

January 10, 2005

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 UNIT 2 - CORRECTION TO NRC SAFETY EVALUATION FOR
FIRST REVISED ORDER EA-03-009 RELAXATION REQUEST NO. 3
REGARDING EXAMINATION COVERAGE FOR REACTOR PRESSURE
VESSEL HEAD PENETRATION NOZZLES (TAC NO. MC3107)

Dear Mr. Stall:

By letter dated December 27, 2004, the U.S. Nuclear Regulatory Commission (NRC) issued Relaxation Request No. 3 granting relaxation from the requirements for inspection of Control Element Drive Mechanism nozzles specified in Section IV, paragraph C.(5)(b)(i) of the First Revised NRC Order EA-03-009 for St. Lucie Unit 2.

The Florida Power and Light Company (FPL) staff has informed the NRC staff of an omission in the safety evaluation (SE) supporting the relaxation. Specifically, the list of supplemental outside diameter non-visual nondestructive examinations did not include ultrasonic testing, which is one of the methods proposed by FPL. We have resolved this by correcting the SE. The corrected pages 3 and 6 of the SE are included as an enclosure to this letter. Revisions are identified by a line in the margin. This letter with its enclosure should be attached to the subject SE to document the resolution of the issue.

If you or your staff have any questions concerning the resolution of this matter, please contact Brendan Moroney at 301-415-3974.

Sincerely,

/RA/

Edwin M. Hackett, Director
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-389

Enclosure: As stated

cc w/enclosure: See next page

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1. On nozzle material below the J-groove weld, both the outside diameter and inside diameter surfaces of the nozzle must be examined.
2. On nozzle material above the J-groove weld, surface examination of the inside diameter surface of the nozzle is permitted provided a surface examination of the J-groove weld is also performed.

3.0 TECHNICAL EVALUATION

3.1 Order Requirements for which Relaxation Is Requested

Section IV.C.(1) of the Order requires, in part, that the above inspections be performed every refueling outage for high susceptibility plants similar to St. Lucie Unit 2, using techniques specified in Paragraph IV.C.(5)(a) and Paragraph IV.C.(5)(b) of the Order.

Relaxation Request No. 3

FPL has requested relaxation from Section IV.C.(5)(b)(i) of the Order to perform UT of the RPV head penetrations inside the tube from 2 inches above the J-groove weld to the bottom of the penetration. Specifically, the relaxation is related to UT examination of the bottom portion (threaded area) of 89 CEDM penetration nozzles with the original J-groove weld configuration (2 nozzles were repaired in the spring 2003 outage). Relaxation is not requested for the remaining 11 RPV head penetrations, which include 10 incore instrumentation penetrations and one RPV head vent line.

Relaxation Request No. 4

FPL has requested relaxation from Section IV.C.(5)(a) of the Order to perform bare metal visual examination of 100 percent of the RPV head surface. Specifically, FPL is unable to comply with the 100 percent visual examination requirement due to inaccessibility of a small portion of the RPV head. The inaccessible areas are behind the twelve 6-inch wide shroud lugs and under the horizontal reflective metal insulation (RMI) support legs.

Both of these relaxations were requested for the next two refueling outages (SL2-15 and SL2-16) with an 18-month operating cycle.

3.2 FPL's Proposed Alternative Method

Relaxation Request No. 3

FPL proposed to perform UT examination from 2 inches above the weld to below the weld to the extent possible. Nozzles that cannot be UT examined at least 0.50 inch below the weld would receive a supplemental outside diameter (OD) non-visual NDE (either UT, PT or ECT) extending to the maximum extent practical but not less than 0.5 inch below the lowest point at the toe of the J-groove weld. Based on the previous inspection, as documented in a letter dated May 11, 2003, 18 of its CEDM nozzles received less than 0.50 inch of UT coverage below the weld.

3.4 Evaluation

Relaxation Request No. 3

The NRC staff's review of this request was based on criterion (2) of Section IV.F of the Order, which states:

Compliance with this Order for specific nozzles would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Within the context of the proposed alternative examination of the RPV penetration nozzles, FPL has demonstrated the hardship that would result from implementing examinations to the bottom-end of these nozzles. The hardship identified by FPL includes the nozzle configuration and the limitation of the UT probe used for nozzle examination. In a letter dated May 11, 2003, FPL stated that it performed a supplemental examination (PT) on nine of its nozzles in the previous outage (SL2-14) inspection and resulted in a radiation exposure of approximately 2.45 man-Rem. In a letter dated November 3, 2004, FPL stated that the proposed supplemental examination on 18 nozzles using manual PT could result in a radiation dose of approximately 4.9 man-Rem. The staff agrees that the nozzle's threaded area that mates with the guide cones makes inspection of these nozzles in accordance with the Order very difficult and would create a hardship. This evaluation focuses on the issue of whether there is a compensating increase in the level of quality and safety such that these nozzles should be inspected in accordance with the Order despite the hardship.

FPL's request to relax the examination requirement of the nozzle base material to at least 0.50 inch below the weld on the downhill side of the CEDM nozzles is supported by FPL's crack growth analysis (Westinghouse Guidance WCAP-1608-P) which indicates that it would take at least 5 years for a postulated flaw in the uninspected area to propagate into the weld. Results from the previous outage inspection showed that Nozzle No. 88, received the most limiting UT coverage of only 0.30 inch below the weld on the downhill side. Based on FPL's analysis, a postulated through-wall flaw could propagate only 0.28 inch in an 18-month operating cycle.

During this refueling outage (SL2-15), the 18 nozzles with less than 0.50-inch UT coverage below the weld will receive a supplemental non-visual NDE (UT, PT or ECT) on the OD surface of the nozzles. This will provide additional safety margin to support an 18-month operating period. The remaining 71 CEDM nozzles will receive a UT coverage of a minimum distance of 0.50 inches below the weld on the downhill side. FPL's analysis had shown that it will take a postulated through-wall crack 5 years to propagate 0.50 inch towards the weld. Therefore, there are sufficient safety margins to support an 18-month operating cycle for these nozzles.

In a letter dated May 11, 2003, FPL documented its findings from the previous inspection, which detected two nozzles with OD axial indications. Both nozzles were repaired. In a letter dated October 12, 2004, the NRC staff issued a Request for Additional Information (RAI) regarding the previous inspection results and crack growth analysis. In a letter dated November 3, 2004, FPL provided its response to the staff's RAI, which stated that the flaws detected in the previous outage were characterized as PWSCC and typical of other cracks found in the industry, and that all cracks were contained completely within the inspection region proposed by this relaxation request. It further stated that recent industry field data did not invalidate the WCAP-1608-P analysis and that the results of the crack growth analysis are still valid.

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