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 RECIP. NAME RECIPIENT AFFILIATION
 BUTCHER, E.J. Operating Reactors Branch 3

SUBJECT: Forwards response to 850107 request for addl info re Generic Ltr 83-28, Items 4.2.1 & 4.2.2 concerning maint program for reactor trip breakers (RTB) & trending of (RTB) parameters to forecast degradation of operability, respectively.

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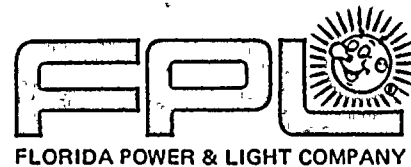
NOTES: 05000335
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Year	Area	Population	Area	Population
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July 22, 1985
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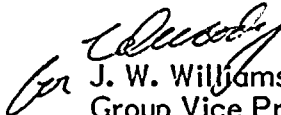
Office of Nuclear Reactor Regulation
Attention: Mr. Edward J. Butcher, Acting Chief
Operating Reactors Branch #3
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Butcher:

Re: St. Lucie Unit Nos. 1 & 2
Docket Nos. 50-335 & 50-389
Generic Letter 83-28, Items 4.2.1 and 4.2.2
(NRC TAC Nos. 53153 and 53134)

Attached is Florida Power and Light Company's response to NRC's letter of January 7, 1985, requesting additional information for Generic Letter 83-28, Items 4.2.1 and 4.2.2.

Very truly yours,


J. W. Williams, Jr.
Group Vice President
Nuclear Energy

Attachment

JWW/RJS/eab

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PDR

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ATTACHMENT

Re: St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Request for Additional Information
Items 4.2.1 and 4.2.2, Generic Letter 83-28

The following additional information is provided in response to the indicated NRC item.

1. NRC Item 4.2.1 - Periodic Maintenance Program for Reactor Trip Breakers.

1.1 Criteria for Evaluating Compliance with Item 4.2.1

The St. Lucie Units 1 and 2 Reactor Trip Systems utilize General Electric AK-2A circuit breakers. The primary criteria for an acceptable maintenance program for this breaker are contained in Maintenance Instruction GEI-50299EI*, "Power Circuit Breakers, Types AK-2/2A-15, AK-2/3/2A/3A-25, AKU-2/3/2A/3A-25," and Service Advice 9.3S and 9.2O, by General Electric. The NRC Staff, Equipment Qualification Branch, has reviewed these items and endorsed the maintenance program they describe. More specifically, the criteria used to evaluate compliance include those items in the General Electric instructions and advisories that relate to the safety function of the breaker, supplemented by those measures that must be taken to accumulate data for trending. The acceptable maintenance activity interval is six months.

1.2 Issues Relating to Item 4.2.1

The licensee response states that their procedure 1-0110060 "provides guidelines for the periodic maintenance of the reactor trip switchgear. This procedure has been reviewed and has been determined to meet or exceed the vendors (sic) recommended guidelines." The procedure requires "revitalization" of lubricant if the trip shaft torque rises above 20 ounce-inches; GE has determined that this "revitalization" in fact accelerates lubricant degradation. The referenced procedure was not included with the submittal.

The St. Lucie Units 1 and 2 periodic maintenance program for the reactor trip breakers should include, on a six month basis:

1. Verification of breaker cleanliness and insulation structure; all foreign materials, such as paint, dust, or oil, should be removed to prevent electrical breakdown between points of different potential;
2. Verification of breaker physical condition, including wiring insulation and termination, all retaining rings, pole bases, arc quencher, stationary and movable contacts, and tightness of nuts and bolts.

3. Verification of proper manual operation of the breaker, including checks for excessive friction, trip bar freedom, latch engagement, operating mechanism alignment and freedom, and undervoltage trip (UVT) device armature freedom;
4. Verification of the optimum freedom of the armature as specified in General Electric Service Advice 175-9.3S, item #S1;
5. Verification of proper trip latch engagement as specified in Service Advice 175-9.3S, item #S2;
6. Verification of undervoltage pick-up setting, as specified in Service Advice 175-9.3S, item #S3, and dropout voltage;
7. Verification that the trip torque required on the trip shaft is less than 1.5 pound-inches, as specified in Service Advice 175-9.3S, Item #S4; "Before" and "After" maintenance torque values should be recorded;
8. Verification of positive tripping by checking the adjustment between the UVT device and trip paddle as specified in Service Advice 175-9.3S, Item #S5;
9. Verification of proper trip response time as specified in Service Advice 175-9.3S, Item #S6;
10. Lubrication of trip shaft and latch roller bearings with Mobil 28 lubricant;
11. Shunt Trip Attachment (STA) operation verification;
12. Examination and cleaning of breaker enclosure;
13. Functional test of the breaker prior to returning it to service.

The licensee is to confirm that the periodic maintenance program includes these 13 items at the specified interval or commit to their inclusion and provide a date by which they will be included.

FPL RESPONSE TO ITEM 4.2.1

St. Lucie Units 1 and 2 have implemented Maintenance Instruction GE1-50295E1, Power Circuit Breakers, Types AK-2/2A-15, AK-2/3/2A/3A-25, AKU-2/3/3A-25 and Service Advice 9.3S and 9.2O by General Electric. The thirteen criteria above are currently specifically addressed by the following procedure steps from Maintenance Procedure 1/2-0110060 rev. 16/8:

<u>Item</u>	<u>Unit 1 Procedure Step</u>	<u>Unit 2 Procedure Step</u>
1	9.2.2.Z.14	9.2.2.V.14
2	Z.16	V.16
3	Z.11	V.11
4	Z.17	V.17
5	9.2.2.AA.11	9.2.2.W.11
6	Z.12	V.12
7	Z.15	V.15
8	Z.18	V.18
9	Z.10	V.10
10	9.2.2.AA.10	9.2.2.W.10
11	Z.20	9.2.2.V.20
12	Z.19	V.19
13	Z.20	V.20

The required frequency for these checks is quarterly. Instructions for correct grease to be used are covered under the 18 month tests.

2. NRC Item 4.2.2 - Trending of Reactor Trip Breaker Parameters to Forecast Degradation of Operability.

2.1 Criteria for Evaluating Compliance with Items 4.2.2

Four parameters have been identified as trendable and are included in the criteria for evaluation. These are (1) undervoltage trip attachment dropout voltage, (2) trip torque, (3) breaker response time for undervoltage trip, and (4) breaker insulation resistance.

2.2 Issues Relating to Item 4.2.2

The licensee submittal states that the licensee measures trip torque and will measure the time required for the breaker to trip. It is not clear whether the trip time is for a shunt or undervoltage trip.

The licensee is to commit to inclusion of breaker response time and dropout voltage for undervoltage trip and breaker insulation resistance as trending parameters. The licensee should also identify the organization which will perform trend analysis, how often the analysis will be performed and how the information derived from the analysis will be used to affect periodic maintenance.



FPL RESPONSE TO ITEM 4.2.2

Because the failure mechanism for the GE AK2-25 breakers has been identified and corrected, and because the results of the GE test of Mobil 28 have shown that the same problem should not develop over the life of the breakers, we have determined that a formal trending and analysis program for the trip breaker parameters is no longer warranted. We are confident that these breakers will perform their intended function and our requirement for corrective action at a 50 millisecond time response provides assurance that there is sufficient margin to the 100 millisecond operability criteria developed by the CE Owners Group.

The St. Lucie Electrical Maintenance Department performs reviews of undervoltage trip attachment pick-up setting voltage, trip torque, and breaker response time. Specific test result points are currently noted in the performance of procedure 1/2-0110060 and are reviewed on a quarterly basis.

St. Lucie reviews the undervoltage trip attachment pick-up setting voltages results since the pick-up calibration spring supplies the stored energy to trip the breaker on loss of voltage. It is our opinion that this is more meaningful than reviewing the undervoltage trip attachment dropout voltage. Insulation resistance is measured on an 18 month basis and it is our opinion that reviewing this parameter would not provide sufficient useful information. Since changing to Mobil 28 grease, the results of the reviews have not shown any significant degradation and have not affected periodic maintenance activities.