



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 24, 1994

Docket Nos. 50-251, 50-251
50-335

Mr. J. H. Goldberg
President - Nuclear Division
Florida Power and Light Company
P. O. Box 14000
Juno Beach, Florida 33408-0420

Dear Mr. Goldberg:

SUBJECT: VERIFICATION OF SEISMIC ADEQUACY OF MECHANICAL AND ELECTRICAL EQUIPMENT IN OPERATING REACTORS UNRESOLVED SAFETY ISSUE (USI) A-46, GENERIC LETTER (GL) 87-02, TURKEY POINT UNITS 3 AND 4, ST. LUCIE UNIT 1 (TAC NOs. M68303, M68304 and M69483)

On July 20, 1993, your representatives met with us to discuss the acceptability of your submittals and responses relating to Unresolved Safety Issue (USI) A-46, as delineated in Generic Letter (GL) 87-02 for St. Lucie 1 and Turkey Point 3 and 4. The discussion focused on our general concerns with your proposed reduced scope program for resolving USI A-46, and specifically, with three programmatic issues relating to the scope of relay evaluation, your definition of the safe-shutdown path, and reasonable assurance of your ability to achieve and maintain hot shutdown for 72 hours. By letter dated September 15, 1993, you documented your responses to these technical issues. During the July 20, 1993 meeting, we agreed to review your responses and to inform you of our determination, which is the purpose of this letter. Please note that we have not completed our review of the details of your overall USI A-46 implementation programs for St. Lucie and Turkey Point, and that this letter is not our safety evaluation (SE).

We agree that your facilities are located in a region with a potential seismic hazard that is substantially lower than other nuclear sites in the United States, and, as a result, it is not necessary to require that your facilities satisfy the same rigorous seismic criteria that would be required for a facility located in a region with a higher seismic hazard (e.g., the full provisions in the Generic Implementation Procedure, Revision 2). Consequently, the staff has established a general framework of criteria which would satisfy the intent of USI A-46 for facilities located in regions with low seismic hazard. In general, the criteria which should be satisfied are as follows:

(1) Safe Shutdown Systems/Duration

In accordance with GL 87-02, the program scope should include the systems and corresponding equipment necessary to ensure that hot shutdown can be achieved and maintained for 72 hours following a Safe Shutdown Earthquake (SSE).

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(2) Electrical Relays

Since the likelihood of encountering a SSE in the range of 0.1g to 0.15g peak ground acceleration during the remaining licensed term of the Turkey Point and St. Lucie units is low, it is unlikely that a potential seismic event would produce vibratory ground motion of substantial intensity to cause a significant number of relays to experience chatter, especially if it is confirmed that the anchorages for the relays and the equipment housing them are sufficient to withstand a design basis earthquake. For the small number of relays which may experience chatter and cause undesirable effects on safe shutdown equipment, appropriate operator action may be sufficient to cope with the undesirable effects (e.g., reset the relay, work around any affected equipment, etc.) within the time needed to avoid core damage. Thus, a reduced scope of electrical relay evaluation would satisfy the intent of the USI A-46 concern regarding potential seismic-induced relay malfunction subject to the following:

- a. Confirmation, by plant walkdowns, that all essential relays in the safe shutdown path are properly installed; i.e., installed per design drawings with adequate anchorages. This may be accomplished by a confirmatory walkdown of a sample population of the safe shutdown relays.
- b. A commitment to replace all "Bad Actor Relays" (EPRI NP-7148-SL, Appendix E), which are considered susceptible to chatter at very low vibration levels, during maintenance or modification activities that occur for other reasons for the balance of plant life.
- c. A commitment to develop a top-level procedure for coping with the consequences of relay chatter. The purpose of this procedure is to ensure that operator action would be sufficient to cope with the malfunction of the "Bad Actor Relays," or any other relays in the safe shutdown path that may potentially chatter. This procedure should alert operators to the potential for seismically-induced relay chattering, describe the expected effects and diagnostic tools available to the operators, and describe methods for coping with the situation.

(3) Equipment Walkdowns/Evaluations

For the remaining equipment in the USI A-46 scope (e.g., pumps, valves, heat exchangers, tanks, cabinets, raceways, etc.), perform confirmatory walkdowns and engineering evaluations to demonstrate that the safe shutdown path equipment satisfies the intent of the GL. As warranted, appropriate action should be taken to restore and ensure the functional operability of the equipment, during and following a design basis SSE, in accordance with design requirements. Special emphasis should be placed on safe shutdown tanks; tanks which do not satisfy the GL criteria should be modified to ensure positive fixes. In addition, with regard to above

ground vertical tanks, if the resolution of USI A-40, "Seismic Design Criteria," is to be achieved through the resolution of USI A-46, then the USI A-46 implementation program must include all tanks in the scope of USI A-40 (i.e., all safety-related, or Category I, above ground vertical tanks) even if they are not in the safe shutdown path.

The above criteria constitute a general framework for satisfying the intent of GL 87-02 for facilities such as yours which are located in low seismic hazard areas. Based on the current status of our review of your submittals, with consideration of the information which you provided during a December 8, 1993, conference call, we have identified the following major areas where your programs do not clearly satisfy the criteria described above.

- (A) Your proposed programs do not commit to maintain hot shutdown for 72 hours, and you have not provided adequate justification for a duration less than 72 hours. Per our discussions with you during the December 8, 1993, conference call, we believe that your plan to augment your safe shutdown paths with the use of combined water sources from seismically and non-seismically qualified tanks, which you indicated are sufficient to provide water for maintaining hot shutdown for at least 72 hours, would satisfy the intent of the GL. However, as discussed during the conference call, a reasonable qualitative engineering evaluation would be required to ensure that the non-seismically qualified storage tanks and equipment necessary to transfer these water sources to the reactor will be functionally operable and available during and following a design basis SSE. You should confirm that support systems within seismic and non-seismic safe shutdown path would be functional during and following an SSE. Since you have indicated that your USI A-46 programs will also resolve USI A-40 for above ground vertical tanks, you must ensure that all of the tanks in the USI A-40 scope are included in your implementation programs. Also, appropriate procedures must be in place to direct plant operators to use the alternative water sources, when necessary, to maintain hot shutdown continuously for at least 72 hours. You should confirm that these actions have been accomplished in a future submittal.
- (B) In addition to your proposed review of low ruggedness relays, you should provide information to reasonably demonstrate that all safe shutdown relays were properly installed (i.e., per manufacturers' recommendations with adequate anchorages). This may be accomplished by a confirmatory walkdown of a sample population of the safe shutdown relays. Additionally, you should commit to develop a top-level procedure, as described above, for coping with the consequences of relay chatter.
- (C) Although you have committed to acceptable criteria (EPRI NP-5228, Revision 1) for demonstrating seismic adequacy of the equipment anchorages in your facilities, your implementation programs do not ensure that the criteria are satisfied (e.g., walkdown documentation is minimal, and the walkdowns were performed prior to the publication of the final criteria). Therefore, you should confirm that the Seismic Review Team

utilized the criteria in Revision 1 of the EPRI document for evaluating equipment anchorages.

Finally, please respond to our RAI dated June 23, 1993, which transmitted comments/questions regarding the technical details of your implementation programs. It is possible that in addressing the concerns identified in (A) through (C) above, you may resolve, in whole or in part, some of the issues identified in the RAI. To enable us to continue with our review effort, we request your responses to the issues discussed herein and the RAI dated June 23, 1993, within 60 days of receipt of this letter. Once you have fully addressed all of the above issues and provided a response to the RAI, we will complete our review of your implementation programs, prepare plant-specific SEs, and perform confirmatory site audits/inspections.

This requirement affects fewer than ten respondents and, therefore, is not subject to Office of Management and Budget review under P.L. 96-511.

If you have any questions regarding this matter, please contact us at (301) 504-1471 or (301)-504-1483

(Original Signed By)



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cc w/enclosure:
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