



November 13, 2000

L-2000-157
10 CFR 50.90

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Re: St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Proposed License Amendments
EDG Risk Informed AOT Extension
Request for Regulatory Commitment

By letter L-99-228 dated November 17, 1999, Florida Power & Light Company (FPL) requested amendments to the Facility Operating Licenses for St. Lucie Units 1 and 2. The proposed license amendments (PLA) would increase the emergency diesel generator (EDG) allowed outage time (AOT) from the current 72-hour action statement to an action statement of 14 days for a single inoperable EDG.

By letter L-2000-112 dated June 14, 2000, FPL provided a response to an NRC request for additional information (RAI) dated March 1, 2000. FPL letter L-2000-112 additionally requested that the NRC separate the St. Lucie Unit 1 and St. Lucie Unit 2 reviews and proceed with the St. Lucie Unit 1 review. The response to the NRC March 1, 2000 RAI request regarding the availability of an alternate AC power source for St. Lucie Unit 2 is attached. This response permits the continued review of the Unit 2 EDG AOT proposed amendment.

During a conference call on July 6, 2000, among FPL, NRC Project Management, NRC Electrical Engineering Branch, and NRC PSA Branch personnel, FPL was requested to make regulatory commitments in support of the proposed amendment. FPL will add Unit 1 EDG (Unit 2 EDG) and blackout crosstie maintenance Tier 2 restrictions to the administrative procedures for implementing the configuration risk management program (CRMP) and to the on-line risk monitor (OLRM).

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The following regulatory commitments for a Unit 1 EDG (Unit 2 EDG) maintenance activity will replace the Tier 2 restrictions previously stated in Section 4.2.2.2 of FPL Letter L-99-228 Attachment 1 page 24:

If a Unit 2(1) EDG is unavailable, a Unit 1(2) EDG will be removed from service only for corrective maintenance (i.e., maintenance required to ensure or restore operability of the Unit 1(2) EDG) and for a period not to exceed 72 hours.

If the station blackout crosstie is unavailable, a Unit 1(2) EDG will be removed from service only for corrective maintenance (i.e., maintenance required to ensure operability or restore operability of the Unit 1(2) EDG and for a period not to exceed 72 hours.

If a Unit 1(2) EDG is not available, the station blackout crosstie will be removed from service only for corrective maintenance and for a period not to exceed 72 hours.

If a condition is entered in which both a Unit 1(2) EDG and either the station blackout crosstie or a Unit 2(1) EDG become unavailable at the same time, FPL will evaluate the plant conditions using the CRMP.

In accordance with 10 CFR 50.91 (b)(1), a copy of this regulatory commitment is being forwarded to the State Designee for the State of Florida. Please allow an implementation period of 60 days from the date of receipt for this license amendment to allow sufficient time for procedure changes and implementation training.

Please contact us if there are any questions about this submittal.

Very truly yours,



Rajiv S. Kundalkar
Vice President
St. Lucie Plant

RSK/GRM

Attachment

cc: Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant
Mr. William A. Passetti, Florida Department of Health and Rehabilitative Services

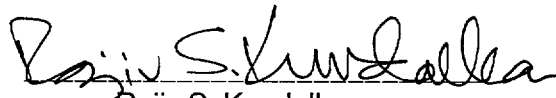
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STATE OF FLORIDA)
)
COUNTY OF ST. LUCIE) ss.

Rajiv S. Kundalkar being first duly sworn, deposes and says:

That he is Vice President, St. Lucie Plant, for the Nuclear Division of Florida Power & Light Company, the Licensee herein;

That he has executed the foregoing document; that the statements made in this document are true and correct to the best of his knowledge, information and belief, and that he is authorized to execute the document on behalf of said Licensee.


Rajiv S. Kundalkar

STATE OF FLORIDA
COUNTY OF ST. LUCIE

Sworn to and subscribed before me

this 13 day of November, 2000
by Rajiv S. Kundalkar, who is personally known to me.


Name of Notary Public - State of Florida



Leslie J. Whitwell
MY COMMISSION # CC646183 EXPIRES
May 12, 2001
BONDED THRU TROY FAIR INSURANCE, INC.

(Print, type or stamp Commissioned Name of Notary Public)

REQUEST FOR ADDITIONAL INFORMATION
RELATED TO THE AMENDMENT OF THE TECHNICAL SPECIFICATIONS
FOR THE EMERGENCY DIESEL GENERATORS

ST. LUCIE UNIT 2

NRC Request 2:

Your staff indicated in a telephone conference on January 19, 2000 that each of the Unit 1 and Unit 2 emergency diesel generators (EDG) is capable of powering its dedicated division of safety loads in addition to the complement of selected Unit 1 or Unit 2 loads necessary to maintain the units in hot standby through the duration of the station blackout (SBO) event. Your staff also indicated that procedures are in place to accomplish the above through the SBO crosstie.

Please clarify this aspect of the design for Unit 2 in your application. In addition, indicate that the time it takes to establish this connection satisfies the availability requirements of an alternate AC source used for the SBO event.

FPL Response 2:

St. Lucie Unit 2 was licensed before July 21, 1988. The capability to withstand station blackout was specifically addressed in the operating license proceeding and was explicitly approved by the NRC. Therefore, in accordance with 10 CFR 50.63(b), the requirements in 10 CFR 50.63(c) do not apply to St. Lucie Unit 2. For station blackout considerations, St. Lucie Unit 2 is currently licensed as a 4-hour DC coping plant. The acceptability of this approach was reconfirmed in the June 11, 1992, NRC SBO Safety Evaluation for St. Lucie Units 1 and 2.

During a conference call to discuss the response to the NRC RAI on May 17, 2000, the NRC Electrical Branch stated its position that the staff has required licensees to demonstrate the availability of an alternate AC power source as part of the review for a risk informed AOT extension. FPL was requested to confirm that a single Unit 1 EDG has the capacity to power its dedicated division of safety loads on Unit 1 (the non-blackout (NBO) unit) and the necessary hot shutdown SBO loads on Unit 2 (SBO unit).

St. Lucie Unit 2 is currently licensed as a 4-hour DC coping plant for SBO, i.e., it can successfully endure a complete loss of AC power for at least 4 hours (UFSAR Section 15.10, Ref. 1). Therefore, no mechanical systems requiring AC power are required during this period. However, the excess capacity of a Unit 1 EDG can be utilized, via the station blackout crosstie between units, to energize specific loads to augment the Unit 2 response to a station blackout. This response describes the ability of a single Unit 1 EDG to support both the Unit 1 loads required to respond to a loss of offsite power (LOOP) plus the additional Unit 2 loads, once the SBO crosstie is established, to respond to a Unit 2 station blackout.

The initial assumptions are that both Unit 1 and Unit 2 are at 100% power prior to the event, both units experience a loss of offsite power, both Unit 2 EDGs fail to energize their respective safety busses, and only a single Unit 1 EDG is operable. In response to the loss of power to the Unit 1 safety busses, undervoltage relays actuate to start the operable Unit 1 EDG and energize one train of safety busses. In the first 35 seconds, required Unit 1 loads are automatically started in timed sequences as summarized in Table 1. Table 1 is at the end of the response.

Following confirmation that Unit 2 is in a station blackout condition, the SBO crosstie, connecting Unit 1 4.16kV bus 1AB to Unit 2 4.16kV bus 2AB, is established. This is done in accordance with procedure 2-EOP-10 (Ref. 4) and Table 7 and Appendix V of procedure 2-EOP-99 (Ref. 5). Actions taken include opening or verifying as open the following Unit 2 breakers:

1. Startup and auxiliary transformer feeders
2. 4.16kV bus ties between normal and emergency busses
3. 4.16kV Bus 2AB ties
4. 4.16kV feeders to the station service transformers (4160/480V)
5. 480V Loadcenter feeders from the station service transformers
6. 480V Loadcenter 2AB ties

Additional steps taken in 2-EOP-10 (Ref. 4) include the following:

1. Place the Intake cooling water and component cooling water pump control switches in pull-to-lock to prevent automatic start when energized
2. The control switches for the reactor cooling pump oil lift pumps are placed in off position to prevent starting
3. Verification that all Unit 2 containment fan coolers are stopped

Therefore, these components are not loaded on the Unit 1 EDG.

Unit 1 UFSAR Section 15.2.13 (Ref. 2) assumes the SBO crosstie is established and busses energized in 25 minutes. For the purposes of this evaluation, and to be consistent with the analysis done for Unit 1, it is assumed that the SBO crosstie is established and the selected Unit 2 4.16kV busses are energized in approximately 24 minutes. It is also assumed, in order to provide additional operating flexibility, the motor-driven auxiliary feedwater pump associated with the Unit 2 safety bus being restored is required to be started as soon as the SBO crosstie is established.

480V loadcenters 2A2 (2B2) and 2A5 (2B5) are energized by closing the necessary 4.16kV and 480V breakers one minute after energizing the 4.16kV busses which occurs at 1500 seconds. This starts the automatic loading of the Unit 2 components in response to restoration of voltage following a LOOP in accordance with Table 1 with the exception of the components noted above.

Following the automatic sequencing of the Unit 2 loads, the remaining required Unit 1 and Unit 2 components are manually started. The manual starting of Unit 2 components during an SBO event with a single Unit 1 EDG providing power is controlled by Table 11 of 2-EOP-99 (Ref. 5) to prevent overloading of the Unit 1 EDG. Where the Unit 1 EDG loading exceeds the allowable values given in Table 11 for a particular load, that load is not started. The components required to address the SBO condition in Unit 2 with Unit 1 the non-black-out unit (i.e., one EDG running) are given in Table 1.

A summary of the above sequence of events and the resultant running load on the Unit 1 EDG for each time sequence is shown in Table 1. Values for total EDG running load are compared to the Unit 1 EDG ratings as provided by the Unit 1 EDG vendor. The ratings given in Unit 1 UFSAR Table 8.3-3 are at 93°F; for conservatism and to reflect design ambient conditions, an ambient temperature of 104°F is used, which requires the ratings to be reduced by 4% (0.96 multiplier) in accordance with vendor information (Ref. 6). Also, since the SBO scenario is postulated for no more than four hours, it is acceptable to use the 2000-hour EDG rating as a basis for determining the acceptability of EDG loading.

Table 1 also provides an evaluation of the EDG capability to start the components by comparing the motor starting kVA plus non-motor kVA to the EDG motor start capability curve, Figure 1, provided by the Unit 1 EDG vendor. Component sequencing times and load values were obtained from the LOOP responses for Units 1 and 2. The evaluation ends at 120 minutes because EDG loading is reduced beyond this time.

Maximum EDG loading is 3292.4 kW at 55 minutes following closure of the Unit 1 EDG circuit breaker and establishment of the station blackout crosstie at 24 minutes following closure of the Unit 1 EDG circuit breaker. This is less than the 2000-hour rating of 3580.8 at 104°F. Loads started remain within the Unit 1 EDG load starting capability at all times, as seen by comparing the initial percent load block loading and the starting load given in Table 1 with the EDG starting capability in Figure 1.

The loading table includes some loads that may not be required to operate. These loads include the Unit 2 control room air conditioning, which is not functional without component cooling water, and the various Unit 2 EDG associated loads, which would not be required if the Unit 2 EDG is not operable. Disabling or shutdown of these loads would provide additional capacity on the Unit 1 EDG to allow starting other loads. Additional loads that may be desired, such as the Unit 2 low pressure safety injection (LPSI) pump, could be added later using load management on the operating Unit 1 EDG. Operating procedures presently allow plant operators to manage the loading on EDG with sufficient guidance to prevent overloading the EDG.

The LPSI pump on the NBO unit is included as a load on the operable EDG. This is to provide shutdown cooling capability for operation at cold shutdown. Therefore, the Unit 1 LPSI pump must be considered as a load on the remaining operable Unit 1 EDG.

However, the motor-driven auxiliary feedwater pump is not required for a unit in cold shutdown, and therefore, could be turned off if still running when the LPSI pump is needed. The motor-driven auxiliary feedwater pump (350 Hp) is somewhat larger than the LPSI pump (335 Hp). Therefore, Unit 1 EDG loading with Unit 1 (SBO) in cold shutdown and Unit 2 (SBO) in hot standby is enveloped by the scenario with both Unit 1 (NBO) and Unit 2 (SBO) in hot standby. The Unit 1 LPSI pump is not an automatic start load for LOOP and could be manually started when needed.

CONCLUSIONS

The maximum loading applied to the Unit 1 diesel generator, given a Unit 2 station blackout with one operable Unit 1 EDG, is 3292.4 kW (at 55 minutes following closure of the Unit 1 EDG circuit breaker and establishment of the station blackout crosstie at 24 minutes following closure of the Unit 1 EDG circuit breaker). This is less than the Unit 1 EDG 2000-hour rating of 3580.8 kW at 104°F with a margin of 288.4 kW. It is also less than the Unit 1 EDG continuous rating of 3360kW at 104°F. Loads started in the various time blocks remain within the starting capability of the Unit 1 EDG at all times.

This evaluation is considered conservative because several loads are included which would not be required and could be turned off; i.e. Unit 2 EDG oil pumps, Unit 2 fuel oil transfer pump, and Unit 2 control room air conditioning (not effective without component cooling water). Also, the loading is compared to the EDG capability at 104°F, which is less than the rating at 93°F. It is anticipated that normal ambient conditions would be closer to the 93°F.

Therefore, it is acceptable to use the excess capacity of either Unit 1 EDG, via the station blackout crosstie, to augment the Unit 2 response to a station blackout event with a coincident loss of offsite power at Unit 1 and failure of one Unit 1 EDG. Application of Unit 2 loads must be in accordance with the guidance given in procedure 2-EOP-10 (Ref. 4).

REFERENCES

1. St. Lucie Unit 2 UFSAR, through Amendment 12.
2. St. Lucie Unit 1 UFSAR, through Amendment 17.
3. Florida Power & Light letter L-2000-112, dated June 14, 2000.
4. St. Lucie Procedure 2-EOP-10, "Station Blackout," Revision 12.
5. St. Lucie Procedure 2-EOP-99, "Appendixes/Figures/Tables," Revision 25.
6. Power Systems Div. (Morrison-Knudsen), "Unit #1 – Backfit Program Emergency Diesel Generator Loading Profile Study," PSD Report No. 6912-783-005; dated 7/15/83.

TABLE 1
STATION BLACKOUT LOADING ON THE UNIT 1 EDG

UNIT	COMPONENT	TIME	AUTO/ MAN	NAMEPLATE [kW]	HP	LOAD BLOCK LOADING		TOTAL EDG RUNNING LOAD (Kw)	MOTOR START CAPABILITY			
						RUNNING: MOTOR & NON- MOTOR (kW)	STARTING: MOTOR (6 x Hp) & NON-MOTOR (Kva)		PRIOR BLOCK EDG LOAD (Kw)	% FULL LOAD (3360 Kw)	EDG CAPABILITY (FROM CURVE)	START STARTING LESS THAN EDG LOAD START CAPABILITY?
1	Motor Operated Valves	0 sec.	A	10.5		9.4	63.0					
1	Emerg. Lighting	0 sec.	A	[124.4]		124.4	124.4					
1	Power Panels	0 sec.	A	[135.7]		135.7	135.7					
1	Boric Acid Makeup Pumps	0 sec.	A	25		13.1	150.0					
1	EDG Fuel Xfer Pump	0 sec.	A	5		2.3	30.0					
1	Charging Pump	0 sec.	A	100		71.3	600.0					
1	RCP Oil Lift Pumps (4 x 10 Hp)	0 sec.	A	40		36.0	240.0					
1	Cable Spread Room A/C	0 sec.	A	40		36.0	240.0					
1	Computer Room A/C ACC/HVA-10A (10B)	0 sec.	A	12		10.8	72.0					
1	Hydrogen Analyzer	0 sec.	A	[1.6]		1.6	1.6					
1	EDG Oil Circ. Pumps (2 x 1 Hp)	0 sec.	A	2		1.8	12.0					
1	EDG Air Compr.	0 sec.	A	7.5		6.7	45.0					
1	Plant Security Inverter	0 sec.	A	[20]		20.0	20.0					
1	UPS Inverter Rectifier	0 sec.	A	[20]		20.0	20.0					
	LOAD BLOCK TOTAL					489.1	1753.7	489.1	0.0	5850		Yes
1	Containment Fan Coolers HVS-1A & 1B (1C & 1D) (2 x 75 Hp)	3 sec.	A	150		123.6	900.0					
	LOAD BLOCK TOTAL					123.6	900.0	612.7	14.6	5600		Yes
1	CCW Pump	6 sec.	A	450		354.9	2700.0					
	LOAD BLOCK TOTAL					354.9	2700.0	967.6	18.2	5550		Yes
1	ICW Pump	9 sec.	A	600		449.2	3600.0					
	LOAD BLOCK TOTAL					449.2	3600.0	1416.8	28.8	5350		Yes
1	AFW Pump	15 secs.	A	350		286.3	2100.0					
	LOAD BLOCK TOTAL					286.3	2100.0	1703.1	42.2	5000		Yes
1	BA Heat Trace/Waste Mgmt.	18 secs.	A	[20.0]		10.0	10.0					
1	Control Room A/C (outdoor unit) ACC-3A (3B)	18 secs.	A	10Hp + 20kW		29.3	80.0					
1	Control Room A/C indoor unit) HVA-3A (3B)	18 secs.	A	7.5		6.7	45.0					
1	Aux. Bldg. Supply Fan HVS-4A (4B)	18 secs.	A	60		53.9	360.0					
1	Reactor Cavity Cooling Fan HVS-2A (2B)	18 secs.	A	20		15.5	120.0					
1	Reactor Support Cooling Fan HVS-3A (3B)	18 secs.	A	40		21.6	240.0					
1	CVCS Heat Trace	18 secs.	A	[7.9]		4.0	4.0					
1	Boric Acid Tank Heater	18 secs.	A	[6.75]		6.8	6.8					
	LOAD BLOCK TOTAL					147.8	865.8	1850.9	50.7	4700		Yes

TABLE 1
STATION BLACKOUT LOADING ON THE UNIT 1 EDG

UNIT	COMPONENT	TIME	AUTO/ MAN	NAMEPLATE [kW]	HP	LOAD BLOCK LOADING		TOTAL EDG LOAD (Kw)	MOTOR START CAPABILITY		
						RUNNING: MOTOR & NON- MOTOR (kW)	STARTING: MOTOR (6 x Hp) & NON-MOTOR (Kva)		PRIOR BLOCK % EDG FULL LOAD (3360 Kw)	EDG START CAPABILITY kVA (FROM CURVE)	STARTING LOAD LESS THAN EDG START CAPABILITY?
1	Battery Chargers	30 secs.	A	[68]		52.0	52.0				
	LOAD BLOCK TOTAL					52.0	52.0	1902.9	55.1	4500	Yes
1	Fire Pump (Note 9)	35 secs.	A	250		0.0	0.0				
1	Aux. Bldg. Swgr Rm. Supply Fan HVS-5A (5B)	35 secs.	A	30		27.0	180.0				
	LOAD BLOCK TOTAL					27.0	180.0	1929.9	56.6	4400	Yes
1	Motor Operated Valves	60 secs.	A	10.5		-9.4	0.0				
	LOAD BLOCK TOTAL					-9.4	0.0	1920.5	57.4	4375	N/A
2	ESTABLISH SBO CROSSTIE	24 mins.				—	—				
2	AFW Pump (Note 3)	24 mins.	A	350		246.8	2100.0				
	LOAD BLOCK TOTAL					246.8	2100.0	2167.3	57.2	4375	Yes
2	Close Loadcenter Breakers, Energize Xfmrs (Note 12)	1500 secs.	M/A	[18]		18.0	18.0				
2	Emerg. Lighting	1500 secs.	A	[95.9]		95.9	95.9				
2	Power Panels	1500 secs.	A	[116.0]		116.0	116.0				
2	Charging Pumps	1500 secs.	A	125		118.0	750.0				
2	Boric Acid Makeup Pump	1500 secs.	A	25		13.1	150.0				
2	Motor Operated Valves	1500 secs.	A	6.8		6.2	40.8				
2	Plant Vital & Security UPSs	1500 secs.	A	[50]		50.0	50.0				
2	RCP Oil Lift Pumps (4 x 10 Hp) (Note 7)	1500 secs.	A	40		0	0				
2	Security Bldg. Air Conditioner HVA-10A	1500 secs.	A	3HP+4.97kW		7.7	23.0				
2	Hydrogen Analyzer Cub.	1500 secs.	A	[1.6]		1.6	1.6				
2	EDG Turbo Lube Pumps (2 x 2Hp)	1500 secs.	A	4		3.6	24.0				
2	EDG Soak Back Lube Oil Pumps (2 x 1Hp)	1500 secs.	A	2		1.8	12.0				
2	EDG Air Compr.	1500 secs.	A	7.5		6.7	45.0				
2	Fuel Handling Bldg H&V Room Fan	1500 secs.	A	3		2.7	18.0				
	LOAD BLOCK TOTAL					441.3	1344.3	2608.6	64.5	4000	Yes
2	Containment Fan Coolers (Note 7) 2HVS-1A & 1B (1C & 1D)	1503 secs.	A	125		0.0	0.0				
2	Diesel Fuel Oil Xfer Pump	1503 secs.	A	3		1.6	18.0				
	LOAD BLOCK TOTAL					1.6	18.0	2610.2	77.6	3000	Yes
2	Elec. Equip. Room Supply Fan 2HVS-5A (5B)	1518 secs.	A	100		77.2	600.0				
2	Reactor Cavity Supply Fan 2HVS-2A (2B)	1518 secs.	A	20		13.7	120.0				
2	Reactor Support Cooling Fan 2HVS-3A (3B)	1518 secs.	A	40		21.8	240.0				
	LOAD BLOCK TOTAL					112.7	960.0	2722.9	77.7	3000	Yes

TABLE 1
STATION BLACKOUT LOADING ON THE UNIT 1 EDG

UNIT	COMPONENT	TIME	AUTO/ MAN	NAMEPLATE [kW]	HP	LOAD BLOCK LOADING		TOTAL EDG RUNNING LOAD (Kw)	MOTOR START CAPABILITY		
						RUNNING: MOTOR & NON- MOTOR (kW)	STARTING: MOTOR (6 x Hp) & NON-MOTOR (Kva)		PRIOR BLOCK EDG LOAD (3360 Kw)	% FULL EDG CAPABILITY (FROM CURVE)	STARTING LOAD LESS THAN EDG START CAPABILITY?
2	Elec. Equip. Room Roof Vent Fan 2RV-3 (4)	1521 secs.	A	5		4.5	30.0				
2	Battery Room Ventilator 2RV-1 (2)	1521 secs.	A	0.75		0.7	4.5				
2	Intake Structure Exhaust Fan 2HVE-41A (41B)	1521 secs.	A	7.5		6.7	45.0				
	LOAD BLOCK TOTAL					11.9	79.5	2734.8	81.0	2650	Yes
2	Control Room A/C 2HVA/ACC-3A (3B)	1524 secs.	A	55		49.4	330.0				
	LOAD BLOCK TOTAL					49.4	330.0	2784.2	81.4	2600	Yes
2	CVCS Heat Trace	1527 secs.	A	[3.8]		1.9	1.9				
2	Battery Chargers	1527 secs.	A	[68]		50.0	50.0				
	LOAD BLOCK TOTAL					51.9	51.9	2836.1	82.9	2350	Yes
2	Aux. Bldg. Supply Fan 2HVS-4A (4B)	1533 secs.	A	150		113.0	900.0				
	LOAD BLOCK TOTAL					113.0	900.0	2949.1	84.4	2100	Yes
2	Elec. Equip. Room Exhaust Fan 2HVE-11 (12)	1538 secs.	A	50		41.7	300.0				
	LOAD BLOCK TOTAL					41.7	300.0	2990.8	87.8	1700	Yes
2	Motor Operated Valves	1590 secs.	A	6.8		-6.2	0.0				
	LOAD BLOCK TOTAL					-6.2	0.0	2984.6	89.0	1550	N/A
2	Air Conditioner 2ACC-4	30 mins.	M	[15.3]		15.3	15.3				
1	Pressurizer Heaters	30 mins.	M	[186]		186.0	186.0				
1	Instrument Air Compr.	30 mins.	M	40		32.8	240.0				
1	Instr. Air Compr. Cooling Fan	30 mins.	M	7.5		6.7	45.0				
1	Instr. Air Compr. Cooling Pump	30 mins.	M	2		1.8	12.0				
	LOAD BLOCK TOTAL					242.6	498.3	3227.2	88.8	1550	Yes
2	Pressurizer Heaters (Notes 5, 8)	55 mins.	M	[200]		0.0	0.0				
2	Instrument Air Compr.	55 mins.	M	60		54.0	360.0				
2	Instrument Air Compr. Cooling	55 mins.	M	12.5		11.2	75.0				
	LOAD BLOCK TOTAL					65.2	435.0	3292.4	96.0	600	Yes
1	EDG Air Compr.	60 mins.	A	7.5		-6.7	0.0				
	LOAD BLOCK TOTAL					-6.7	0.0	3285.7	98.0	200	N/A

TABLE 1
STATION BLACKOUT LOADING ON THE UNIT 1 EDG

UNIT	COMPONENT	TIME	AUTO/ MAN	NAMEPLATE [kW]	HP	LOAD BLOCK LOADING		TOTAL EDG LOAD (Kw)	MOTOR START CAPABILITY		
						RUNNING: MOTOR & NON- MOTOR (kW)	STARTING: MOTOR (6 x Hp) & NON-MOTOR (Kva)		PRIOR BLOCK EDG LOAD (3360 Kw)	% FULL CAPABILITY (FROM CURVE)	STARTING LOAD LESS THAN EDG START CAPABILITY?
1	Fuel Pool Cooling Pump (Note 8)	80 mins.	M	40		0.0	0.0				
1	RCP Oil Lift Pumps	80 mins.	M	4 x 10		-36.0	0.0				
1	Boric Acid Tank Heater	80 mins.	M	[6.75]		-6.8	-6.8				
	LOAD BLOCK TOTAL					-42.8	-6.8	3242.9	97.8	200	N/A
2	EDG Air Compr.	85 mins.	A	7.5		-6.7	0.0				
2	Fuel Pool Cooling Pump (Note 8)	85 mins.	M	40		0.0	0.0				
	LOAD BLOCK TOTAL					-6.7	0.0	3236.2	96.5	300	N/A
1	Cable Spread Room A/C	120 mins.	M	40		-36	0.0				
1	Electric Equip. Rm. Roof Vent Fan RV-3 (4)	120 mins.	M	1.5		1.3	9.0				
1	Electric Equip. Rm. Exhaust Fan HVE-11 (12)	120 mins.	M	7.5		4.1	45.0				
	LOAD BLOCK TOTAL					-30.6	54.0	3205.6	96.3	300	Yes

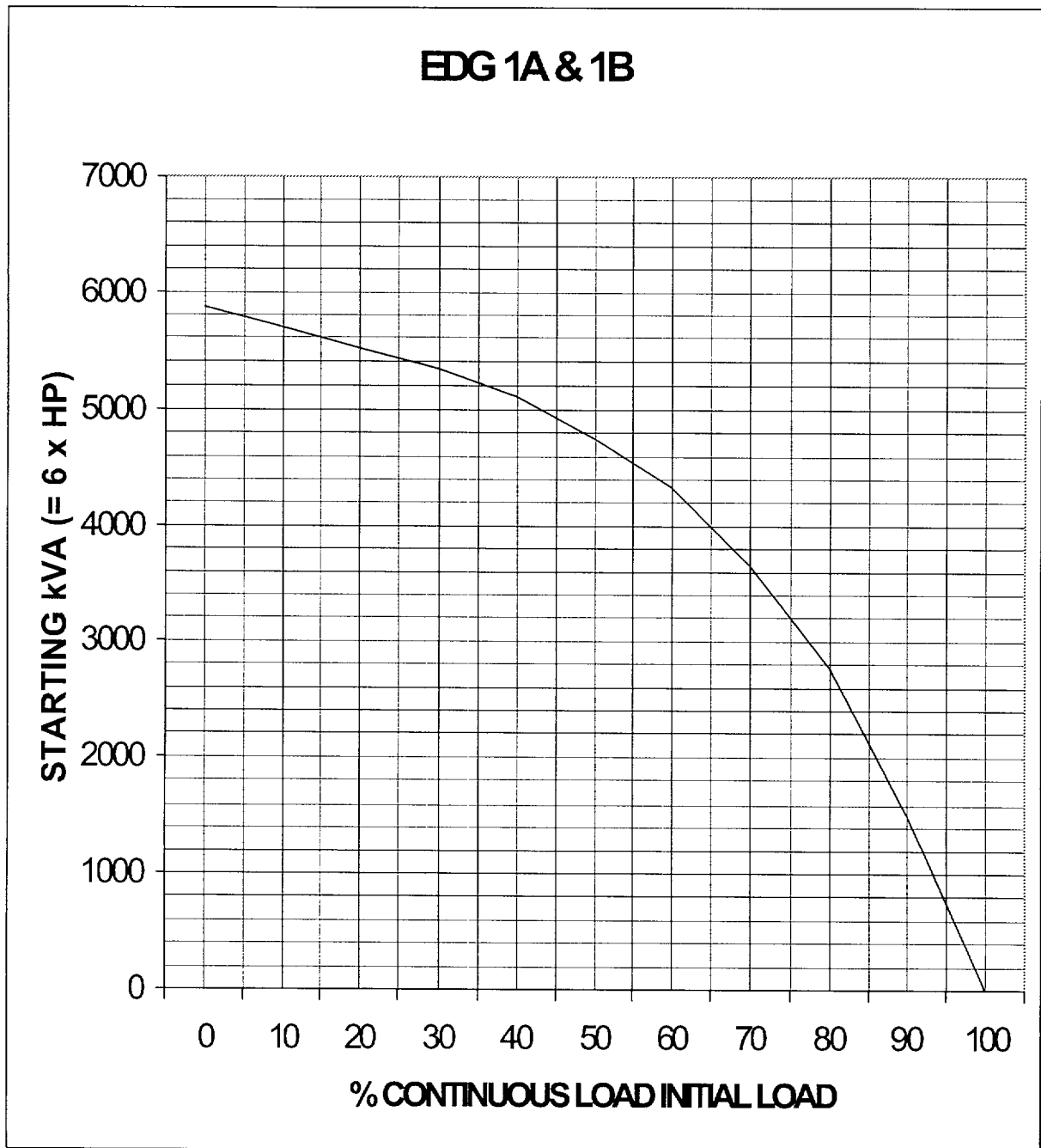
NOTES:

- Unit 1 EDG load information derived from Table 5.1 of Calculation PSL-1-F-J-E-90-0013, Rev. 2 (Ref. 6.5); Unit 2 EDG load information derived from Table 5.1 of Calculation PSL-2-FJE-90-0020, Rev. 5 (Ref. 6.6).
- Unit 1 Emergency Diesel Generator ratings, from Table 8.3-3 of the Unit 1 FSAR (Ref. 6.3) and Vendor EDG loading profile study (Ref. 6.11):

	93F	104F
Continuous kW	3500	3360
Continuous kVA (@ 0.85 pf)	4125	3960
2000 hr/year kW	3730	3580.8
7 day/year kW	3790	3638.4
4 hr/year kW	3860	3705.6
30 min/year kW	3960	3801.6

Ratings at 104F = 96% ratings at 93F.
- AFW Pump assumed turned on immediately when x-tie is established, in accordance with 2-EOP-10 (Ref. 6.9) and Appendix V of 2-EOP-99 (Ref. 6.10).
- Unit 2 automatic LOOP loads are assumed to start in accordance with the individual load sequence relays after Unit 2 loadcenters are energized. Unit 2 manual loads are started in accordance with "Component starting Limits on Unit 1 EDG", Table 5.2 of PSL-0FJE-93-004 (Ref. 6.7).
- These Unit 2 components would not be turned on since Unit 1 EDG loading exceeds Table 5.2 values.
- Maximum Unit 1 EDG loading is 3292.4 kW at 55 minutes after EDG breaker close; this is less than the 3580.8kW 2000hr/year rating at 104F and leaves a margin of 288.4 kW.
- In accordance with 2-EOP-10 (Ref. 6.9) and Appendix V of 2-EOP-99 (Ref. 6.10), these loads are turned off prior to completing the SBO crosstie.
- Per Calc. PSL-0-J-M-90-0015 (Ref. 6.12), these are not SBO loads.
- No fires are postulated to occur during SBO conditions.
- Motor starting kVA is assumed = 6 x Hp, in accordance with Vendor evaluation (Ref. 6.11).
- Unit 1 battery room roof vent fan, RV-1, is powered from PP-101 and is included in the power panel loads.
- Transformer loss data from 4.22 of Calculation PSL-0-F-J-E-90-011, Rev. 3 (Ref. 6.13).

FIGURE 1
UNIT 1 EDG STARTING CAPABILITY CURVE



Source: "Unit 1 – Backfit Program Emergency Diesel Generator Loading Profile Study;" PSD Report No. 6912-783-005 (Ref. 6.11)