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ACCESSION NBR:8110270065 DOC.DATE: 81/10/16 NOTARIZED: NO DOCKET #
FACIL:50-335 St. Lucie Plant, Unit 1, Florida Power & Light Co. 05000335
AUTH.NAME AUTHOR AFFILIATION
UHRIG,R.E. Florida Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
CLARK,R.A. Operating Reactors Branch 3

SUBJECT: Forwards four completed tables of diesel generator reliability data, in response to NRC request for addl info re station blackout.

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TITLE: Station Blackout (USI A-44)

NOTES:

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	I&C SYS BR	06	1	1	I&E	11	2	2
	MPA	10	1	1	OR ASSESS BR	07	1	1
	ORB#3	13	3	3	P BARANOWSKI	01	2	2
	POWER SYS BR	05	1	1	REG FILE	04	1	1
EXTERNAL:	ACRS	16	16	16	INPO,J STARNES		1	1
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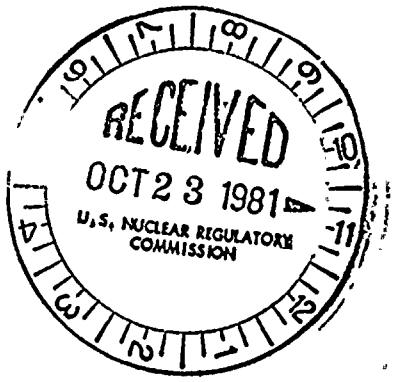
FLORIDA POWER & LIGHT COMPANY

October 16, 1981
L-81-452

Office of Nuclear Reactor Regulation
Attention: Mr. Robert A. Clark, Chief
Operating Reactors Branch #3
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555



Dear Mr. Clark:

Re: St. Lucie Unit 1
Docket No. 50-335
Information Request Regarding
Station Blackout - Safety Issue A-44

Please find attached the four completed tables of diesel generator reliability data you requested. Tables 2, 3, and 4 have been completed with information covering the entire operating history of the plant. Table 1 contains data for a twelve month period that is representative of our overall plant performance. It is our opinion that the effort required to retrieve the requested information for the entire plant history (approximately one manweek per calendar year) is not warranted at this time.

We have also reviewed the list of LER's provided in Enclosure 2 and find it complete. LER 335-81-38 was reported following the date of your letter. A copy is attached.

Very truly yours,

Robert E. Uhrig
Vice President
Advanced Systems & Technology

REU/JEM/mbd

Attachment

cc: J.P. O'Reilly, Region II
Harold F. Reis, Esquire

A050
S1/1

TABLE 2

Diesel Generator Scheduled Downtime Record
Calendar Year 1978

Plant Name PSL
Unit No. 1

Reason for Downtime	Hours of Downtime										Comments
	Reactor shutdown					Reactor not shutdown					
	DG# 1A	DG# 1B	DG#	DG#	DG#	DG# 1A	DG# 1B	DG#	DG#	DG#	
Scheduled Maintenance											
Semi-annual & Monthly						18	18				
Annual	57	98									Reactor in refueling mode.
Clean switch gear						2					
Plant Modification						1	2				Soakback pump control circuit
Time DG is unavailable for emergency service because of required tests											

Plant Name PSL
Unit No. 1

TABLE 2

Diesel Generator Scheduled Downtime Record
Calendar Year 19 76

Reason for Downtime	Hours of Downtime										Comments
	Reactor shutdown					Reactor not shutdown					
	DG# 1A	DG# 1B	DG#	DG#	DG#	DG# 1A	DG# 1B	DG#	DG#	DG#	
Scheduled Maintenance											
Semi-annual & Monthly						18	18				D.G. A & B at different times.
Annual Overhaul	-	-									Unit was in 5 month overhaul with fuel removed from the reactor during last half of the year. Parts of Annual PM function were performed during this period with other activities.
Adjust breaker times						1/2	1/2				
Replace switch							3				DG could not be stopped from the control room.
Time DG is unavailable for emergency service because of required tests											

Plant Name PSL
Unit No. I

TABLE 2

Diesel Generator Scheduled Downtime Record
Calendar Year 1979

Reason for Downtime	Hours of Downtime										Comments
	Reactor shutdown					Reactor not shutdown					
	DG# 1A	DG# 1B	DG#	DG#	DG#	DG# 1A	DG# 1A	DG#	DG#	DG#	
Scheduled Maintenance											
Annual	69	167									Reactor in refueling mode
Semi-annual & Monthly						18	18				
Time DG is unavailable for emergency service because of required tests											

TABLE 2

Diesel Generator Scheduled Downtime Record
Calendar Year 1980

Plant Name PSL
Unit No. 1

Reason for Downtime	Hours of Downtime										Comments
	Reactor shutdown					Reactor not shutdown					
	DG# 1A	DG# 1B	DG#	DG#	DG#	DG# 1A	DG# 1B	DG#	DG#	DG#	
Scheduled Maintenance											
Annual	297	117									Reactor in refueling mode
Semi-annual & Monthly						18	18				
Time DG is unavailable for emergency service because of required tests											

TABLE 3

Diesel Generator Unscheduled Downtime Record
Calendar Year 19 76

Plant Name PSL
Unit No. 1

LER Abstract No (Refer to attached LER Abstracts)	Downtime Hours				Comments - If any of the reported failures would not have been a failure under emergency conditions, please explain here. Refer to attached LERs or the failures listed in Table 1.
	Total Hours	Trouble-shooting	Parts, Delivery, etc	Repair/ Replace	
24	8				During preoperational testing
23	1				Fuel unloaded

*NOTE

Records of total hours of downtime are maintained. However, records of the actual division of downtime into the specified categories is not maintained. In general, due to our spare parts program, little time is spent awaiting spare parts. Trouble-shooting tends to exceed repair/replacement time.

TABLE 3

Diesel Generator Unscheduled Downtime Record
Calendar Year 19 77

Plant Name PSL
Unit No. 1

LER Abstract No (Refer to attached LER Abstracts)	Downtime Hours				Comments - If any of the reported failures would not have been a failure under emergency conditions, please explain here. Refer to attached LERs or the failures listed in Table 1.
	Total Hours	Trouble-shooting	Parts, Delivery, etc	Repair/ Replace	
19	65				
20	1	1			
21	69				
22	1½				

*See note on 1976 data.

1½

TABLE 3

Diesel Generator Unscheduled Downtime Record
Calendar Year 1978

Plant Name PSL
Unit No. 1

LER Abstract No. (Refer to attached LER Abstracts)	Downtime Hours				Comments - If any of the reported failures would not have been a failure under emergency conditions, please explain here. Refer to attached LERs or the failures listed in Table 1.
	Total Hours	Trouble-shooting	Parts, Delivery, etc	Repair/ Replace	
11	3½				
18	0				Administrative error, failure to record in engine mounted Fuel Oil tanks.

*See NOTE on 1976 data.

TABLE 3 Diesel Generator Unscheduled Downtime Record
Calendar Year 1979

Plant Name PSL
Unit No. I

LER Abstract No (Refer to attached LER Abstracts)	Downtime Hours				Comments - If any of the reported failures would not have been a failure under emergency conditions, please explain here. Refer to attached LERs or the failures listed in Table 1.
	Total Hours	Trouble-shooting	Parts, Delivery, etc	Repair/ Replace	
9	2				
10	~48				DG could be manually started within ~24 hours. Autostart capac was not confirmed for about 48 hours.
12	0				Vendor report on D.G. lube oil system operation. DGs operable.
13	0				Procedural error installed plant modification prior to safety analysis.
14	0				Solenoid valve for filling D.G. mounted Fuel Oil tank failed. Valve was manually bypassed when low level alarm was received. Failure does not effect operation of D.G.
15	0				The LER involved vendor notification of a potential failure of crankshaft coupling. Replacements were done during annual overhaul. No additional downtime resulted.
16	0				Level of D.G. mounted Fuel Oil tank was low due to failure of Fuel Oil level indicator. D.G. would have started but not have run for the time specified by design.

*See NOTE on 1976 data..

TABLE 3 Diesel Generator Unscheduled Downtime Record
Calendar Year 1980

Plant Name PSL
Unit No. I

LER Abstract No (Refer to attached LER Abstracts)	Downtime Hours				Comments - If any of the reported failures would not have been a failure under emergency conditions, please explain here. Refer to attached LERs or the failures listed in Table 1.
	Total Hours	Trouble-shooting	Parts, Delivery, etc	Repair/ Replace	
1	12				
2	6				
3	0				Timer settings had drifted. Drift was not sufficient to cause overlapping of load groups or D.G. overload.
4	0				The frequency permission relay was not set properly. The improper setpoint did not prevent automatic loading on a dead buss as would be the case in an emergency.
5	0				Same problem as Abstract #3 (above).
6	1	½		½	
7	24				
8	0				D.G. was declared to be inoperable. In fact, the D.G. was available at all times for emergency operation.
LER 80-58	0				Power panel was apparently de-energized inadvertantly by workers. Loss of power panel did not affect operability of D.G. because alarms still functioned and manual valves could be operated.

*See NOTE on 1976 data.

TABLE 4

Onsite Emergency Diesel Generator and Auxiliary Equipment Modification Record

Plant Name PSL
Unit No. I

Equipment or procedure modified	Date of Mod.	Reason for Modification and Desired Improvement	Description of Modification
Soakback pump (turgo-charger lubrication & cooling) control circuit	5/78	As designed, pump stopped at 200 rpm. On cold start main lube oil pump had not yet filled all piping and turbo-charger did not receive proper lubrication for a few seconds after soak-back pump shut off.	Pump had been designed to stop when D/G speed reached 200 rpm (full speed 900 rpm). Modification was to remove this feature so pump continues to run. Previous to this mod. we had experienced several turbo-charger gear/bearing failures due to inadequate lubrication. After mod. (5/78) received none thru end of 1980.
D/G operating procedure for testing	5/78	Vendor reported that light or no load operation could lead to souping (oil accumulation in turbo-charger), excessive wear on gear train which drives turbo only during starts, stops & light load operation.	Required minimum operation at no or light load required test run be at or near full capacity (100%) rather than at Tech. Spec. requirement of ≥37%.
Crankshaft coupling to cooling system fans	5/79	Improved design needed to ensure shaft did not fail in extended full-time service. Similar marine D/G's couplings had failed after years of operation.	Modified shaft with improved support and resistance to fatigue failure installed.
Operating Procedure	6/79	Ref. LER 79-021 Due to low viscosity on restart of hot D/G (after running) pumps could not supply proper lube oil pressure for a few seconds turbo-charger gear damage could occur.	Restricted non-emergency hot starts until lube oil had cooled down, so pumps could ensure proper pressure.
Excitation leads to generator field	3/80	Leads were under-sized due to drawing error. After 4 years had resulted in 1 D/G (A) inability to carry full, 100% load.	Installed correct size leads Ref. LER 335-80-13

TABLE 4

Onsite Emergency Diesel Generator and Auxiliary Equipment Modification Record

Plant Name PSL

Unit No. 1

Equipment or procedure modified	Date of Mod.	Reason for Modification and Desired Improvement	Description of Modification
D/G cooling system	10/81	Ref. LER's 335 80-55 and 80-56	Adding vents to cooling water system high points to ensure ability to properly vent.
D/G procedure	10/80	" "	Gave instructions to ensure better venting if needed to fill cooling-water system.

TABLE 2

Diesel Generator Scheduled Downtime Record
Calendar Year 1977

Plant Name PSL
Unit No. 1

Reason for Downtime	Hours of Downtime										Comments
	Reactor shutdown					Reactor not shutdown					
	DG# 1A	DG# 1B	DG#	DG#	DG#	DG# 1A	DG# 1B	DG#	DG#	DG#	
Scheduled Maintenance											-
Semi-annual and Monthly						18	18				
Annual	-	-									Annual overhaul are actually required on 18 mo interval. Unit not down for refueling in 1977
Replace breaker test light							1				
Check phase balance							8				
Time DG is unavailable for emergency service because of required tests											