January 30, 2003

Mr. J. A. Stall
Senior Vice President, Nuclear and
Chief Nuclear Officer
Florida Power and Light Company
P.O. Box 14000
Juno Beach, Florida 33408-0420

SUBJECT: ST. LUCIE PLANT, UNITS 1 AND 2 - REQUEST FOR ADDITIONAL INFORMATION REGARDING REQUESTS FOR RELIEF FOR REACTOR PRESSURE VESSEL CLOSURE HEAD PENETRATION WELDS (TAC NOS. MB6379 AND MB6380)

Dear Mr. Stall:

By letter dated September 26, 2002, Florida Power and Light Company (FPL) submitted a request for relief to use an alternate repair method for control element drive mechanism penetration welds. In addition, FPL requested relief from the requirement to perform flaw characterization.

The U.S. Nuclear Regulatory Commission staff has reviewed your submittal and finds that a response to the enclosed request for additional information (RAI) is needed before we can complete the review. This request was discussed with your staff on January 14, 2003, and Mr. George Madden agreed that a response would be provided within 30 days of issuance.

If you have any questions, please feel free to contact Eva Brown at (301) 415-2315.

Sincerely,

/RA/
Brendan T. Moroney, Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-335 and 50-389

Enclosure: RAI

cc w/encl: See next page

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Mr. J. A. Stall
Florida Power and Light Company

ST. LUCIE PLANT

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Stuart, Florida 34997

REQUEST FOR ADDITIONAL INFORMATION

RELIEF REQUESTS NOS. 20, 21, 30, AND 31

RELIEF FOR REACTOR PRESSURE VESSEL CLOSURE HEAD PENETRATION WELDS

SAINT LUCIE PLANT, UNITS 1 AND 2

DOCKET NOS. 50-335 AND 50-389

1) Please comment on successive inspection plans for new Reactor Pressure Vessel (RPV) to control element drive mechanism (CEDM) tube pressure retaining welds, which are deposited approximately mid-wall of the RPV head. The discussion should include the types of nondestructive examination that are going to be performed and the frequency. If successive inspections are not going to be performed, provide the technical justification and basis for not performing a successive/repetitive inspection on the new pressure boundary welds.

2) Relief Requests Nos. 21 and 31 indicate that calculations, analyses and evaluations discussed within provide the technical basis why this repair methodology provides an acceptable level of quality and safety. Please submit the calculations, analyses and evaluations discussed below from Relief Requests Nos. 21 and 31:

   a) American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, stress calculations will be performed to show the flaws are acceptable for a number of years.

   b) An analysis of the new pressure boundary welds will be performed using a 3-dimensional model of a CEDM nozzle located at the most severe hillside orientation.

   c) A primary stress analysis for design conditions will be performed. A maximum Primary General Membrane Stress Intensity (P_m) will be calculated and shown to be less than the maximum allowed by the ASME Code.

   d) The maximum cumulative fatigue usage factor will be calculated, and allowable years of future plant operation will be based on the maximum allowed ASME Code usage factor criterion of 1.0.

   e) A fracture mechanics evaluation will be performed to determine if degraded J-groove weld material could be left in the vessel, with no examination to size any flaws that might remain following the repair.

   f) Residual stresses will not be included in the flaw evaluations since it will be demonstrated by analysis that these stresses are compressive in the low alloy steel base metal.

   g) Flaw evaluations will be performed for a postulated radial corner crack on the uphill side of the RPV head penetration, where stresses are the highest and radial distance from the inside corner to the low alloy steel base metal (crack depth) is the greatest.

Enclosure

h) Fatigue crack growth, calculated for the remaining operational life, should be small, and the final flaw size will be shown to meet the fracture toughness requirements of the ASME Code using an upper shelf value of 200ksi$\sqrt{in}$ for ferritic materials.