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EISENHUT,D.G. Division of Licensing

SUBJECT: Forwards response to NRC 800721 request for addl info re adequacy of station electric distribution sys voltages.

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FLORIDA POWER & LIGHT COMPANY

September 12, 1980
L-80-304

Office of Nuclear Reactor Regulation
Attention: Mr. Darrell G. Eisenhut, Director
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Eisenhut:

Re: St. Lucie Unit 1
Docket No. 50-335
Adequacy of Station Voltages

Our response to an NRC letter dated July 21, 1980, requesting additional information on the adequacy of station electric distribution system voltages is attached.

Very truly yours,

Jack E. Vasel for

Robert E. Uhrig
Vice President
Advanced Systems & Technology

REU/PLP/pah

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

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ATTACHMENT

Re: Request for Additional Information - St. Lucie Unit 1, Adequacy of Station Electric Distribution System Voltages

Reference 1: FPL letter (L-79-324) to NRC (W. Gammill) dated November 9, 1979

Response to Question 1

1. Paragraph 3 page 4 (reference 1) provides the response to question 1 guideline 1. Because either a unit trip or safety injection signal initiates automatic transfer of the onsite distribution system from the auxiliary transformer to the start-up transformer, the voltage analyses were performed assuming connection to the start-up transformer. Two cases were analyzed, one with normal running loads being supplied by the start-up transformer (unit trip) and the other with safety loads being simultaneously started without tripping the normal running loads (accident condition). All automatic actions were assumed to occur as designed and no credit was taken for manual load shedding.

   Paragraph 2 page 5 (reference 1) provides the response to question 1 guideline 7. In addition the voltages for the conditions analyzed are furnished in Table A (attached). Two cases were analyzed. Case 1 with normal running loads being supplied by the start-up transformer (unit trip) and Case 2 with safety loads being simultaneously started without tripping the normal running loads (accident condition) as stated in reference 1. Voltage conditions less than 230 kV are considered to be short term and transient in nature with recovery or collapse of the system expected to occur in a short period of time. The voltage at all safety related equipment would be sufficient for their continued operation should the plant trip and all loads be transferred to the start-up transformer. The studies were performed with the grid at 230 kV.

1a. Paragraph 2 page 4 (reference 1) provides the response to question 1a, guideline 6. The minimum expected voltage value at St. Lucie Unit 1 is 230 kV. Voltages below 230 kV are considered to be short term and transient. Table A contains the calculated voltages for the conditions analyzed at the grid voltage of 230 kV.

   The voltage analysis results for grid voltage at 244 kV are documented in table A case 3. The voltages calculated do not exceed the maximum voltage rating of any safety related equipment. The assumptions made are those given in paragraph 3 page 4 (reference 1).

   Concerns of question 1a, guidelines 5 and 12 have been addressed in pages 4 and 5 (reference 1).

1b. St. Lucie Unit 1 safety related instruments are fed through inverters by batteries. Grid voltage oscillations therefore have no effect on these instruments.

1c. The assumptions given in pages 4 and 5 (reference 1) addressed Question 1c guidelines 3, 4, and 9. Since no credit for manual load shedding was taken, in compliance with guideline 4, non-class 1E loads remained connected for the calculation. Therefore, consideration of starting the condensate pump was not made because it was already considered to be running.

1d. Although it is possible to backfeed the plant from the grid through the main transformer bank, the generator would not be operated in this configuration.

Response to Question 2

St. Lucie Unit 1 FSAR chapter #8 (sections 8.1.2.1 and 8.2.2) provides the requested review which shows compliance with GDC-17.

Response to Question 3

Table A provides the voltage analysis results for the adequacy of the onsite distribution system from offsite sources. Analytical results were within 2% using the same methods and assumptions and the actual plant configuration of data obtained by plant personnel using standard plant test methods.

Response to Questions 4 and 5

The addition of undervoltage relays on the 480 volt class 1E busses assures that the manufacturer's guaranteed pickup point can be met. In addition, as indicated in letter (L-80-212) dated July 3, 1980 responding to a May 29, 1980 request for additional information, an October 1980 completion date was expected for further investigation of the W-2 relay set points. Due to subsequent new requests for additional information on Grid voltages the above mentioned investigations are not expected to be completed until January 1981.

(Note: Questions 4 and 5 appear to answer one another)

TABLE A

VOLTAGE ANALYSIS

Bus	Case 1	Case 2	Case 3
4 KV. Non Safety Related Bus voltage	4011	3797	4264
4 KV. Safety related bus voltage	4007	3768	4260
480 volt safety related load center voltage	458	423	488
Voltage at safety related MCC 5	450	408	479
Voltage at safety related MCC 6	450	407	480
Voltage at safety related MCC 7	449	408	479
Voltage at safety related MCC 8	450	409	480

Case 1 - Normal running loads being supplied by the start up transformer (unit trip from full load with transfer of the loads to the start-up transformer.

Case 2 - Same as case 1 with a concurrent accident condition

Case 3 - Same as case 1 at maximum grid voltage