2G002

DIESEL GENERATOR STARTS - UNITS 2 AND 3
(Continued)

Part 1 - Diesel Generator Start Evaluation Report DG No. 2G002

1. Date of start 04 8/21/08 Time of start 0404

2. Date of stop 8/21/08 Time of stop 04:55 Engine Hours: 1653.6
L-160(161) KI-E928 (KI-E978)

3. Reason for start (include procedure #, AR #, etc.) POST MAINT. INSPECTION
WCD 30000623

STEP	ACTION (Initial applicable steps only, leave others blank)	YES/ NO	PERF. BY INITIALS	GO TO STEP
4	Start qualifies as: [1] Post-Maint. Operability/Surveillance/Auto/Man	N/A	(b)(6)	5
	Maint. Testing/Troubleshooting [2]	N/A		10
5	DG Started:	YES		6
		NO		10
6	DG run intentionally terminated before loading:	YES		13
		NO		7
7	DG loaded: (output CB closed)	YES		8
		NO		10
8	DG loaded to ≥ 4450 kW and ≤ 4700 kW for ≥ 1 hour, and has also met any additional Operability acceptance criteria of the applicable procedure: [3]	YES		16
		NO		9
9	DG run intentionally terminated after loading:	YES		13
		NO		10

[1] All start attempts (automatic, including those from bona fide signals, or manual) except those starts addressed in Note [2], where the DG is expected to perform its design function (e.g., pass surveillance, start/load on SIAS/LOVS, etc.).

[2] All maintenance tests or troubleshooting performed PRIOR to turning the DG over to Operations for final Operability testing (e.g., cranking, venting, or air roll procedures not intended to start the DG).

[3] The ONLY path by which a DG run can be considered a "Valid Successful Test" is to meet this criterion.

DIESEL GENERATOR STARTS - UNITS 2 AND 3
(Continued)

STEP	ACTION (Initial applicable steps only, leave others blank)	YES/ NO	PERF. BY INITIALS	GO TO STEP
10	DG unsuccessful start or load attempt attributed to operating error: [4]	YES		18
		NO	(b)(6)	11
11	DG unsuccessful start or load attempt attributed to spurious operation of a trip that is bypassed in the emergency mode, malfunction of equipment that is not operative in the emergency mode (e.g., synchronizing circuit) or is not part of the defined DG unit design: [4]	YES		13
		NO	(b)(6)	12
12	DG run was for maintenance testing and/or troubleshooting and led to discovery of conditions (e.g., excessive water or oil in a cylinder) that would have resulted in the failure of the DG during Operability test or during response to a bona fide signal: [4]	YES		15
		NO	(b)(6)	18
13	DG run terminated due to any condition that would ultimately have resulted in DG damage or failure to perform its design function if the DG was operating in the emergency mode: [4]	YES		14
		NO		18
14	Test was Operability test following maintenance:	YES		15
		NO		17
15	Failure was due to cause related to initial, valid failure which resulted in the DG being declared inoperable, or due to maintenance process error such that is expected that the error would have been found during the Operability test: [4]	YES		18
		NO		17

[4] If unable to respond to this step due to inadequate information or uncertainty, then initiate an AR, AND consider this run as a "Valid Failed Test" until determined otherwise.

DIESEL GENERATOR STARTS - UNITS 2 AND 3
(Continued)

PERF. BY INITIALS

NOTE: Initial only step 16, 17, or 18 as applicable

16. Test is a "Valid Successful Test" _____

17. Test is a "Valid Failed Test" _____

Initiate AR. _____ SRO

Apparent cause of failure: _____

_____ (b)(6)

18. Test is a "Not Valid Test" _____

Reason test is not valid: EDG RUN FOR POWER TO LOAD TEST ONLY.

Comments: _____

(b)(6)

REVIEWED BY: _____ SRO Ops Supv. Date 8-21-07

File Disposition: File per S0123-0-A3.

Control Room:
- Transfer applicable data to Part 2 (Tracking Log) of this attachment.
- Attach the evaluation report to the procedure controlling the DG run.
- Forward package to the Operations Surveillance Coordinator.

Surveillance Coordinator:
- Review package and consider transmittal to Nuclear Regulatory Affairs Licensing for reportability assessment, if necessary.
- File package according to controlling procedure disposition.
- *Transmittal time requirements*:
  - Copies of evaluation reports which did not result in a valid failure, should be forwarded within 15 working days following the date of the actual start or load demand.
  - Copies of evaluation reports which did result in a valid failure, should be forwarded as soon as practicable, but within 15 working days following the date of the actual start or load demand. However, if a D/G is under accelerated testing, then copies of evaluation reports should be forwarded prior to the next test; i.e., seven calendar days.

HANDBARRING DIESEL GENERATOR G002

CONTINUOUS USE

OBJECTIVE

Provide direction on the handbarring a Diesel when any of the following conditions exist:

- The Diesel Generator is Inoperable and to be started for post maintenance testing

OR

- 1) The Diesel Generator has NOT been run or rotated at least one complete revolution within 48 hours prior to the planned start

AND

2) The Unit is not currently in an Action Statement per LCO 3.8.1

AND

3) The Diesel is NOT required to be OPERABLE per Mode 5/6 Tech Specs. (If the Diesel can be started within Time to Boil requirements, then the Diesel remains AVAILABLE for DID during Handbarring.)

UNIT 2 MODE 1 DATE 8-20-08 TIME 1230

1.0 PREREQUISITES

PERF. BY INITIALS

1.1 Verify this document is current by checking a controlled copy or by using the method described in SO123-VI-0.9. (b)(6)

1.2 Ensure SO23-3-3.23, Attachment for A.C. Sources Verification, completed within one hour prior to placing the Diesel Generator in Maintenance Lockout. (Mark N/A if Diesel Generator is already Inoperable.) (LS-2.1, LS-3.1) N/A

1.3 Verify all steps in Section 1.0 are complete. (b)(6)

SRO Ops. Supv.

2.0 PROCEDURE

PERF. BY INITIALS

2.1 Handbar G002 Diesel Generator: (LS-2.5)

(b)(6)

03:12 2.1.1 SELECT HS-1767-1, MAINTENANCE LOCKOUT SWITCH to MAINTENANCE.

.1 VERIFY ANNUNCIATED 63B07, DIESEL GEN G002 LOCKOUT RELAY TRIPPED.

.2 VERIFY ANNUNCIATED Local Alarm LOCKOUT RELAY IN TRIP POSITION.

.3 VERIFY ILLUMINATED ZL-E917, MAINTENANCE LOCKOUT light. (L-160)

2.1.2 Isolate the starting air to both G002 engines, as follows: (May be performed in any order.)

.1 UNLOCK AND CLOSE S2(3)2420MU084, DG G002 ENG #2 (20 CYL) Start Air Subsystem #2 LEFT BANK Valve HV5931C Inlet ISO.

.2 UNLOCK AND CLOSE S2(3)2420MU081,DG G002 ENG #2 (20 CYL) Start Air Subsystem #1 RIGHT BANK Valve HV5931A Inlet ISO.

.3 UNLOCK AND CLOSE S2(3)2420MU082, DG G002 ENG #1 (16 CYL) Start Air Subsystem #1 LEFT BANK Valve HV5931B Inlet ISO.

.4 UNLOCK AND CLOSE S2(3)2420MU083, DG G002 ENG #1 (16 CYL) Start Air Subsystem #2 RIGHT BANK Valve HV5931D Inlet ISO.

2.1.3 For all 36 Kiene Valves, REMOVE thread protective caps and OPEN 1 turn. (Step 2.1.4 may be performed concurrently with this step.) (LS-2.3, LS-2.4)

2.1.4 To assist in inspection in Step 2.1.9, ENSURE REMOVED any oil and/or moisture from the Kiene Valves.

2.1.5 REMOVE access hatch.

2.1.6 INSTALL the Manual Handbarring Tool.

2.1.7 ROTATE the engines at least one revolution using the Handbarring device.

2.0 PROCEDURE (Continued)

INITIALS
PERF /IND VER

2.1.8 REMOVE Handbarring Tool and ensure access hatches replaced on both 16 and 20 Cylinder engines. (Verifying access hatches replaced may be performed concurrently with moisture inspection.) (b)(6) (b)(6)

2.1.9 INSPECT all 36 Kiene Valves for obvious signs of moisture (water or oil) being issued from the Kiene Valves. (AR 040501412) N/A

2.1.10 If moisture (water or oil) has visibly issued from the Kiene Valves, then ABORT the planned start, and perform the following: (Mark N/A Section 2.1.10 If no moisture is visible.)

.1 Maintain lineup in current configuration for investigating the cause of leak. N/A N/A

.2 Inform the Shift Manager and the Maintenance Engineer. N/A N/A

.3 Initiate an AR and record number in the Comments section. N/A N/A

.4 If the AR disposition declares the Diesel Operable, then continue with this attachment.

2.1.11 CLOSE all 36 Kiene Valves and INSTALL thread protective caps. (LS-2.3, LS-2.4) (b)(6)

2.1.12 Realign the starting air to both G002 engines, as follows: (May be performed in any order.)

.1 LOCK OPEN S2(3)2420MU084, DG G002 ENG #2 (20 CYL) Start Air Subsystem #2 LEFT BANK Valve HV5931C Inlet ISO.

.2 LOCK OPEN S2(3)2420MU081, DG G002 ENG #2 (20 CYL) Start Air Subsystem #1 RIGHT BANK Valve HV5931A Inlet ISO.

.3 LOCK OPEN S2(3)2420MU082, DG G002 ENG #1 (16 CYL) Start Air Subsystem #1 LEFT BANK Valve HV5931B Inlet ISO.

.4 LOCK OPEN S2(3)2420MU083, DG G002 ENG #1 (16 CYL) Start Air Subsystem #2 RIGHT BANK Valve HV5931D Inlet ISO.

2.0 PROCEDURE (Continued)

PERF. BY INITIALS

2.1.13 PLACE HS-1767-1, MAINTENANCE LOCK-OUT SWITCH, to NORMAL.

.1 VERIFY EXTINGUISHED ZL-E917, MAINTENANCE LOCKOUT light.

2.1.14 DEPRESS HS-1665-1, LOCKOUT RESET, to reset the Diesel Generator Trip Lock-out Relay.

.1 VERIFY RESET 63B07, DIESEL GEN G002 LOCKOUT RELAY TRIPPED.

.2 VERIFY ILLUMINATED ZL-E906, LOCKOUT RELAY RESET light. (L-160)

.3 VERIFY RESET Local Alarm LOCKOUT RELAY IN TRIP POSITION.

(b)(6)

03:47

COMMENTS: _____

REVIEWED BY: (b)(6) SRO Ops. Supv. DATE: 8-21-08

FILE DISPOSITION: File per SO123-0-A3.

DIESEL GENERATOR OPERATION

CONTINUOUS USE

OBJECTIVE:

Provide direction to perform Emergency Diesel Generator (D/G) runs. Sections are provided to start, raise speed to specified frequency and voltage, load the D/G, run loaded maintaining normal operating parameters, and secure the D/G. Individual sections may be used to support Post-Maintenance Testing and other D/G starts or runs. This attachment DOES NOT document Tech. Spec. Surveillance Acceptance Criteria. (LS-11.0)

UNIT 2 MODE 1 DG No. G002 DATE 8-20-08 TIME 1218

PERF. BY INITIALS

1.0 PREREQUISITES

1.1 Verify this document is current by checking a controlled copy or by using the method described in SO123-VI-0.9. (b)(6)

NOTE

Steps performed by Field Operators are identified by an *f*.

1.2 The Opposite Train D/G is NOT paralleled with the preferred offsite source. (LS-6.1) (b)(6)

1.3 Reason attachment is initiated:

✔	REASON
✔	Post Maintenance Test: WAR# WCO 30000623
	Start Verification
	EOIs
	Unloading and/or Stopping the Diesel Generator
	Other (specify):

1.4 Ensure Switchyard evolutions in progress or planned, will not conflict with Diesel Generator Operation. (LS-6.6) (b)(6)

1.0 PREREQUISITES (Continued)

PERF. BY INITIALS

(b)(6)

1.5 Determine the performance requirements of this attachment: (LS-11.0)

✔	DIESEL GENERATOR OPERATION	PERFORM SECTION(S)
✓	Prestart Requirements	2.2 (pages 22 to 26)
✓	Diesel Generator Start	2.3 (pages 27 to 30)
✓	Synchronizing and Loading the Diesel Generator	2.4 (pages 31 to 33)
✓	Re-aligning Start Air System	2.5 (page 34 to 35)
	Paralleling a Diesel Supplied Bus to the RAT	2.6 (page 36)
	Paralleling a Diesel Supplied Bus to the UAT	2.7 (page 37)
✓	Unloading the Diesel Generator	2.8 (page 38)
✓	Stopping the Diesel Generator	2.9 (pages 39 to 41)
✓	Post Run Actions	2.10 (pages 42 to 44)
✔	Logging Results of Diesel Generator Run	3.0 (page 45)

1.5.1 Mark N/A for the remaining unused Sections. (Mark N/A if all Sections will be performed.)

(b)(6)

1.6 Determine type of Start: (Mark N/A if not performing Section 2.3.)

✔	TYPE OF START	MARK N/A STEPS
✔	SLOW START	NONE
	LOCAL FAST START	2.3.2, 2.3.2.1, 2.3.7, 2.3.14, 2.3.14.1
	CONTROL ROOM OR SIAS START	2.3.1, 2.3.1.1, 2.3.2, 2.3.2.1, 2.3.7, 2.3.14, 2.3.14.1, 2.3.15, 2.3.15.1

1.7 If Diesel Control will remain in LOCAL for duration of run, then Mark N/A Sections 2.3.15 and 2.9.1. (Mark N/A if Diesel Control will NOT remain in LOCAL.)

N/A

1.0 PREREQUISITES (Continued)

PERF. BY INITIALS

1.8 Determine if start is to be timed. (Mark N/A Section 1.8 and Step 2.10.2 if not performing Section 2.3.) (b)(6)

✓	DG START TO BE TIMED?
	YES: Request the Maintenance Department to install temporary recording equipment monitoring parameters required for Diesel Start, and request this alteration be documented per SO123-II-15.3.
✓	NO: Mark N/A Step 1.8.1, Sections 2.3.16, and 2.3.17, and Step 2.10.2

1.8.1 Name of Maintenance Department person contacted: N/A

Person Contacted ____ Date ____ Time ____

1.9 Determine if Diesel will be operated at 450 RPM for duration of run: (Mark N/A if not performing Section 2.3.) (b)(6)

✓		MARK N/A
	YES	Steps 2.3.14, 2.3.14.1, 2.3.15, 2.3.15.1, and Section 2.9.2
✓	NO	NONE

NOTE

It is preferred to reduce diesel speed to idle prior to stopping to minimize engine wear.

(b)(6)

1.10 Determine type of Diesel Generator Stop:

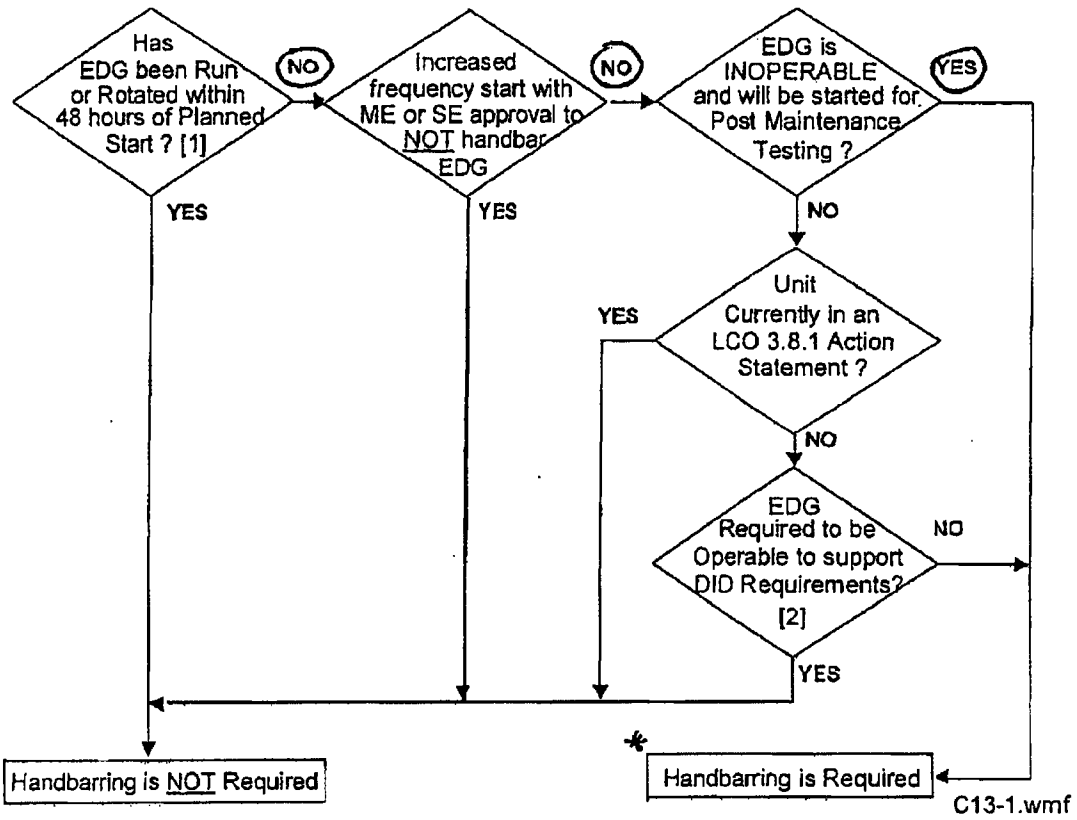
✓	TYPE OF STOP	MARK N/A
✓	LOCAL STOP FROM IDLE SPEED	Section 2.9.5
	LOCAL STOP FROM FAST SPEED	Sections 2.9.2 and 2.9.5, Steps 2.9.7.1 and 2.9.7.2
	CONTROL ROOM STOP	Sections 2.9.1, 2.9.2, 2.9.6, and 2.9.7

1.0 PREREQUISITES (Continued)

PERF. BY INITIALS

1.11 Determine if Handbarring is required:
(Mark N/A Section 1.11 if not performing Section 2.3.)

(b)(6)



f 1.11.1 If required, then HANDBAR the Diesel Generator per Attachment 12 or 13. (Mark N/A if handbarring not required.)

(b)(6)

[1] Rotation may be performed by either Operations or Maintenance.

[2] If the Diesel is AVAILABLE, can be started within Time to Boil requirements, and **not** required to be OPERABLE, then Select NO.
The Diesel remains AVAILABLE for DID during Handbarring.

1.0 PREREQUISITES (Continued)

PERF. BY INITIALS

1.12 Determine if Unit 2 Diesel Generators are to be started during normal working hours (Monday-Friday from 0700-1600): (Mark N/A Section 1.12 if not performing Section 2.3.) (b)(6)

☐ YES Request Facilities (PAX 83979 or 83333) to close fresh air dampers to D1N to minimize exhaust entering building.

☑ NO Mark N/A Step 1.12.1 and Section 2.10.8.

1.12.1 Name of Facilities Department person contacted: N/A

Person Contacted ____ Date ____ Time ____

1.13 Determine which AVR is to be used as determined by the Red Book or other controlling document (e.g. Daily Production Package, WAR, etc.): (Mark N/A if not performing Section 2.2.) (AR 990601338-10) (LS-7.1, LS-7.5) (b)(6)

✔	AVR	MARK N/A
✔	AVR A	Sections 2.2.6 and 2.2.7
	AVR B	Sections 2.2.5 and 2.2.7
	OFF	Sections 2.2.5 and 2.2.6

1.14 SELECT Air Start alignment as determined by the SRO Ops Supv. or controlling document (e.g. WAR, Red Book, Daily Production Package, etc.): (Mark N/A if not performing Section 2.2.) (LS-1.8) (b)(6)

✔	SUBSYSTEM TO BE ALIGNED	MARK N/A SECTIONS
	G002	
	BOTH	2.2.8, 2.2.9, 2.2.10, 2.2.11, 2.3.22, 2.5
✔	1	2.2.9, 2.2.10, 2.2.11, 2.5.2, 2.5.3, 2.5.4
	2	2.2.8, 2.2.10, 2.2.11, 2.5.1, 2.5.3, 2.5.4
	G003	
	BOTH	2.2.8, 2.2.9, 2.2.10, 2.2.11, 2.3.22, 2.5
	1	2.2.8, 2.2.9, 2.2.11, 2.5.1, 2.5.2, 2.5.4
	2	2.2.8, 2.2.9, 2.2.10, 2.5.1, 2.5.2, 2.5.3

1.0 PREREQUISITES (Continued)

PERF. BY INITIALS

1.15 Determine if Air Start Receiver Pressure Drop Monitoring is to be performed: (Mark N/A if not performing Section 2.2.) (b)(6)

✓		MARK N/A
SUBSYSTEM 1 TO BE TESTED?		
	YES	NONE
✓	NO	Steps 2.2.13, 2.2.15, 2.3.20, and 2.3.23
SUBSYSTEM 2 TO BE TESTED?		
	YES	NONE
✓	NO	Steps 2.2.14, 2.2.16, 2.3.21, and 2.3.24

1.16 Determine if measuring devices are to be installed to monitor/record Diesel Generator parameters. (Mark N/A if not performing Section 2.2.) (b)(6)

✓	MEASURING DEVICES TO BE INSTALLED?	MARK N/A STEPS
	YES	NONE
✓	NO	2.2.12, 2.10.1

1.17 Verify all steps in Section 1.0 are complete, and all steps in Sections 1.0 and 2.0 required to be marked N/A as directed above, are correctly marked N/A. (b)(6)

SRO Ops. Supv.

END OF SECTION 1.0

2.0 PROCEDURE

2.1 Performance Guidelines

2.1.1 If the D/G needs to be secured and restarted rapidly during performance of this attachment, e.g. Hot Restart, then the initial standby actions do not need to be reperformed.

2.1.2 This attachment allows multiple starts/stops and loading/unloading of the Diesel, leave unused columns blank.

GUIDELINE
Due to Air Start System valve position tracking difficulties, separate copies of this attachment are required if testing involves various Air Start System alignments.

2.1.3 If required due to post-maintenance testing, then maintenance testing may be performed concurrently with this attachment at any time the Diesel is in a steady state condition (e.g. varying speed or adjusting Governor with the engine unloaded at 900 rpm). (LS-6.2, LS-6.3)

.1 If maintenance testing requires unloading, stopping, or tripping the Diesel, then Mark N/A unused steps of the current start column.

2.1.4 If a valid Degraded Grid Voltage condition occurs with the D/G output breaker CLOSED, then initiate a controlled unloading of the D/G, and OPEN the output breaker. This is necessary to return the SDVS protection circuit to Automatic. (With the D/G output breaker closed, the SDVS circuit is defeated.)

2.1.5 If Diesel operation is planned for > 8 hours cumulative, then oil will need to be added to ensure level is ≥ FULL RUN Level.

END OF SECTION 2.1

2.0 PROCEDURE (Continued)

PERF. BY INITIALS

2.2 Prestart Requirements

f	2.2.1	Ensure SO23-3-3.23, Attachment for Diesel Generator Standby Verification, has been performed and is up to date for this Diesel Inoperability.	(b)(6)
f	2.2.2	RECORD PI-E938 (PI-E988), Engine No. 1 Auxiliary Turbocharger Filter Circ. Oil Outlet Pressure: (Ref. 2.3.1.6) 28 psig	
f	2.2.3	RECORD PI-E937 (PI-E987), Engine No. 2 Auxiliary Turbocharger Filter Circ. Oil Outlet Pressure: (Ref. 2.3.1.6) 30 psig	
	2.2.4	Report Auxiliary Turbocharger Filter Circ. Oil Outlet Pressures to the Control Room. (LS-5.5)	
	.1	If either pressure is ≤ 10 psig, then DO NOT START the Diesel without Maintenance Engineer concurrence. (Mark N/A if both engines >10 psig.)	N/A
		Name of Maintenance Engineer ____ Date ____ Time ____	
f	2.2.5	ENSURE HS-E941(HS-E991), VOLTAGE REGULATOR, selected to AVR A.	(b)(6)
f	.1	VERIFY ILLUMINATED ZL-E921(ZL-E971), AVR A SELECTED.	
f	2.2.6	ENSURE HS-E941(HS-E991), VOLTAGE REGULATOR, selected to AVR B.	N/A
f	.1	VERIFY ILLUMINATED ZL-E922(ZL-E972), AVR B SELECTED.	↓
f	2.2.7	ENSURE HS-E941(HS-E991), VOLTAGE REGULATOR, selected to OFF.	N/A
f	.1	VERIFY EXTINGUISHED ZL-E921(ZL-E971), AVR A SELECTED.	
f	.2	VERIFY EXTINGUISHED ZL-E922(ZL-E972), AVR B SELECTED.	↓

2.0 PROCEDURE (Continued)

PERF. BY INITIALS

2.2.8 **Use G002 Starting Air Subsystem 1 to start the Diesel.**

(b)(6)

f .1 ENSURE LOCKED OPEN S2(3)2420MU087, DG G002 Starting Air Subsystem #1 Air Receiver T335 Outlet Isolation Valve.

f .2 ENSURE LOCKED CLOSED S2(3)2420MU086, DG G002 Starting Air Subsys #1 T335 and Subsys #2 T336 Outlet Crosstie Valve.

f .3 ENSURE LOCKED OPEN S2(3)2420MU081, DG G002 Eng #2 (20 Cyl) Start Air Subsys #1 Right Bank Vlv HV5931A Inlet Iso.

f .4 ENSURE LOCKED OPEN S2(3)2420MU082, DG G002 Eng #1 (16 Cyl) Start Air Subsys #1 Left Bank Vlv HV5931B Inlet Iso.

f .5 UNLOCK and CLOSE S2(3)2420MU083, DG G002 Eng #1 (16 Cyl) Start Air Subsys #2 Right Bank Vlv HV5931D Inlet Iso.

f .6 UNLOCK and CLOSE S2(3)2420MU084, DG G002 Eng #2 (20 Cyl) Start Air Subsys #2 Left Bank Vlv HV5931C Inlet Iso.

f .7 UNLOCK and CLOSE S2(3)2420MU085, DG G002 Starting Air Subsystem #2 Air Receiver T336 Outlet Isolation Valve.

END OF SECTION 2.2.8

2.0 PROCEDURE (Continued)

PERF. BY INITIALS

2.2.9 **Use G002 Starting Air Subsystem 2 to start the Diesel.**

f .1 ENSURE LOCKED OPEN S2(3)2420MU085, DG G002 Starting Air Subsystem #2 Air Receiver T336 Outlet Isolation Valve. N/A

f .2 ENSURE LOCKED CLOSED S2(3)2420MU086, DG G002 Starting Air Subsys #1 T335 and Subsys #2 T336 Outlet Crosstie Valve.

f .3 ENSURE LOCKED OPEN S2(3)2420MU083, DG G002 Eng #1 (16 Cyl) Start Air Subsys #2 Right Bank Vlv HV5931D Inlet Iso.

f .4 ENSURE LOCKED OPEN S2(3)2420MU084, DG G002 Eng #2 (20 Cyl) Start Air Subsys #2 Left Bank Vlv HV5931C Inlet Iso.

f .5 UNLOCK and CLOSE S2(3)2420MU081, DG G002 Eng #2 (20 Cyl) Start Air Subsys #1 Right Bank Vlv HV5931A Inlet Iso.

f .6 UNLOCK and CLOSE S2(3)2420MU082, DG G002 Eng #1 (16 Cyl) Start Air Subsys #1 Left Bank Vlv HV5931B Inlet Iso.

f .7 UNLOCK and CLOSE S2(3)2420MU087, DG G002 Starting Air Subsystem #1 Air Receiver T335 Outlet Isolation Valve.

END OF SECTION 2.2.9

2.0 PROCEDURE (Continued)

PERF. BY INITIALS

2.2.10 **Use G003 Starting Air Subsystem 1 to start the Diesel.**

f .1 ENSURE LOCKED OPEN S2(3)2420MU096, DG G003 Starting Air Subsystem #1 Air Receiver T337 Outlet Isolation Valve. N/A

f .2 ENSURE LOCKED CLOSED S2(3)2420MU095, DG G003 Starting Air Subsys #1 T337 and Subsys #2 T338 Outlet Crosstie Valve.

f .3 ENSURE LOCKED OPEN S2(3)2420MU109, DG G003 Eng #2 (20 Cyl) Start Air Subsys #1 Right Bank Vlv HV5931E Inlet Iso.

f .4 ENSURE LOCKED OPEN S2(3)2420MU110, DG G003 Eng #1 (16 Cyl) Start Air Subsys #1 Left Bank Vlv HV5931F Inlet Iso.

f .5 UNLOCK and CLOSE S2(3)2420MU111, DG G003 Eng #1 (16 Cyl) Start Air Subsys #2 Right Bank Vlv HV5931H Inlet Iso.

f .6 UNLOCK and CLOSE S2(3)2420MU112, DG G003 Eng #2 (20 Cyl) Start Air Subsys #2 Left Bank Vlv HV5931G Inlet Iso.

f .7 UNLOCK and CLOSE S2(3)2420MU094, DG G003 Starting Air Subsystem #2 Air Receiver T338 Outlet Isolation Valve.

END OF SECTION 2.2.10

2.0 PROCEDURE (Continued)

PERF. BY INITIALS

2.2.11 **Use G003 Starting Air Subsystem 2 to start the Diesel.**

f .1 ENSURE LOCKED OPEN S2(3)2420MU094, DG G003 Starting Air Subsystem #2 Air Receiver T338 Outlet Isolation Valve. N/A

f .2 ENSURE LOCKED CLOSED S2(3)2420MU095, DG G003 Starting Air Subsys #1 T337 and Subsys #2 T338 Outlet Crosstie Valve

f .3 ENSURE LOCKED OPEN S2(3)2420MU111, DG G003 Eng #1 (16 Cyl) Start Air Subsys #2 Right Bank Vlv HV5931H Inlet Iso.

f .4 ENSURE LOCKED OPEN S2(3)2420MU112, DG G003 Eng #2 (20 Cyl) Start Air Subsys #2 Left Bank Vlv HV5931G Inlet Iso.

f .5 UNLOCK and CLOSE S2(3)2420MU109, DG G003 Eng #2 (20 Cyl) Start Air Subsys #1 Right Bank Vlv HV5931E Inlet Iso.

f .6 UNLOCK and CLOSE S2(3)2420MU110, DG G003 Eng #1 (16 Cyl) Start Air Subsys #1 Left Bank Vlv HV5931F Inlet Iso.

f .7 UNLOCK and CLOSE S2(3)2420MU096, DG G003 Starting Air Subsystem #1 Air Receiver T337 Outlet Isolation Valve.

2.2.12 Request Maintenance to ensure all required test equipment is installed, and pretests have been performed on the measuring devices installed to monitor/record Diesel Generator parameters. N/A

VERIFIED BY:

_____ _____ _____
Maintenance General Foreman Date Time

f 2.2.13 PLACE C-012A (C-013A), Starting Air Compressor Power Supply Handswitch, at BDX-09 (BHX-09) to OFF. N/A

f 2.2.14 PLACE C-012B (C-013B), Starting Air Compressor Power Supply Handswitch, at BDX-10 (BHX-10) to OFF. N/A

f 2.2.15 RECORD Subsystem #1 Prestart Air Start Manifold pressure:

_____ PI-5958B(D) N/A

f 2.2.16 RECORD Subsystem #2 Prestart Air Start Manifold pressure:

_____ PI-5958A(C) N/A

2.0 PROCEDURE (Continued)

2.3 Diesel Generator Start

		PERF. BY INITIALS START 1	PERF. BY INITIALS START 2	PERF. BY INITIALS START 3	PERF. BY INITIALS START 4
2.3.1	TRANSFER HS-1665-1(HS-1644-2), MODE SELECTOR, to LOCAL CONTROL at CR-63.	(b)(6)			
ƒ .1	VERIFY ILLUMINATED ZL-E918 (ZL-E968), LOCAL CONTROL light. [L-160(L-161)]				
ƒ 2.3.2	DEPRESS HS-1701A(B), IDLE SPEED ON pushbutton. [L-160(~~L-161~~)]				
ƒ .1	VERIFY ILLUMINATED ZL-1700A(B), IDLE SPEED light. [L-160(~~L-161~~)]				
2.3.3 ☞	START the Diesel Generator and RECORD time. (LS-5.4) Start Time: 04:04				
.1	If the D/G fails to start, then refer to Attachment 7. (Ref. 2.2.1) (LS-1.7)				
ƒ 2.3.4	VERIFY all Air Start Motors have Disengaged.	(b)(6)			
ƒ .1	If any Air Start Motor has NOT Disengaged, then IMMEDIATELY SECURE the D/G, and notify the Control Room of this condition.				
ƒ 2.3.5	If the Diesel Generator exhibits "hunting" as indicated by large swings in the fuel rack position, speed, and/or engine loading, then refer to Attachment 7. (LS-5.7)				

2.0 PROCEDURE (Continued)

2.3 Diesel Generator Start

		PERF. BY INITIALS START 1	PERF. BY INITIALS START 2	PERF. BY INITIALS START 3	PERF. BY INITIALS START 4
f 2.3.6	RECORD Diesel Generator Lube Oil Pressure: Engine No. 1: 94 [>25 psig] (PI-5991B, D) Engine No. 2: 104 [>25 psig] (PI-5991A, C)	(b)(6)			
2.3.7	RUN at idle speed (~450 rpm) 5 to 10 minutes for warmup, or as needed for testing. (LS-6.3)				
f 2.3.8	If required to shutdown the Diesel from 450 rpm, then SECURE the Diesel per Section 2.9, and REALIGN the Start Air system per Section 2.5.				
f 2.3.9	LOCALLY VERIFY STARTED E-550 (E-549), Diesel Radiator Fan.	(b)(6)			
f 2.3.10	LOCALLY VERIFY STARTED E-546 (E-547), Diesel Radiator Fan.				
2.3.11	VERIFY STARTED A-274 (A-276), D/G Building Emergency Ventilation Fan. (Ref. 2.3.1.2)				
2.3.12	VERIFY STARTED A-275 (A-277), D/G Building Emergency Ventilation Fan. (Ref. 2.3.1.2)				
f 2.3.13	Ensure desired AVR is Selected, per SRO Ops. Supv. direction.				
	AVR (Circle one.)	(A) B NONE	A B NONE	A B NONE	A B NONE
	NOTE: 159/81, Volts per Cycle Relay, may drop during transfers between idle speed and rated speed, and windows 63B19(63C19) and/or 63B29(63C29) may annunciate. (AR 021101161, AR 070100987)				

2.0 PROCEDURE (Continued)

2.3 Diesel Generator Start

		PERF. BY INITIALS START 1	PERF. BY INITIALS START 2	PERF. BY INITIALS START 3	PERF. BY INITIALS START 4
0414 *f* 2.3.14	Following the warmup period, or as needed for testing, RAISE DIESEL SPEED to 900 rpm by DEPRESSING HS-1702A(B), IDLE SPEED OFF. [L-160(L-161)] (LS-6.2, LS-7.2)	(b)(6)			
f .1	VERIFY EXTINGUISHED ZL-1700A(B), IDLE SPEED light. [L-160(L-161)]				
2.3.15	DEPRESS HS-1665-1~~(HS-1664-2)~~; MODE SELECTOR, LOCAL CONTROL pushbutton at CR-63 to transfer Diesel Control to the Control Room. (Mark N/A if not transferring to Control Room at this time.)				
f .1	VERIFY EXTINGUISHED ZL-E918 (ZL-E968), LOCAL CONTROL light. (Mark N/A if not transferring to Control Room at this time.)				
2.3.16	Time required to reach 4.224 kV: _____ seconds (Ref. 2.3.3.1) **Performed by:** _____ Electrical Test	N/A			
2.3.17	Time required to reach 59.76 HZ: _____seconds (Ref. 2.3.3.1) **Performed by:** _____ Electrical Test	N/A			
f 2.3.18	VERIFY air blowing from S2(3)2420MU302 [S2(3)2420MU304], Diesel Generator G002(3) Engine #1 (16 CYL) Airbox Drain Valve.	(b)(6)			
f .1	If Air is not blowing from the Air Box Drain S2(3)2420MU302 [S2(3)2420MU304], then THROTTLE OPEN the drain valve until air is blowing from drain.				
f 2.3.19	VERIFY air blowing from S2(3)2420MU301 [S2(3)2420MU303], Diesel Generator G002(3) Engine #2 (20 CYL) Airbox Drain Valve.	(b)(6)			
f .1	If Air is not blowing from S2(3)2420MU301 [S2(3)2420MU303], then THROTTLE OPEN the drain valve until air is blowing from drain.				

2.0 PROCEDURE (Continued)

2.3 Diesel Generator Start

		PERF. BY INITIALS START 1	PERF. BY INITIALS START 2	PERF. BY INITIALS START 3	PERF. BY INITIALS START 4
f 2.3.20	RECORD Subsystem #1 Post start Air Start Manifold pressure: _____ PI-5958B(D)	N/A			
f 2.3.21	RECORD Subsystem #2 Post start Air Start Manifold pressure: _____ PI-5958A(C)	N/A			
f 2.3.22	COMMENCE REALIGNING the Diesel Air Start System per Section 2.5. (May be performed after Diesel is loaded.)	(b)(6)			
f 2.3.23	ENSURE IN AUTO C-012A (C-013A), Starting Air Compressor Power Supply Handswitch, at BDX-09 (BHX-09).	N/A			
f 2.3.24	ENSURE IN AUTO C-012B (C-013B), Starting Air Compressor Power Supply Handswitch, at BDX-10 (BHX-10).	N/A			
2.3.25	If desired to shutdown the Diesel prior to loading the engine, then SECURE the Diesel per Section 2.9.				
2.3.26	If it is desired to return the Diesel to 450 rpm, then Mark N/A steps of next start column per the guidance of Section 1.0, Mark N/A Steps 2.3.3 through 2.3.12, and go to Step 2.3.2. (Attach additional copies of Section 2.3 if required.)				

END OF SECTION 2.3

2.0 PROCEDURE (Continued)

2.4 Synchronizing and Loading the Diesel Generator (LS-6.6)

		PERF. BY INITIALS START 1	PERF. BY INITIALS START 2	PERF. BY INITIALS START 3	PERF. BY INITIALS START 4
2.4.1	ENSURE D/G control aligned to the Control Room.	(b)(6)			
2.4.2	SELECT HS-1627-1(2), SYNC CKT CONTROL, to ON.				
2.4.3	DEPRESS HS-1664-1(HS-1642-2), D/G Breaker SYNC pushbutton.				
2.4.4	Using HS-1669-1(HS-1648-2), VOLTAGE REGULATOR, and the Control Room ***digital voltmeters*** MATCH incoming and running voltages. (LS-7.2)				
2.4.5	Using HS-1671-1(HS-1650-2), GOVERNOR CONTROL, ADJUST D/G SPEED so that the synchroscope is ***moving slowly in the clockwise direction.***				
2.4.6	When the synchroscope is within 2 minutes of the straight up position, then CLOSE A0413(A0613), Diesel Generator Breaker. (LS-6.7, LS-6.8, and LS-6.9)				
.1	RAISE LOAD to approximately 1.2 MW by depressing HS-1671-1(HS-1650-2), GOVERNOR CONTROL.				
.2	MAINTAIN positive VAR loading of 0.1 to 0.5 MVARS for duration of load ramp using HS-1669-1 (HS-1648-2), VOLTAGE REGULATOR. (LS-7.2)				
2.4.7	VERIFY ILLUMINATED HS-1671-1(HS-1650-2), GOVERNOR CONTROL DROOP IN light.				
2.4.8	DEPRESS HS-1664-1(HS-1642-2), D/G Breaker SYNC pushbutton.				
.1	SELECT HS-1627-1(2), SYNC CKT CONTROL, to OFF.				

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2.0 PROCEDURE (Continued)

	2.4 Synchronizing and Loading the Diesel Generator (LS-6.6)	PERF. BY INITIALS START 1	PERF. BY INITIALS START 2	PERF. BY INITIALS START 3	PERF. BY INITIALS START 4
2.4.9	After Diesel Generator load has been maintained at ~1.2 MW for 5 to 10 minutes, then ESTABLISH the ***desired load*** per the following guidelines by depressing HS-1671-1(HS-1650-2), GOVERNOR CONTROL: (Loads and/or durations may be modified as required for specific testing, e.g. per script.) (LS-6.2, LS-6.5, and LS-6.10) • ~2.4 MW for 5 to 10 minutes • ~3.6 MW for 5 to 10 minutes • ≥ 4.45 MW and ≤ 4.70 MW (Normal full load) • ≥ 4.70 MW and ≤ 5.17 MW (If required for testing)	(b)(6)			
2.4.10	When Load is ≥ 4.45 MW and ≤ 4.70 MW, then ADJUST positive VAR loading using HS-1669-1 (HS-1648-2), VOLTAGE REGULATOR, until one of the following conditions is met: (Mark N/A if load is not ≥ 4.45 MW and ≤ 4.70 MW.) (LS-7.2 and LS-7.4) • 3.0 - 3.2 MVAR • 4.53 kV to 4.55 kV Bus Voltage • 730-750 amps D/G Output Current • Exciter field current of 3.8 - 4.0 amps DC	N/A			
2.4.11	MAINTAIN VAR loading for duration of Diesel Generator run.	(b)(6)			
.1	If VAR loading cannot be maintained, then Declare the aligned AVR INOPERABLE. (DCE 070300161) (LS-7.2 and LS-7.5)				

2.0 PROCEDURE (Continued)

2.4 Synchronizing and Loading the Diesel Generator
(LS-6.6)

		PERF. BY INITIALS START 1	PERF. BY INITIALS START 2	PERF. BY INITIALS START 3	PERF. BY INITIALS START 4
f 2.4.12	After the Diesel Generator has been at the desired load for ≥ 45 minutes, then record Diesel local parameters. (Handheld Computer or a Computer printout.) (Mark N/A if not loaded ≥ 45 minutes.)	N/A			
2.4.13	After the Diesel Generator has been at the desired load for ≥ 45 minutes, then record 10 Meter temperature from the Met Tower Recorder or PCS: (Mark N/A if not loaded ≥ 45 minutes.) 10 Meter Temperature: _____ (include units)	N/A			
.1	If Temperature is > 80°F (>26.7°C), then initiate an AR to Maintenance Engineering to evaluate the impact on engine maintenance. (LS-6.13)				
2.4.14	TRANSFER HS-1665-1(HS-1644-2), MODE SELECTOR, to LOCAL CONTROL at CR-63. (Mark N/A Section 2.4.14 if not desired to locally control load.)	N/A			
f .1	VERIFY ILLUMINATED ZL-E918(ZL-E968), LOCAL CONTROL light. [L-160(L-161)]	↓			
f 2.4.15	Using HS-940(HS-E990), GOVERNOR, and HS-942(HS-E992), VOLTAGE ADJUST, Locally Adjust Diesel Load and VARs as directed by Electrical Test and/or Engineering. (Mark N/A if not desired to locally control load.)	N/A			
f 2.4.16	When local load control is complete, then DEPRESS HS-1665-1(HS-1644-2), MODE SELECTOR, LOCAL CONTROL pushbutton at CR-63 to transfer Diesel Control to the Control Room. (Mark N/A Section 2.4.16 if not desired to locally control load.)	N/A			
f .1	VERIFY EXTINGUISHED ZL-E918(ZL-E968), LOCAL CONTROL light. [L-160(L-161)]	↓			

2.0 PROCEDURE (Continued)

INITIALS
PERF /IND VER

2.5 Re-aligning Start Air System (Section 2.5 not required to be reperformed for Diesel restarts.)

2.5.1 **Re-align from G002 Starting Air Subsystem #1 alignment, as follows:**

(b)(6)

f .1 LOCK OPEN S2(3)2420MU085, DG G002 Starting Air Subsystem #2 Air Receiver T336 Outlet Isolation Valve.

f .2 LOCK OPEN S2(3)2420MU083, DG G002 Eng #1 (16 Cyl) Start Air Subsys #2 Right Bank Vlv HV5931D Inlet Iso.

f .3 LOCK OPEN S2(3)2420MU084, DG G002 Eng #2 (20 Cyl) Start Air Subsys #2 Left Bank Vlv HV5931C Inlet Iso.

2.5.2 **Re-align from G002 Starting Air Subsystem #2 alignment, as follows:**

N/A

f .1 LOCK OPEN S2(3)2420MU087, DG G002 Starting Air Subsystem #1 Air Receiver T335 Outlet Isolation Valve.

f .2 LOCK OPEN S2(3)2420MU081, DG G002 Eng #2 (20 Cyl) Start Air Subsys #1 Right Bank Vlv HV5931A Inlet Iso.

f .3 LOCK OPEN S2(3)2420MU082, DG G002 Eng #1 (16 Cyl) Start Air Subsys #1 Left Bank Vlv HV5931B Inlet Iso.

END OF SECTION 2.5.2

2.0 PROCEDURE (Continued)

INITIALS
PERF /IND VER

2.5.3 **Re-align from G003 Starting Air Subsystem #1 alignment, as follows:**

f .1 LOCK OPEN S2(3)2420MU094, DG G003 Starting Air Subsystem #2 Air Receiver T338 Outlet Isolation Valve. N/A

f .2 LOCK OPEN S2(3)2420MU111, DG G003 Eng #1 (16 Cyl) Start Air Subsys #2 Right Bank Vlv HV5931H Inlet Iso.

f .3 LOCK OPEN S2(3)2420MU112, DG G003 Eng #2 (20 Cyl) Start Air Subsys #2 Left Bank Vlv HV5931G Inlet Iso.

2.5.4 **Re-align from G003 Starting Air Subsystem #2 alignment, as follows:**

f .1 LOCK OPEN S2(3)2420MU096, DG G003 Starting Air Subsystem #1 Air Receiver T337 Outlet Isolation Valve. N/A

f .2 LOCK OPEN S2(3)2420MU109, DG G003 Eng #2 (20 Cyl) Start Air Subsys #1 Right Bank Vlv HV5931E Inlet Iso.

f .3 LOCK OPEN S2(3)2420MU110, DG G003 Eng #1 (16 Cyl) Start Air Subsys #1 Left Bank Vlv HV5931F Inlet Iso.

END OF SECTION 2.5.4

2.0 PROCEDURE (Continued)

PERF. BY INITIALS

2.6 Paralleling a Diesel Supplied Isochronous Bus to the RAT: (LS-6.6)

f 2.6.1 Ensure the affected Switchgear Room is clear of all unnecessary personnel and maintain it clear until after the Diesel is paralleled to the 4kV bus. N/A

2.6.2 Verify that the associated Reserve Auxiliary Transformer is energized and available to pick up the load.

2.6.3 PLACE Synchronization Master Control switch to ON.

2.6.4 DEPRESS the Reserve Auxiliary Transformer XR1(XR2) FDR BKR A0418 (A0618) SYNC Pushbutton.

2.6.5 Using HS-1669-1(HS-1648-2), VOLTAGE REGULATOR, MATCH incoming and running voltages at the synchroscope.

2.6.6 Using HS-1671-1(HS-1650-2), GOVERNOR CONTROL, ADJUST D/G SPEED so that the synchroscope is ***moving slowly in the clockwise direction.***

NOTE

To prevent a reverse power condition, the Diesel should have a minimum load applied immediately after being paralleled to the 4kV bus.

2.6.7 When the Synchroscope is within "3 minutes" of the straight up position, then CLOSE the Reserve Auxiliary Transformer Breaker. (LS-6.8)

2.6.8 RAISE LOAD on the Diesel to approximately 1.2 MW by depressing HS-1671-1(HS-1650-2), GOVERNOR CONTROL.

2.6.9 VERIFY ILLUMINATED HS-1671-1(HS-1650-2), GOVERNOR CONTROL DROOP IN light.

2.6.10 MAINTAIN VARS between 0.1 to 0.5 MVARS positive by adjusting the D/G Voltage Regulator using HS-1669-1 (HS-1648-2), VOLTAGE REGULATOR.

2.6.11 REMOVE the Reserve Auxiliary Transformer Breaker from sync circuit.

2.6.12 SELECT HS-1627-1(2), SYNC CKT CONTROL, to OFF.

2.0 PROCEDURE (Continued)

PERF. BY INITIALS

2.7 Paralleling a Diesel Supplied Isochronous Bus to the UAT: (LS-6.6)

f 2.7.1 Ensure the affected Switchgear Room is clear of all unnecessary personnel and maintain it clear until after the Diesel is paralleled to the 4kV bus. N/A

2.7.2 Verify that the associated Unit Auxiliary Transformer is energized and available to pick up the load. _____

2.7.3 PLACE Synchronization Master Control switch to ON. _____

2.7.4 DEPRESS the Unit Auxiliary Transformer XU1 FDR BKR A0419 (A0616) SYNC Pushbutton. _____

2.7.5 Using HS-1669-1(HS-1648-2), VOLTAGE REGULATOR, MATCH incoming and running voltages at the synchroscope. _____

2.7.6 Using HS-1671-1(HS-1650-2), GOVERNOR CONTROL, ADJUST D/G SPEED so that the synchroscope is ***moving slowly in the COUNTER-CLOCKWISE direction.*** (LS-6.12) _____

> ***NOTE***
>
> To prevent a reverse power condition, the Diesel should have a minimum load applied immediately after being paralleled to the 4kV bus.

2.7.7 When the Synchroscope is within "3 minutes" of the straight up position, then CLOSE the Unit Auxiliary Transformer Breaker. (LS-6.8) _____

2.7.8 RAISE LOAD on the Diesel to approximately 1.2 MW by depressing HS-1671-1(HS-1650-2), GOVERNOR CONTROL. _____

2.7.9 VERIFY ILLUMINATED HS-1671-1(HS-1650-2), GOVERNOR CONTROL DROOP IN light. _____

2.7.10 MAINTAIN VARS between 0.1 to 0.5 MVARS positive by adjusting the D/G Voltage Regulator using HS-1669-1 (HS-1648-2), VOLTAGE REGULATOR. _____

2.7.11 REMOVE the Unit Auxiliary Transformer Breaker from sync circuit. _____

2.7.12 SELECT HS-1627-1(2), SYNC CKT CONTROL, to OFF. _____

2.0 PROCEDURE (Continued)

2.8 Unloading the Diesel Generator

		PERF. BY INITIALS START 1	PERF. BY INITIALS START 2	PERF. BY INITIALS START 3	PERF. BY INITIALS START 4
2.8.1	Ensure all required operating readings are complete. (Mark N/A if Step 2.4.12 was marked N/A.)	N/A			
2.8.2	REDUCE load on the Diesel Generator to the following values: (Mark N/A Section 2.8.2 if Output Breaker to be opened under load.) (LS-6.2, LS-6.11, and LS-7.3)				
.1	0.1 MW to 0.2 MW using HS-1671-1(HS-1650-2), GOVERNOR CONTROL.	(b)(6)			
.2	0.1 to 0.5 MVARS using HS-1669-1 (HS-1648-2), VOLTAGE REGULATOR.				
2.8.3	OPEN A0413(A0613), Diesel Generator Breaker.				
2.8.4	If it is desired to load the Diesel using the currently selected AVR prior to stopping, then go to Step 2.4.1.				

END OF SECTION 2.8

2.0 PROCEDURE (Continued)

2.9 Stopping the Diesel Generator

			PERF. BY INITIALS START 1	PERF. BY INITIALS START 2	PERF. BY INITIALS START 3	PERF. BY INITIALS START 4
	2.9.1	Transfer Diesel Control to LOCAL, as follows:				
	.1	TRANSFER HS-1665-1(HS-1644-2), MODE SELECTOR, to LOCAL CONTROL at CR-63.	(b)(6)			
	ƒ .2	VERIFY ILLUMINATED ZL-E918 (ZL-E968), LOCAL CONTROL light. [L-160(L-161)]				
	2.9.2	Reduce speed to idle, as follows: (LS-6.2 and LS-7.3)				
0430	ƒ .1	DEPRESS HS-1701A(B), IDLE SPEED ON pushbutton. [L-160(L-161)]	(b)(6)			
	ƒ .2	VERIFY ILLUMINATED ZL-1700A(B), IDLE SPEED light. [L-160(L-161)]				
	ƒ .3	VERIFY the Diesel at idle speed.				
		Idle Time: 04:3				
	.4	If it is desired to continue testing, then Mark N/A the remaining steps of the current START Column of this section, and go to Step 2.3.13.				
	.5 CRITICAL STEP	Allow to run at idle for at least: (Check one.) (LS-6.4) ■ Diesel was loaded: 15 minutes ☐ Diesel was not loaded: 5 minutes	(b)(6)			
	ƒ 2.9.3	ENSURE both AC Lube Oil Circulating Pumps and both Turbocharger Pumps are operating.				
	ƒ 2.9.4	VERIFY the Air Start Manifolds > 185 psig as indicated on PI-5958A(C) and PI-5958B(D).				
	.1	If NO, then initiate Attachment 14.				

2.0 PROCEDURE (Continued)

2.9 Stopping the Diesel Generator

			PERF. BY INITIALS START 1	PERF. BY INITIALS START 2	PERF. BY INITIALS START 3	PERF. BY INITIALS START 4
2.9.5	ENSURE D/G control aligned to the Control Room.		N/A			
.1 ☞	STOP the Diesel from the Control Room and RECORD time.	Stop Time:				
2.9.6	Locally shut down the Diesel, as follows:					
f .1 ☞	After notifying the Control Room that the Diesel has run in idle for >15 minutes or >5 minutes, as required, or if ***locally stopping*** from 900 rpm, then ROTATE HS-5995-1(2), Local Engine Control, to STOP and RECORD time. (LS-5.5)	Stop Time: 0457	(b)(6)			
2.9.7	Return Diesel Control to Control Room, as follows:					
f .1	DEPRESS HS-1702A(B), IDLE SPEED OFF. [L-160(L-161)]		(b)(6)			
f .2	VERIFY EXTINGUISHED ZL-1700A(B), IDLE SPEED light. [L-160(L-161)]					
.3	DEPRESS HS-1665-1(HS-1644-2), MODE SELECTOR, LOCAL CONTROL pushbutton at CR-63 to transfer Diesel Control to the Control Room.					
f .4	VERIFY EXTINGUISHED ZL-E918 (ZL-E968), LOCAL CONTROL light. [L-160(L-161)]					
f 2.9.8	RECORD Engine Hours from KI-E928(KI-E978) located on L-160(161):	1653.6 Engine Hours:				
f 2.9.9	RECORD kWh Meter at A0413 (A0613): (Mark N/A if Diesel was not loaded.)	12782000 kWh Meter:				

2.0 PROCEDURE (Continued)

2.9 Stopping the Diesel Generator

		PERF. BY INITIALS START 1	PERF. BY INITIALS START 2	PERF. BY INITIALS START 3	PERF. BY INITIALS START 4
	NOTE: 159/81, Volts per Cycle Relay, may drop during transfers between idle speed and rated speed, and windows 63B19(63C19) and/or 63B29(63C29) may annunciate. (AR 021101161, AR 070100987)				
f 2.9.10	After Diesel is stopped, then ENSURE RESET 159/81, Volts per Cycle Relay for G-002(G-003) on A0414(A0614).	(b)(6)			
2.9.11	If it is desired to rapidly restart the Diesel, then Mark N/A steps of next start column per the guidance of Section 1.0, and go to Step 2.3.1.				

END OF SECTION 2.9

2.0 PROCEDURE (Continued)

PERF. BY INITIALS

2.10 Post Run Actions

2.10.1 Ensure all measuring devices installed to monitor/record Diesel Generator parameters are removed. N/A

2.10.2 If time to reach generator voltage of 4.224 kV in Step 2.3.16, or generator frequency of 59.76 HZ in Step 2.3.17 was > 8.25 seconds (with both air start systems aligned), then initiate an AR for D/G degraded performance, and notify the Maintenance Engineer for enhanced monitoring. (This step does NOT make D/G INOPERABLE.) (Mark N/A if Steps 2.3.16 and 2.3.17 were ≤ 8.25 seconds, or only one air system aligned.) N/A

Name of ME Notified _____ Date _____ Time _____

NOTE

This attachment DOES NOT document Tech. Spec. Surveillance Acceptance Criteria. Tech. Specs. are called out for reference only.

2.10.3 RECORD the level in the Diesel Fuel Oil Storage Tank T-035 (T-036) at CR-60 or Local Soundings. (LS-4.1) (b)(6)

92.5 %
LI-5903-1 (LI-5906-2) or Local Soundings

.1 Is Fuel Oil Storage Tank at the required level? (Tech. Spec. SR 3.8.3.1, Ref. 2.3.3.3)

✓	FOST LEVEL	APPLICABLE TS
✓	≥87% (Mode 1-4) ≥78% (Mode 5-6)	NONE
	≥74% and <87% (Mode 1-4) ≥67% and <78% (Mode 5-6)	Tech. Spec. 3.8.3
	<74% (Mode 1-4) <67% (Mode 5-6)	Tech. Spec. 3.8.1

YES / NO (b)(6)

2.0 PROCEDURE (Continued)

PERF. BY INITIALS

2.10.3.2 If Fuel Oil Storage Tank level is ≤ 89% (Mode 1-4), or ≤ 80% (Mode 5 or 6), then notify SRO Ops. Supv. to order Diesel Fuel Oil.

.3 If in Modes 5-6, and Fuel Oil Storage Tank is < 87%, then initiate a Mode 4 EDMR.

f 2.10.4 T-133(T-134), Day Tank Fuel Level, ≥31.5 inches. (LS-4.1) (Tech. Spec. SR 3.8.1.4, SR 3.8.2.1, Ref. 2.3.3.2)

YES / NO (b)(6)

f 2.10.5 Both engine lube oil levels are at the required level on dipstick. (LS-10.1, LS-10.2) (Tech. Spec. SR 3.8.3.2)

✓	LUBE OIL LEVEL	APPLICABLE TS
✓	≥ TSMIN mark	NONE
	≥ TSINOP mark and < TSMIN mark	Tech. Spec. 3.8.3
	< TSINOP	Tech. Spec. 3.8.1

YES / NO (b)(6)

f 2.10.6 Air Receivers at required pressure as indicated on PI-5958A(C) & PI-5958B(D), Air Start Manifold Pressure Indicators. Separate Actions are applicable for each Subsystem. (Tech. Spec. SR 3.8.3.4)

✓	AIR RECEIVER PRESSURE	APPLICABLE TS
✓	≥ 175 psig	NONE
	≥ 136 psig and < 175 psig	Tech. Spec. 3.8.3
	< 136 psig (LS-1.3)	Affected Air Start Subsystem INOPERABLE. (Tech. Spec. 3.8.3)
	All aligned Air Receivers < 136 psig	Tech. Spec. 3.8.1.

YES / NO (b)(6)

2.0 PROCEDURE (Continued)

PERF. BY INITIALS

f 2.10.7 Inspect for signs of fuel leakage in the associated Tank Vault (inspection tube) and under the grating of the Diesel Building Trenches. (AR 030100114)

☑ Leakage not found.
☐ Leakage found: AR _____

(b)(6)

2.10.8 Request Facilities (PAX 83979 or 83333) align D1N HVAC dampers to normal. (Mark N/A all of Section 2.10.8 if another Diesel Start is to be performed per Return to Service plan.) N/A

.1 Name of Facilities Department person contacted: ↓

_____ _____ _____
Person Contacted Date Time

2.10.9 ATTACH a copy of the readings taken in Step 2.4.12 to this attachment. (Mark N/A if not loaded ≥ 45 minutes.) N/A

END OF SECTION 2.10

3.0 Logging Results of Diesel Generator Run

PERF. BY INITIALS

3.1 Complete Diesel Generator Start Evaluation Report per SO123-0-A4, Attachment for Diesel Generator Starts - Units 2 and 3. (b)(6)

3.2 Reports on Diesel Generator failures, valid or non-valid, shall be reported to the NRC in accordance with LCS 5.0.104.2.b.

3.2.1 Notify Engineering and request a report to be made to the NRC should a Diesel Generator failure occur.

3.2.2 Notify the Maintenance Engineer of any D/G failures.

COMMENTS: _____

(b)(6)

REVIEWED BY: _____ DATE: 8-21-08

SRO Ops. Supv.

FILE DISPOSITION: File per SO123-0-A3.
Surveillance/Compliance Group: Forward a copy of this attachment and readings taken in Step 2.4.12 to the Maintenance Engineer.

Safety Monitor 3.5.01
Date of calculation: 08/21/2008 09:57 Page: 1

SONG Unit 2

Mode/POS: 1PWR : Full and Low Power

CDF : 8.10E-05 (Above Moderate = 8.00E-05): ACT - 207h:13m
LERF : 5.14E-06 (Below Moderate = 8.00E-06): ACT - 246h:48m
TRIP : 0.00E+00 (Below Moderate = 2.00E+00): ACT - 8760h:0m

Out of service components (all systems):

2A0616
S21219MP011
S21413MP113
SA1513ME330
S32420MG003
S22420MG003

yellow if do

No env/test factors in effect.

Both diesels ON Train C
OOS 26003
36003

SONG Unit 2

Mode/POS: 1PWR : Full and Low Power

CDF : 8.10E-05 (Above Moderate = 8.00E-05): ACT - 207h:13m
LERF : 5.14E-06 (Below Moderate = 8.00E-06): ACT - 246h:48m
TRIP : 0.00E+00 (Below Moderate = 2.00E+00): ACT - 8760h:0m

System alignments:

1	2B021 or 3B021 (Only1 can be aligned)	NotAligned, Train D1
2	2B022 or 3B022 (Only1 can be aligned)	NotAligned, Train D4
3	BQ Power Supply	Unit 2, Train A
4	BS Power Supply	Unit 2, Train B
5	CCW HX E001	Not in H/T, Train A
6	CCW HX E002	Not in H/T, Train B
7	CCW Pump P024	Standby, Train A
8	CCW Pump P025	Standby, Train Train A
9	CCW Pump P026	Running, Train B
10	Cont. Mini-Purge Valves	Closed, Train N/A
11	E418 Power Supply	Unit 2, Train A
12	E419 Power Supply	Unit 2, Train B
13	HPSI Pump P018	Train A, Train N/A
14	ME335 Alignments	U2 PWR, Train U2 CCW
15	ME336 Alignments	U2 PWR, Train U3 CCW
16	SWC Pump P112	Standby, Train A
17	SWC Pump P113	Standby, Train B
18	SWC Pump P114	Running, Train B
19	SWC Pump P307	Standby, Train A
20	TPCW Supply	Unit 3, Train N/A
21	Unit 2 Intake	Status, Train Avail
22	Unit 3 Intake	Status, Train Avail
[illegible]	CS Pump P012	Standby, Train CS Align
[illegible]	CS Pump P013	Standby, Train CS Align
25	RCS Alignment	Header B, Train N/A
26	SDC Pump P015	Standby, Train A
27	SDC Pump P016	Standby, Train B
28	SFP Pump P009	Running, Train 1E Power
29	SFP Pump P010	Standby, Train 1E Power
30	SFPC Alignment	Aligned, Train N/A
31	Cond. Pump 50	Running, Train N/A
32	Cond. Pump 51	Running, Train N/A
33	Cond. Pump 52	Running, Train N/A
34	Cond. Pump 53	Standby, Train N/A
35	FW Heater 1 Bypass	Closed, Train N/A
36	FW Heater 2/3 Bypass	Closed, Train N/A
37	FW Heater 4/5 Bypass	Closed, Train N/A
38	TPCW Heat Treat	Not in H/T, Train U2 HX
39	TPCW High Temp Seawater	No, Train N/A

SONG Unit 3

Mode/POS: 1PWR : Full and Low Power

CDF : 8.50E-05 (Above Moderate = 8.00E-05): ACT - 189h:4m
LERF : 5.66E-06 (Below Moderate = 8.00E-06): ACT - 215h:21m
TRIP : 0.00E+00 (Below Moderate = 2.00E+00): ACT - 8760h:0m

Out of service components (all systems):

SA1513ME330
S32420MG003
S22420MG003
S31505MA372

No env/test factors in effect.

SONG Unit 3

Mode/POS: 1PWR : Full and Low Power

CDF : 8.50E-05 (Above Moderate = 8.00E-05): ACT - 189h:4m
LERF : 5.66E-06 (Below Moderate = 8.00E-06): ACT - 215h:21m
TRIP : 0.00E+00 (Below Moderate = 2.00E+00): ACT - 8760h:0m

System alignments:

1	2B021 or 3B021 (Only1 can be aligned)	NotAligned, Train D1
2	2B022 or 3B022 (Only1 can be aligned)	NotAligned, Train D4
3	BQ Power Supply	Unit 2, Train A
4	BS Power Supply	Unit 2, Train B
5	CCW HX E001	Not in H/T, Train A
6	CCW HX E002	Not in H/T, Train B
7	CCW Pump P024	Standby, Train A
8	CCW Pump P025	Running, Train Train A
9	CCW Pump P026	Running, Train B
10	Cont. Mini-Purge Valves	Closed, Train N/A
11	E418 Power Supply	Unit 2, Train A
12	E419 Power Supply	Unit 2, Train B
13	HPSI Pump P018	Train A, Train N/A
14	ME335 Alignments	U2 PWR, Train U2 CCW
15	ME336 Alignments	U2 PWR, Train U3 CCW
16	SWC Pump P112	Running, Train A
17	SWC Pump P113	Standby, Train B
18	SWC Pump P114	Running, Train B
19	SWC Pump P307	Standby, Train A
20	TPCW Supply	Unit 3, Train N/A
21	Unit 2 Intake	Status, Train Avail
22	Unit 3 Intake	Status, Train Avail
[illegible]	CS Pump P012	Standby, Train CS Align
[illegible]	CS Pump P013	Standby, Train CS Align
25	RCS Alignment	Header A, Train N/A
26	SDC Pump P015	Standby, Train A
27	SDC Pump P016	Standby, Train B
28	SFP Pump P009	Running, Train 1E Power
29	SFP Pump P010	Standby, Train 1E Power
30	SFPC Alignment	Aligned, Train N/A
31	Cond. Pump 50	Running, Train N/A
32	Cond. Pump 51	Running, Train N/A
33	Cond. Pump 52	Running, Train N/A
34	Cond. Pump 53	Running, Train N/A
35	FW Heater 1 Bypass	Closed, Train N/A
36	FW Heater 2/3 Bypass	Closed, Train N/A
37	FW Heater 4/5 Bypass	Closed, Train N/A
38	TPCW Heat Treat	Not in H/T, Train No HX
39	TPCW High Temp Seawater	No, Train N/A

SONG Unit 2

Mode/POS: 1PWR : Full and Low Power

	: 4.49E-05 (Below Moderate = 8.00E-05):	ACT - 1420h:57m
LERF	: 2.08E-06 (Below Moderate = 8.00E-06):	ACT - 1777h:13m
TRIP	: 0.00E-00 (Below Moderate = 2.00E-00):	ACT - 8760h:0m

Out of service components (all systems):

2A0616
S21219MP011
S21413MP112
SA1513ME330
S32420MG003

No env/test factors in effect.

36003 00S

SONG Unit 2

Mode/POS: 1PWR : Full and Low Power

	: 4.49E-05	(Below Moderate = 8.00E-05)	: ACT - 1420h:57m
LERF	: 2.08E-06	(Below Moderate = 8.00E-06)	: ACT - 1777h:15m
TRIP	: 0.00E+00	(Below Moderate = 2.00E+00)	: ACT - 8760h:0m

System alignments:

1	2B021 or 3B021 (Only1 can be aligned)	NotAligned, Train D1
2	2B022 or 3B022 (Only1 can be aligned)	NotAligned, Train D4
3	BQ Power Supply	Unit 2, Train A
4	BS Power Supply	Unit 2, Train B
5	CCW HX E001	Not in H/T, Train A
6	CCW HX E002	Not in H/T, Train B
7	CCW Pump P024	Standby, Train A
8	CCW Pump P025	Standby, Train Train A
9	CCW Pump P026	Running, Train B
10	Cont. Mini-Purge Valves	Closed, Train N/A
11	E418 Power Supply	Unit 2, Train A
12	E419 Power Supply	Unit 2, Train B
13	HPSI Pump P018	Train A, Train N/A
14	ME335 Alignments	U2 PWR, Train U2 CCW
15	ME336 Alignments	U2 PWR, Train U3 CCW
16	SWC Pump P112	Standby, Train A
17	SWC Pump P113	Standby, Train B
18	SWC Pump P114	Running, Train B
19	SWC Pump P307	Standby, Train A
20	TPCW Supply	Unit 3, Train N/A
21	Unit 2 Intake	Status, Train Avail
22	Unit 3 Intake	Status, Train Avail
23	CS Pump P012	Standby, Train CS Align
	CS Pump P013	Standby, Train CS Align
25	RCS Alignment	Header B, Train N/A
26	SDC Pump P015	Standby, Train A
27	SDC Pump P016	Standby, Train B
28	SFP Pump P009	Running, Train 1E Power
29	SFP Pump P010	Standby, Train 1E Power
30	SFPC Alignment	Aligned, Train N/A
31	Cond. Pump 50	Running, Train N/A
32	Cond. Pump 51	Running, Train N/A
33	Cond. Pump 52	Running, Train N/A
34	Cond. Pump 53	Standby, Train N/A
35	FW Heater 1 Bypass	Closed, Train N/A
36	FW Heater 2/3 Bypass	Closed, Train N/A
37	FW Heater 4/5 Bypass	Closed, Train N/A
38	TPCW Heat Treat	Not in H/T, Train U2 HX
39	TPCW High Temp Seawater	No, Train N/A

SONG Unit 3

Mode/POS: 1PWR : Full and Low Power

	: 5.64E-05	(Below Moderate = 8.00E-05):	ACT - 495h:40m
LERF	: 2.61E-06	(Below Moderate = 8.00E-06):	ACT - 863h:0m
TRIP	: 0.00E-00	(Below Moderate = 2.00E+00):	ACT - 8760h:0m

Out of service components (all systems):

SA1513ME330
S32420MG003
S31505MA372

No env/test factors in effect.

SONG Unit 2

Mode/POS: 1PWR : Full and Low Power

	: 5.64E-05 (Below Moderate = 8.00E-05):	ACT - 495h:40m
LERF	: 2.61E-06 (Below Moderate = 8.00E-06):	ACT - 863h:0m
TRIP	: 0.00E+00 (Below Moderate = 2.00E+00):	ACT - 8760h:0m

System alignments:

1	2B021 or 3B021 (Only1 can be aligned)	NotAligned, Train D1
2	2B022 or 3B022 (Only1 can be aligned)	NotAligned, Train D4
3	BQ Power Supply	Unit 2, Train A
4	BS Power Supply	Unit 2, Train B
5	CCW HX E001	Not in H/T, Train A
6	CCW HX E002	Not in H/T, Train B
7	CCW Pump P024	Standby, Train A
8	CCW Pump P025	Running, Train Train A
9	CCW Pump P026	Running, Train B
10	Cont. Mini-Purge Valves	Closed, Train N/A
11	E418 Power Supply	Unit 2, Train A
12	E419 Power Supply	Unit 2, Train B
13	HPSI Pump P018	Train A, Train N/A
14	ME335 Alignments	U2 PWR, Train U2 CCW
15	ME336 Alignments	U2 PWR, Train U3 CCW
16	SWC Pump P112	Running, Train A
17	SWC Pump P113	Standby, Train B
18	SWC Pump P114	Running, Train B
19	SWC Pump P307	Standby, Train A
20	TPCW Supply	Unit 3, Train N/A
21	Unit 2 Intake	Status, Train Avail
22	Unit 3 Intake	Status, Train Avail
23	CS Pump P012	Standby, Train CS Align
	CS Pump P013	Standby, Train CS Align
25	RCS Alignment	Header A, Train N/A
26	SDC Pump P015	Standby, Train A
27	SDC Pump P016	Standby, Train B
28	SFP Pump P009	Running, Train 1E Power
29	SFP Pump P010	Standby, Train 1E Power
30	SFPC Alignment	Aligned, Train N/A
31	Cond. Pump 50	Running, Train N/A
32	Cond. Pump 51	Running, Train N/A
33	Cond. Pump 52	Running, Train N/A
34	Cond. Pump 53	Running, Train N/A
35	FW Heater 1 Bypass	Closed, Train N/A
36	FW Heater 2/3 Bypass	Closed, Train N/A
37	FW Heater 4/5 Bypass	Closed, Train N/A
38	TPCW Heat Treat	Not in H/T, Train No HX
39	TPCW High Temp Seawater	No, Train N/A

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Date of calculation: 08/21/2008 00:59 Page: 1

SONG Unit 2

Mode/POS: 1PWR : Full and Low Power

CDF : 6.26E-05 (Below Moderate = 8.00E-05): ACT - 366h:1m
LERF : 3.23E-06 (Below Moderate = 8.00E-06): ACT - 532h:42m
TRIP : 0.00E+00 (Below Moderate = 2.00E+00): ACT - 8760h:0m

Out of service components (all systems):

2A0616
S21219MP011
S21413MP113
SA1513ME330
S32420MG003
S22420MG002

No env/test factors in effect.

unit 3 6003 OOS
unit 2 6002 OOS

SONG Unit 2

Mode/POS: 1PWR : Full and Low Power

CDF : 6.26E-05 (Below Moderate = 8.00E-05): ACT - 366h:1m
LERF : 3.23E-06 (Below Moderate = 8.00E-06): ACT - 532h:42m
TRIP : 0.00E+00 (Below Moderate = 2.00E+00): ACT - 8760h:0m

System alignments:

1	2B021 or 3B021 (Only1 can be aligned)	NotAligned, Train D1
2	2B022 or 3B022 (Only1 can be aligned)	NotAligned, Train D4
3	BQ Power Supply	Unit 2, Train A
4	BS Power Supply	Unit 2, Train B
5	CCW HX E001	Not in H/T, Train A
6	CCW HX E002	Not in H/T, Train B
7	CCW Pump P024	Standby, Train A
8	CCW Pump P025	Standby, Train Train A
9	CCW Pump P026	Running, Train B
10	Cont. Mini-Purge Valves	Closed, Train N/A
11	E418 Power Supply	Unit 2, Train A
12	E419 Power Supply	Unit 2, Train B
13	HPSI Pump P018	Train A, Train N/A
14	ME335 Alignments	U2 PWR, Train U2 CCW
15	ME336 Alignments	U2 PWR, Train U3 CCW
16	SWC Pump P112	Standby, Train A
17	SWC Pump P113	Standby, Train B
18	SWC Pump P114	Running, Train B
19	SWC Pump P307	Standby, Train A
20	TPCW Supply	Unit 3, Train N/A
21	Unit 2 Intake	Status, Train Avail
22	Unit 3 Intake	Status, Train Avail
[illegible]	CS Pump P012	Standby, Train CS Align
[illegible]	CS Pump P013	Standby, Train CS Align
25	RCS Alignment	Header B, Train N/A
26	SDC Pump P015	Standby, Train A
27	SDC Pump P016	Standby, Train B
28	SFP Pump P009	Running, Train 1E Power
29	SFP Pump P010	Standby, Train 1E Power
30	SFPC Alignment	Aligned, Train N/A
31	Cond. Pump 50	Running, Train N/A
32	Cond. Pump 51	Running, Train N/A
33	Cond. Pump 52	Running, Train N/A
34	Cond. Pump 53	Standby, Train N/A
35	FW Heater 1 Bypass	Closed, Train N/A
36	FW Heater 2/3 Bypass	Closed, Train N/A
37	FW Heater 4/5 Bypass	Closed, Train N/A
38	TPCW Heat Treat	Not in H/T, Train U2 HX
39	TPCW High Temp Seawater	No, Train N/A

SONG Unit 3

Mode/POS: 1PWR : Full and Low Power

CDF : 6.16E-05 (Below Moderate = 8.00E-05): ACT - 382h:46m
LERF : 3.25E-06 (Below Moderate = 8.00E-06): ACT - 529h:7m
TRIP : 0.00E+00 (Below Moderate = 2.00E+00): ACT - 8760h:0m

Out of service components (all systems):

SA1513ME330
S32420MG003
S22420MG002

No env/test factors in effect.

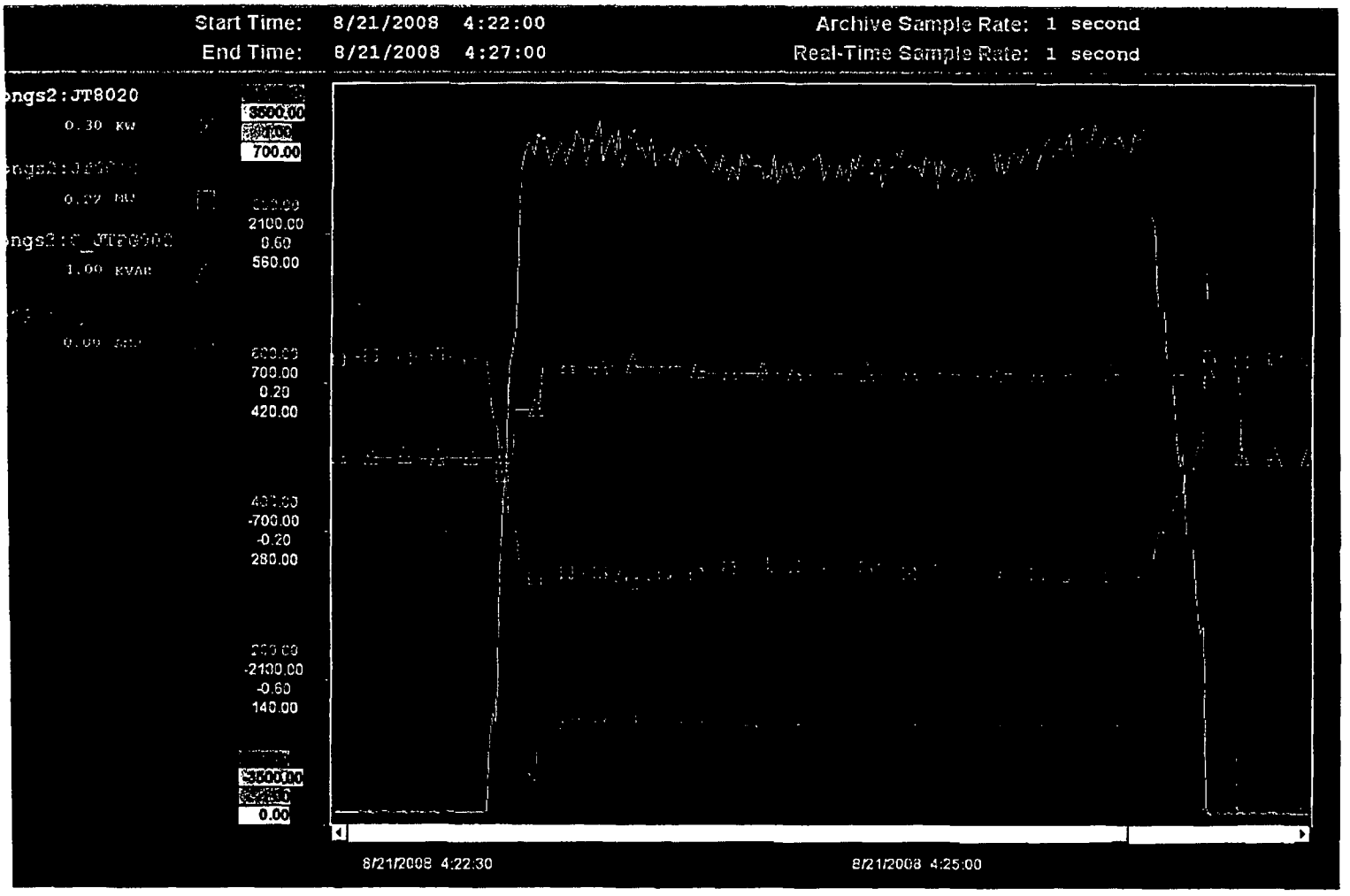
SONG Unit 3

Mode/POS: 1PWR : Full and Low Power

CDF : 6.16E-05 (Below Moderate = 8.00E-05): ACT - 382h:46m
LERF : 3.25E-06 (Below Moderate = 8.00E-06): ACT - 529h:7m
TRIP : 0.00E+00 (Below Moderate = 2.00E+00): ACT - 8760h:0m

System alignments:

1	2B021 or 3B021 (Only1 can be aligned)	NotAligned, Train D1
2	2B022 or 3B022 (Only1 can be aligned)	NotAligned, Train D4
3	BQ Power Supply	Unit 2, Train A
4	BS Power Supply	Unit 2, Train B
5	CCW HX E001	Not in H/T, Train A
6	CCW HX E002	Not in H/T, Train B
7	CCW Pump P024	Standby, Train A
8	CCW Pump P025	Running, Train Train A
9	CCW Pump P026	Running, Train B
10	Cont. Mini-Purge Valves	Closed, Train N/A
11	E418 Power Supply	Unit 2, Train A
12	E419 Power Supply	Unit 2, Train B
13	HPSI Pump P018	Train A, Train N/A
14	ME335 Alignments	U2 PWR, Train U2 CCW
15	ME336 Alignments	U2 PWR, Train U3 CCW
16	SWC Pump P112	Running, Train A
17	SWC Pump P113	Standby, Train B
18	SWC Pump P114	Running, Train B
19	SWC Pump P307	Standby, Train A
20	TPCW Supply	Unit 3, Train N/A
21	Unit 2 Intake	Status, Train Avail
22	Unit 3 Intake	Status, Train Avail
	CS Pump P012	Standby, Train CS Align
	CS Pump P013	Standby, Train CS Align
25	RCS Alignment	Header B, Train N/A
26	SDC Pump P015	Standby, Train A
27	SDC Pump P016	Standby, Train B
28	SFP Pump P009	Running, Train 1E Power
29	SFP Pump P010	Standby, Train 1E Power
30	SFPC Alignment	Aligned, Train N/A
31	Cond. Pump 50	Running, Train N/A
32	Cond. Pump 51	Running, Train N/A
33	Cond. Pump 52	Running, Train N/A
34	Cond. Pump 53	Running, Train N/A
35	FW Heater 1 Bypass	Closed, Train N/A
36	FW Heater 2/3 Bypass	Closed, Train N/A
37	FW Heater 4/5 Bypass	Closed, Train N/A
38	TPCW Heat Treat	Not in H/T, Train No HX
39	TPCW High Temp Seawater	No, Train N/A



ZG002 TRACES

8.3.1.5 Cross-tie to the Opposite Unit s Diesel Generator

The December 15, 1995, Individual Plant Examination of External Events (IPEEE) report for SONGS Units 2&3, which was submitted to NRC in response to Generic Letter 88-20, Supplement 4, takes probabilistic credit for the capability of a Diesel Generator (DG) cross-tie to the opposite unit and requires that in approximately 55 minutes (available mission time equal to steam generator dry out time plus core uncovery time) the cross-tie is established to restore power to the unit experiencing a station blackout.

The purpose of the cross-tie is to provide the capability to manually cross-connect one unit s DG to the same train of the other unit s 4.16 kV Class 1E bus in the event of:

1. A loss of all preferred (offsite) power sources to both San Onofre units, and
2. A station blackout in one of the units (both DGs are unavailable), and
3. Either one or both of the other San Onofre unit s DGs (standby power) are available and supplying power to their 4.16 kV Class 1E buses.

Operation of the cross-tie is permitted under the provisions of 10 CFR 50.54(x), which states, A licensee may take reasonable action that departs from a license condition or a technical specification (contained in a license issued under this part) in an emergency when this action is immediately needed to protect the public health and safety and no action consistent with license conditions and technical specifications that can provide adequate or equivalent protection is immediately apparent . During operation of the cross-tie under 10 CFR 50.54(x), the plant is operating outside the license condition or technical specifications and the reporting requirements of 10 CFR 50.72 and 10 CFR 50.73 are applicable. The 4.16 kV Class 1E bus DG cross-tie is designed to perform the intended functions in the following manner: Two dedicated Hand Switches per 4.16 kV Class 1E train (8 total in the plant), each with Normal and 5054X maintained positions are provided at the Exposure Fire Isolation Panels in the Class 1E switchgear rooms. An ESF System Bypass/Inoperable status alarm and indication will be received in the respective unit s control room if any of these switches is not in the Normal position. With all Hand Switches in the Normal position, the Onsite AC Power Systems will function as described in paragraphs 8.3.1.1 through 8.3.1.4.

To establish the cross-tie connection between the same train 4.16 kV ESF buses of Unit 2 and Unit 3, the operator must manually select the associated 5054X hand switches at the Exposure Fire Isolation Panels to the 5054X position. After the cross-tie connection is established, the required ESF loads must then be manually loaded from the control room without exceeding the DG loading limits. The preferred power can be restored by paralleling the DG to the SONGS 230 kV Switchyard using any one of the four preferred power sources (Unit 2 Reserve Auxiliary Transformer, Unit 2 Unit Auxiliary Transformer, Unit 3 Reserve Auxiliary Transformer, or Unit 3 Unit Auxiliary Transformer) in the normal manner. After closing one of the preferred power supply breakers, the DG can be shutdown and returned to the standby mode.

Recovery of standby power to the blacked-out unit is completed through a "drop and pickup" of the 4 kV bus without paralleling with the diesel generator of the opposite unit. In the drop and pickup method, the operator is required to open the tie breaker, then the diesel generator breaker will close or be closed to connect the diesel generator to the dead bus. Any loads automatically stripped by the 4 kV bus undervoltage logic will be manually restarted as necessary.