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SUBJECT: Responds to station blackout rule re plant capability of maintaining core cooling & containment integrity.

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APRIL 17 1989

L-89-145
10 CFR 50.63

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

Re: St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Information to Resolve Station Blackout
(TAC Nos. 68608 and 68609)

On July 21, 1988, the Nuclear Regulatory Commission (NRC) amended its regulations in 10 CFR, Part 50 by adding a new section, 10 CFR 50.63. This regulation requires that each light-water-cooled nuclear power plant be able to withstand and recover from a station blackout (SBO) of a specified duration. It also identifies the factors that must be considered in specifying the station blackout duration. Additionally, 10 CFR 50.63 requires that, for the station blackout duration, the plant be capable of maintaining core cooling and appropriate containment integrity. It further requires that each licensee submit the following information:

1. A proposed station blackout duration including a justification for the selection based on the redundancy and reliability of the onsite emergency AC power sources, the expected frequency of loss of offsite power, and the probable time needed to restore offsite power;
2. A description of the procedures that will be implemented for station blackout events for the duration (as determined in 1 above) and for recovery therefrom; and
3. A list and proposed schedule for any needed modifications to equipment and associated procedures necessary for the specified SBO duration.

Florida Power & Light Company (FPL) has evaluated the design features of St. Lucie Units 1 and 2 against the requirements of 10 CFR 50.63. An assessment was conducted using criteria provided in 10 CFR 50.63a(1). The evaluation used guidance from Regulatory Guide 1.155 and NUMARC 87-00 documents. The result of FPL's assessment is provided in Attachment A. Attachment B provides a description of the procedures that are in-place, but will be modified to meet the rule or new procedures which are proposed to reflect St. Lucie Unit 1 and 2 modifications for meeting 10 CFR 50.63. Attachment C provides a summary description of the proposed modifications, criteria, and assumptions to meet 10 CFR 50.63 for St. Lucie Units 1 and 2.

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The issue of station blackout was also considered by the Atomic Safety and Licensing Appeal Board (ALAB-603) for the St. Lucie Unit 2 facility. The decision reached by the Board was that the total loss of alternating current (AC) power shall be considered a design basis event for St. Lucie Unit 2.

The Commission reviewed the ALAB-603 decision and indicated that there is a "need for protective measures against loss of all ac power for some reasonable time." (Memorandum and Order CLI-81-12, Paragraph B, Item (2)). In response to this concern, FPL analyzed the effect of a total loss of AC power at the St. Lucie 2 plant as discussed in the St. Lucie Unit 2 Updated Final Safety Analysis Report (UFSAR). This plant specific analysis is presented in UFSAR Section 15c.4 which demonstrates that St. Lucie Unit 2 could successfully withstand a complete loss of all AC power for at least four hours.

The proposed 10 CFR 50.63 modifications to St. Lucie Plant will permit powering either unit from the other unit's Emergency Diesel Generators in 10 minutes.

If there are further questions, please contact us.

Very truly yours,


W. F. Conway
Senior Vice President-Nuclear

WFC/RWG/cm

Attachment

cc: Stewart D. Ebnetter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant

ATTACHMENT A

STATION BLACKOUT (SBO) DURATION

NUMARC 87-00, Section 3 and Regulatory Guide 1.115 Tables 2 through 8 were used to determine the proposed SBO duration. For St. Lucie Plant the station blackout (SBO) duration evaluation was determined for the existing site electrical configuration and the future enhanced site electrical configuration.

SBO Duration

	<u>Existing Site Electrical Configuration/per unit per R. G. 1.115</u>	<u>Enhanced Electrical Configuration per R. G. 1.115</u>
1. Extremely Severe Weather (ESW) Group (footnote 1)	4	4
2. Severe Weather Recovery (SWR) Group	1	1
3. Severe Weather (SW) Group (footnote 2)	3	3
4. Independence of offsite Power Group	I 2	I 2
5. Offsite Power Design Characteristic	P2	P2
6. Emergency AC Power Config.	C	A
7. Acceptable SBO Duration	4 hours with commitment to 0.975 EDG Reliability or 8 hours/0.95	4 hours with commitment to 0.95 EDG Reliability

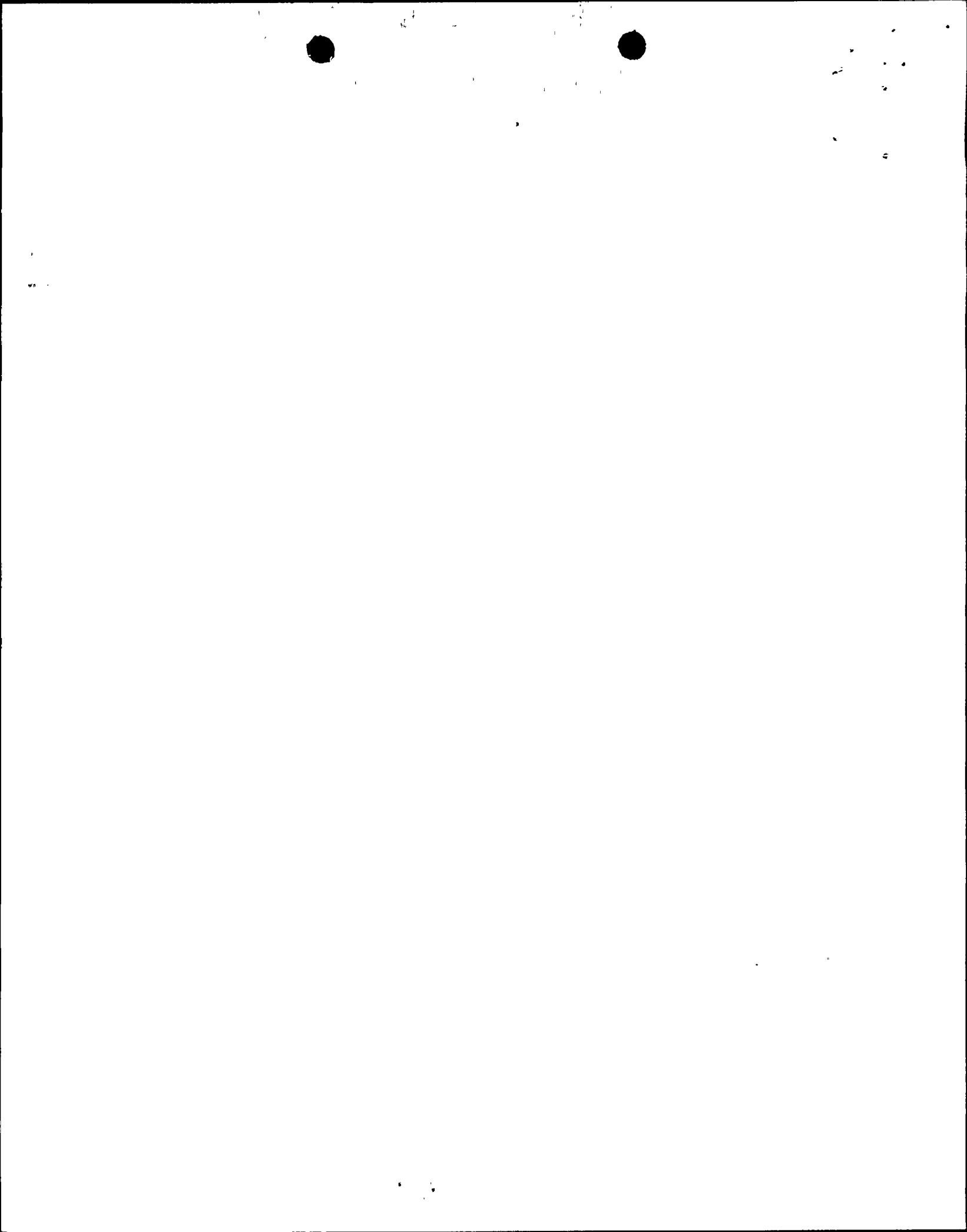
FOOTNOTES

1) Hurricane frequency for the St. Lucie nuclear site was studied for the NRC by Sandia National Laboratory (i.e. SAND 86-2377) and for FPL by Dames and Moore (#4598-144-09). The mean value of wind speed frequencies for 125 mph as reported by Sandia and Dames and Moore is $6.25 \times 10^{-3}/\text{yr}$ and $3.9 \times 10^{-3}/\text{yr}$ respectively. Both studies have used data from the U.S. Weather Bureau. The results define the extremely severe weather groups for St. Lucie as ESW Group 4 (i.e., $3.3 \times 10^{-3} < e < 1 \times 10^{-2}$).

2) Computational bases:
 $f = (1.3 \times 10^{-4}) h_1 + (b) h_2 + (0.012) h_3 + (c) h_4$
 $h_1^* = 0$
 $b^* = 72.3$
 $h_2^* = 1.2 \times 10^{-5}$
 $h_3^* = 0.15$
 $c^* = 0$

$$f = 2.67 \times 10^{-3}$$

*Per NUMARC 87-00, Section 3



ATTACHMENT B

DESCRIPTION OF PROCEDURES
FOR RESOLUTION OF
STATION BLACKOUT

Resolution of station blackout for St. Lucie Units 1 and 2 will be accomplished by the addition of a dedicated remote manual cross connection between the Unit 1 and 2 startup transformers. The procedures that will be used to cope with a station blackout event are:

1. The existing emergency procedure to cross-connect Unit 1 and 2 will be modified to include remote manual connect in 10 minutes. Loss of all AC power on one of two St. Lucie Units will be precluded by developing a procedure which will allow the operators to use any one (1) of four (4) Emergency Diesel Generators (EDG) to safely shut down and maintain both nuclear units in hot standby conditions for 4 hours.
2. Existing procedures will be modified to include criteria for unit shutdown for hurricanes.

ATTACHMENT C

PROPOSED DESIGN MODIFICATION TO RESOLVE STATION BLACKOUT

I. LICENSING CRITERIA TO RESOLVE STATION BLACKOUT

FPL will meet the requirements of 10 CFR 50.63, the Station Blackout Rule, by applying criteria discussed below. Specifically, resolution of station blackout for St. Lucie Units 1 and 2 shall include use of an alternate safety related, class IE, seismic category 1, power source with the ability to align the source in 10 minutes. The 10 minute criterion shall start after operators perform the immediate steps in the Emergency Operating Procedures (EOP's), confirm reactor scram, other primary system parameters, attempt to restore offsite power and attempt to start the EDG's from the control room per the EOP's.

II. ADDITION OF A SAFETY-RELATED TIE BETWEEN TWO UNITS' SWING SWITCHGEARS

DESCRIPTION OF CHANGE

To permit powering of both Units' emergency buses from one available emergency diesel generator set, a tie connecting the existing safety swing 4.16kV Switchgears of both Units is proposed. The cross-tie operation will be remotely operated from the control room. Presently, the 4.16kV Switchgear 2AB has a spare breaker available to complete the tie. However, the loading considerations will require cooperation between both Units' operators.

III. PROPOSED IMPLEMENTATION

Final implementation and documentation of 10 CFR 50.63 requirements shall be completed December 31, 1991. This is based on currently planned refueling outages for St. Lucie Unit 1 during fourth quarter of 1991 and St. Lucie Unit 2 during third quarter of 1990.