

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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 FACIL: 50-335 St, Lucie Plant, Unit 1, Florida Power & Light Co.
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 RECIP. NAME: CLARK, R. A. RECIPIENT AFFILIATION: Operating Reactors Branch 3

DOCKET # 05000335

SUBJECT: Forwards addl info re 821210 degraded grid voltage protection submittals per 820223 telcon. Voltage/time setpoints will be supported by two undervoltage devices.

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UNITED STATES DEPARTMENT OF ENERGY

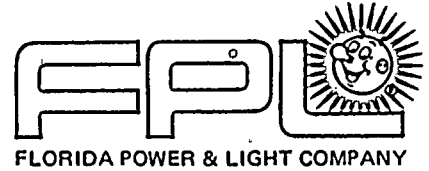
FEDERAL ENERGY REGULATORY COMMISSION
 OFFICE OF ENERGY DELIVERY AND ENERGY RELIABILITY
 1000 POWER BUILDING
 WASHINGTON, DC 20548
 TEL: (202) 502-2000
 FAX: (202) 502-2000

SUBJECT: Request for information re B51510 concerning the voltage
 protection substations for B50553 telecon. Voltage
 protection will be supported by two underground devices.

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March 11, 1983
L-83-139

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
Degraded Grid Voltage Protection

During a telephone conference on February 23, 1982 with your staff, Florida Power & Light was requested to provide additional information and clarification regarding our degraded grid voltage submittals of December 10, 1982 (L-82-536 and L-82-537). The requested information is attached.

Should you or your staff have further questions on this subject, please contact us.

Very truly yours,

Robert E. Uhrig
Vice President
Advanced Systems & Technology

REU/PLP/js

Attachment

cc: J. P. O'Reilly, Region II
Harold F. Reis, Esquire
PNS-LI-83-181-1

A015

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PDR ADOCK 05000335
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Clarifications to Florida Power & Light Company letters of December 10, 1982 (L-82-536 and L-82-537), Degraded Grid Voltage St. Lucie Unit #1.

Reference: NRC - Florida Power & Light telephone conference on February 23, 1983.

Clarification No. 1:

Describe the proposed undervoltage relaying logic - fixed time, steps, fixed voltage, number of relays, etc.

The following describes the St. Lucie Unit #1 proposed undervoltage relaying logic for both the 480 volt and 4160 volt Class IE safety related busses.

On each of the 480 volt busses the following relaying logic is proposed. Presently, an ITE type 27 fixed voltage fixed time relay is used. This relay contact is in series with the safety injection signal, such that this relay could only actuate during an accident condition. In order to satisfy the staff requirement and preclude separation from the offsite source due to spurious actuation of a single relay following a safeguard signal, a second ITE type 27 will be installed. The two relays will be paralleled and their contacts will be series connected to produce the required acceptable coincident 2-out-of-2 logic per bus.

Each of the 4160 volt Class IE safety related busses will have a total of six (6) undervoltage devices. These will be of a fixed time, fixed voltage type. The present Westinghouse's CV-2 inverse time relays will not be utilized. As proposed in the Technical Specification, three (3) different voltage/time setpoints will be incorporated in the overall relaying logic scheme. Each set of voltage/time setpoints will be supported by a set of two (2) undervoltage devices. This scheme meets the staff requirement for a coincident 2-out-of-2 logic.

There is no intertie between the A and B 480 volt Class IE busses or between the A and B 4160 volt Class IE busses undervoltage tripping/diesel generator starting/load sequencing logics. Should testing or maintenance be required or a device malfunction occur, it would affect the respective bus only. The other bus will remain connected to its source and ready to initiate its diesel generator should it be required to provide protective action as specified in IEEE-279-1971. The 480 volt and 4160 volt schemes will include built in testability and annunciation of by-pass in the control room.

Clarification No.2:

What is the equivalent voltage on the 4KV bus that corresponds to the 429 volts condition on the 480 volt bus?

A voltage of 429 volts on the 480 volt Class IE safety related busses corresponds to 94.4% or 3927 volts on the 4160 volt Class IE busses during the condition when the unit trips from full load and transfers the loads to the start-up transformer with a concurrent accident condition. At this voltage on the 4160 volt busses, the 4160 volt equipment is capable of starting and running. The 429 volt setpoint satisfies the staff request that the bus voltage of all safety related equipment be above their required starting voltage during an accident condition.

Clarification No. 3:

Clarify the 8 seconds (7 sec. \pm 1 sec) time delay on the 480 volt bus undervoltage relays.

For the case of loss of offsite power, the period between the time of an accident (safety injection actuation signal - SIAS) and the time when the safety injection system starts to pump emergency cooling water into the core is assumed to be 30 seconds in the FSAR accident analyses. This time includes a 10 second period in bringing the diesel generator up to speed and voltage. The 7 seconds \pm 1 second time delay for the 480 volt undervoltage bus relays comes into play only when an accident concurrent with a degraded system voltage exists. Since under an SIAS the diesel generator automatically starts, comes up to speed and voltage within 10 seconds and stands by ready to accept loads, the 8 seconds maximum time delay in the 480 volt relays do not add any additional time to the core cooling analysis for accident condition concurrent with loss of offsite power. The 8 seconds maximum time precludes spurious actuation due to momentary fluctuation in the system and the system is given an opportunity to remain on the preferred source.

Clarification No. 4:

Provide design information such as, relay types, one lines, etc., on the proposed undervoltage relaying logic for the 480 volt and 4160 volt busses.

Detailed design for the proposed scheme on Clarifications 1 through 3 above are not yet available.

These designs will be finalized upon acceptance of our proposed relay scheme with the NRC staff. The requested detailed designs can be forwarded to the NRC staff when complete.

EEC
EEC/rms

