

January 31, 1996

Mr. Percy M. Beard, Jr.
Senior Vice President,
Nuclear Operations (SA2A)
Florida Power Corporation
ATTN: Manager, Nuclear
Licensing
Crystal River Energy Complex
15760 W Power Line Street
Crystal River, Florida 34428-6708

SUBJECT: CRYSTAL RIVER NUCLEAR GENERATING PLANT UNIT 3 - REQUEST FOR
ADDITIONAL INFORMATION ON ISI RELIEF REQUESTS (TAC NO. M93755)

Dear Mr. Beard:

By letter dated September 22, 1995, you submitted your relief request No. 95-030. In order for the staff to complete its review of your request, we require additional information as described in the enclosure. We request your response within 45 days of the date of this letter. To expedite the review process, we request that you also send a copy of your response to our contractor, INEL, at the following address:

Michael T. Anderson
INEL Research Center
2151 North Boulevard
PO Box 1625
Idaho Falls, Idaho 83415-2209

This requirement affects nine or fewer 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 me at (301) 415-1471.

Sincerely,

(Original Signed By)
George F. Wunder, Project Manager
Project Directorate II-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-302

Enclosure: As stated

cc w/enclosure: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

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Sincerely,

A handwritten signature in cursive script, appearing to read "George F. Wunder".

George F. Wunder, Project Manager
Project Directorate II-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-302

Enclosure: As stated

cc w/enclosure: See next page

Mr. Percy M. Beard, Jr.
Florida Power Corporation

Crystal River Unit No. 3
Generating Plant

cc:

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Board of County Commissioners
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U.S. Nuclear Regulatory Commission
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Atlanta, Georgia 30323

Mr. Joe Myers, Director
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Department of Community Affairs
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Tallahassee, Florida 32399-2100

Mr. Kerry Landis
U.S. Nuclear Regulatory Commission
101 Marietta Street, N.W. Suite 2900
Atlanta, Georgia 30323-0199

Request for Additional Information - Second 10-Year Interval Inservice
Inspection Program Plan

1. Scope/Status of Review

Throughout the service life of a water-cooled nuclear power facility, 10 CFR 50.55a(g)(4) requires that components (including supports) that are classified as American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Class 1, Class 2, and Class 3 meet the requirements, except design and access provisions and preservice examination requirements, set forth in the ASME Code Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. This section of the regulations also requires that inservice examinations of components and system pressure tests conducted during the successive 120-month inspection interval shall comply with the requirements in the latest edition and addenda of the Code incorporated by reference in 10 CFR 50.55a(b) on the date 12 months prior to the start of a successive 120-month interval, subject to the limitations and modifications listed therein. The components (including supports) may meet requirements set forth in subsequent editions and addenda of the Code that are incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein and subject to Nuclear Regulatory Commission (NRC) approval. The licensee, Florida Power Corporation, prepared the *Crystal River Unit 3, Second 10-Year Interval Inservice Inspection (ISI) Program Plan* to meet the requirements of the 1983 Edition of Section XI with Addenda through the Summer 1983.

As required by 10 CFR 50.55a(g)(5), if the licensee determines that certain Code examination requirements are impractical and requests relief, the licensee shall submit information to the Nuclear Regulatory Commission (NRC) to support that determination.

The staff has reviewed the available information in the Crystal River, Unit 3, request for relief from examination of the reactor vessel transition-piece-to-bottom-head weld, submitted September 22, 1995.

2. Additional Information Required

Based on the above review, the staff has concluded that additional information and/or clarification is required to complete the review of the request for relief from the examination of the reactor pressure vessel transition-piece-to-bottom-head weld.

Code Requirement: The 1983 Edition of Section XI with Addenda through the Summer 1983, Table IWB-2500-1, Examination Category B-A, Item B1.21 requires 100% volumetric examination of the accessible length of one

reactor pressure vessel circumferential head weld after the first interval.

The 1988 Addenda of Section XI, and later, require the examination of the accessible portions of all reactor pressure vessel welds in each interval.

Licensee's Basis:

- a) Cost Reduction (12 hours Critical Path, \$250,000)
- b) Limited coverage (Approximately 10%)
- c) The subject weld was examined 100% preservice and 10% inservice in the first interval and found to be satisfactory.
- d) The transition-to-bottom-head weld is not subjected to neutron flux similar to the beltline region and is, therefore, less susceptible to neutron embrittlement.
- e) Difficulty in maneuvering the examination tool because of obstructions, (i.e. instrumentation nozzles and lugs make it difficult to maneuver the ultrasonic transducer), and potential for damage of incore instrumentation tubes if bumped by the manipulator.

In order to recommend the granting or authorizing of the licensee's request for relief from examination of the reactor pressure vessel transition-piece-to-bottom-head weld, the basis for relief, (i.e. impracticality, acceptable alternative, or burden), provided below are key areas that should be addressed by the licensee for consideration of this request for relief.

- A. Discussion of Potential Damage Mechanisms - The licensee has cited neutron embrittlement as a potential damage mechanism for the shell welds in the beltline region only. For consideration of authorization of this request for relief, the licensee should also address the following:

The reactor pressure vessel transition-piece-to-bottom-head weld is of a lesser wall thickness than the shell welds. Address the stresses and potential damage mechanisms associated with this weld. The discussion should include but not be limited to effects of potential neutron embrittlement on the subject weld (considering the reduced wall thickness), corrosion, loads associated with welded attachments (12 flow stabilizer lugs are located on and above the subject weld), lower head penetrations, expansion/contraction stresses associated with reactor operation cycles and operating conditions.

- B. Confidence that no flaw is present in the weld - The licensee has stated that the likelihood of a significant flaw existing in this weld is very small. In the case of the fabrication, preservice, and inservice examinations, the weld was found to be satisfactory. Confirm that there are no preexisting, recordable flaws, acceptable by Code.
- C. Structural integrity - The licensee essentially proposes the elimination of the subject volumetric Code examination of the accessible portions of the weld. This implies that other RPV welds are more susceptible to failure than the subject weld. Based on a qualitative comparison of the fracture toughness of the beltline weld to the lower head weld, what is the estimated critical flaw size for the lower head weld (Appendix G ASME Code flaw size)?
- D. Radiation fields - The licensee has not addressed the radiation dose potential associated with the examination of the subject weld. Provide information on the estimated exposure associated with the examination of the subject weld.
- E. Potential for Damage Caused by Examinations - The licensee cites limited access for examination and the potential for damage of incore instrumentation by the examination tool. Provide a detailed access study and determine the actual probability for potential damage due to the inspection tooling, (i.e. considering clearance requirements, tool operations, etc.). In addition, provide instances where damage associated with the subject weld has occurred as the result of the use of the inspection tool at your plant or at any other plant with similar reactor pressure vessel designs.

The schedule for timely completion of this review requires that the licensee provide, by the requested date, the above requested information and/or clarification with regard to the *Crystal River Unit 3, Second 10-Year Interval Inservice Inspection (ISI) Program Plan*, request for relief from the examination of the reactor pressure vessel transition-piece-to-bottom-head weld.