March 3, 2000

Mr. John Paul Cowan
Vice President, Nuclear Operations
Florida Power Corporation
ATTN: Manager, Nuclear Licensing (NA1B)
Crystal River Energy Complex
15760 W. Power Line Street
Crystal River, Florida 34428-6708

SUBJECT: CRYSTAL RIVER UNIT 3 - REQUEST FOR ADDITIONAL INFORMATION - ENHANCED SPENT FUEL POOL STORAGE AMENDMENT (TAC NO. MA6754)

Dear Mr. Cowan:

In a submittal dated September 16, 1999, Florida Power Corporation submitted a request for an amendment to the Crystal River Unit 3 (CR-3) operating license. The request proposed to increase the licensed capacity for spent fuel assembly storage in the CR-3 spent fuel pool and revise the configuration for storage of fresh fuel. In order to complete our review of the seismic issues relating to this request, we require additional information as specified in the enclosure to this letter. Please provide the requested information within 60 days of receipt of this letter. This Request for Additional Information and requested submittal date were discussed with Mr. Ronald Rogers of your staff.

Sincerely,

/RA/

Leonard A. Wiens, Senior Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-302

Enclosure: Request for Additional Information

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION

ENHANCED SPENT FUEL POOL STORAGE CAPACITY

CRYSTAL RIVER UNIT 3

1. Florida Power Corporation indicated in their submittal, that the calculated seismic loading stresses in a fully loaded rack will not exceed that of Standard Review Plan (SRP) Section 3.8.4 which was used as a guide. With respect to the stress calculations using the ANSYS computer code for the dynamic fluid-structure interaction analyses, the following information is requested:

   a) The FLUID80 element of ANSYS is used for the dynamic 3-D fluid-rack (single- and multiple-rack) interaction analysis. Explain how this element interacts with the rack elements (i.e., separation, sliding, responses (e.g., displacement) at the common nodal points) under the safe-shutdown earthquake (SSE) loading condition.

   b) Provide the results of any existing experimental study that verifies the correct or adequate simulation of the fluid coupling utilized in the numerical analyses for the fuel assemblies, racks and walls. If there is no such experimental study available, provide the technical justification on how the current level of the ANSYS code verification is adequate for engineering applications and that it should be accepted without further experimental verification work.

   c) Indicate whether there was any numerical convergency and/or stability problem(s) during the nonlinear, dynamic single- and multi-rack analyses using the ANSYS code. If there were any, how was the problem overcome?

   d) Provide the largest magnitude of the hydrodynamic pressure distribution along the height of the rack during the fluid and rack interaction for each case of the 3-D single- and multi-rack analyses. Indicate if any negative hydrodynamic pressures occurred, and if so, provide an explanation for these negative pressures.

   e) Provide the deformation shape and magnitudes of the deformations of the rack from the bottom to the top for the single-rack SSE analysis when the maximum displacement at the rack top corner occurs.

2. With respect to the calculations for determination of spent fuel pool (SFP) capacity per SRP Section 3.8.4 and American Concrete Institute (ACI) 349-80, the following information is requested:

   a) Describe the applied loading conditions including the weights of racks and fuel assemblies.

   b) Discuss whether there are any changes in the factors of safety of the SFP walls and slab due to the increased weights of racks and fuel assemblies. If there are any changes, provide the calculated factors of safety of the SFP walls and slab in a tabular form for the axial, shear, bending and combined stress conditions.

c) The calculated maximum pool temperature for a full-core off-load is 157 °F. Please provide technical justifications for exceeding the required maximum temperature of 150 °F per the ACI Code 349 limits for normal operation or other long-term period.

3. On page 3-14 of the Westinghouse Report, Revision 0, August 1999, the rack construction materials are discussed.

a) Please specify the materials of fabrication for all rack components including the weld materials. For example, American Society of Mechanical Engineers (ASME) SA240 304 for all sheet metal and ASME Type 308 L for weld material.

b) Please specify which ASME/American Society for Testing and Materials standards are used for each material listed above.Mr. John Paul Cowan

Florida Power Corporation

cc:

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