Generator System Train "A", (A3748) Rev. 0

8.1 .3 M-585 Sh. 2, Diesel Generator System Train "A", (A3748) Rev. 0

8.1 .4 M-585 Sh. 3, Diesel Generator System Train "B", (A3748) Rev. 0

8.1 .5 M-585 Sh. 4, Diesel Generator System Train "B", (A3748) Rev. 0

8.1 .6 M-504 Aux. Bldg. C/TSC RMS HVAC Systems, Rev. 14

8.1 .7 M-521 Make-up and Purification System, Rev. 19

8.1 .8 M-521 Sh. 1, Make-up and Purification System, Rev. 15

8.1 .9 M-521 Sh. 2, Make-up and Purification System, Rev. 16

8.1 .10 M-521 Sh. 3, Make-up and Purification System, Rev. 8

8.1 .11 M-522 Sh. 1, Decay Heat Removal System, Rev. 35

8.1 .12 M-524 Reactor Building Spray System, Rev. 11

8.1 .13 M-532 Sh. 1, Steam Generator System, Rev. 11

8.1. .14 M-532 Sh. 2, Steam Generator System, Rev. 7

8.1 .15 M-532 Sh. 3, Steam Generator System, Rev. 8

8.1 .16 M-533 Sh. 3, Feedwater Heater System, Rev. 11

8.1 .17 M-536 Condenser System, Rev. 28

8.1 .18 M-544 Nuclear Service Raw Water, Rev. 21

8.1 .19 M-545 Nuclear Service Cooling System, Rev. 18

8.1 .20 M-551 Reactor Building HVAC System, Rev. 29

REFERENCES (Continued)

8.1 .21 M-552 Sh. 1, HVAC System, Rev. 21

8.1 .22 M-553 Sh. 1, Nuclear Service Elect. Bldg. HVAC, System, Rev. 13

8.1 .23 M-553 Sh. 2, Nuclear Service Elect. Bldg. HVAC, System, Rev. 12

8.2 SINGLE LINE DIAGRAMS

8.2 .1 E-100 Sh. 1, One Line Diagram, Drawing Index, Rev. 3

8.2 .2 E-100 Sh. 2, One Line Diagram, Drawing Index, Rev. 0

8.2 .3 E-101 Main One Line Diagram, Rev. 13

8.2 .4 E-103 One Line Diagram, 6900 Volt System, Rev. 12

8.2 .5 E-104 Sh. 1, 4160 Volt System, (4C) Rev. 10

8.2 .6 E-104 Sh. 2, 4160 Volt System, (4A) Rev. 11

8.2 .7 E-104 Sh. 3, 4160 Volt System, (4B) Rev. 13

8.2 .8 E-104 Sh. 4, 4160 Volt System, (4D) Rev. 6

8.2 .9 E-104 Sh. 5, 4160 Volt System, (4E) Rev. 8

8.2 .10 E-104 Sh. 6, 4160 Volt System, (4A2) Rev. 4

8.2 .11 E-104 Sh. 7, 4160 Volt System, (4B2) Rev. 5

8.2 .12 E-105 Sh. 1, 480 Volt System (Bus 3A), Rev. 7

8.2 .13 E-105 Sh. 2, 480 Volt System (Bus 3B), Rev. 7

8.2 .14 E-105 Sh. 8, 480 Volt System (MCC 2A1), Rev. 26

8.2 .15 E-105 Sh. 8A,480 Volt System (MCC 2A1), Rev. 12

8.2 .16 E-105 Sh. 9, 480 Volt System (MCC 2B1), Rev. 24

8.2 .17 E-105 Sh. 9A,480 Volt System (MCC 2B1), Rev. 11

8.2 .18 E-105 Sh. 25,480 Volt System (MCC 2A2), Rev. 3

8.2 .19 E-105 Sh. 26, 480 Volt System (MCC 2B2 & 2B2B), Rev. 5

8.2 .20 E-105 Sh. 27, 480 Volt System (MCC 2A3), Rev. 8

8.2 .21 E-105 Sh. 28, 480 Volt System (MCC 2B3), Rev. 6

REFERENCES (Continued)

8.2 .22 E-105 Sh. 31, 480 Volt System (MCC 2A4) (A3748), Rev. 0

8.2 .23 E-105 Sh. 32, 480 Volt System (MCC 2B4) (A3748), Rev. 0

8.2 .24 E-105 Sh. 33, 480 Volt System (MCC 2D7) (A3748), Rev. 0

8.2 .25 E-105 Sh. 34, 480 Volt System (MCC 2C8) (A3748), Rev. 0

8.2 .26 E-105 Sh. 36, 480 Volt Load Center 3A2 (A3748), Rev. 1

8.2 .27 E-105 Sh. 37, 480 Volt Load Center 3B2 (A3748), Rev. 1

8.2 .28 E-107 125 VDC System, Rev. 26

8.2 .29 E-107 Sh. 2, 125 VDC System Panels (A3748), Rev. 5

8.2 .30 E-107 Sh. 4, 125VDC System, Rev. 1

8.2 .31 E-108 Sh. 1, 120 VAC System, Rev. 22

8.2 .32 E-108 Sh. 2, 120 VAC System, Rev. 23

8.2 .33 E-108 Sh. 8 120 VAC System Panel H3RPA1, Rev. 1

8.2 .34 E-108 Sh. 9 120 VAC System Panel H3RPB1, Rev. 2

8.2 .35 E-108 Sh. 11, 125 VDC and 120 VAC Dist., Rev. 7

8.3 Elementary Diagrams

8.3 .1 E-203 Sh. 2, Make-up Pump P-236 Normal Feed, Rev. 15

8.3 .2 E-203 Sh. 2A, Make-up Pump P-236 Alternate Feed, Rev. 3

8.3 .3 E-203 Sh. 3, Decay Heat Removal Pump P-261A, B, Rev. 11

8.3 .4 E-203 Sh. 4, High Pressure Injection Pump P-238A, Rev. 17

8.3 .5 E-203 Sh. 4A, High pressure Injection Pump P-238B, Rev. 1

8.3 .6 E-203 Sh. 5, Reactor Bldg. Spray Pump P-291A, Rev. 16

8.3 .7 E-203 Sh. 5A, Reactor Bldg. Spray Pump P-291B, Rev. 5

8.3 .8 E-203 Sh. 6, RB Emerg. Clg. Units A-500A, B, C & D, Rev. 13

8.3 .9 E-203 Sh. 12, RB Upper Dome Emerg. Air Circ. A-532A, B, C & D, Rev. 9

REFERENCES (Continued)

8.3 .10 E-203 Sh. 42, Nuclear Service Raw Water Pumps P-472A & B, Rev. 13

8.3 .11 E-203 Sh. 43, Nuclear Service Cooling Water Pumps P-482A & B, Rev. 12

8.3 .12 E-204 Sh. 1, Diesel Generator GEA Output Breaker, Rev. 22

8.3 .13 E-204 Sh. 2, Diesel Generator GEB Output Breaker, Rev. 16

8.3 .14 E-204 Sh. 8, Diesel Generator Room "A" Vent. Exh Fan A-544A, Rev. 16

8.3 .15 E-204 Sh. 8A, Diesel Generator Room "A" Vent. Exh Fan A-544B, Rev. 3

8.3 .16 E-204 Sh. 8B, Diesel Generator Room "B" Vent. Exh Fa[illegible]44C, Rev. 2

8.3 .17 E-204 Sh. 8C, Diesel Generator Room "B" Vent. Exh Fan A-544D, Rev. 3

8.3 .18 E-204 Sh. 11A, GEA Fuel Oil Pump P-888A, Rev. 1

8.3 .19 E-204 Sh. 11B, GEA Fuel Oil Pump P-888B, Rev. 0

8.3 .20 E-204 Sh. 11C, GEB Fuel Oil Pump P-888C, Rev. 0

8.3 .21 E-204 Sh. 11D, GEB Fuel Oil Pump P-888D, Rev. 0

8.3 .22 E-204 Sh. 19, GEA2 Breaker Control (A3748), Rev. 0

8.3 .23 E-204 Sh. 19A, GEA2 Metering and Relaying (A3748), Rev. 0

8.3 .24 E-204 Sh. 19B, GEA2 Generator Control (A3748), Rev. 0

8.3 .25 E-204 Sh.20 GEB2 Breaker Control (A3748), Rev. 0

8.3 .26 E-204 Sh.20A, GEB2 Metering and Relaying (A3748), Rev. 0

8.3 .27 E-204 Sh. 20B GEB2 Generator Control (A3748), Rev. 0

8.3 .28 E-204 Sh. 65, Diesel Engine "A" Control (R1108), Rev. 0

8.3 .29 E-204 Sh. 65, Diesel Engine "A" Control (R1150), Rev. 1

8.3 .30 E-204 Sh. 66, Diesel Engine "A" Alarm, Rev. 2

8.3 .31 E-204 Sh. 66A Diesel Engine "A", Rev. 1

REFERENCES (Continued)

8.3 .32 E-204 Sh. 67, Diesel Generator "A", Rev. 1

8.3 .33 E-204 Sh. 68, Diesel Generator "A", Rev. 1

8.3 .34 E-204 Sh. 69, Diesel Engine "B" Control (R1108), Rev. 0

8.3 .35 E-204 Sh. 69, Diesel Engine "B" Control (R1898), Rev. 1

8.3 .36 E-204 Sh. 70, Diesel Engine "B" Alarm, Rev. 2

8.3 .37 E-204 Sh. 70A, Diesel Engine "B", Rev. 1

8.3 .38 E-204 Sh. 71, Diesel Generator "B", Rev. 1

8.3 .39 E-204 Sh. 72, Diesel Generator "B", Rev. 2

8.3 .40 E-205 Sh. 43, Aux Feedwater Pump P-319 (A5415M), Rev. 0

8.3 .41 E-205 Sh. 44, Aux Feedwater Pump P-318 (A5415V), Rev. 0

8.3 .42 E-206 Sh. 57, CR/TSC HVAC AH A-545A (A3660Z), Rev. 1

8.3 .43 E-206 Sh. 58, CR/TSC HVAC AH A-545B (A3660Z), Rev. 1

8.3 .44 E-206 Sh. 63, Ess. Condensing Unit U-545A (A3660Z), Rev. 1

8.3 .45 E-206 Sh. 134, Ess. Condensing Unit U-503A (A3660Z), Rev. 0

8.3 .46 E-206 Sh. 135, Ess. Condensing Unit U-503B (A3660Z), Rev. 0

8.3 .47 E-206 Sh. 147, CR/TSC HVAC U-545B (A3660Z), Rev. 1

8.3 .48 E-208 Sh. 8, 4160 Volt Nuclear Service S/U #2 Norm. Sply., Rev. 15

8.3 .49 E-208 Sh. 8A, 4160 Volt Nuclear Service S/U #2 Stdby. Sply., Rev. 5

8.3 .50 E-208 Sh. 9, 4160 Volt Nuclear Service S/U #1 Norm. Sply., Rev. 15

8.3 .51 E-208 Sh. 9A, 4160 Volt Nuclear Service S/U #1 Stdby. Sply., Rev. 15

8.3 .52 E-208 Sh. 10, Station Service Trans. X43A1, Rev. 16

8.3 .53 E-208 Sh. 10A, Station Service Trans. X43B2, Rev. 3

8.3 .54 E-208 Sh. 13A, 480 Volt Swgr. 3A Bus Supply, Rev. 4

8.3 .55 E-208 Sh. 13B, 480 Volt Swgr. 3B Bus Supply, Rev. 3

REFERENCES (Continued)

8.3 .56 E-208 Sh. 15A, 480 Volt Feeder to NS MCC-2A1, Rev. 0

8.3 .57 E-208 Sh. 15B, 480 Volt Feeder to NS MCC-2B1, Rev. 0

8.3 .58 E-208 Sh. 20A, NS Bus Unloading "A", Rev. 5

8.3 .59 E-208 Sh. 20B, NS Bus Unloading "B", Rev. 6

8.3 .60 E-208 Sh. 20C, Diesel A & B CO2 Blocking System, Rev. 1

8.3 .61 E-208 Sh. 20D, 4 KV Bus 4A Potential, Rev. 3

8.3 .62 E-208 Sh. 20E, 4 KV Bus 4B Potential, Rev. 3

8.3 .63 E-208 Sh. 42, 480 Volt Load Center Supply BKR 52-3A202, Rev. 4

8.3 .64 E-208 Sh. 43, 480 Volt Load Center Supply BKR 52-3B202, Rev. 2

8.3 .65 E-208 Sh. 48, 52-3A211 FDR to MCC 2A3, Rev. 2

8.3 .66 E-208 Sh. 49, 480 Volt Load Center to MCC 2B3, Rev. 2

8.3 .67 E-208 Sh. 50, [illegible] KV Feeder BKR 52-4A204 to SS XFMR X43A2, Rev. 5

8.3 .68 E-208 Sh. 51, 52-4B204 Feeder BKR to SS XFMR X43B2A, Rev. 3

8.3 .69 E-208 Sh. 52, 4 KV Standby supply BKR 52-4A203 from S/U XFMR #2, Rev. 4

8.3 .70 E-208 Sh. 53, 4 KV Normal Sply. BKR 52-4A207 from S/U XFMR #1, Rev. 4

8.3 .71 E-208 Sh. 56, Swgr. 4A2 Bus PT (meter/relay), Rev. 4

8.3 .72 E-208 Sh. 56A, Nuclear Service Bus Loading "A2", Rev. 0

8.3 .73 E-208 Sh. 57, Swgr. 4B2 Bus PT (meter/relay), Rev. 4

8.3 .74 E-208 Sh. 57A, Nuclear Service Bus Loading "B2", Rev. 2

8.3 .75 E-208 Sh. 66, 480 Volt MCC 2A2 Feeder BKR 52-3A206 (A3660Z), Rev. 3

8.3 .76 E-208 Sh. 67, 480 Volt MCC 2B2 Feeder BKR 52-3B206 (A3660Z), Rev. 2

8.3 .77 E-208 Sh. 68, 480 Volt MCC 2A4 Feeder BKR 52-3A215 (A3660Z), Rev. A

8.3 .78 E-208 Sh. 69, 480 Volt MCC 2B4 Feeder BKR 52-3B215 (A3660Z), Rev. A

8.3 .79 M.17.02.1-511, Sh. 4, GEA2 Engine Controls (A3748), Rev. G

REFERENCES (Continued)

8.3 .80 M.17.02.1-511, Sh. 6, GEA2 Engine Controls (A3748), Rev. G

8.3 .81 M.17.02.1-512, Sh. 4, GEB2 Engine Controls (A3748), Rev. G

8.3 .82 M.17.02.1-512, Sh. 6, GEB2 Engine Controls (A3748), Rev. G

8.3 .83 E-203 Sh. 66, H2 Purge Discharge to RB Outside Isolation Valve, SFV-53612, Rev. 3

8.3 .84 E-203 Sh. 66C, H2 Purge Intake From RB Outside Isolation Valve, SFV-53613, Rev. 2

8.3 .85 E-203 Sh. 66h, H2 Purge Inside RB Isolation Valve SFV-53615, Rev. 1

8.3 .86 E-203 Sh. 66i, H2 Purge Inside RB Isolation Valve SFV-53616, Rev. 2

8.3 .87 E-203 Sh. 90a, RB Purge Isolation MOV SFV-53605, Rev. 2

8.3 .88 E-203 Sh. 90, Reactor Building Purge Isolation MOV SFV-53504, Rev. 6

8.3 .89 E-203 Sh. 48b, SFA Close Inside MOV SFV-60001 & SFV-53603, Rev. 2

8.3 .90 E-203 Sh. 64b, RB Purge Outlet Valve Outside SFV-53604, Rev. 5

8.3 .91 E-203 Sh. 64c, RB Purge Inlet Valve Outside SFV-53502, Rev. 7

8.3 .92 E-203 Sh. 64d, RB Purge Equalizing Valve SFV-53610, Rev. 3

8.3 .93 E-208 Sh. 29, Elementary Diagram Electrical Auxiliaries

8.3 .94 E-203 Sh. 33, Elementary Diagram Electrical Auxiliaries

8.3 .95 E-208 Sh. 54 Elementary Diagram Electrical Auxiliaries

8.3 .96 E-208 Sh. 90, Elementary Diagram Electrical Auxiliaries

8.3 .97 E-208 Sh. 44, Elementary Diagram Electrical Auxiliaries

8.3 .98 M-17.02.1-512 Sh. 5, A3748 Engine Control Schematic

8.3 .99 E-208 Sh. D, DCN 4A ECN-A-3660Z, Rev. 0

8.3 .100 E6.02.1A-130.2, Connection Diagram

8.4 OPERATING PROCEDURES

8.4 .1 A.14A Rev 1/A.14 B Rev 1/A.14C Rev 0/A.14D Rev 1/A.14E Rev 0, Heating Ventilating and Air Conditioning Sys., Rev. 25

REFERENCES (Continued)

8.4 .2 A.15, Make-up, Purification and Letdown System, Rev. 33

8.4 .3 A.24, Nuclear Service Cooling Water System, Rev. 14

8.4 .4 A.25, Nuclear Service Raw Water System, Rev. 18

8.4 .5 A.31, Diesel Generator System, Rev. 28

8.4 .6 A.31B, TDI Diesel Generator System, Rev. 1

8.4 .7 A.47, Condensate and Feedwater System, Rev. 23

8.4 .8 A.51, Feedwater System Auxiliary, Rev. 33

8.4 .9 A.54, 220 KV Electrical System, Rev. 9

8.4 .10 A.55, 22 KV Electrical System, Rev. 6

8.4 .11 A.56, 12.4 KV Electrical System, Rev. 5

8.4 .12 A.57, 6.9 KV Electrical System, Rev. 8

8.4 .13 A.58, 4.16 KV Electrical System, Rev. 10

8.4 .14 A.59, 480 Volt Electrical System, Rev. 23

8.4 .15 A.60, 208/120 Volt AC System, Rev. 26

8.4 .16 A.61, 125 VDC Electrical System, Rev. 9

8.4 .17 A.62, 120 VAC Vital Electrical System, Rev. 11

8.4 .18 A.63, 120 VAC Non-Vital Electrical System, Rev. 7

8.4 .19 A.7, Reactor Building Spray System, Rev. 17

8.4 .20 A.70, Safety Features Actuation System, Rev. 14

8.4 .21 A.8, Decay Heat System, Rev. 33

8.5 MISCELLANEOUS

8.5 .1 SP.206.03A(B), Emergency Diesel Generator A(B) Synchronization

8.5 .2 Technical Specifications, Sections 3.2, 4.6.3.C, 4.6.3.D, 4.6.3.E, Proposed Amendment #147, Rev. 2, Sup 2.

8.5 .3 Safety Guide 1.9, 1971

REFERENCES (Continued)

(MISCELLANEOUS)

8.5 .4 Regulatory Guide 1.9, Selection, Design and Qualification of Diesel Generator Units Used as Standby (Onsite) Electrical Power Systems at Nuclear Power Plants

8.5 .5 Regulatory Guide 1.108, Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants

8.5 .6 E-334 Sh. 4, Wiring Diagram Penetration Canister

8.5 .7 E-335 Sh. 5, Wiring Diagram Penetration Canister

8.5 .8 E-303 Sh. 2, Wiring Diagram 480V Switchgear S3B

8.5 .9 E7.02.1 Sh. 141, Schematic & Connection Diagram S2B3

8.5 .10 E7.02.1 Sh. 139, Schematic & Connection Diagram S2A3

8.5 .11 E7.02.1 Sh. 347, Schematic & Connection Diagram S2A4

8.5 .12 E7.02.1 Sh. 459, Schematic & Connection Diagram S2B4

8.5 .13 I-1155 Sh. 8, Instrument Installation Detail Instrumentation Tube Fitting Installation Procedure

8.5 .14 EM.173, Backfeed of the Main and Auxiliary Transformers

8.5 .15 Regulating Guide 1.41 Preoperational Testing of Redundant Onsite Electric Power Systems to Verify Proper Load Group Assignments.

9.0 ENCLOSURES

9.1 Test Procedure Authorization Form

9.2 Signature/Initials Sheet

9.3 Rancho Seco Test Log

9.4 Instrument Calibration List

9.5 Loss of Offsite Power Point Summary Sorted By Loop#

9.6 High Pressure Injection System Abnormal Lineup

9.7 Enclosure Deleted

9.8 Reactor Building Spray System Abnormal Lineup

9.9 Auxiliary Feedwater System Abnormal Lineup

9.10 Enclosure Deleted

9.11 Lineup For Sections 6.9 - 6.19

9.12 Enclosure Deleted

9.13 Motor Starting Guidelines

9.14 Enclosure Deleted

9.15 Communications Locations

9.16 Sequencing Intervals

9.17 Sections 6.9 and 6.12 Initial Pretest Lineup

9.18 Sections 6.9 and 6.12 Final Pretest Lineup

9.19 Sections 6.9 and 6.12 Restoration

9.20 Sections 6.10 and 6.14 Initial Pretest Lineup

9.21 Sections 6.10 and 6.14 Final Pretest Lineup

9.22 Sections 6.10 and 6.14 Restoration

9.23 AFW Pump P-319 Motor Temperatures

ENCLOSURE 9.1

TEST PROCEDURE AUTHORIZATION FORM

TEST PROCEDURE NUMBER: STP.961 REVISION: ________

TITLE: LOSS OF OFFSITE POWER TEST

PRETEST REVIEW COMPLETE ______________________ / ________
TEST DIRECTOR DATE

RELEASED FOR PERFORMANCE ______________________ / ________
SRTP DIRECTOR DATE

AUTHORIZATION TO CONDUCT TEST ______________________ / ________
SRTP ASST DIRECTOR DATE

______________________ / ________
OPERATIONS SHIFT SUPERVISOR DATE

---

*TEST PERFORMANCE COMPLETE ______________________ / ________
TEST DIRECTOR DATE

*READY FOR RESULTS REVIEW ______________________ / ________
SRTP ASST DIRECTOR DATE

*INDICATES TESTING COMPLETE AND ACCEPTANCE CRITERIA HAS BEEN SATISFIED.

ENCLOSURE 9.2

SIGNATURE/INITIALS SHEET

NAME (PRINTED)	SIGNATURE	INITIALS

ENCLOSURE 9.3

RANCHO SECO TEST LOG

Date_________________
Test Number STP.961
Page ______ of ______

REMARKS

ENCLOSURE 9.4

INSTRUMENT CALIBRATION LIST

If additional test equipment was used, fill out 2.3.

2.1 Computer (2)

Instrument ______________ CTE No. ______________

Instrument ______________ CTE No. ______________

DESCRIPTION OF SCAN RATE:

The computer scan rates are as follows:

ANALOG:

1. Diesel generator frequency, voltage, amps and kilowatts at .1 second intervals for 1 minute.

2. All analog channels at .5 second intervals for 10 minutes.

DIGITAL:

1. All digitals at .05 second intervals for 1 minute.

2. All digitals at .5 second intervals for 10 minutes.

NOTE: The strip chart speed will be 25 millimeters/second during diesel starts and subsequent transients and 25 millimeters/minute for the remainder of each diesel engine run.

2.2 Linearcorder (8)

(A-1) Instrument ______________
INST. SERIAL NO. ______________
CHART SPEED ______________
CTE NO. ______________

(B-1) Instrument ______________
INST. SERIAL NO. ______________
CHART SPEED ______________
CTE NO. ______________

(A-2) Instrument ______________
INST. SERIAL NO. ______________
CHART SPEED ______________
CTE NO. ______________

(B-2) Instrument ______________
INST. SERIAL NO. ______________
CHART SPEED ______________
CTE NO. ______________

(A2-1) Instrument ______________
INST. SERIAL NO. ______________
CHART SPEED ______________
CTE NO. ______________

(B2-1) Instrument ______________
INST. SERIAL NO. ______________
CHART SPEED ______________
CTE NO. ______________

2.2 Linearcorder (8) (Continued)

(A2-2) Instrument ________________
INST. SERIAL NO. __________
CHART SPEED ______________
CTE NO. ________________

(B2-2) Instrument ________________
INST. SERIAL NO. __________
CHART SPEED ______________
CTE NO. ________________

LOOP CALIBRATIONS PER WR# ______________________________

2.3 Additional Test Equipment for STP.961

					Initials/ Date
	CAL DUE DATE		CTE NO.		/
	CAL DUE DATE		CTE NO.		/
	CAL DUE DATE		CTE NO.		/
	CAL DUE DATE		CTE NO.		/
	CAL DUE DATE		CTE NO.		/
	CAL DUE DATE		CTE NO.		/
	CAL DUE DATE		CTE NO.		/
	CAL DUE DATE		CTE NO.		/
	CAL DUE DATE		CTE NO.		/
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	CAL DUE DATE		CTE NO.		/
	CAL DUE DATE		CTE NO.		/
	CAL DUE DATE		CTE NO.		/
	CAL DUE DATE		CTE NO.		/

LOSS OF OFFSITE POWER TEST POINT SUMMARY
SORTED BY LOOP

LOOP #	SLOT CHAN	DESCRIPTION OF LOOP	COMPUTER INPUT RANGE	COMPUTER ENGINEERING UNITS	A/D	FROM	LOAD GRP	SUB TRN	TEMPORARY TRANSDUCER INFO ID #	LOCATION
1	A10	DG A2 FREQUENCY	0-1VDC	55-65HZ	A	R161	DGA2	A2	N/A	
2	A11	DG A2 VOLTAGE	0-.97VDC	0-5250VAC	A	R161	DGA2	A2	N/A	
3	A12	DG A2 KILOWATTS	0-.98VDC	0-5600KW	A	R161	DGA2	A2	N/A	
4	A13	DG A2 CURRENT	0-.98VDC	0-800A	A	R161	DGA2	A2	N/A	
5	A14	DG A FREQUENCY	0-1VDC	55-65HZ	A	Local	DGA	A	FXD	TBNS352A
6	A15	DG A VOLTAGE	0-1VDC	0-5000HZ	A	AU118	DGA	A	VXD	TBNS352A
7	A16	DG A KW	0-1VDC	0-4800KW	A	CR	DGA	A	KWXD	H3E
8	A17	DG A AMPS	0-1VDC	0-600HZ	A	AU118	DGA	A	AXD	TBAU118
9	A30	BUS 4A2 AMPS, NORM FEED	0-1VDC	0-800HZ	A	NS159	4A2	A2	N/A	
10	A50	BUS 4A2 KW, NORM FEED	0-10VDC	0-5600KW	A	NS159	4A2	A2	KWXD	TBNS159
11	A59	BUS 4A2 NORM FEED VOLTS	0-1VDC	0-5250VAC	A	NS159	4A2	A2	N/A	
12	A32	BUS 3A2 AMPS	0-1VDC	0-300A	A	NS159	3A2	A2	N/A	
13	A51	BUS 3A2 KW	0-10VDC	0-2100KW	A	NS159	3A2	A2	KWXD	TBNS159
14	A34	AFW PUMP P319 AMPS	0-1VDC	0-200A	A	NS159	4A2	A2	N/A	
15	A52	AFW PUMP P319 KW	0-10VDC	0-1400KW	A	NS159	4A2	A2	KWXD	TBNS159
16	A314	BUS 3A2 VOLTS	0-1VDC	0-600VAC	A	NS159	3A2	A2	VXD	TBSN159
17	~~A36~~	~~MCC 2A3 CURRENT~~	~~1mv/AMP~~	~~0-1000A~~	A	~~NS159~~	~~2A3~~	A2	~~CL~~	
18	A37	MCC 2A3 VOLTAGE	0-1VDC	0-520VAC	A	NS159	2A3	A2	VXD	TBNS159
19	A38	MCC 2A4 CURRENT	1mv/AMP	0-1000A	A	NS159	2A4	A2	CL	
20	A39	MCC 2A4 VOLTAGE	0-1VDC	0-520VAC	A	R161	2A4	A2	VXD	DGA2
21	A310	BUS 4A NORM SUPPLY AMPS	0-1VDC	0-600A	A	AU118	4A	A	AXD	TBAU118
22	A53	BUS 4A NORM SUPPLY KW	0-10VDC	0-4800Kw	A	AU118	4A	A	KWXD	TBAU118
23	A510	BUS 4A NORM FEED VOLTS	0-4.1VDC	0-6000VAC	A	AU118	4A	A	N/A	
24	A312	BUS 3A NORM SUPPLY AMPS	0-1VDC	0-200A	A	AU118	3A	A	AXD	TBAU118
25	A54	BUS 3A NORM SUPPLY KW	0-10VDC	0-1600KW	A	AU118	3A	A	KWXD	TBAU118
26	A313	MU PUMP P236 AMPS	0-1VDC	0-200A	A	AU118	4A	A	AXD	TBAU118
27	A55	MU PUMP P236 KW	0-10VDC	0-1600KW	A	AU118	4A	A	KWXD	TBAU118
28	A41	HPI PUMP P238A AMPS	0-1VDC	0-200A	A	AU118	4A	A	AXD	TBAU118
29	A56	HPI PUMP P238A KW	0-10VDC	0-1600KW	A	AU118	4A	A	KWXD	TBAU118
30	A43	DH PUMP P261A AMPS	0-1VDC	0-100A	A	AU118	4A	A	AXD	TBAU118
31	A57	DH PUMP P261A KW	0-10VDC	0-800A	A	AU118	4A	A	KWXD	TBAU118
32	A45	NSRW PUMP P472A AMPS	0-1VDC	0-100A	A	AU118	4A	A	AXD	TBAU118
33	A58	NSRW PUMP P472A KW	0-10VDC	0-800A	A	AU118	4A	A	KWXD	TBAU118
34	A47	BUS 3A VOLTS	0-1VDC	0-520VAC	A	AU215	3A	A	VXD	TBAU215
35	A48	RBS PUMP P291A AMPS	0-1VDC	0-600A	A	AU215	3A	A	AXD	TBAU215
36	A49	NSCW PUMP P482A AMPS	0-1VDC	0-400A	A	AU215	3A	A	AXD	TBAU215
37	A410	D/G EXH FAN 544B AMPS	1mv/AMP	0-1000A	A	AU215	3A	A	CL	
38	A411	RB ECU-500C AMPS	1mv/AMP	0-1000A	A	AU215	3A	A	CL	
39	A412	D/G EXH FAN 544A AMPS	1mv/AMP	0-1000A	A	AU215	3A	A	CL	
40	A413	RB ECU-500A AMPS	1mv/AMP	0-1000A	A	AU215	3A	A	CL	
41	A414	MCC 2A1 CURRENTS	1mv/AMP	0-1000A	A	AU215	2A1	A	CL	
42	A415	MCC 2A1 VOLTAGE	0-1VDC	0-513.5VAC	A	AU215	2A1	A	VXD	TBAU215

LOOP #	SLCT CHAN	DESCRIPTION OF LOOP	COMPUTER INPUT RANGE	COMPUTER ENGINEERING UNITS	A/D	FROM	LOAD GRP	SUB TRN	TEMPORARY TRANSDUCER INFO ID #	LOCATION
43	A31	COND U 503A AMPS	1mv/AMP	0-1000A	A	NS159	3A2	A2	CL	
44	A33	COND U 545A AMPS	1mv/AMP	0-1000A	A	NS159	3A2	A2	CL	
101	B10	D/G B2 FREQUENCY	0-1VDC	55-65HZ	A	R162	DGB2	B2	N/A	
102	B11	D/G B2 VOLTAGE	0-.98VDC	0-5250VAC	A	R162	DGB2	B2	N/A	
103	B12	D/G B2 KILOWATTS	0-1VDC	0-5600KW	A	R162	DGB2	B2	N/A	
104	B13	D/G B2 CURRENT	0-1VDC	0-800A	A	R162	DGB2	B2	N/A	
105	B14	D/G B FREQUENCY	0-1VDC	55-65HZ	A	LOCAL	DGB	B	FXD	TBNS352B
106	B15	D/G B VOLTAGE	0-1VDC	0-6000VAC	A	AU114	DGB	B	VXD	TBNS352B
107	B16	D/G B KILOWATTS	0-1VDC	0-4800KW	A	CR	DGB	B	KWXD	H3E
108	B17	D/G B CURRENT	0-1VDC	0-600A	A	AU114	DGB	B	AXD	TBAU114
109	B30	BUS 4B2 NORM FEED AMPS	0-1VDC	0-800A	A	NS158	4B2	B2	N/A	
110	B50	BUS 4B2 NORM FEED KW	0-10VDC	0-5600KW	A	NS158	4B2	B2	KWXD	TBNS158
111	B510	BUS 4B2 NORM FEED VOLTS	0-4.06VDC	0-5250VAC	A	NS158	4B2	B2	N/A	
112	B32	BUS 3B2 AMPS	0-1VDC	0-300A	A	NS158	3B2	B2	N/A	
113	B51	BUS 3B2 KW	0-10VDC	0-2100KW	A	NS158	3B2	B2	KWXD	TBNS158
114	B34	AFW PUMP P318 AMPS	0-1VDC	0-200A	A	NS158	4B2	B2	N/A	
115	B52	AFW PUMP P318 KW	0-10VDC	0-1400KW	A	NS158	4B2	B2	KWXD	TBNS158
116	B59	BUS 3B2 VOLTS	0-5VDC	0-600VAC	A	NS158	3B2	B2	VXD	TBNS158
117	B36	MCC 2B3 AMPS	1mv/AMP	0-1000A	A	NS158	2B3	B2	CL	
118	B37	MCC 2B3 VOLTS	0-1VDC	0-520VAC	A	NS158	2B3	B2	VXD	TBNS158
119	B38	MCC 2B4 AMPS	1mv/AMP	0-1000A	A	NS158	2B4	B2	CL	
120	B39	MCC 2B4 VOLTS	0-1VDC	0-520VAC	A	R162	2B4	B2	VXD	DGB2
121	B310	BUS 4B NORM FEED AMPS	0-1VDC	0-600A	A	AU114	4B	B	AXD	TBAU114
122	B53	BUS 4B NORM FEED KW	0-10VDC	0-4800KW	A	AU114	4B	B	KWXD	TBAU114
123	B514	BUS 4B NORM FEED VOLTS	0-4.09VDC	0-6000VAC	A	AU114	4B	B	N/A	
124	B312	BUS 3B AMPS	0-1VDC	0-200A	A	AU114	3B	B	AXD	TBAU114
125	B54	BUS 3B KW	0-10VDC	0-1600KW	A	AU114	3B	B	KWXD	TBAU114
126	B313	MU PUMP P236 AMPS	0-1VDC	0-200A	A	AU114	4B	B	AXD	TBAU114
127	B55	MU PUMP P236 KW	0-10VDC	0-1600KW	A	AU114	4B	B	KWXD	TBAU114
128	B41	HPI PUMP P238B AMPS	0-1VDC	0-200A	A	AU114	4B	B	AXD	TBAU114
129	B56	HPI PUMP P238B KW	0-10VDC	0-1600KW	A	AU114	4B	B	KWXD	TBAU114
130	B43	DH PUMP P261B AMPS	0-1VDC	0-100A	A	AU114	4B	B	AXD	TBAU114
131	B57	DH PUMP P261B KW	0-10VDC	0-800KW	A	AU114	4B	B	KWXD	TBAU114
132	B45	NSRW PUMP P472B AMPS	0-1VDC	0-100A	A	AU114	4B	B	AXD	TBAU114
133	B58	NSRW PUMP P472B KW	0-10VDC	0-800KW	A	AU114	4B	B	KWXD	TBAU114
134	B47	BUS 3B VOLTS	0-1VDC	0-520VAC	A	AU211	3B	B	VXD	TBAU211
135	B48	RBS PUMP P291B AMPS	0-1VDC	0-600A	A	AU211	3B	B	AXD	TBAU211
136	B49	NSCW PUMP P482B AMPS	0-1VDC	0-400A	A	AU211	3B	B	AXD	TBAU211
137	B410	D/G A VENT EXH FAN 544D AMPS	1mv/AMP	0-1000A	A	AU211	3B	B	CL	
138	B411	RB ECU A500 B AMPS	1mv/AMP	0-1000A	A	AU211	3B	B	CL	
139	B412	D/G A VENT EXH FAN 544C AMPS	1mv/AMP	0-1000A	A	AU211	3B	B	CL	
140	B413	RB ECU A 500 D AMPS	1mv/AMP	0-1000A	A	AU211	3B	B	CL	
141	B414	MCC 2B1 AMPS	1mv/AMP	0-1000A	A	AU211	2B1	B	CL	

LOSS OF OFFSITE POWER TEST POINT SUMMARY
SORTED BY LOOP #

LOOP #	SLOT CHAN	DESCRIPTION OF LOOP	COMPUTER INPUT RANGE	COMPUTER ENGINEERING UNITS	A/D	FROM	LOAD GRP	SUB TRN	TEMPORARY TRANSDUCER INFO ID #	LOCATION
142	B415	MCC 2B1 VOLTS	0-1VDC	0-514VAC	A	AU211	2B1	B	VXD	TBAU211
143	B31	COND U 503 B AMPS	1mv/AMP	0-1000A	A	NS158	3B2	B2	CL	
144	B33	COND U 545B AMPS	1mv/AMP	0-1000A	A	NS158	3B2	B2	CL	
251	A70	BKR 4A202 POSITION	0-125VDC		D	NS159	4A2	A2		
252	A71	BKR 4A204 POSITION	0-125VDC		D	NS159	4A2	A2		
253	A72	BKR 4A205 POSITION	0-125VDC		D	NS159	4A2	A2		
254	A73	BKR 4A207 POSITION	0-125VDC		D	NS159	4A2	A2		
255	A74	BKR 4A01 POSITION	0-125VDC		D	AU118	4A	A		
256	A75	BKR 4A02 POSITION	0-125VDC		D	AU118	4A	A		
257	A76	BKR 4A04 POSITION	0-125VDC		D	AU118	4A	A		
258	A77	BKR 4A05 POSITION	0-125VDC		D	AU118	4A	A		
259	A78	BKR 4A07 POSITION	0-125VDC		D	AU118	4A	A		
260	A79	BKR 4A08 POSITION	0-125VDC		D	AU118	4A	A		
261	A710	BKR 4A09 POSITION	0-125VDC		D	AU118	4A	A		
262	A711	BKR 3A202 POSITION	DRY(A)		D	NS159	3A2	A2		
263	A712	BKR 3A206 POSITION	DRY(A)		D	NS159	3A2	A2		
264	A7[illegible]3	BKR 3A210 POSITION	DRY(B)		D	NS159	3A2	A2		
265	A[illegible]4	BKR 3A21[illegible] POSITION	DRY(A)		D	NS159	3A2	A2		
266	A715	BKR 3A215 POSITION	DRY(A)		D	NS159	3A2	A2		
267	A80	BKR 3A217 POSITION	DRY(B)		D	NS159	3A2	A2		
268	A81	BKR 3A05 POSITION	0-125VDC		D	AU215	3A	A		
269	A82	BKR 3A09 POSITION	0-125VDC		D	AU215	3A	A		
270	A83	BKR 3A10 POSITION	0-125VDC		D	AU215	3A	A		
271	A84	BKR 3A13 POSITION	0-125VDC		D	AU215	3A	A		
272	A85	BKR 3A14 POSITION	0-125VDC		D	AU215	3A	A		
273	A86	BKR 3A17 POSITION	0-125VDC		D	AU215	3A	A		
274	A87	BKR 3A18 POSITION	0-125VDC		D	AU215	3A	A		
275	A88	BKR 3A22 POSITION	0-125VDC		D	AU215	3A3	A		
276	A89	BKR 2A104 POSITION	DRY(A)		D	AU215	2A1	A		
277	A810	BKR 2A105 POSITION	DRY(A)		D	AU215	2A1	A		
278	A811	D/G A2 START SIGNAL	0-125VDC		D	R161	DGA2	A2		
279	A812	D/G A START SIGNAL	0-125VDC		D	H2DEA	DGA2	A2		
280	A35	D/G A2 SPEED	0-.2VDC	0-600RPM	A	R161	DGA2	A2	N/A	
281	A311	DG A SPEED (COMP DISC)	0-.768VDC	0-1200RPM	A	H2DEA	DGA	A	N/A	
284	A815	4A10 BREAKER POSITION	0-125VDC		D	AU118	4A	A		
285	A90	4A203 BREAKER POSITION	0-125VDC		D	NS159	4A2	A2		
286	B91	BKR OCB200 POSITION	DRY(A)		D	H3PRA	4B	B		
287	B92	BKR OCB210 POSITION	DRY(A)		D	H3PRA	4B	B		
351	B70	BKR 4B202 POSITION	0-125VDC		D	NS158	4B2	B2		
352	B71	BKR 4B203 POSITION	0-125VDC		D	NS158	4B2	B2		
353	B72	BKR 4B204 POSITION	0-125VDC		D	NS158	4B2	B2		
354	B73	BKR 4B205 POSITION	0-125VDC		D	NS158	4B2	B2		
355	B74	BKR 4B01 POSITION	0-125VDC		D	AU114	4B	B		

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ENCLOSURE 9.5 (Continued)
LOSS OF OFFSITE POWER TEST POINT SUMMARY
SORTED BY LOOP #

LOOP #	SLOT CHAN	DESCRIPTION OF LOOP	COMPUTER INPUT RANGE	COMPUTER ENGINEERING UNITS	A/D	FROM	LOAD GRP	SUB TRN	TEMPORARY TRANSDUCER INFO ID # LOCATION
356	B75	BKR 4B05 POSITION	0-125VDC		D	AU114	4B	B	
357	B76	BKR 4B06 POSITION	0-125VDC		D	AU114	4B	B	
358	B77	BKR 4B07 POSITION	0-125VDC		D	AU114	4B	B	
359	B78	BKR 4B08 POSITION	0-125VDC		D	AU114	4B	B	
360	B79	BKR 4B09 POSITION	0-125VDC		D	AU114	4B	B	
361	B710	BKR 4B11 POSITION	0-125VDC		D	AU114	4B	B	
362	B711	BKR 3B202 POSITION	DRY(A)		D	NS158	3B2	B2	
363	B712	BKR 3B206 POSITION	DRY(A)		D	NS158	3B2	B2	
364	B713	BKR 3B210 POSITION	DRY(B)		D	NS158	3B2	B2	
365	B714	BKR 3B211 POSITION	DRY(A)		D	NS158	3B2	B2	
366	B715	BKR 3B215 POSITION	DRY(A)		D	NS158	3B2	B2	
367	B80	BKR 3B217 POSITION	DRY(B)		D	NS150	3B2	B2	
368	B81	BKR 3B05 POSITION	0-125VDC		D	AU211	3B	B	
369	B82	BKR 3B06 POSITION	0-125VDC		D	AU211	3B	B	
370	B83	BKR 3B09 POSITION	0-125VDC		D	AU211	3B	B	
371	B84	BKR 3B10 POSITION	0-125VDC		D	AU211	3B	B	
372	B85	BKR 3B14 POSITION	0-125VDC		D	AU211	3B	B	
373	B86	BKR 3B17 POSITION	0-125VDC		D	AU211	3B	B	
374	B87	BKR 3B18 POSITION	0-125VDC		D	AU211	3B	B	
375	B88	BKR 3B22 POSITION	0-125VDC		D	AU211	3B	B	
376	B89	BKR 2B104 POSITION	DRY(A)		D	AU211	2B1	B	
377	B810	BKR 2B105 POSITION	DRY(A)		D	AU211	2B1	B	
378	B811	D/G B2 START SIGNAL	0-125VDC		D	R162	DGB2	B2	
379	B812	D/G B START SIGNAL	0-125VDC		D	H2DEB	DGB	B	
380	B35	D/G B2 SPEED	.2-1VDC	0-600RPM	A	R162	DGB2	B2	N/A
381	B311	D/G B SPEED (COMP DISC)	0-.768VDC	0-1200RPM	A	H2DEB	DGB	B	N/A
384	B815	4B04 BREAKER POSITION	0-125VDC		D	AU114	4B	B	
385	B90	4B207 BREAKER POSITION	0-125VDC		D	NS158	4B2	B2	
386	A91	BKR OCB240 POSITION	DRY(A)		D	H3PRA	4A	A	
387	A92	BKR OCB250 POSITION	DRY(A)		D	H3PRA	4A	A	
388	B94	BKR 4B205 PERM.	0-125VDC		D	NS158	4B2	B2	

TOTAL NUMBER OF LOOPS IS 158

ENCLOSURE 9.6

HIGH PRESSURE INJECTION SYSTEM ABNORMAL LINEUP

<u>NOTE</u>: An asterisk (*) indicates an item is not positioned per the normal lineup in A.15.

	VALVE	DESCRIPTION	POSITION	INITIALS
	FV-23004B	Flow Control Valve to Makeup Tank	CLOSED	
	SIM-062	Fill Line for RC System Isolation Valve	CLOSED	
	SIM-580	RC Fill Line Vent	CLOSED	
	HV-23004	Three Way Valve Supply to Flash Tank V-604	NORMAL	
	PLS-044	Supply to Makeup Tank Stop-Check Valve	OPEN	
	PLS-082	Makeup Tank O2 Analyzer Isolation Valve	CLOSED	
	TE-23503	Makeup Tank Temperature Indicating Element	IN SERVICE	
	PLS-525	Makeup Tank Level Transmitter LT-23502A/B Upper Isolation	OPEN	
	PLS-526	Makeup Tank Level Transmitter LT-23502A/B Lower Isolation	OPEN	
	LT-23502A	Makeup Tank Level Transmitter	IN SERVICE	
	LT-23502B	Makeup Tank Level Transmitter	IN SERVICE	
	LR-23502	Makeup Tank Level Recorder	IN SERVICE	
	LSL-23502	Makeup Tank Low Level Alarm Indicator H1RC	IN SERVICE	
	LSH-23502	Makeup Tank High Level Alarm Indicator H1RC	IN SERVICE	
	LSLL-23502	Makeup Tank Low Level Alarm Interlock	IN SERVICE	
	PT-23501	Makeup Tank Pressure Transmitter	IN SERVICE	
	PI-23502	Makeup Tank Pressure Indicator H1RC	IN SERVICE	
	PSL-23501	Makeup Tank Low Pressure Alarm H2PS	IN SERVICE	
	PSH-23501	Makeup Tank High Pressure Alarm H2PS	IN SERVICE	
	PLS-086	RC System Drain Tank Isolation Valve	CLOSED	
	PLS-087	Reactor Coolant Sample Sink Isolation Valve	CLOSED	
	HV-23506	Hydrogen to M/U Tank	CLOSED	
	HV-23507	Nitrogen to M/U Tank	CLOSED	
	NGS-023	Nitrogen Supply Manual Isolation Valve	OPEN	
*	NGS-057	Nitrogen Spool Piece Isolation Upstream	OPEN	
*	NGS-058	Nitrogen Spool Piece Isolation Downstream	OPEN	
*	________	Spool Piece	INSTALLED	
	SFV-23508	Makeup Tank Outlet	OPEN	
*	52-2A172	M/U Tank Isolation Valve Norm Breaker	OFF	
*	52-2B166	M/U Tank Isolation Valve Alternate Breaker	OFF	
	SIM-577	Drain Isolation Valve Downstream of SFV-23508	CLOSED	
*	SIM-035	FI-23605 Outlet Isolation Valve	CLOSED	

	VALVE	DESCRIPTION	POSITION	INITIALS
*	SIM-056	Suction Header Isolation Valve	OPEN	
	SIM-565	SIM-056 Bypass Valve	LOCKED CLOSED	
*	SIM-057	Suction Header Isolation Valve	OPEN	
	SIM-564	SIM-057 Bypass Valve	LOCKED CLOSED	
	PLS-567	Drain Isolation Valve Between SIM-056 and SIM-057	CLOSED	
*	SIM-042	Supply From Borated Water Storage Tank T-250 Isolation Valve	CLOSED	
	PLS-578	SIM-042 Bypass Valve	CLOSED	
	PLS-580	Drain Isolation Valve Downstream of SIM-042	CLOSED	
	SIM-054	Suction Header Isolation Valve	LOCKED OPEN	
	SIM-569	SIM-054 Bypass Valve	LOCKED CLOSED	
	SIM-055	Suction Header Isolation Valve	LOCKED OPEN	
	SIM-568	SIM-055 Bypass Valve	LOCKED CLOSED	
	SIM-493	Drain Isolation Valve Between SIM-054 and SIM-055	CLOSED	
*	SIM-051	Supply From Borated Water Storage Tank T-250 Isolation Valve	CLOSED	
*	PLS-049	Supply To Decay Pumps P-261A and B	CLOSED	
*	HV-26007	LP Supply to HP Suction A	CLOSED	
*	52-2A139	DH Supply to HP Inj Pump A HV-26007	OFF	
*	HV-26008	LP Supply to HP Suction B	CLOSED	
*	52-2B148	DH Supply to HP Inj Pump B HV-26008	OFF	
*		Makeup Tank Level Established Between 60 and 80 inches with N2 Overpressure of 20 to 35 psig.		
	SIM-072	P-238A Vent Isolation Valve	CLOSED	
	SIM-074	P-238A Discharge Header Drain Isolation Valve Closed	CLOSED	
	SIM-086	P-238A Recirculation Isolation Valve	LOCKED OPEN	
	SIM-081	P-238A Recirculation Stop-Check Valve	LOCKED OPEN	
	SIM-053	P-238A Suction Isolation Valve	LOCKED OPEN	
	SIM-571	SIM-053 Bypass Valve	CLOSED	
	PI-23847	P-238A Suction Pressure Indicator	IN SERVICE	
	SIM-059	P-238A Discharge Isolation Valve	OPEN	
	PI-23803	P-238A Discharge Pressure Indicator	IN SERVICE	
	SIM-096	P-238A Vent Valve	CLOSED	

	VALVE	DESCRIPTION	POSITION	INITIALS
	SIM-089	P-238A Suction Header Drain Valve	CLOSED	
	LOS-054	P-238A Lube Oil Drain Isolation Valve	CLOSED	
*	52-2A102	HP Injection PP P-238A Lo Pump Breaker	ON	
*	52-2A102	HIRC Isolation Switch	NORMAL	
*	52-2A116	Emergency Pump Room Air Cooler A-529A Breaker	ON	
	SIM-070	P-236 Vent Isolation Valve	CLOSED	
	SIM-071	P-236 Discharge Header Drain Isolation Valve	CLOSED	
	SIM-080	P-236 Recirculation Isolation Valve	LOCKED OPEN	
	SIM-079	P-236 Recirculation Stop-Check Valve	LOCKED OPEN	
	SIM-001	P-236 Suction Isolation Valve	LOCKED OPEN	
	SIM-566	SIM-001 Bypass Valve	CLOSED	
	PI-23641	Makeup Pump Suction Pressure Indicator	IN SERVICE	
	SIM-003	P-236 Discharge Isolation Valve	OPEN	
	PI-23601	Makeup Pump Discharge Pressure Indicator	IN SERVICE	
	SIM-097	Makeup Pump Vent Valve	CLOSED	
	SIM-092	Suction Header Drain Valve	CLOSED	
	LOS-055	P-236 Lube Oil Drain Isolation Valve	CLOSED	
	SIM-073	P-238B Vent Isolation Valve	CLOSED	
	SIM-075	P-238B Discharge Header Drain Isolation Valve Closed	CLOSED	
	SIM-077	P-238B Recirculation Isolation Valve	LOCKED OPEN	
	SIM-078	P-238B Recirculation Stop-Check Valve	LOCKED OPEN	
	SIM-044	P-238B Suction Isolation Valve	LOCKED OPEN	
	PLS-563	SIM-044 Bypass Valve	CLOSED	
	PI-23848	P-238B Suction Header Pressure Indicator	IN SERVICE	
	SIM-046	P-238B Discharge Isolation Valve	OPEN	
	PI-23804	P-238B Discharge Header Pressure Indicator	IN SERVICE	
	SIM-098	P-238B Vent Valve	CLOSED	
	SIM-095	P-238B Suction Header Drain Valve	CLOSED	
	LOS-056	P-238B Lube Oil Drain Isolation Valve	CLOSED	
*	52-2B102	HPI Pump P-238B Lo Pump Breaker	ON	
*	52-2B119	Emergency Pump Air Cooler A-529C Breaker	ON	
	PLS-530	Vent Isolation Valve Between SFV-24004 and SFV-24013	CLOSED	
*	SFV-24013	RCP Bleedoff Isol-Outside	CLOSED	
	SFV-23646	HPI Pump Recirc To Coolers	OPEN	
*	52-2B141	M/U Pump Recirc SFV-23646	OFF	
	SFV-23645	HPI Pump Recirc to Coolers	OPEN	
*	52-2A121	Makeup Pump Recirc Isolation SFV-23645	OFF	
	PLS-547	Drain Isolation Between SFV-23645 and SFV-23646	CLOSED	

ENCLOSURE 9.6 (Continued)
HIGH PRESSURE INJECTION SYSTEM ABNORMAL LINEUP

VALVE	DESCRIPTION	POSITION	INITIALS
PLS-022	E-240A Vent Isolation Valve	CLOSED	
PLS-169	E-240A Vent Isolation Valve	CLOSED	
PLS-053	E-240A Drain Isolation Valve	CLOSED	
PLS-170	E-240A Drain Isolation Valve	CLOSED	
PLS-005	E-240A Inlet Isolation Valve	OPEN	
PLS-007	E-240A Inlet Isolation Valve	OPEN	
PLS-023	E-240B Vent Isolation Valve	CLOSED	
PLS-025	E-240B Vent Isolation Valve	CLOSED	
PLS-054	E-240B Drain Isolation Valve	CLOSED	
PLS-171	E-240B Drain Isolation Valve	CLOSED	
PLS-006	E-240B Inlet Isolation Valve	OPEN	
PLS-008	E-240B Inlet Isolation Valve	OPEN	
TSH-24001	Seal Return Hi Temperature Alarm, H2PS	IN SERVICE	

ENCLOSURE 9.7

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ENCLOSURE 9.8

REACTOR BUILDING SPRAY SYSTEM ABNORMAL LINEUP

<u>CAUTION</u>: IF THE RCS IS PRESSURIZED, THE LINEUP OF ENCLOSURE 9.11 <u>MUST</u> BE COMPLETED PRIOR TO PERFORMING THIS LINEUP.

	VALVE	DESCRIPTION	POSITION	INITIALS/ DATE
1)	CBS-009	("A" LOOP RBS INJECTION)	CLOSED	________/________
2)	CBS-011	("A" WEEP LINE)	OPEN	________/________
3)	CBS-045	("A" LOOP TEST LINE TO BWST)	OPEN	________/________
4)	CBS-047	(TEST LINE TO BWST T-250)	OPEN (3 TURNS)	________/________
5)	CBS-026	(V-290B SPRAY ADD LOOP "A")	CLOSED	________/________
6)	CBS-025	(V-290A SPRAY ADD LOOP "B")	CLOSED	________/________
7)	CBS-010	("B" LOOP RBS INJECTION)	CLOSED	________/________
8)	CBS-012	("B" WEEP LINE)	OPEN	________/________
9)	CBS-046	("B" LOOP TEST LINE TO BWST)	OPEN	________/________
10)	CBS-020	(V-290B SPRAY ADD LOOP "B")	CLOSED	________/________
11)	CBS-019	(V-290A SPRAY ADD LOOP "A")	CLOSED	________/________

ENCLOSURE 9.9

AUXILIARY FEEDWATER SYSTEM ABNORMAL LINEUP

	VALVE	DESCRIPTION	POSITION	INITIALS/ DATE
1)	FWS-063	(AUX FEED TO "A" STM GEN)	CLOSED	______/______
2)	FWS-064	(AUX FEED TO "B" STM GEN)	CLOSED	______/______
3)	FWS-055	(PUMP FLOW TEST VALVE)	OPEN	______/______
4)	FWS-022	(FW CLEANUP RECIRC TO COND)	CLOSED	______/______
5)	FWS-541	(FWS-022 WARMING VALVE)	CLOSED	______/______
6)	FWS-544	(VENT)	CLOSED	______/______
7)	MCM-091	(FW CLEANUP/RECIRC TO LP COND)	OPEN	______/______
8)	MCM-092	(FW CLEANUP/RECIRC TO LP COND)	OPEN	______/______
9)	MCM-093	(FW CLEANUP/RECIRC TO HP COND)	OPEN	______/______
10)	~~MCM-094~~	~~(FW CLEANUP/RECIRC TO HP COND)~~	~~OPEN~~	______/______
11)	FWS-021	(FW CLEANUP RECIRC TO COND)	CLOSED	______/______
12)	FWS-542	(FWS-021 WARMING VALVE)	CLOSED	______/______
13)	FWS-545	(VENT)	CLOSED	______/______
14)	FWS-710	(AFW TEST LINE VENT)	CLOSED	______/______
15)	FWS-136	(DRAIN)	CLOSED	______/______
16)	FWS-135	(VENT)	CLOSED	______/______
17)	FWS-492	(FWS-055 BYPASS)	CLOSED	______/______
18)	FV-31855	(AFW FLOW TEST CONTROL VALVE)	CLOSED	______/______

ENCLOSURE 9.10

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ENCLOSURE 9.10

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ONLY IF RED

ENCLOSURE 9.11

LINEUP FOR SECTIONS 6.9 - 6.19, EXCLUDING 6.13 and 6.15

VALVE		DESCRIPTION	POSITION	INITIALS/ DATE
1)	HV-20005	DH PUMP A SUC FR RCS	CLOSED	/
		CK BKR 52-2A134	OPEN	/
2)	HV-20006	DH PUMP B SUC FR RCS	CLOSED	/
		CK BKR 52-2B144	OPEN	/
3)	SFV-26005	LP INJECTION LOOP A	CLOSED	/
		CK BKR 52-2A138	OPEN	/
4)	SFV-26006	LP INJECTION LOOP B	CLOSED	/
		CK BKR 52-2B147	OPEN	/
5)	SFV-25003	HPI/LPI/RBS SUCT FROM BWST	OPEN	/
		CK BKR 52-2A137	CLOSED	/
6)	SFV-25004	HPI/LPI/RBS SUCT FROM BWST	OPEN	/
		CK BKR 52-2B146	CLOSED	/

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ENCLOSURE 9.13

MOTOR STARTING GUIDELINES

MOTORS RATED ABOVE 100 HP

Number	Nomenclature	HP Rating
P-472A,B	Nuclear Service Raw Water Pumps	420
P-482A,B	Nuclear Service Cooling Water	250
P-236	Makeup Pump	700
P-238A,B	High Pressure Injection Pumps	700
P-261A,B	Decay Heat Removal Pumps	350
P-291A,B	Reactor Building Spray Pumps	300

Pump Number	System	Successive Starts with Motor Cold	Successive Starts with Motor Hot	Interval with Motor Running Before Another Start	Interval with Motor Not Running Before Another Start
P-236	RX M/U	2	1	5 min.	15 min.
P-238	HPI	2	1	5 min.	15 min.
P-261	DHR	2	1	5 min.	15 min.
P-291	RBS	2	1	5 min.	15 min.
P-472	NSRW	3	2	5 min.	15 min.
P-482	NSCW	3	2	5 min.	15 min.
*P-318	AFW	2	2	4 hrs.	5 hrs.

* No more than five (5) starts are allowed in any twenty-four (24) hour period.
If the motor starts from ambient temperature and runs for not more than two (2) minutes, the motor may be restarted once following motor coastdown to rest.

1. For motors not listed above, the following criteria should be used.

   Motors 100 HP and Above

   1. Two consecutive starts may be attempted when motor is at ambient temperature.
   2. One start may be attempted when motor is at rated temperature.
   3. A twenty minute interval, with motor running, must elapse before attempting another start.
   4. A forty minute interval, with motor not running, must elapse before attempting another start.

2. For P-319 start limitations, see Enclosure 9.23 (EAR SY-87-156).

ENCLOSURE 9.14

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ENCLOSURE 9.15

COMMUNICATIONS LOCATIONS

	Location	Equipment
1)	Aux Bldg EL 0'-0"	Bus 4A
2)	Aux Bldg EL 20'-0"	Bus 3A Bus 2A1
3)	Control Room	
4)	NSEB EL 1'-6"	Bus 3A2 Bus 4A2 Bus 2A3
5)	Diesel Cont. Rm A EL 0'-5"	D/G A2 Bus 2A4
6)	Aux Bldg EL 0'-0"	Bus 4B
7)	Aux Bldg EL 20'-0"	Bus 2B1 Bus 3B
8)	D/G A Rm EL 0'-0" Aux Bldg	D/G "A"
9)	D/G B Rm EL 0'-0" Aux Bldg	D/G "B"
10)	NSEB EL 1'-6"	Bus 2B3 Bus 3B2 Bus 4B2
11)	Diesel Cont. Rm "B" EL 0'-0"	Bus 2B4 D/G B2
12)	NSEB EL 40'-0"	Data Acquisition Computer Rm NS 352

SEQUENCING INTERVALS

LOAD	BREAKER NUMBER	DESCRIPTION	TIMING SEQUENCE		EVENT
(SUBTRAIN A)					
P-261A	4A05	DHR PUMP	5	(4.75-5.25)	A
X43A1	4A09	MCC-2A1 SUPPLY	5	(4.75-5.25)	B
			0		C
P-236	4A02	M/U PUMP	8	(7.6-8.4)	A
			8	(7.6-8.4)	B
			3	(2.85-3.15)	C
P-238A	4A04	HPI PUMP	8	(7.6-8.4)	A
			8	(7.6-8.4)	B
			3	(2.85-3.15)	C
A-500A	3A10	RB EMERG AC	15	(14.25-15.75)	A
A-500C	3A14	RB EMERG AC	15	(14.25-15.75)	B
			16	(15.2-16.8)	C
P-482A	3A18	NSCW PUMP	15	(14.25-15.75)	A
			15	(14.25-15.75)	B
			16	(15.2-16.8)	C
P-4[illegible]A	4A07	NSRW PUMP	25	(23.75-26.25)	A
			25	(23.75-26.25)	B
			26	(24.70-27.30)	C
A-544A	3A13	DG RM EX FAN	40	(38.0-42.0)	A
A-544B	3A17	DG RM SP FAN	40	(38.0-42.0)	B
			41	(38.95-43.05)	C
P-291A	3A09	RB SPRAY PUMP	300	(285.-315.)	A
			25	(23.75-26.25)	B
			300	(285.-315.)	C

A = LOOP-SFAS   0 SEC. = D/G BKR CLOSURE
B = SFAS/LOOP   0 SEC. = D/G START SIGNAL
C = SFAS   0 SEC. = D/G START SIGNAL

TIMING RELAY TOLERANCES

BUS 4A AND 4B   ±5%
BUS 4A2 AND 4B2   ±10%

REF. DWG. E-208, SH. D, REV. 0, DCN 4A (ECN A-36602)
REF. TECH MANUAL E6.02.1A-130-2 MEMO INSERT DATED 03/18/87 FROM AMECKE

LOAD	BREAKER NUMBER	DESCRIPTION	TIMING SEQUENCE		EVENT
(SUBTRAIN B)					
P-261B	4B09	DHR PUMP	5	(4.75-5.25)	A
X43A1	4B05	MCC-2B1 SUPPLY	5	(4.75-5.25)	B
			0		C
P-236	4B08	M/U PUMP	8	(7.6-8.4)	A
			8	(7.6-8.4)	B
			3	(2.85-3.15)	C
P-238B	4B07	HPI PUMP	8	(7.6-8.4)	A
			8	(7.6-8.4)	B
			3	(2.85-3.15)	C
A-500B	3B10	RB EMERG AC	15	(14.25-15.75)	A
A-500D	3B14	RB EMERG AC	15	(14.25-15.75)	B
			16	(15.2-16.8)	C
P-482B	3B18	NSCW PUMP	15	(14.25-15.75)	A
			15	(14.25-15.75)	B
			16	(15.2-16.8)	C
P-472B	4B06	NSRW PUMP	25	(23.75-26.25)	A
			25	(23.75-26.25)	B
			26	(24.70-27.30)	C
A-544C	3B06	DG RM EX FAN	40	(38.0-42.0)	A
A-544D	3B17	DG RM SP FAN	40	(38.0-42.0)	B
			41	(38.95-43.05)	C
P-291B	3B09	RB SPRAY PUMP	300	(285.-315.)	A
			25	(23.75-26.25)	B
			300	(285-315)	C

A = LOOP-SFAS — 0 SEC. = D/G BKR CLOSURE
B = SFAS/LOOP — 0 SEC. = D/G BKR CLOSURE
C = SFAS — 0 SEC. = D/G START SIGNAL

TIMING RELAY TOLERANCES

BUS 4A AND 4B ±5%
BUS 4A2 AND 4B2 ±10%

REF. DWG. E-208, SH. D, REV. 0, DCN 4A (ECN A-3660Z)
REF. TECH MANUAL E6.02.1A-130-2 MEMO INSERT DATED 03/18/87 FROM AMECKE

ENCLOSURE 9.16 (Continued)
SEQUENCING INTERVALS

LOAD	BREAKER NUMBER	DESCRIPTION	TIMING SEQUENCE		EVENT
(SUBTRAIN A2)					
S2A4	3A215	MCC 2A4	25	(22.5-27.5)	A
			25	(22.5-27.5)	B
			26	(23.4-28.6)	C
P-319	4A205	AFW PUMP	30	(27.0-33.0)	A
			30	(27.0-33.0)	B
			31	(27.9-34.1)	C
U-503A	3A217	NSEB HVAC	30	(27.0-33.0)	A
			30	(27.0-33.0)	B
			31	(27.9-34.1)	C
U-545A	3A210	CR/TS HVAC	50	(45.0-55.0)	A
			50	(45.0-55.0)	B
			51	(45.9-56.1)	C
S3A2	3A202	BUS 3A2	5	(4.5-5.5)	A
		(MCC-2A3)	5	(4.5-5.5)	B
			0		C

A = LOOP-SFAS   0 SEC. = D/G BKR CLOSURE
B = SFAS/LOOP   0 SEC. = D/G BKR CLOSURE
C = SFAS   0 SEC. = D/G START SIGNAL

TIMING RELAY TOLERANCES

BUS 4A AND 4B   ±5%
BUS 4A2 AND 4B2   ±10%

REF. DWG. E-208, SH. D, REV. 0, DCN 4A (ECN A-3660Z)
REF. TECH MANUAL E6.02.1A-130-2 MEMO INSERT DATED 03/18/87 FROM AMECKE

ENCLOSURE 9.16 (Continued)
SEQUENCING INTERVALS

LOAD	BREAKER NUMBER	DESCRIPTION		TIMING SEQUENCE	EVENT
(SUBTRAIN B2)					
S2B4	3B215	MCC 2B4	25	(22.5-27.5)	A
			25	(22.5-27.5)	B
			26	(23.4-28.6)	C
U-503B	3B217	NSEB HVAC	30	(27.0-33.0)	A
			30	(27.0-33.0)	B
			31	(27.9-34.1)	C
U-545B	3B210	CR/TS HVAC	50	(45.0-55.0)	A
			50	(45.0-55.0)	B
			51	(45.9-56.1)	C
S3B2	3B202	BUS 3B2 (MCC-2B3)	5	(4.5-5.5)	A
			5	(4.5-5.5)	B
			0		C

A = LOOP-SFAS 0 SEC. = D/G BKR CLOSURE
B = SFAS/LOOP 0 SEC. = D/G BKR CLOSURE
C = SFAS 0 SEC. = D/G START SIGNAL

TIMING RELAY TOLERANCES

BUS 4A AND 4B ±5%
BUS 4A2 AND 4B2 ±10%

REF. DWG. E-208, SH. D, REV. 0, DCN 4A (ECN A-3660Z)
REF. TECH MANUAL E6.02.1A-130-2 MEMO INSERT DATED 03/18/87 FROM AMECKE

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ENCLOSURE 9.17

SECTIONS 6.9 AND 6.12 INITIAL PRETEST LINEUP

NOTE Operations will perform and sign for all equipment line-ups

NOTE: Duplicate this enclosure as necessary for Sections 6.9 and 6.12.

CAUTION: THIS ENCLOSURE MUST BE PERFORMED IN THE ORDER SHOWN.

SECTION _________ INITIAL PRETEST LINEUP

1.0 Align the 480 VAC System breakers as follows:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
1.1	52-3A21	TIE BREAKER TO LOAD CENTER S3B2	RACKED OUT	______/______
1.2	52-3A22	MCC-2B1 SPLY BKR	CLOSED	______/______
1.3	52-3A203	TIE TO BUS S3B	RACKED OUT	______/______
1.4	52-3A05	STATION SERVICE XFMR X43A1	CLOSED	______/______
1.5	52-3A202	MAIN BREAKER TO BUS 3B2	CLOSED	______/______
1.6	52-3A206	MCC 2B2 SPLY BKR	CLOSED	______/______
1.7	52-3A211	MCC 2B3 SPLY BKR	CLOSED	______/______
1.8	52-3A215	MCC 2B4 SPLY BKR	CLOSED	______/______

2.0 Align the 4 KV and 6.9 KV System breakers as follows:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
2.1	52-4C01	S/U XFMR NO. 2 X94	RACKED OUT	_____/_____
2.2	52-4D01	S/U XFMR NO. 2 X94	RACKED OUT	_____/_____
2.3	52-4E06	S/U XRMR NO. 2	RACKED OUT	_____/_____
2.4	52-4E13	S/U XFMR NO. 2	RACKED OUT	_____/_____
2.5	52-6A04	S/U XFMR NO. 1-X976	RACKED OUT	_____/_____
2.6	52-6B04	S/U XFMR NO. 1-X976	RACKED OUT	_____/_____
2.7	52-4A01	NUCLEAR SERVICES SUPPLY TRANS	CLOSED	_____/_____
2.8	52-4A09	STATION SERVICE SUPPLY TRANS X43A	CLOSED	_____/_____
2.9	52-[illegible]203	NSS XFMR X74	CLOSED	_____/_____
2.10	52-4A204	480V LOAD CENTER S3A2	CLOSED	_____/_____

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		INITIALS/DATE
3.0	Close/verify closed the following air start valves to diesel generator GEB:	
3.1	EGS-546	______/______
3.2	EGS-550	______/______
4.0	Close/verify closed the following air start valves to diesel generator GEB2:	
4.1	EGS-578	______/______
4.2	EGS-634	______/______
5.0	Verify the Main Transformers X98A and X98B are on Backfeed and providing power to the Unit Aux Transformer IAW EM.173.	______/______

6.0 Align the following 125 VDC Bus SOB Breakers:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
6.1	72-B01	SFB SOLENOIDS	CLOSED	_______/_______
6.2	72-B02	RCP FAILURE	OPEN	_______/_______
6.3	72-B03	SPARE	OPEN	_______/_______
6.4	72-B04	DIESEL ENGINE GEB CONTROL CABINET	CLOSED	_______/_______
6.5	72-B05	480V SWGR BUS 3B	CLOSED	_______/_______
6.6	72-B06	ROD CONTROL AC BKR B	OPEN	_______/_______
6.7	72-B07	DIESEL GEN GEB CONTROL CAB	CLOSED	_______/_______
6.8	72-B08	4160V SWGR BUS 4B	CLOSED	_______/_______
6.9	~~72-B09~~	~~DIESEL GEN GEB EMERG AIR COMP~~	~~OPEN~~	_______/_______
6.10	72-B10	SPARE	OPEN	_______/_______
6.11	72-B11	BATT CHGR H4BB	CLOSED	_______/_______
6.12	72-B12	BATTERY CHARGER H4BBD	OPEN	_______/_______
6.13	72-B13	BATTERY BB	CLOSED	_______/_______
6.14	72-B15	SPARE	OPEN	_______/_______

7.0 Align the following 125 VDC Bus S0B2 Breakers:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
7.1	72-B201	SPARE	CLOSED	______/______
7.2	72-B202	DIESEL GENERATOR B2 ENGINE CONTROL PANEL	OPEN	______/______
7.3	72-B203	STEAM TO AUX FP TURBINE MOV HV-30801	OPEN	______/______
7.4	72-B204	DIESEL GENERATOR B2 ENGINE CONTROL PANEL	OPEN	______/______
7.5	72-B205	4160V SWITCHGEAR 4B2 CONTROL	CLOSED	______/______
7.6	72-B206	D/G CONT PANEL H2DGB2 FIELD FLASH	OPEN	______/______
7.7	72-B207	4.16KV SWGR S4B2 SEQ. & UNDER VOLTAGE RELAYS	CLOSED	______/______
7.8	72-B208	DIESEL GENERATOR CONTROL B2 PANEL	OPEN	______/______
7.9	72-B209	SPARE	OPEN	______/______
7.10	72-B210	SPARE	OPEN	______/______
7.11	72-B211	480V LOAD CENTER 3B2 CONTROL	CLOSED	______/______
7.12	72-B212	INVERTER S1B2	CLOSED	______/______
7.13	72-B213	SPARE	OPEN	______/______
7.14	72-B214	SPARE	OPEN	______/______
7.15	72-B215	SPARE	OPEN	______/______
7.16	72-B216	SPARE	OPEN	______/______
7.17	72-B217	AFW VALVE CONTROLLER FY-20531	OPEN	______/______
7.18	72-B218	AFW VALVE CONTROLLER FY-20532	OPEN	______/______
7.19	72-B219	BATTERY CHARGER H4BB2	CLOSED	______/______
7.20	72-B220	BATTERY CHARGER H4BB2D2	OPEN	______/______
7.21	72-B221	BATTERY B2	CLOSED	______/______

8.0 Align the following 125 VDC Bus SOD Breakers:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
8.1	72-D01	CONTROL ROOM LTG	CLOSED	_______/______
8.2	72-D02	RCP FAILURE	OPEN	_______/______
8.3	72-D03	SFV-23810	OPEN	_______/______
8.4	72-D04	SU TRANS. NO. 2 PROTECTION	CLOSED	_______/______
8.5	72-D05	SFV-23812	OPEN	_______/______
8.6	72-D06	SPARE	OPEN	_______/______
8.7	72-D07	TURBINE TRIP	OPEN	_______/______
8.8	72-D08	SPARE	OPEN	_______/______
8.9	72-D09	ROD CONTROL DC BKRS	OPEN	_______/______
8.10	72-D10	SPARE	OPEN	_______/______
8.11	72-D11	BATTERY CHARGER H4BBD	OPEN	_______/______
8.12	72-D12	BATTERY CHARGER H4BD	CLOSED	_______/______
8.13	72-D13	BATTERY BD	CLOSED	_______/______
8.14	72-D15	SPARE	OPEN	_______/______

ENCLOSURE 9.17 (Continued)
SECTIONS 6.9 AND 6.12 INITIAL PRETEST LINEUP

9.0 Align the following 125 VDC Bus S0D2 Circuit Breakers:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
9.1	72-D201	SPARE	OPEN	______/______
9.2	72-D202	SPARE	OPEN	______/______
9.3	72-D203	SPARE	OPEN	______/______
9.4	72-D204	SPARE	OPEN	______/______
9.5	72-D205	SPARE	OPEN	______/______
9.6	72-D206	SPARE	OPEN	______/______
9.7	72-D207	SPARE	OPEN	______/______
9.8	72-D208	AUX. FW ISOLATION VALVE HV-20582	OPEN	______/______
9.9	72-D209	SPARE	OPEN	______/______
9.10	72-D210	SPARE	OPEN	______/______
9.11	72-D211	AUX. FW ISOLATION VALVE HV-20577	OPEN	______/______
9.12	72-D212	INVERTER S1D2	CLOSED	______/______
9.13	72-D213	SPARE	OPEN	______/______
9.14	72-D214	SPARE	OPEN	______/______
9.15	72-D215	SPARE	OPEN	______/______
9.16	72-D216	SPARE	OPEN	______/______
9.20	72-D217	SPARE	OPEN	______/______
9.18	72-D218	SPARE	OPEN	______/______
9.19	72-D219	BATTERY CHARGER H4BD2	CLOSED	______/______
9.20	72-D220	BATTERY CHARGER H4BB2D2	OPEN	______/______
9.21	72-D221	BATTERY D2	CLOSED	______/______

10.0 Align the following 120 VAC Bus S1B Circuit Breakers:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
10.1	52-B01	PWR FDRS GND PROT SHUNT TRIP 2B1 AND 2B108	CLOSED	______/______
10.2	52-B02	SF CONT. PANEL B INSTRUMENTS	CLOSED	______/______
10.3	52-B03	1E POWER TO H4SCB SIGNAL CONVERSION CABINET	CLOSED	______/______
10.4	52-B04	BATT RM FAN EF-A-2	CLOSED	______/______
10.5	52-B05	BATT RM FAN EF-A-7	CLOSED	______/______
10.6	52-B06	EMERG AIR COND DAMPERS	OPEN	______/______
10.7	52-B07	MUX CABINET H4CDARS	CLOSED	______/______
10.8	52-B08	CONTROL ROD DRIVE TURBINE TRIP	OPEN	______/______
10.9	52-B09	SF ACTUATION CH. B ANALOG	CLOSED	______/______
10.10	52-B10	RPS CHANNEL B	CLOSED	______/______
10.11	52-B11	SF ACTUATION CH. B DIGITAL	CLOSED	______/______
10.12	52-B12	RCP UNDER POWER PROTECTION CHANNEL B	OPEN	______/______
10.13	N/A	120 VAC MAIN	CLOSED	______/______

11.0 Align the following 120 VAC Bus S1B2-1 Circuit Breakers:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
11.1	52-B2101	H3RPB1 RCS AND PZR HIGH POINT VENTS	OPEN	______/______
11.2	52-B2102	CR/TSC ESS CONDENSING UNIT U-545A	CLOSED	______/______
11.3	52-B2103	H4CDAR9 MUX/ISO CAB NSEB	CLOSED	______/______
11.4	52-B2104	AUX RELAY PANEL H3RPB1 ESS. NSEB HVAC EQUIP.	CLOSED	______/______
11.5	52-B2105	EFIC "B" PANEL H4FWB	CLOSED	______/______
11.6	52-B2106	AUX RELAY PNL H3RPB1 FOR CR/TSC HVAC EQUIP	CLOSED	______/______
11.7	52-B2107	CAB H4CDAL H4SPDS AND H2SP	OPEN	______/______
11.8	52-B2108	H3TSB T-SAT CALCULATOR MOD CHANNEL B UY-21032	OPEN	______/______
11.9	52-B2109	RAD. MONITOR CTMT AREA HIGH RAD R-15050 AND CR/TSC HVAC-R15702	CLOSED	______/______
11.10	52-B2110	TIE "B1" PNL H4EIBI	CLOSED	______/______
11.11	52-B2111	AFW SOL VALVES FY-31855B & D	CLOSED	______/______
11.12	52-B2112	SPARE	OPEN	______/______
11.13	52-B2113	H1SS CONSOLE INSTR.	CLOSED	______/______
11.14	52-B2114	CR/TSC ESS HVAC FT-54702 POWER SUPPLY	CLOSED	______/______
11.15	52-B2115	SPARE	OPEN	______/______
11.16	52-B2116	H4S1B SIG. ISO CAB 1E SIDE	CLOSED	______/______
11.17	52-B2117	SPARE	OPEN	______/______
11.18	52-B2118	CONT WATER & EMERG SUMP LEVEL MONITORS H4WB	CLOSED	______/______

ENCLOSURE 9.17 (Continued)
SECTIONS 6.9 AND 6.12 INITIAL PRETEST LINEUP

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
11.19	52-B2119	SPARE	OPEN	______/______
11.20	52-B2120	SPARE	OPEN	______/______
11.21	52-B2121	SPARE	OPEN	______/______
11.22	52-B2122	SPARE	OPEN	______/______
11.23	52-B2123	SPARE	OPEN	______/______
11.24	52-B2124	SPARE	OPEN	______/______
11.25	52-B2125	NSEB ESS COND UNIT U-503B CONT CKTS.	CLOSED	______/______
11.26	52-B2126	NSEB HVAC EQUIP FSH-50[illegible]	CLOSED	______/______
1[illegible] 27	52-B2127	FROM TRANSFER SWITCH H8T82	CLOSED	______/______

12.0 Align the following 120 VAC Bus S1D Circuit Breakers:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
12.1	52-D01	SPARE	OPEN	______/______
12.2	52-D02	PWR. REC. RCP. VIB. PNL	CLOSED	______/______
12.3	52-D03	SPARE	OPEN	______/______
12.4	52-D04	BATT RM D FAN EF-A-1	CLOSED	______/______
12.5	52-D05	SPARE	OPEN	______/______
12.6	52-D06	SPARE	OPEN	______/______
12.7	52-D07	SPARE	OPEN	______/______
12.8	52-[illegible]	CRD SYSTEM LOGIC	OPEN	______/______
12.9	52-[illegible]	SPARE	OPEN	______/______
12.10	52-D10	RPS CHANNEL D	CLOSED	______/______
12.11	52-D11	SPARE	OPEN	______/______
12.12	52-D12	RCP UNDER POWER PROT CH. D	OPEN	______/______
12.13	N/A	120 VAC MAIN	CLOSED	______/______

13.0 Align the following 120 VAC Bus S1D2-1 Circuit Breakers:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
13.1	52-D2101	AUXILIARY FEEDWATER SYSTEM POWER SUPPLY	OPEN	______/______
13.2	52-D2102	ANTICIPATORY REACTOR TRIP	OPEN	______/______
13.3	52-D2103	EFIC "D" H4FWD	CLOSED	______/______
13.4	52-D2104	SPARE	OPEN	______/______
13.5	52-D2105	SPARE	OPEN	______/______
13.6	52-D2106	SPARE	OPEN	______/______
13.7	52-D2107	SPARE	OPEN	______/______
13.8	52-D2108	SPARE	OPEN	______/______
13.9	52-D2109	SPARE	OPEN	______/______
13.10	52-D2110	SPARE	OPEN	______/______
13.11	52-D2111	SPARE	OPEN	______/______
13.12	52-D2112	SPARE	OPEN	______/______
13.13	52-D2113	SPARE	OPEN	______/______
13.14	52-D2114	SPARE	OPEN	______/______
13.15	52-D2115	SPARE	OPEN	______/______
13.16	52-D2116	SPARE	OPEN	______/______
13.17	52-D2117	SPARE	OPEN	______/______
13.18	52-D2118	SPARE	OPEN	______/______
13.19	52-D2119	SPARE	OPEN	______/______
13.20	52-D2120	SPARE	OPEN	______/______

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
13.21	52-D2123	SPARE	OPEN	______/______
13.22	52-D2124	ATWS RPS SYSTEM	OPEN	______/______
13.23	52-D2127	FROM TRANSFER SWITCH H8TD2	CLOSED	______/______

14.0 Line-up the following 125VDC/120VAC panels IAW the operating procedure referenced:

	PANEL	OPERATING PROCEDURE	INITIALS / DATE
14.1	SOA	A.61, Section 4.4	________/_____
14.2	SOA2	A.61, Section 4.4	________/_____
14.3	SOC2	A.61, Section 4.4	________/_____
14.4	SOC	A.61, Section 4.4	________/_____
14.5	S1A	A.62, Section 4.8	________/_____
14.6	S1A2-1	A.62, Section 4.8	________/_____
14.7	S1C	A.62, Section 4.8	________/_____
14.8	S1C2	A.62, Section 4.8	________/_____

ENCLOSURE 9.18

SECTIONS 6.9 AND 6.12 FINAL PRETEST LINEUP

NOTE: Operations will perform and sign for all equipment line-ups.

NOTE: Duplicate this enclosure as necessary for Sections 6.9 and 6.12.

NOTE: This enclosure must be performed in the sequence listed.

SECTION ________ FINAL PRETEST LINEUP	INITIALS/ DATE
1. Verify that the normal source for Battery Charger H4BEF, MCC S2A1 Breaker 52-2A130 is ON.	______/______
2. Verify 120 VAC Buses S1B and S1B2-1 are energized from 125 VDC Bus SOB2 via Inverter S1B2 IAW Operating Procedure A.62, Section 4.4.	______/______
3. Verify 120 VAC Buses S1D and S1D2-1 are energized from 125 VDC Bus SOD2 via Inverter S1D2 IAW Operating Procedure A.62, Section 4.8.	______/______

NOTE: Deenergizing MCC S2B1 will cause power to be lost to the following equipment:

SF-A-3, West (Grade Level) Nuclear Service Battery Room Supply Fan

SF-A-5, West Mezzanine Battery Room Supply Fan

3.1	Notify Security to post continuous Fire Watches at the following locations:	
3.1.1	- Battery Room BB Door (Zone 39)	______/______
3.1.2	- Mezzanine West Battery Room Door (Zone 11)	______/______
3.2	Disable the associated CARDOX Zone Fire Protection Systems:	
3.2.1	- Zone 39 (for the BB and BD Battery Rooms)	______/______
3.2.2	- Zone 11 (for the West Mezzanine Battery Room)	______/______
3.3	OPEN the affected Battery Room doors to prevent Hydrogen gas buildup in the rooms.	______/______
3.4	Contact the NOFPC to establish further compensatory actions, as required.	______/______

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INITIALS/ DATE

4. De-energize 480 VAC MCC S2B1 IAW Operating Procedure A.59, Section 6.1. ______/______

5. Open circuit breaker 52-BO1 (Ground Protection Shunt Trip) at 120 VAC Panel S1B. ______/______

6. De-energize 480 VAC MCC S2B2 IAW Operating Procedure A.59, Section 6.1. ______/______

NOTE: Deenergizing MCC S2B3 will cause power to be lost to the following equipment:

EF-554B, Battery BB2 Room Exhaust Fan.

EF-554D, Battery BD2 Room Exhaust Fan.

EF-554F, Battery BGB Room Exhaust Fan.

6.1 Notify Security to post continuous Fire Watches at the affected Battery Rooms. ______/______

6.2 Disable the CARDOX Fire Protection System for the affected Zones:

6.2.1 - Zone 75 (BB2 and BD2 Battery Rooms) ______/______

6.2.2 - Zone 79 (BGB Battery Room) ______/______

6.3 OPEN the affected Battery Room doors to prevent Hydrogen buildup in the rooms. ______/______

6.4 Contact the NOFPC to establish further compensatory actions, as required. ______/______

7. De-energize 480 VAC MCC 2B3 IAW Operating Procedure A.59, Section 6.1. ______/______

8. De-energize 480 VAC MCC 2B4 IAW Operating Procedure A.59, Section 6.1. ______/______

9. De-energize 480 VAC LC 3B IAW Operating Procedure A.59, Section 6.2. ______/______

10. De-energize 480 VAC LC 3B2 IAW Operating Procedure A.59, Section 6.2. ______/______

INITIALS/ DATE

11. De-energize 4 KV Bus 4B IAW Operating Procedure A.58, Section 6.3. ________/______

12. De-energize 4 KV Bus 4B2 IAW Operating Procedure A.58, Section 6.4. ________/______

13. Open the following circuit breakers:

PANEL	BREAKER #	DESCRIPTION	
SOB	72-B05	480V SWGR BUS 3B	________/______
SOB	72-B08	4160V SWGR BUS 4B	________/______
SOB2	72-B205	4160V SWITCHGEAR 4B2 CONTROL	________/______
SOB2	72-B207	4.16KV SWGR & 4B2 SEQ & UNDER VOLTAGE RELA·	________/______
SOB2	72-B211	480V LOAD CENTER 3B2 CONTROL	________/______

14. De-energize Startup Transformer #2 IAW Operating Procedure A.54, Section 7.2 and Enclosure 8.5 except actions 11, 12 and 13. ________/______

15. Open 125 VDC circuit breaker 72-D04 (S/U Transformer #2 Protection) at Panel SOB ________/______

ENCLOSURE 9.19

SECTIONS 6.9 AND 6.12 RESTORATION

NOTE: Operations will perform and sign for all equipment line-ups.

NOTE: Duplicate this Enclosure as necessary for Sections 6.9 and 6.12.

NOTE: The Shift Supervisor shall determine what order this restoration will be done in.

STEP #	DESCRIPTION
1-2	Re-energizes S/U XFMR #2
3-5	Re-energizes Buses 3B, 4B, 3B2, and 4B2
8-12	Re-energizes MCCs 2B1, 2B2, 2B3, and 2B4
13-18	Re-energizes Battery Chargers to the "GB", "N1", "B", "D", "B2", and "D2" Batteries.
19-21	Restores GEB and GEB2
22-29	Restores 120 VAC and 125 VDC panel line-ups to normal.
30-33	Restores HPI, AFW, RBS and DHS to normal.

NOTE: Prior to beginning this Enclosure, the Shift Supervisor shall review the line-ups in this section to ensure that the line-ups will return the systems to their required status to support plant conditions.

SECTION _________ RESTORATION INITIALS/ DATE

1. Close 125 VDC circuit breaker 72-D04 (S/U XFMR #2 Protection) at Panel SOD. _______/______

2. Energize Startup Transformer #2 IAW Operating Procedure A.54, Section 7.5, Enclosure 8.8 for Startup 2 only and Enclosure 8.7 except Actions 5,6,7 and 8 _______/______

3. CLOSE/verify closed the following 125 VDC circuit breakers:

3.1 72-B05 480V SWGR BUS 3B _______/______

3.2 72-B08 4160V SWGR BUS 4B _______/______

3.3 Step Deleted

3.4 72-B205 4160V SWITCHGEAR 4B2 CONTROL _______/______

3.5 72-B211 480V LOAD CENTER 3B2 CONTROL _______/______

4. Energize Bus 4B IAW Operating Procedure A.58, Section 4.5. _______/______

5. Energize Bus 4B2 IAW Operating Procedure A.58, Section 4.7. _______/______

6. Energize Bus 3B IAW Operating Procedure A.59, Section 4.1. _______/______

7. Energize Bus 3B2 IAW Operating Procedure A.59, Section 4.1. _______/______

8. Energize 480 VAC Motor Control Center 2B1 IAW Operating Procedure A.59, Section 4.2. _______/______

9. CLOSE Circuit Breaker 52-B01 (GROUND PROTECTION SHUNT TRIP) at 120 VAC Distribution Panel S1B. _______/______

10. Energize 480 VAC Motor Control Center 2B2 IAW Operating Procedure A.59, Section 4.4. _______/______

11. Energize 480 VAC Motor Control Center 2B3 IAW Operating Procedure A.59, Section 4.2. _______/______

12. Energize 480 VAC Motor Control Center 2B4 IAW Operating Procedure A.59, Section 4.2. _______/______

INITIALS/ DATE

13. Place in service/verify in service BATTERY CHARGER H4BB to feed Panel SOB IAW Operating Procedure A.61, Section 4.4.2. DO NOT close in all loads on SOB. ________/________

14. Place in service/verify in service BATTERY CHARGER H4BD to feed Panel SOD IAW Operating Procedure A.61, Section 4.4.4. DO NOT close in all loads on SOD. ________/________

15. Place in service/verify in service BATTERY CHARGER H4BGB to feed Inverter S1GB IAW Operating Procedure A.63, Section 4.3. DO NOT close in all loads on S1GB-1. ________/________

16. Place in service/verify in service BATTERY CHARGER H4BN1 to feed panel SON1 IAW Operating Procedure A.61, Section 4.4.13. ________/________

17. Place in service/verify in service BATTERY CHARGER H4BB2 to feed Panel SOB2 IAW Operating Procedure A.61, Section 4.4.8. DO NOT close in all loads on SOB2. ________/________

18. Place in service/verify in service BATTERY CHARGER H4BD2 to feed Panel SOD2 IAW Operating Procedure A.61, Section 4.4.10. DO NOT close in all loads on SOD2. ________/________

NOTE: The Compensatory Measures, taken on Enclosure 9.18, for the loss of Battery Room Fans may now be suspended.

		INITIALS/ DATE
19.	Close the following 125 VDC breakers:	
19.1	72-B04 DIESEL ENGINE GEB CONTROL CABINET	______/______
19.2	72-B07 DIESEL GEN GEB CONTROL CAB	______/______
19.3	72-B202 DIESEL GENERATOR B2 ENGINE CONTROL PANEL	______/______
19.4	72-B204 DIESEL GENERATOR B2 ENGINE CONTROL PANEL	______/______
19.5	72-B206 D/G CONT PANEL H2DGB2 FIELD FLASH	______/______
19.6	72-B208 DIESEL GENERATOR CONTROL B2 PANEL	______/______
19.7	DC CKT BKR IN CUBICLE S4B03 "BUS 4B SEQUENCER"	______/______
19.8	72-B207 4160 SWGR S4B2 SEQ. & UNDER VOLTAGE RELAYS	______/______
20.	Open the following air start valves to Diesel Generator GEB:	
20.1	EGS-546	______/______
20.2	EGS-550	______/______
21.	Open the following air start valves to Diesel Generator GEB2:	
21.1	EGS-578	______/______
21.2	EGS-534	______/______
22.	Close/verify closed the following circuit breakers at Panel SOB:	
22.1	72-B01 SFB SOLENOIDS	______/______
22.2	72-B02 RCP FAILURE	______/______
22.3	72-B04 DIESEL ENGINE GEB CONTROL CABINET	______/______
22.4	72-B05 480V SWGR BUS 3B	______/______
22.5	72-B06 ROD CONTROL AC BKR B	______/______

INITIALS/ DATE

22.6 72-B07 DIESEL GEN GEB CONTROL CAB ________/________

22.7 72-B08 4160V SWGR BUS 4B ________/________

22.8 72-B09 DIESEL GEN GEB EMERG AIR COMP ________/________

22.9 72-B11 BATT CHGR H4BB ________/________

22.10 72-B13 BB BATTERY ________/________

23. Close/verify closed the following circuit breakers at Panel SOB2:

23.1 72-B202 DIESEL GENERATOR B2 ENGINE CONTROL PANEL ________/________

23.2 72-B203 STEAM TO AUX FP TURBINE MOV HV-30801 ________/________

23.3 72-B204 DIESEL GENERATOR B2 ENGINE CONTROL PANEL ________/________

23.4 72-B205 4160 SWITCHGEAR 4B2 CONTROL ________/________

23.5 72-B206 DIESEL GENERATOR CONT PANEL H2DGB2 FIELD FLASH ________/________

23.6 72-B207 4.16KV SWGR S4B2 SEQ & UNDER VOLTAGE RELAYS 4B2 ________/________

23.7 72-B208 DIESEL GENERATOR CONTROL B2 PANEL ________/________

23.8 72-B211 480V LOAD CENTER 3B2 CONTROLS ________/________

23.9 72-B212 INVERTER S1B2 ________/________

23.10 72-B201 AFW VALVE FY-20531 CONTROLLER ________/________

23.11 72-B218 AFW VALVE FY-20532 CONTROLLER ________/________

23.12 72-B219 BATTERY CHARGER H4BB2 ________/________

23.13 72-B221 B2 BATTERY ________/________

24. Close/verify closed the following circuit breakers at Panel SOD:

24.1 72-D01 CONTROL ROOM LTG ________/________

24.2 72-D02 RCP FAILURE ________/________

24.3 72-D03 SFV-23810 ________/________

		INITIALS/ DATE
24.4	72-D04 SU TRANS. NO.2 PROTECTION	______/______
24.5	72-D05 SFV-23812	______/______
24.6	72-D07 TURBINE TRIP	______/______
24.7	72-D09 ROD CONTROL DC BKRS	______/______
24.8	72-D12 BATTERY CHARGER H4BD	______/______
24.9	72-D13 BD BATTERY	______/______
25.	Close/verify closed the following circuit breakers at Panel SOD2:	
25.1	72-D208 AUX. FW. ISOLATION VALVE HV-20582	______/______
25.2	72-D211 AUX. FW. ISOLATION VALVE HV-20577	______/______
25.3	72-D212 INVERTER S1D2	______/______
25.4	72-D219 BATTERY CHARGER H4BD2	______/______
25.5	72-D221 D2 BATTERY	______/______
26.	Close/verify closed the following circuit breakers at Panel S1B:	
26.1	52-B01 PWR FDRS GND PROT SHUNT TRIP 2B1 AND 2B108	______/______
26.2	52-B02 SF CONT. PANEL B INST	______/______
26.3	52-B03 1E POWER TO H4SCB SIGNAL CONVERSION CABINET	______/______
26.4	52-B04 BATT RM FAN EF-A-2	______/______
26.5	52-B05 BATT RM FAN EF-A-7	______/______
26.6	52-B06 EMERG AIR COND DAMPERS	______/______
26.7	52-B07 MUX CABINET H4CDARS	______/______
26.8	52-B08 CONTROL ROD DRIVE TURBINE TRIP	______/______
26.9	52-B09 SF ACTUATION CH B ANALOG	______/______

		INITIALS/ DATE
26.10	52-B10 RPS CHANNEL B	______/______
26.11	52-B11 SF ACTUATION CH B DIGITAL	______/______
26.12	52-B12 RCP UNDER POWER PROTECTION CHANNEL B	______/______
26.13	N/A 120 VAC MAIN	______/______
27.	Close/verify closed the following circuit breakers at Panel S1A2-1:	
27.1	52-B2101 H3RPB1 RCS and PZR HIGH POINT VENTS	______/______
27.2	52-B2102 CR/TSC ESS CONDENSING UNIT U-545B	______/______
27.3	52-B2103 H4CDAR9 MUX/ISO CAB NSEB	______/______
27.3.1	52-B2104 AUX RELAY PANEL H3RPB1 ESS NSEB HVAC EQUIP.	______/______
27.4	52-B2105 EFIC "B" PANEL H4FWB	______/______
27.5	52-B2106 AUX RELAY PANEL H3RPB1 FOR CR/TSC HVAC EQUIP	______/______
27.6	52-B2107 CAB H4CDA1, H4SPDS AND H2SP	______/______
27.7	52-B2108 H3TSB T-SAT CALCULATOR MOD CHANNEL B UY-21032	______/______
27.8	52-B2109 RAD. MONITOR CTMT AREA HR R-15050 AND CR/TSC HVAC-R15702	______/______
27.9	52-B2110 TIE "B1" PNL H4EIB1	______/______
27.10	52-B2111 AFW SOL VALVES FY-31855B & D	______/______
27.11	52-B2113 H1SS CONSOLE INSTR	______/______
27.12	52-B2114 CR/TSC ESS HVAC FT-54702 POWER SUPPLY	______/______
27.13	52-B2116 H4S1B SIG ISO CAB 1E SIDE	______/______
27.14	52-B2118 CONT WATER AND EMERG SUMP LEVEL MONITORS H4WB	______/______
27.15	52-B2125 NSEB COND UNIT U-503B CONT CKTS	______/______
27.16	52-B2126 NSEB HVAC EQUIP FSH-50104	______/______

INITIALS/ DATE

27.17 52-B2127 FROM TRANSFER SWITCH H8TB2 ________/________

28. Close/verify closed the following circuit breakers at Panel S1D:

28.1 52-D02 SEISMIC RECORDER ________/________

28.2 52-D04 BATT RM D FAN EF-A-1 ________/________

28.3 52-D05 CRD SYSTEM LOGIC ________/________

28.4 52-D10 RPS CHAN D ________/________

28.5 52-D12 RCP UNDER POWER PROT CH D ________/________

28.6 N/A 120 VAC MAIN ________/________

29. Close/verify closed the following circuit breakers at Panel S1D2-1:

29.1 52-D2127 FROM TRANSFER SWITCH H8TD2 ________/________

30. Restore the DHR System to normal IAW A.8 Sections 4.7 or 4.8 or as directed by the Shift Supervisor (Valves CBS-045, CBS-046 and CBS-047, MUST BE CLOSED FIRST). ________/________

31. Restore the HPI Systems A & B to normal IAW A.15 Section 4.2, or as directed by the Shift Supervisor. ________/________

32. Restore the RBS System IAW A.7 steps 4.1.5 through 4.1.6.4 and steps 4.2.5 through 4.2.6.4 or as directed by the Shift Supervisor. ________/________

33. Restore the AFW and EFIC systems IAW A.51, Sections 4.1 and 4.2, or as directed by the Shift Supervisor. ________/________

34. Place the 52-4A10 (Bus 4A STBY SPLY) breaker in the CONNECT and OPEN position or as the Shift Supervisor directs. ________/________

ENCLOSURE 9.20

SECTIONS 6.10 AND 6.14 INITIAL PRETEST LINEUP

NOTE: Operations will perform and sign for all equipment Line-ups.

NOTE: Duplicate this Enclosure as necessary for Sections 6.10 and 6.14.

CAUTION: THIS ENCLOSURE MUST BE PERFORMED IN THE ORDER SHOWN.

SECTION __________ INITIAL PRETEST LINEUP

1.0 Align the 480 VAC System Breakers as follows:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
1.1	52-3B21	TIE BREAKER TO LOAD CENTER S3B2	RACKED OUT	________/________
1.2	52-3B22	MCC-2B1 SPLY BKR	CLOSED	________/________
1.3	52-3B203	TIE TO BUS S3B	RACKED OUT	________/________
1.4	52-3B05	STATION SERVICE XFMR X43B2	CLOSED	________/________
1.5	52-3B202	MAIN BREAKER TO BUS 3B2	CLOSED	________/________
1.6	52-3B206	MCC 2B2 SPLY BKR	CLOSED	________/________
1.7	52-3B211	MCC 2B3 SPLY BKR	CLOSED	________/________
1.8	52-3B215	MCC 2B4 SPLY BKR	CLOSED	________/________

2.0 Align the 4 KV and 6.9 KV System Breakers as follows:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
2.1	52-4C01	S/U XFMR NO. 2'X94	RACKED OUT	_______/_______
2.2	52-4D01	S/U XFMR NO. 2 X94	RACKED OUT	_______/_______
2.3	52-4E06	S/U XRMR NO. 2	RACKED OUT	_______/_______
2.4	52-4E13	S/U XFMR NO. 2	RACKED OUT	_______/_______
2.5	52-6A04	S/U XFMR NO. 1-X976	RACKED OUT	_______/_______
2.6	52-6B04	S/U XFMR NO. 1-X976	RACKED OUT	_______/_______
2.7	52-4B01	BUS 4B NORMAL SUPPLY	CLOSED	_______/_______
2.8	52-4B05	TRANSFORMER X43B2	CLOSED	_______/_______
2.9	52-4B203	STARTUP XMFR NO. 2	CLOSED	_______/_______
2.10	52-4B204	480V LOAD CENTER S3B2	CLOSED	_______/_______

		INITIALS/ DATE
3.0	Close/verify closed the following air start valves to diesel generator GEA:	
3.1	EGS-547	______/______
3.2	EGS-551	______/______
4.0	Close/verify closed the following air start valves to diesel generator GEA2:	
4.1	EGS-579	______/______
4.2	EGS-635	______/______
5.0	Verify the Main Transformers X98A and X98B are on Backfeed and providing power to the Unit Aux Transformer IAW EM.173.	______/______

ENCLOSURE 9.20 (Continued)
SECTIONS 6.10 AND 6.14 INITIAL PRETEST LINEUP

6.0 Align the following 125 VDC Bus 50A Breakers:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
6.1	72-A01	SFA SOLENOIDS	CLOSED	______/______
6.2	72-A02	RCP FAILURE	OPEN	______/______
6.3	72-A03	SPARE	OPEN	______/______
6.4	72-A04	DIESEL ENGINE GEA CONTROL CAB	CLOSED	______/______
6.5	72-A05	480V SWGR BUS 3A	CLOSED	______/______
6.6	72-A06	ROD CONTROL AC BRKR A	OPEN	______/______
6.7	72-A07	DIESEL GEN GEA CONTROL CAB	CLOSED	______/______
6.8	72-A08	4160V SWGR BUS 4A	CLOSED	______/______
6.9	72-A09	DIESEL GEN GEA EMERG AIR COMP	OPEN	______/______
6.10	72-A10	SPARE	OPEN	______/______
6.11	72-A11	BATTERY CHARGER H4BA	CLOSED	______/______
6.12	72-A12	BATTERY CHARGER H4BAC	OPEN	______/______
6.13	72-A13	BATTERY BA	CLOSED	______/______
6.14	72-A15	SPARE	OPEN	______/______

7.0 Align the following 125 VDC Bus SOA2 Breakers:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
7.1	72-A201	MFW CONTROL AND STARTUP SOL. VALVE H4EIAI	CLOSED	______/______
7.2	72-A202	DIESEL GENERATOR A2 ENGINE CONTROL PANEL	OPEN	______/______
7.3	72-A203	SPARE	OPEN	______/______
7.4	72-A204	DIESEL GENERATOR A2 ENGINE CONTROL PANEL	OPEN	______/______
7.5	72-A205	4160 SWITCHGEAR 4A2 CONTROL	CLOSED	______/______
7.6	72-A206	DSL GEN CONT PANEL H2DGA2 FIELD FLASHING	OPEN	______/______
7.7	72-A207	4.16KV SWG 4A2 SEQ & UNDER VOLTAGE RELAYS	CLOSED	______/______
7.8	72-A208	DIESEL GENERATOR A2 CONTROL PANEL H2DGA2	OPEN	______/______
7.9	72-A209	SPARE	OPEN	______/______
7.10	72-A210	SPARE	OPEN	______/______
7.11	72-A211	480V LOAD CENTER 3A2 CONTROL	CLOSED	______/______
7.12	72-A212	INVERTER S1A2	CLOSED	______/______
7.13	72-A213	SPARE	OPEN	______/______
7.14	72-A214	SPARE	OPEN	______/______
7.15	72-A215	SPARE	OPEN	______/______
7.16	72-A216	SPARE	OPEN	______/______
7.17	72-A217	SPARE	OPEN	______/______
7.18	72-A218	SPARE	OPEN	______/______

7.0 Align the following 125 VDC Bus SOA2 Breakers: (Continued)

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
7.19	72-A219	BATTERY CHARGER H4BA2	CLOSED	______/______
7.20	72-A220	BATTERY CHARGER H4BA2C2	OPEN	______/______
7.21	72-A221	BATTERY A2	CLOSED	______/______

8.0 Align the following 125 VDC Bus SOC Breakers:

8.1	72-C01	CONTROL ROOM LTG	CLOSED	______/______
8.2	72-C02	RCP FAILURE	OPEN	______/______
8.3	72-C03	SFV-23604	OPEN	______/______
8.4	72-C04	SU XFMR NO. 1 PROTECTION	CLOSED	______/______
8.5	72-C05	SFV-23809	OPEN	______/______
8.6	72-C06	SPARE	OPEN	______/______
8.7	72-C07	SPARE	OPEN	______/______
8.8	72-C08	SFV-23811	OPEN	______/______
8.9	72-C09	ROD CONTROL DC BKRS	OPEN	______/______
8.10	72-C10	SPARE	OPEN	______/______
8.11	72-C11	BATTERY CHARGER H4BAC	OPEN	______/______
8.12	72-C12	BATTERY CHARGER H4BC	CLOSED	______/______
8.13	72-C13	BATTERY BC	CLOSED	______/______
8.14	72-C15	SPARE	OPEN	______/______

9.0 Align the following 125 VDC Bus SOC2 Circuit Breakers:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
9.1	72-C201	SPARE	OPEN	______/______
9.2	72-C202	SPARE	OPEN	______/______
9.3	72-C203	SPARE	OPEN	______/______
9.4	72-C204	SPARE	OPEN	______/______
9.5	72-C205	SPARE	OPEN	______/______
9.6	72-C206	SPARE	OPEN	______/______
9.7	72-C207	SPARE	OPEN	______/______
9.8	72-C208	AUX. FW. ISOLATION VALVE HV20581	OPEN	______/______
9.9	72-C209	SPARE	OPEN	______/______
9.10	72-C210	SPARE	OPEN	______/______
9.11	72-C211	AUX. FW. ISOLATION VALVE HV20578	OPEN	______/______
9.12	72-C212	INVERTER S1C2	CLOSED	______/______
9.13	72-C213	SPARE	OPEN	______/______
9.14	72-C214	SPARE	OPEN	______/______
9.15	72-C215	SPARE	OPEN	______/______
9.16	72-C216	SPARE	OPEN	______/______
9.17	72-C217	SPARE	OPEN	______/______
9.18	72-C218	SPARE	OPEN	______/______
9.19	72-C219	BATTERY CHARGER H4BC2	CLOSED	______/______
9.20	72-C220	BATTERY CHARGER H4BA2C2	OPEN	______/______
9.21	72-C221	BATTERY C2	CLOSED	______/______

10.0 Align the following 120 VAC Bus S1A Circuit Breakers:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
10.1	52-A01	PWR FDRS GND PROT SHUNT TRIP 2A1	CLOSED	______/______
10.2	52-A02	SAFETY FEATURES PANEL "A" INST	CLOSED	______/______
10.3	52-A03	IE POWER TO H4SCA SIGNAL CONV CAB	CLOSED	______/______
10.4	52-A04	BATT RM FAN EF-A-4	CLOSED	______/______
10.5	52-A05	MUX-CAB H4CDAR3	CLOSED	______/______
10.6	52-A06	SPARE	OPEN	______/______
10.7	52-A07	H4CDCAL, H4SPDS, H2SP	CLOSED	______/______
10.8	52-A08	CONTROL ROD DRIVE TURBINE TRIP	OPEN	______/______
10.9	52-A09	SF ACTUATION CH. A ANALOG	CLOSED	______/______
10.10	52-A10	RPS CH. A	CLOSED	______/______
10.11	52-A11	SF ACTUATION CH. A DIGITAL	CLOSED	______/______
10.12	52-A12	RCP UNDER POWER PROTECTION CHANNEL A	OPEN	______/______
10.13	N/A	120 VAC MAIN	ON	______/______

11.0 Align the following 120 VAC Bus S1A2-1 Circuit Breakers:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
11.1	52-A2101	H3RPA1 RCS HIGH POINT VENTS	OPEN	_______/_______
11.2	52-A2102	CR/TSC ESS CONDENSING UNIT U-545A	CLOSED	_______/_______
11.3	52-A2103	H4CDAR7 MUX/ISO CAB NSEB	CLOSED	_______/_______
11.4	52-A2104	AUX. RELAY PNL. H3RPA1 ESS. NSEB HVAC	CLOSED	_______/_______
11.5	52-A2105	EFIC "A" H4FWA	CLOSED	_______/_______
11.6	52-A2106	AUX RELAY PNL H3RPA1 FOR CR/TSC HVAC CONTROLS	CLOSED	_______/_______
11.7	52-A2107	CAB H4CDAL, H4SPDS, H2SP	OPEN	_______/_______
11.8	52-A2108	H4TSA T-SAT CALCULATOR MOD CHANNEL A UY-21031	OPEN	_______/_______
11.9	52-A2109	RAD MONITOR CTMT AREA HIGH RAD R-15049 AND CR/TSC HVAC-R15701	CLOSED	_______/_______
11.10	52-A2110	TIE "A1" PNL H4EIA1	CLOSED	_______/_______
11.11	52-A2111	AFW SOL VALVES FY-31855A & C	CLOSED	_______/_______
11.12	52-A2112	TIE "A1" PNL H4EIA1 FOR ISO. RELAY AT H7IHV20565	CLOSED	_______/_______
11.13	52-A2113	H1SS CONSOLE INSTR	CLOSED	_______/_______
11.14	52-A2114	CR/TSC ESS HVAC FT-54701 POWER SUPPLY	CLOSED	_______/_______
11.15	52-A2115	SPARE	OPEN	_______/_______
11.16	52-A2116	H4S1A SIG ISO CAB 1E SIDE	CLOSED	_______/_______
11.17	52-A2117	SPARE	OPEN	_______/_______
11.18	52-A2118	CONT WATER & EMERG SUMP LEVEL MONITORS H4WA	CLOSED	_______/_______

ENCLOSURE 9.20 (Continued)
SECTIONS 6.10 AND 6.14 INITIAL PRETEST LINEUP

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
11.19	52-A2119	SPARE	OPEN	______/______
11.20	52-A2120	SPARE	OPEN	______/______
11.21	52-A2121	SPARE	OPEN	______/______
11.22	52-A2122	SPARE	OPEN	______/______
11.23	52-A2123	SPARE	OPEN	______/______
11.24	52-A2124	SPARE	OPEN	______/______
11.25	52-A2125	NSEB ESS CONDENSING UNIT U-503A CONTROLS	CLOSED	______/______
11.26	52-A2126	NSEB HVAC EQUIP FSH-50105	CLOSED	______/______
11.27	52-A2127	FROM TRAN[illegible]ER SWITCH H8TA2	CLOSED	______/______

12.0 Align the following 120 VAC Bus S1C Circuit Breakers:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
12.1	52-C01	H2SD SHDN PNL PWR	CLOSED	/
12.2	52-C02	SPARE	OPEN	/
12.3	52-C03	SPARE	OPEN	/
12.4	52-C04	BATT RM C FAN EF-A-3	CLOSED	/
12.5	52-C05	CRD SYSTEM LOGIC #3	OPEN	/
12.6	52-C06	SPARE	OPEN	/
12.7	52-C07	SPARE	OPEN	/
12.8	52-C08	SPARE	OPEN	/
12.9	52-C09	SF ACTUATION CH. C ANALOG	CLOSED	/
12.10	52-C10	RPS CHAN C	CLOSED	/
12.11	52-C11	SPARE	OPEN	/
12.12	52-C12	RCP UNDER POWER PROT CH. C	OPEN	/
12.13	N/A	120 VAC MAIN	CLOSED	/

13.0 Align the following 120 VAC Bus S1C2-1 Circuit Breakers:

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
13.1	52-C2101	AFW SYS POWER SUPPLY	OPEN	______/______
13.2	52-C2102	ANTICIPATORY REACTOR TRIP	OPEN	______/______
13.3	52-C2103	EFIC "C" PNL H4FWC	CLOSED	______/______
13.4	52-C2104	SPARE	OPEN	______/______
13.5	52-C2105	SPARE	OPEN	______/______
13.6	52-C2106	SPARE	OPEN	______/______
13.7	52-C2107	SPARE	OPEN	______/______
13.8	52-C2108	SPARE	OPEN	______/______
13.9	52-C2109	SPARE	OPEN	______/______
13.10	52-C2110	SPARE	OPEN	______/______
13.11	52-C2111	SPARE	OPEN	______/______
13.12	52-C2112	SPARE	OPEN	______/______
13.13	52-C2113	SPARE	OPEN	______/______
13.14	52-C2114	SPARE	OPEN	______/______
13.15	52-C2115	SPARE	OPEN	______/______
13.16	52-C2116	SPARE	OPEN	______/______
13.17	52-C2117	SPARE	OPEN	______/______
13.18	52-C2118	SPARE	OPEN	______/______
13.19	52-C2119	SPARE	OPEN	______/______
13.20	52-C2120	SPARE	OPEN	______/______

ENCLOSURE 9.20 (Continued)
SECTIONS 6.10 AND 6.14 INITIAL PRETEST LINEUP

	BREAKER NO.	DESCRIPTION	POSITION	INITIALS/ DATE
13.21	52-C2123	SPARE	OPEN	_______/_______
13.22	52-C2124	ATWS RPS SYSTEM	OPEN	_______/_______
13.23	52-C2127	FROM TRANSFER SWITCH H8TC2	CLOSED	_______/_______

14. Line-up the following 125VDC-120VAC panels IAW the operating procedure referenced:

	PANEL	OPERATING PROCEDURE	INITIALS/ DATE
14.1	S0B	A.61, Section 4.3	______/______
14.2	S0B2	A.61, Section 4.3	______/______
14.3	S0D2	A.61, Section 4.3	______/______
14.4	S0D	A.61, Section 4.3	______/______
14.5	S1B	A.62, Section 4.1	______/______
14.6	S1B2-1	A.62, Section 4.1	______/______
14.7	S1D	A.62, Section 4.8	______/______
14.8	S1D2-1	A.62, Section 4.8	______/______

ENCLOSURE 9.21

SECTIONS 6.10 AND 6.14 FINAL PRETEST LINEUP

NOTE: Operations will perform and sign for all equipment Line-ups.

NOTE: Duplicate this Enclosure as necessary for Sections 6.10 and 6.14.

NOTE: This enclosure must be performed in the sequence listed.

SECTION ________ FINAL PRETEST LINEUP — INITIALS/ DATE

1. Lineup Battery Charger H4BEF to supply 125 VDC Bus Panel SOE IAW Operating Procedure A.61, Section 4.6.3. ________/________

2. Verify 120 VAC Buses S1A and S1A2-1 are energized from 125 VDC Bus SOA2 via Inverter S1A2 IAW Operating Procedure A.62, Section 4.1 and 4.2. ________/________

3. Line up 120 VAC Buses S1C and S1C2-1 are energized from 125 VDC Bus SOC2 via Inverter S1C2 IAW Operating Procedure A.62, Section 4.8. ________/________

NOTE: Deenergizing MCC S2A1 will cause power to be lost to SF-A-4, West (Grade Level) Nuclear Service Battery Room Supply Fan.

3.1 Notify Security to post continuous Security/Fire Watch at battery BA Room Door. ________/________

3.2 Disable the CARDOX Zone 36 Fire Protection System (for the BA and BC Battery Rooms). ________/________

3.3 OPEN the BA And BC Battery Room doors to prevent Hydrogen gas buildup in the rooms. ________/________

3.4 Contact the NOFPC and establish further compensatory measures, as required. ________/________

4. De-energize 480 VAC MCC 2A1 IAW Operating Procedure A.59, Section 6.1. ________/________

5. Open circuit breaker 52-A01 (Ground Protection Shunt Trip) at 120 VAC Panel S1A. ________/________

6. De-energize 480 VAC MCC 2A2 IAW Operating Procedure A.59, Section 6.1. ________/________

NOTE: Deenergizing MCC S2A3 will cause power to be lost to the following equipment:

EF-554A, Battery BA2 Room Exhaust Fan

EF-554C, Battery BC2 Room Exhaust Fan

EF-554E, Battery BGA Room Exhaust Fan

6.1 Notify Security to post continuous Firewatches at the affected Battery Rooms. ________/________

6.2 Disable the CARDOX Fire Protection System for the affected Zones:

6.2.1 Zone 76 (BA2 and BC2 Battery Rooms) ________/________

6.2.2 Zone 80 (BGA Battery Room) ________/________

6.3 OPEN the affected Battery Room doors to prevent Hydrogen Gas buildup in the rooms. ________/________

6.4 Contact the NOFPC and establish further compensatory measures, as required. ________/________

7. De-energize 480 VAC MCC 2A3 IAW Operating Procedure A.59, Section 6.1. ________/________

8. De-energize 480 VAC MCC 2A4 IAW Operating Procedure A.59, Section 6.1. ________/________

9. De-energize 480 VAC LC 3A IAW Operating Procedure A.59, Section 6.2. ________/________

10. De-energize 480 VAC LC 3A2 IAW Operating Procedure A.59, Section 6.2. ________/________

11. De-energize 4 KV Bus 4A IAW Operating Procedure A.58, Section 6.1. ________/________

12. De-energize 4 KV Bus 4A2 IAW Operating Procedure A.58, Section 6.2. ________/________

13. Open the following circuit breakers:

PANEL	BREAKER #	DESCRIPTION	INITIALS/ DATE
SOA	72-A05	480V SWGR BUS 3A	_______/______
SOA	72-A08	4160V SWGR BUS 4A	_______/______
SOA2	72-A205	4160 SWITCHGEAR 4A2 CONTROL	_______/______
SOA2	72-A207	4.16KV SWGR 4A2 SEQ & UNDER VOLTAGE RELAYS	_______/______
SOA2	72-A211	480V LOAD CENTER 3A2 CONTROL	_______/______

14. De-energize the 12.4 Kv Electrical System IAW Procedure A.56 Section 6.1. _______/______

15. De-energize Startup Transformer #1 IAW Operating Procedure A.54, Section 7.1 and Enclosure 8.4 except for Actions 10, 11, and 12. _______/______

16. Open 125 VDC circuit breaker 72-C04 (S/U Transformer #1 Protection) at Panel SOC. _______/______

ENCLOSURE 9.22

SECTIONS 6.10 AND 6.14 RESTORATION

NOTE: Operations will perform and sign for all equipment Line-ups.

NOTE: Duplicate this Enclosure as necessary for Sections 6.10 and 6.14.

NOTE: The Shift Supervisor shall determine what order this restoration will be done in.

STEP #	DESCRIPTION
1-2	Re-energizes S/U XFMR #1
3-5	Re-energizes Buses 3A, 4A, 3A2, and 4A2
8-12	Re-energizes MCCs 2A1, 2A2, 2A3, and 2A4
13-18	Re-energizes Battery Chargers to the "GA", "A", "C", "A2", and "C2" Batteries.
19-21	Restores GEA and GEA2
22-29	Restores 120 VAC and 125 VDC panel lineups to normal.
30-33	Restores HPI, AFW; RBS and DHS to normal.

NOTE: Prior to beginning this Enclosure, the Shift Supervisor shall review the line-ups in this section to ensure that they will return the systems to their required status to support plant conditions.

INITIALS/ DATE

SECTION ________ RESTORATION

1. Close 125 VAC circuit breaker 72-C04 (S/U XFMR #1 Protection) at Panel SOC. ______/______

2. Energize Startup Transformer #1 IAW Operating Procedure A.54, Section 7.4 Enclosure 8.8 for Startup 1 only and Enclosure 8.6, Actions 1,2, and 7 thru 9. ______/______

2.1 Energize the 12.4 Kv Electrical System IAW Operating Procedure A.56, Section 4.1 ______/______

3. CLOSE/verify closed the following 125 VDC circuit breakers:

3.1 72-A05 (480V SWGR BUS 3A) ______/______

3.2 72-A08 (4150V SWGR BUS 4A) ______/______

3.3 72-A205 (4160 SWITCHGEAR 4A2 CONTROL) ______/______

3.4 72-A211 (480V LOAD CENTER 3A2 CONTROL) ______/______

4. Energize Bus 4A IAW Operating Procedure A.58, Section 4.1. ______/______

5. Energize Bus 4A2 IAW Operating Procedure A.58, Section 4.3. ______/______

6. Energize Bus 3A IAW Operating Procedure A.59, Section 4.1. ______/______

7. Energize Bus 3A2 IAW Operating Procedure A.59, Section 4.1. ______/______

8. Energize 480 VAC Motor Control Center 2A1 IAW Operating Procedure A.59, Section 4.2. ______/______

9. CLOSE Circuit Breaker 52-A01 (GROUND PROTECTION SHUNT TRIP) at 120 VAC Distribution Panel S1A. ______/______

10. Energize 480 VAC Motor Control Center 2A2 IAW Operating Procedure A.59, Section 4.4. ______/______

11. Energize 480 VAC Motor Control Center 2A3 IAW Operating Procedure A.59, Section 4.2. ______/______

12. Energize 480 VAC Motor Control Center 2A4 IAW Operating Procedure A.59, Section 4.2. ______/______

INITIALS/ DATE

13. Place in service/verify in service BATTERY CHARGER H4BA to feed Panel SOA IAW Operating Procedure A.61, Section 4.4.1. DO NOT close in all loads on SOA, they are restored in the following steps. ________/________

14. Place in service/verify in service BATTERY CHARGER H4BC to feed Panel SOC IAW Operating Procedure A.61, Section 4.4.3. DO NOT close in all loads on SOC, they are restored in the following steps. ________/________

15. Place in service/verify in service BATTERY CHARGER H4BGA to feed Inverter S1GA IAW Operating Procedure A.63, Section 4.2. DO NOT close in all loads on S1GA-1 they are restored in the following steps. ________/________

16. Step (deleted)

17. Place in service/verify in service BATTERY CHARGER H4BA2 to feed Panel SOA2 IAW Operating Procedure A.61, Section 4.4.[illegible] DO NOT close in all loads on SOA2, they are restored in the following steps. ________/________

18. Place in service/verify in service BATTERY CHARGER H4BC2 to feed Panel SOC2 IAW Operating Procedure A.61, Section 4.4.9. DO NOT close in all loads on SOC2, they are restored in the following steps. ________/________

NOTE: The compensatory measures taken in Enclosure 9.21, for loss of Battery Room fans may now be suspended.

	INITIALS/ DATE
19. Close the following 125 VDC breakers:	
19.1 72-A04 DIESEL ENGINE GEA CONTROL CAB	______/______
19.2 72-A07 DIESEL GEN GEA CONTROL CAB	______/______
19.3 72-A202 DIESEL GENERATOR A2 ENGINE CONTROL PANEL	______/______
19.4 72-A204 DIESEL GENERATOR A2 ENGINE CONTROL PANEL	______/______
19.5 72-6206 DSL GEN CONT PANEL H2DGA2 FIELD FLASHING	______/______
19.6 72-A208 DIESEL GENERATOR A2 CONTROL PANEL H2DGA2	______/______
19.7 DC CKT BKR IN CUBICLE S4A03 "BUS 4A SEQUENCER"	______/______
19.8 72-A207 4160 SWGR S4A2 SEQ. & UNDER VOLTAGE RELAYS	______/______
20. Open the following air start valves to Diesel Generator GEA:	
20.1 EGS-547	______/______
20.2 EGS-551	______/______
21. Open the following air start valves to Diesel Generator GEA2:	
21.1 EGS-579	______/______
21.2 EGS-635	______/______
22. Close/verify closed the following circuit breakers at Panel SOA:	
22.1 72-A01 SFA SOLENOIDS	______/______
22.2 72-A02 RCP FAILURE	______/______

		INITIALS/ DATE
22.3	72-A04 DIESEL ENGINE GEA CONTROL CAB	_____/_____
22.4	72-A05 480V SWGR BUS 3A	_____/_____
22.5	72-A06 ROD CONTROL AC BRKR A	_____/_____
22.6	72-A07 DIESEL GEN GEA CONTROL CAB	_____/_____
22.7	72-A08 4160V SWGR BUS 4A	_____/_____
22.8	72-A09 DIESEL GEN GEA EMERG AIR COMP	_____/_____
22.9	72-A11 BATTERY CHARGER H4BA	_____/_____
22.10	72-A13 BATTERY "BA"	_____/_____
23.	Close/verify closed the following circuit breakers at Panel SOA2:	
23.1	72-A202 DIESEL GENERATOR A2 ENGINE CONTROL PANEL	_____/_____
23.2	72-A204 DIESEL GENERATOR A2 ENGINE CONTROL PANEL	_____/_____
23.3	72-A205 4160 SWITCHGEAR 4A2 CONTROL	_____/_____
23.4	72-A206 DSL GEN CONT PANEL H2DGA2 FIELD FLASHING	_____/_____
23.5	72-A207 4.16KV SWGR 4A2 SEQ. & UNDER VOLTAGE RELAYS	_____/_____
23.6	72-A208 DIESEL GENERATOR A2 CONTROL PANEL H2DGA2	_____/_____
23.7	72-A211 480V LOAD CENTER 3A2 CONTROL	_____/_____
23.8	72-A212 INVERTER S1A2	_____/_____
23.9	72-A201 MFW CONTROL AND STARTUP SOL. VALVE H4EIAI	_____/_____
23.11	72-A219 BATTERY CHARGER H4BA2	_____/_____
23.12	72-A221 A2 BATTERY	_____/_____
24.	Close/verify closed the following circuit breakers at Panel SOC:	
24.1	72-C01 CONTROL ROOM LTG	_____/_____
24.2	72-C02 RCP FAILURE	_____/_____

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		INITIALS/ DATE
24.3	72-C03 SFV-23604	______/______
24.4	72-C04 S/U XFMR NO. 1 PROTECTION	______/______
24.5	72-C05 SFV-23809	______/______
24.6	72-C09 ROD CONTROL DC BKRS	______/______
24.7	72-C12 BATTERY CHARGER H4BC	______/______
24.8	72-C13 BATTERY BC	______/______
24.9	72-C08 SFV-23811	______/______
25.	Close/verify closed the following circuit breakers at Panel SOC2:	
25.1	72-C208 AUX. FW. ISOLATION VALVE HV-20581	______/______
25.2	72-C211 AUX. FW ISOLATION VALVE HV-20578	______/______
25.3	72-C212 INVERTER S1C2	______/______
25.4	72-C219 BATTERY CHARGER H4BC2	______/______
25.5	72-C221 BATTERY C2	______/______
26.	Close/verify closed the following circuit breakers at Panel S1A:	
26.1	52-A01 PWR FDRS GND PROT SHUNT TRIP 2A1	______/______
26.2	52-A02 SAFETY FEATURES PANEL "A" INST	______/______
26.3	52-A03 1E POWER TO H4SCA SIGNAL CONV CAB	______/______
26.4	52-A04 BATT RM FAN EF-A-4	______/______
26.5	52-A05 MUX-CAB H4CDAR3	______/______
26.6	52-A07 H4CDCAL, H4SPDS, H2SP	______/______
26.7	52-A08 CONTROL ROD DRIVE TURBINE TRIP	______/______

		INITIALS/ DATE
26.8	52-A09 SF ACTUATION CH A ANALOG	______/______
26.9	52-A10 RPS CHAN A	______/______
26.10	52-A11 SF ACTUATION CH A DIGITAL	______/______
26.11	52-A12 RCP UNDER POWER PROTECTION CHANNEL A	______/______
26.12	N/A 120 VAC MAIN	______/______
27.	Close/verify closed the following circuit breakers at Panel S1A2-1:	
27.1	52-A2101 H3RPA1 RCS HIGH POINT VENTS	______/______
27.2	52-A2102 CR/TSC ESS CONDENSING UNIT U-545A	______/______
27.3	52-A2103 H4CDAR7 MUX/ISO CAB NSEB	______/______
27.4	52-A2105 EFIC "A" H4FWA	______/______
27.5	52-A2106 AUX RELAY PNL H3RPA1 FOR CR/TSC HVAC CONTROLS	______/______
27.6	52-A2104 AUX. RELAY PNL.H3RA1 ESS NSEB HVAC	
27.7	52-A2107 CAB H4CDAL, H4SPDS and H2SP	______/______
27.8	52-A2108 H4TSA T-SAT CALCULATOR CHANNEL A UY-21031	______/______
27.9	52-A2109 RAD MONITOR CTMT AREA HIGH RAD R-15049 AND CR/TSC HVAC-R15701	______/______
27.10	52-A2110 TIE "A1" PNL H4EIA1	______/______
27.11	52-A2111 AFW SOL VALVES FY-31855A & C	______/______
27.12	52-A2112 TIE "A1" PNL H4EIA1 FOR ISOL RELAY AT H7IHV20565	______/______
27.13	52-A2113 H1SS CONSOLE INSTR	______/______
27.14	52-A2114 CR/TSC ESS HVAC FT-54701 POWER SUPPLY	______/______
27.15	52-A2116 H4S1A SIGNAL ISO CAB 1E SIDE	______/______

	INITIALS/ DATE
27.16 52-A2118 CONTAINMENT WATER AND EMERG SUMP LEVEL MONITORS H4WA	______/______
27.17 52-A2125 NSEB ESS CONDENSING UNIT U-503A CONTROLS	______/______
27.18 52-A2126 NSEB HVAC EQUIP. FSH-50105	______/______
27.19 52-A2127 FROM TRANSFER SWITCH H8TA2	______/______
28. Close/verify closed the following circuit breakers at Panel S1C:	
28.1 52-C01 (H2SD SHTDN PNL PWR)	______/______
28.2 52-C04 (BATT RM C FAN EF-A-3)	______/______
28.3 52-C05 (CRD SYSTEM LOGIC #3	______/______
28.4 52-C09 (SF ACTUATION CH. C ANALOG)	______/______
28.5 52-C10 (RPS CHAN C)	______/______
28.6 52-C12 (RCP UNDER POWER PROT CH C)	______/______
28.7 N/A (120 VAC MAIN)	______/______
29. Close/verify closed the following circuit breakers at Panel S1C2-1:	
29.1 52-C2103 (EFIC "C" PNL H4FWC)	______/______
29.2 52-C2127 (FROM TRANSFER SWITCH H8TC2)	______/______
30. Restore the DHR System to normal IAW A.8 Sections 4.7 or 4.8 or as directed by the Shift Supervisor (Valves CBS-045, CBS-046 and CBS-047 MUST BE CLOSED first).	______/______
31. Restore the HPI System A&B to normal IAW A.15 Section 4.2, or as directed by the Shift Supervisor.	______/______
32. Restore the RBS System IAW A.7 steps 4.1.5 through 4.1.6.4 and steps 4.2.5 through 4.2.6.4 or as directed by the Shift Supervisor.	______/______
33. Restore the AFW and EFIC systems IAW A.51, Sections 4.1 and 4.2, or as directed by the Shift Supervisor.	______/______
34. Place the 52-4B04 (Bus 4B STBY SPLY) breaker in the CONNECT and OPEN position or as directed by the Shift Supervisor.	______/______

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ENCLOSURE 9.23

AFW PUMP P-319 MOTOR TEMPERATURES

For pump start #2 (Step 6.12.2.21.12) in order to satisfy the requirements of EAR-SY-87-156, the following conditions must be satisfied:

1. Motor temperatures will be taken and recorded every ten (10) minutes and recorded on this Enclosure.

2. The motor shall be run for a minimum of fifty (50) minutes. Even after fifty (50) minutes, the motor shall not be stopped and restarted until the outlet air temperature rises not more than 1°C every ten (10) minutes for the previous twenty (20) minutes.

Ambient Air Temperature will be measured in close proximity to the motor using CTE equipment. The motor vent outlet air temperature will be measured using the local motor air temperature indicator, which does not have an instrument number.

ENCLOSURE 9.23 (Continued)
AFW PUMP P-319 MOTOR TEMPERATURES

Clock Time	CTE # ______ CAL DUE DATE ____ Ambient Air Temperature (°C)	Motor Air Temperature	Initials/ Date
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Verify motor has been run for >50 minutes and motor vent temperatures have stabilized as required (≤1°C rise per 10 minutes). ________/________