

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8205170380 DOC. DATE: 82/05/10 NOTARIZED: NO DOCKET #
 FACIL: 50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250
 50-251 Turkey Point Plant, Unit 4, Florida Power and Light C 05000251
 AUTH. NAME AUTHOR AFFILIATION
 UHRIG, R.E. Florida Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION
 NOVAK, T.M. Assistant Director for Operating Reactors

SUBJECT: Forwards design description of undervoltage protection sys,
 per 800818 request. Plant changes to be implemented during
 Oct 1983 refueling outage for Unit 3 & Oct 1982 steam
 generator repair outage for Unit 4.

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NOTES:

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	NRR/DSI/ICSB	09	1	1	NRR/DSI/PSB	14	1	1	
	<u>REG FILE</u>	04	1	1	RGN2		1	1	
EXTERNAL:	ACRS	16	10	10	INPO, J. STARNES		1	1	
	LPDR	03	1	1	NRC PDR	02	1	1	
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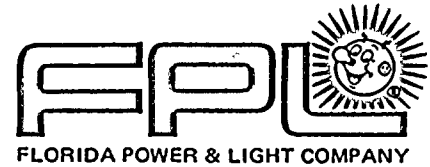
1. The first part of the report is a general statement of the purpose and scope of the study. It is followed by a brief review of the literature on the subject.

2. The second part of the report is a description of the methods used in the study. This includes a description of the subjects, the materials, and the procedures.

3. The third part of the report is a presentation of the results of the study. This includes a description of the data and a discussion of the findings.

4. The fourth part of the report is a conclusion and a discussion of the implications of the study. This includes a summary of the findings and a discussion of the limitations of the study.

Table 1		Table 2	
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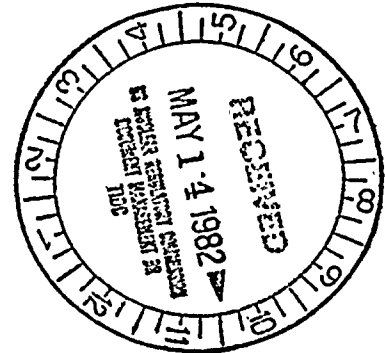


May 10, 1982
L-82-193

Office of Nuclear Reactor Regulation
Attention: Mr. Thomas M. Novak, Assistant
Director for Operating Reactors,
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Novak:

Re: Turkey Point Units 3 & 4
Docket No. 50-250 and 50-251
ADEQUACY OF STATION
DISTRIBUTION SYSTEM VOLTAGES



In our letter (L-81-16) dated January 14, 1981, we provided a preliminary description of our undervoltage protection system design for Turkey Point Units 3 & 4. This design description was provided in response to your request dated August 18, 1980. We have now completed our design (except for relay setpoints) and have issued a plant change/modification to implement the design. A description of the design is attached.

The plant change/modification package is presently undergoing plant review prior to implementation. It is scheduled to be implemented during the October 1983 refueling outage for Unit 3 and during the October 1982 Steam Generator Repair outage for Unit 4. When the implementation is complete we will propose Technical Specifications as requested.

Very truly yours,

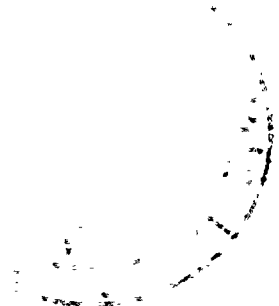
Robert E. Uhrig
Vice President
Advanced Systems and Technology

REU/PLP/mbd

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

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TO THE HONORABLE MEMBERS OF THE
HOUSE OF REPRESENTATIVES
OF THE STATE OF NEW YORK
IN SENATE CHAMBERS
ALBANY, JANUARY 1, 1901

REPORT OF THE
COMMISSIONER OF THE LAND OFFICE

IN RESPONSE TO A RESOLUTION PASSED BY THE SENATE, MAY 1, 1899

ALBANY: PUBLISHED BY THE STATE OF NEW YORK, 1901.
PRINTED BY THE STATE OF NEW YORK, 1901.
RECEIVED BY THE STATE OF NEW YORK, 1901.
THE STATE OF NEW YORK, 1901.

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ATTACHMENT

Re: Turkey Point Units 3 & 4
Docket No. 50-250 and 50-251
Adequacy of Station
Distribution System Voltages

DESCRIPTION OF CHANGES

Items I, II, and III below comprise an overall modification to the Turkey Point Units 3 and 4 undervoltage detection scheme. These features provide increased independence and reliability of plant power system. The reason for each change is also given.

Item I:

Undervoltage relaying logic and subsequence change-over of bus source from off site to on site is modified as follows:

- a. Previously, two instantaneous relays were connected on each 4 kv bus to monitor for undervoltage conditions. The relays of busses "A" and "B" were interconnected such that degraded voltage on both busses was required for initiation of load shedding, diesel start, and subsequent load sequencing on both busses.
- b. The revised relaying scheme reconnects the four relays discussed in a) above such that the shedding, diesel start, and sequencing function occurs only for that bus on which the degraded voltage condition exists. Hence, the relaying scheme for bus "A" is independent of that for bus "B". Load shedding, diesel start, and sequencing will occur for both busses only upon a concurrent loss of voltage on each bus. To provide reliability, the two instantaneous undervoltage relays are connected across two secondaries of the potential transformer for each bus. Thus, failure of a single relay or voltage source would not cause a spurious trip.

The reason for this change is to maintain the A and B bus undervoltage sensing schemes independent of each other for bus shedding, diesel start and load sequencing. Thus undervoltage on one bus alone is sufficient for the separation of that system from off-site sources, while the other bus, if not disturbed, would continue its feed from off-site sources. However, loss of reactor coolant pump due to tripping of the affected bus will lead to unit shutdown.

Item II:

Installation of a new set of two inverse time undervoltage relays (General Electric Type IAV) for each 4 kv bus. These relays are located in the sequencer panels and are wired similar to and in parallel with the modified wiring of the existing instantaneous undervoltage relays in Item I above, except via a "b" contact of



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S C A

1. *Journal of Management Studies*, 1996, 33, 1, 1-14.

10. *Chlorophyll *a** and *Chlorophyll *b** were determined by the method of Arar and Collins (1971).

1. *Journal of the American Medical Association*, 1997; 277: 1033-1037.

2. *Chlorophyll a* and *Chlorophyll b* (mg/g)

^a R² = 0.98; ^b R² = 0.97; ^c R² = 0.96.

$\frac{1}{\sqrt{2}} \begin{pmatrix} 1 & i \\ 0 & 1 \end{pmatrix}$

the diesel generator breaker. This interlock disables the inverse time under voltage relaying circuit once the diesel is connected to the 4 kv bus; otherwise, these relays initiate load shedding, on-site connection and sequencing of loads in the same manner as the instantaneous undervoltage relays in Item I above.

The reason for the change is to transfer the source of power from the 4 kv bus from off-site to on-site if the off-site source experiences sustained undervoltage.

Item. III:

→ Installation of a new set of two instantaneous undervoltage relays (ITE type 27H) on each safety related 480 V load center to monitor the load center voltage. The two relays in each load center are connected in "AND" logic and when actuated due to a degraded voltage concurrent with a safety injection signal and an open diesel generator breaker, would initiate a new time delay relay. The output of that relay is connected in parallel with existing timers that initiate load shedding, on site power connection and sequencing of the necessary loads.

The reason for this change is to provide an undervoltage monitoring system on the 480 V safety related load center so that degraded load center voltage concurrent with safety injection signal would initiate transfer to on-site power.

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