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WILLIAMS,J.W. Florida Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
VARGA,S.A. Operating Reactors Branch 1

SUBJECT: Forwards response to NRC 840514 request for addl info re decay heat loads,testing & insp of storage racks,cooling water flow & heavy load handling.

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FPL
FLORIDA POWER & LIGHT COMPANY

JULY 2 1984
L-84-165

Office of Nuclear Reactor Regulation
Attention: Mr. Steven A. Varga, Chief
Operating Reactor Branch #1
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Varga:

Re: Turkey Point Units 3 & 4
Docket Nos. 50-250 & 50-251
Proposed Amendment to
Spent Fuel Storage Facility Expansion
Additional Information

By letter dated May 14, 1984, the NRC requested that FPL provide additional information related to decay heat loads, testing and inspection of storage racks, cooling water flow, and heavy load handling. The specific questions and responses are included as an attachment to this letter.

If additional information is needed, please contact us.

Very truly yours,

J.W. Williams
Vice President
Nuclear Energy

JWW/GJK/mp
Attachment

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

A001
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ATTACHMENT: Turkey Point Units 3 & 4
Proposed Amendment to
Spent Fuel Storage Facility Expansion
Additional Information

QUESTION NO. 1 In Section 3.2.2 of your safety analysis for the spent fuel storage facility modification you state that the time for pool water temperature to rise from 141°F to 180°F is four hours assuming normal refueling loads and a complete loss of cooling capability. Provide the time for the spent fuel pool water to reach boiling and the boiloff rate under these conditions and also for the abnormal heat load condition of a freshly discharged full core. Provide the makeup rate capability of each makeup source and indicate which of the makeup sources are seismic Category 1.

RESPONSE: The timefor the Spent Fuel Pit (SFP) water to reach boiling and the boiloff rate have been calculated for the normal refueling case (i.e., one-half core offload) and the full core offload. With a complete loss of SFP cooling, the time for the SFP water to rise from its maximum equilibrium value to 212°F is 8 hours for the normal refueling case and 1.8 hours for the full core offload. The corresponding boiloff rates are 35 gpm and 68 gpm respectively. The normal design temperature of the SFP is 180°F. Boiling is an upset condition beyond the normal design basis that can be accommodated without loss of the SFP's integrity. Analysis will affirm this capability.

Normal makeup flow rate to the SFP is 100 gpm provided from the demineralized water system or from the seismic Class 1 RWST. The supply piping from these sources is not seismically installed since Turkey Point is located in a seismically inactive area far from any recorded damaging shocks (Reference: FSAR Section 2.11). Multiple alternate means of makeup are available (Reference 3), which include temporary connections from the fire water system or from the primary water storage tank.

QUESTION NO. 2 With regard to testing and in-service surveillance you state in Section 4.8 of your analysis that the visual inspection of the Boraflex material after fabrication, coupled with the Westinghouse QA controls satisfies the initial verification test requirements and precludes the necessity for onsite poison verification. Provide a discussion that supports your conclusions considering any possible effects on the Boraflex configuration due to shipping of the racks. Your discussion should describe why the Boraflex cannot be displaced within the wrapper.

RESPONSE: As is shown in Figures 4-6 and 4-8, the Boraflex is encapsulated by a stainless steel wrapper which is welded to the storage cells. The wrapper serves to fix and position as well as protect the Boraflex. Handling and shipment operations do not subject the Boraflex to loads of magnitudes to cause displacement. This is accomplished by using specially designed equipment for handling and installation operations and by securing the rack modules to the carrier bed in such a manner as to minimize shipping loads to the modules. Shipping loads are further minimized by using carriers with "air ride" suspension. Actual shipping loads are monitored by the use of shock indicators per the requirements of ANSI-N45-2.2 Section 4.2.3(3). As part of the receipt inspection the racks will also be checked to assure no damage occured prior to arrival on site.

In addition, a silicon adhesive of similar composition to the binder material in the Boraflex is used during fabrication to position and fix the Boraflex within the wrapper. This, together with the encapsulation provided by the wrapper and the precautions listed above, will prevent displacement of the Boraflex during handling and shipment.

QUESTION NO. 3 Referring to Figures 4-5, 6 and 7 describe the flow through the cells located above the leveling screw and support plate. Your description should confirm that the possible higher flow resistance at the inlet of these cells does not preclude these cells from receiving the minimum required flow for decay heat removal from the hottest fuel assembly.

RESPONSE: The flow path through the cells located above the leveling screws is through flow holes unique to these locations. This is shown in Figure 3-10 at the lower left-hand cell location. Although the total area of these eight holes is slightly less than the single hole at all remaining locations, flow blockage analysis shows that sufficient flow exists for decay heat removal from the hottest fuel assembly.

QUESTION NO. 4 With regard to the reracking operation verify that in addition to the load drop analysis performed for the pool, that the possibility of a load drop onto safe shutdown equipment has also been considered. Also provide safe load path drawings for the racks and the temporary crane.

RESPONSE: The possibility of a load drop onto safe shutdown equipment has previously been evaluated and addressed in correspondence with the NRC (see References). This correspondence was in regard to; 1) the NRC generic issues concerning the Fuel Handling System and Control of Heavy Loads, and 2) the Technical Specification request for the transfer of spent fuel between Turkey Point Units 3 and 4. These evaluations demonstrate that the physical configuration can accommodate all postulated heavy load drops without damage to safe shutdown facilities, or if a loss of function is postulated to occur, unit safe shutdown capability is maintained. All movements of heavy loads handled during the rerack operation will comply with the NRC Guidelines presented in NUREG 0612 "Control of Heavy Loads at Nuclear Power Plants" as described in FPL's previous responses and as supplemented in Sections 3.0 and 4.0 of the rerack SAR.

As part of the response to NUREG 0612, FPL developed safe load path areas as defined by restricted (exclusion) zones for the handling of heavy loads. Sketches of these areas and zones and a description of the heavy load handling procedures were provided in Reference 7 and approved by the NRC in their SER dated November 1, 1983 (Reference 8). FPL will use these load path (exclusion area) sketches and handling procedures for all rerack heavy load handling. The lifting of the racks, temporary construction crane and staging platform between the cask washdown area and the SFP will necessitate the passage over an exclusion area. The effects of a postulated load (cask) drop in this area have been previously addressed in the references. To assure that these previous evaluations envelope a postulated rack, construction crane or staging platform drop accident the applicable portions of the cask handling procedures will be incorporated in the rerack handling procedures. The movement of the temporary construction crane over spent fuel in the SFP is addressed in the SAR.

REFERENCES

1. Letter from R. E. Uhrig FPL, to K. R. Goller, NRC, dated January 10, 1975.
2. Letter from R. E. Uhrig, FPL, to G. Lear, NRC, L-76-1, dated January 2, 1976.
3. Letter from R. E. Uhrig, FPL, to V. Stello, NRC, L-76-234, dated June 23, 1976.
4. Letter from R. E. Uhrig, FPL, to V. Stello, NRC, L-78-324, dated October 4, 1978.
5. Letter from R. E. Uhrig, FPL, to D. G. Eisenhut, NRC, L-81-382, dated September 4, 1981.
6. Letter from R. E. Uhrig, FPL, to D. G. Eisenhut, NRC, L-81-473, dated November 12, 1981.
7. Letter from R. E. Uhrig, FPL, to S. A. Varga, NRC, L-82-346, dated August 10, 1982.
8. Letter from D. G. McDonald, NRC, to R. E. Uhrig, FPL, dated November 1, 1983.