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 50-251 Turkey Point Plant, Unit 4, Florida Power and Light C 05000251
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 GOLDBERG, J.H. Florida Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION
 Document Control Branch (Document Control Desk)

SUBJECT: Forwards response to violations noted in Insp Repts
 50-250/94-23 7 50-251/94-23. Corrective actions: sequencer
 test selector switch placed in OFF position, thus disabling
 automatic test feature.

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FEB 7 1995

L-95-019
10 CFR 2.201

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

Gentlemen:

Re: Turkey Point Units 3 & 4
Docket No. 50-250/251
Reply to Notice of Violation (EA 94-236)
NRC Inspection Report 94-23

Florida Power & Light Company has reviewed the subject inspection report and, pursuant to 10 CFR 2.201, the required response is attached.

If there are any questions, please contact us.

Very truly yours,

A handwritten signature in cursive script that reads 'J. H. Goldberg'.

J. H. Goldberg
President
Nuclear Division

JHG/CLM/cm

Attachment

cc: Stewart D. Ebnetter, Regional Administrator, Region II, USNRC
T. P. Johnson, Senior Resident Inspector, USNRC,
Turkey Point Nuclear Plant

9502130261 950207
PDR ADOCK 05000250
Q PDR

an FPL Group company

A handwritten signature in cursive script, possibly reading 'JED' followed by a vertical line.

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ATTACHMENT

REPLY TO A NOTICE OF VIOLATION

RE: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
NRC Inspection Report 94-23

FINDING:

10 CFR Part 50, Appendix B, Criterion III, Design Control, requires, in part, that design changes be subject to design control measures which provide for verifying or checking the adequacy of design, such as by performance reviews or by the performance of a suitable test program.

Contrary to the above, as of November 3, 1994, the licensee failed to provide adequate design control measures to verify the design of emergency load sequencers 3C23A-1, 3C23B-1, 4C23A-1, and 4C23B-1, which were installed in Units 3 and 4 in 1991. Specifically, during the verification and validation test programs conducted during the design of the sequencers and during the design reviews and pre-operational testing for plant change modification No. 87-264, the licensee failed to ensure, by adequate performance reviews or a suitable testing program, that emergency load sequencers 3C23A-1, 3C23B-1, 4C23A-1, and 4C23B-1B would meet design requirements while in the manual and automatic test modes for test sequence numbers 2, 3, 6, 8, and 10. Consequently, during a design basis event, safety related equipment may not have automatically loaded onto the emergency buses as required. (01013)

This is a Severity Level III violation (Supplement I).

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RESPONSE TO FINDING

1. Florida Power & Light Company (FPL) concurs with the finding.
2. Reason for the violation:

FPL failed to provide adequate design control in that a new technology of complex design was implemented at the plant without adequate design review expertise. The Turkey Point sequencers employ Programmable Logic Controller (PLC) based equipment which was installed in 1991. The unique application of automatic testing of the logic necessitated a complex design. The specification required that, should a valid signal be present during a test, the test be terminated automatically and the valid signal processed. Testing was performed which involved different combinations of valid input signals during different sequencer test modes. This testing and the significant extent of the validation and verification (V & V) program provided a false confidence in the design review adequacy, and failed to identify adverse interactions between certain field input/test combinations.

3. Corrective steps which have been taken and the results achieved

A. Immediate actions to restore operability of the sequencers are as follows:

1. The sequencer Test Selector switch was placed in the OFF position, thus disabling the automatic test feature.
2. A review of the logic diagrams and the original V & V was conducted to ensure that the inhibit problems found in the automatic and manual test circuits were not present with the Test Selector switch in the OFF position. An Engineering Evaluation documented this review.
3. Using the same software as in the Unit 3 sequencer, the V & V test was run on the training sequencer to verify that with the Test Selector switch in OFF, all safety signals would be processed properly.
4. Several crews of operators performed a Loss of All Sequencers scenario on the plant simulator, which demonstrated their capabilities to deal with such a problem.



- B. The Architect/Engineer and the sequencer vendor were notified of the problem. The nuclear utility industry was notified in the NRC Daily Plant Status Report which is summarized by INPO and distributed over NUCLEAR NETWORK.
- C. FPL formed an Independent Assessment Team (IAT), including consultants and PLC experts, which was tasked to provide an independent review of the sequencer software and FPL evaluations of the condition. The initial assessment was completed on December 2, 1994, concluding that FPL's evaluation of the condition was appropriate and that operation of the sequencers with the Test Selector switch OFF is acceptable. The second phase of the IAT assignment provided a detailed review of the software documentation which identified one other software issue requiring further investigation. This investigation, documented in an Engineering Evaluation dated January 11, 1995, concluded that the additional software deviation did not have safety significance. Details of this additional software deviation are referenced in Licensee Event Report 250/94-005-01.
- D. Other safety related process computer suppliers were notified of the event. These suppliers responded that similar software errors do not exist in other safety related process computers.
- E. A Technical Alert was issued to FPL and contractor design engineering personnel to stress the importance of understanding logic interactions and the importance of V & V.
- F. Since 1991, the FPL Nuclear Engineering Department has strengthened its technical expertise, design production capability and involvement in the design change process. FPL significantly reduced reliance on contractors and increased technical oversight of remaining contractor engineering work.
- G. Beginning in 1992, increased Engineering involvement was required in the post-modification testing process for complex modifications, in test development, in physical performance of the testing, and in review of the test results. These changes have been implemented in the Engineering Quality Instructions.

- H. In order to eliminate issues related to the use of one-of-a-kind or first-of-a-kind equipment, FPL implemented Nuclear Policy NP-905, Equipment Selection in October of 1991. This policy states in part that, "FPL's nuclear engineering department shall select only specific models of equipment with proven records of reliable performance for use in FPL nuclear facilities. Verification of the equipment reliability must be established through contact with NPRDS, nuclear station managers, or other appropriate sources. If no prior operating experience is available, appropriate prototype testing, under equivalent plant operating conditions, must be undertaken to establish its reliability before it is placed in service at FPL nuclear facilities." The Engineering Quality Instructions contain the Nuclear Policy requirements for design outputs.
4. Corrective actions which will be taken to prevent further violations:
- A. Training of FPL design engineering personnel will be conducted in software V & V methodology, to be completed by February 28, 1995.
 - B. Design modifications to eliminate the software logic problems will be implemented during the next refueling outages of each unit.
 - C. An FPL Nuclear Engineering standard will be developed on the use of PLCs, prior to the procurement of any additional PLC-based equipment.
5. The date when full compliance was or will be achieved:
- Full compliance was achieved on January 11, 1995 (See item 3.C above).