



# Florida Power

CORPORATION

Crystal River Unit 3

Docket No. 80-002

September 22, 1995  
3F0995-03

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555

Subject: Inservice Inspection Program (ISI) Relief Requests 95-010, 95-020, 95-030  
and 95-040

Dear Sir:

Florida Power Corporation (FPC) is requesting review and approval of the attached Relief Requests 95-010, 95-020, 95-030 and 95-040. These Relief Requests are submitted pursuant to 10 CFR 50.55a(3). The information being provided for each request includes the component for which relief is requested, the requirement that has been found to be impractical, basis for its impracticality, the proposed alternate examination and its implementation schedule.

FPC will greatly appreciate your prompt review and approval of these requests since FPC needs to implement them by the next refueling outage scheduled for February, 1996.

Sincerely,

P. M. Beard, Jr.  
Senior Vice President  
Nuclear Operations

PMB/LVC

Attachments

xc: Regional Administrator, Region II  
Senior Resident Inspector  
NRR Project Manager

AD4711

**FLORIDA POWER CORPORATION  
INSERVICE INSPECTION  
RELIEF REQUEST # 95-10  
CRYSTAL RIVER UNIT 3**

**REFERENCE CODE:** ASME Boiler and Pressure Vessel Code, Section XI,  
1983 Edition through Summer 1983 Addenda.

**I. Component for which exemption is requested:**

- (a) Name and Identification Number:  
Core Flood Nozzle-to-Safe End (FSAR Figure 6-2; FD-302-702).
- (b) Function:  
Provide Reactor Vessel Core Flooding capability.
- (c) ASME Section III Code Class:  
Class 1.
- (d) Category:  
Category B-F, Pressure Retaining Dissimilar Metal Welds.

**II. Requirement that has been determined to be impractical:**

ASME Boiler and Pressure Vessel Code, Section XI, Table IWB-2500-1,  
Item B5.10, Nozzle-to-Safe End Butt Welds, surface examination.

**III. Basis for requesting relief:**

In March of 1990, FPC submitted Relief Request # 90-10 for the core flood nozzle surface examination to delete the surface examination requirement for the first 10 year interval. The basis for deletion of the surface examination was the development of a B&W Owners Group (BWOOG) sponsored enhanced ultrasonic examination technique performed from the inside diameter (ID) of the core flood nozzle which would detect indications at or near the surface of the nozzle.

As shown in the Alternate Examination for that relief request and in the subsequent NRC Safety Evaluation, FPC had committed: "Before performing the ultrasonic core flood nozzle examination scheduled near the end of the current inservice inspection interval - to conduct a performance demonstration of the ultrasonic technique to be used to demonstrate its ability to find and size surface flaws". The current interval for Crystal River Unit 3 began in March of 1987 and ends in March 1997.

The BWOOG sponsored a performance demonstration that was conducted by Babcock and Wilcox Nuclear Technologies (BWNT). The results of the demonstration are published in Topical Report BAW-2228-A and the revised Topical Report BAW-2228P Rev. 1. This topical report was prepared by BWNT for the BWOOG and has been recently submitted to the NRC.

**Basis for requesting relief (continued)**

FPC had previously reviewed Topical Report BAW-2228-A and has recently reviewed the revised Topical Report BAW-2228P Rev. 1 for applicability to Crystal River Unit 3. FPC has confirmed that the input stresses under normal/upset and emergency/faulted conditions shown in the revised report is a result of using the bounding transient in the analysis and that the material in its inlet, outlet, and core flood nozzles is A508 Class 2 carbon steel. FPC is requesting this relief in anticipation of NRC's review and approval of BAW-2228P, Rev. 1.

**IV. Alternate examination:**

FPC will perform a full volumetric examination of both core flood nozzle-to-safe end welds from the ID using the enhanced ultrasonic technique.

**V. Implementation schedule:**

Examination of both core flood nozzle-to-safe end welds will be performed during the reactor vessel 10 year examination scheduled for February of 1996.

FLORIDA POWER CORPORATION  
INSERVICE INSPECTION  
RELIEF REQUEST # 95-020  
CRYSTAL RIVER UNIT 3

REFERENCE CODE: ASME Boiler and Pressure Vessel Code, Section XI,  
1983 Edition through Summer 1983 Addenda.

I. Component for which exemption is requested:

(a) Name and Identification Number:

Hydrostatic testing of portions of class III piping in various plant systems including Main Steam (MS), Auxiliary Steam (AS), Emergency Feedwater (EF), Condensate (CD), Makeup and Purification (MU), Domestic Water (DO), Nuclear Services & Decay Heat Sea Water (RW), Spent Fuel (SF), and Chilled Water (CH).

(b) Function:

Pressure retaining components in Class III portions of plant systems.

(c) ASME Section III Code Class:

Class III.

(D) Valve Category:

N/A

II. Requirement that has been determined to be impractical:

ASME Boiler and Pressure Vessel Code, Section XI, 1983 Edition, Table IWD-2500-1, Test and Examination Requirement IWA-5000/IWD-5223 for Examination Category D-A, Item D1.10; Examination Category D-B, Item D2.10; and Examination Category D-C, Item D3.10.

III. Basis for requesting relief:

Crystal River Unit 3 is currently in the third period of the second inservice inspection interval. As such, hydrostatic testing of most ASME Class III systems has previously been completed. For the remaining portions of ASME Class III systems listed in I(a) above, relief is requested from the periodic hydrostatic tests of class III Pressure Retaining Components required by Table IWD-2500-1. Code Case N-498-1 outlines the basis for relief to be the following:

- (1) A system inservice or functional pressure test shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B.

**Basis for requesting relief (continued)**

- (2) The boundary subject to test pressurization during the system inservice or functional pressure test shall extend to all Class 3 components included in those portions of systems required to operate or support the safety system function up to and including the first normally closed valve, including a safety or relief valve, or valve capable of automatic closure when the safety function is required.
- (3) Prior to performing the VT-2 visual examination, the system shall be pressurized to nominal operating pressure for at least 4 hours for insulated systems and 10 minutes for noninsulated systems. The system shall be maintained at nominal operating pressure during performance of the VT-2 visual examination.
- (4) The VT-2 visual examination shall include all components identified in (2) above.
- (5) Test instrumentation requirements of IWA-5260 are not applicable.

Substitution of an inservice or functional pressure test for the required hydrostatic tests in accordance with Code Case N-498-1 will ensure the continued integrity of ASME Class III Pressure Retaining Components while minimizing dose to inspection personnel and reducing the quantity of radioactive waste water produced at Crystal River Unit 3.

**IV. Alternate Examination:**

A system inservice test or system functional test will be performed in accordance with the guidance in Code Case N-498-1.

**V. Implementation Schedule:**

Implementation of a system inservice test or functional test in lieu of a hydrostatic test will begin in this the third period of the second inservice inspection interval at Crystal River Unit 3.



FLORIDA POWER CORPORATION  
INSERVICE INSPECTION  
RELIEF REQUEST # 95-30  
CRYSTAL RIVER UNIT 3

REFERENCE CODE: ASME Boiler and Pressure Vessel Code, Section XI, 1989  
Edition Augmented Reactor Vessel examination requirements  
imposed by 10CFR50.55(a)(g)(6)(ii)(A).

I. Component for which exemption is requested:

(a) Name and Identification Number:

Reactor Vessel Transition Piece to Bottom Head Weld ISI Exam  
Number B1.2.2

(b) Function:

Houses Core and Maintains Core Geometry

(c) ASME Section III Code Class:

Class I

(d) Category:

Category B-A, Pressure Retaining Welds in Reactor Vessel

II. Requirement that has been determined to be impractical:

ASME Boiler and Pressure Vessel Code, Section XI, Table IWB-2500-1  
Item B1.21, Circumferential Head Weld, volumetric examination.

III. Basis for requesting relief:

Access for examination of this weld is severely limited by the flow stabilizers, the core stop lugs, and the incore instrumentation nozzles. Ultrasonic examination of the weld would be limited to approximately 10%. In order to achieve this very limited examination, Florida Power Corporation estimates that the critical-path outage time would be a minimum of 12 hours, which is estimated to cost approximately \$250,000.

The obstructions located on and adjacent to this weld create an area in which it is very difficult to maneuver the ultrasonic transducer manipulator. Of particular concern are the incore instrument nozzles. These nozzles are small and manufactured to close tolerances. If an inadvertent collision were to occur, the nozzles could be severely damaged. A damaged nozzle could prevent the reinsertion of an incore instrument or could require a critical-path in-vessel repair.

**Basis for requesting relief (continued)**

The majority of the neutron flux escaping from the core impacts the reactor vessel beltline area, rather than the bottom head. Therefore the potential for neutron embrittlement of this bottom-head weld is considerably less than for the beltline region welds.

The possibility of a significant flaw existing in this weld is small. When the vessel was originally fabricated, this full-penetration weld was completely radiographed and found to be acceptable. Since that time, the weld has been ultrasonically inspected once during preservice inspection (essentially 100% coverage), and once at the end of the first interval. At that time, ultrasonic examination of the reactor vessel welds was performed in accordance with the ASME Boiler and Pressure Vessel Code, Section V article 4, 1977 Edition with Addenda through Summer 1978 and NRC Regulatory Guide 1.150. Five percent of the transition piece to lower head weld was examined. There were no recordable indications. Additionally, no service induced flaws have been identified in any of the reactor vessel welds.

Accordingly, Florida Power Corporation requests relief based upon:

- o The severe access limitation
- o The critical-path outage time and significant cost required to perform the examination
- o The possibility of an impact and resultant damage to the incore instrument nozzles and subsequent critical-path in-vessel repair
- o The lack of potential for neutron embrittlement
- o The small possibility of a significant flaw existing in the weld
- o The previous examinations which identified no recordable indications
- o The lack of identification of any service induced flaws in any of the reactor vessel welds.

**IV. Alternate examination:**

The remaining reactor vessel weld volumetric examinations scheduled during Refuel 10 will be performed in accordance with the augmented examination requirements of 10CFR 50.55a(g)(6)(ii)(A). This augmented examination requires a volumetric examination of essentially 100% of the weld volume of each of the reactor vessel shell welds. In addition, the accessible areas of the reactor vessel interior and the interior surfaces and welded attachments within and beyond the beltline region will receive the VT-1 and VT-3 visual examinations required by Section XI of the ASME Code. A VT-2 visual examination will be performed on the exterior of the reactor vessel during the inservice leak test performed during start-up.

**V. Implementation schedule:**

Examination of the reactor vessel will be performed during the refueling outage scheduled to begin in February of 1996.



FLORIDA POWER CORPORATION  
INSERVICE INSPECTION  
RELIEF REQUEST # 95-40  
CRYSTAL RIVER UNIT 3

**REFERENCE CODE:** ASME Boiler and Pressure Vessel Code, Section XI, 1983 Edition through Summer 1983 Addenda.

**I. Component for which exemption is requested:**

(a) Name and Identification Number:

Main Loop Welds in Ferritic Steel Piping for Reactor Coolant System.

(b) Function:

Circulate Reactor Coolant from Reactor to Steam Generators and Return.

(c) ASME Section III Code Class:

Class I.

(d) Valve Category:

N/A

**II. Requirement that has been determined to be impractical:**

ASME, Section XI, Appendix III (for ASME Class 1 and 2 ferritic steel piping systems), Subarticle III-3410: "The basic calibration blocks shall be made from material of the same nominal diameter and nominal wall thickness or pipe schedule as the pipe to be examined".

**III. Basis for requesting relief:**

Article 5 of Section V of the 1980 and later editions of the ASME Boiler and Pressure Vessel code have authorized the use of flat calibration blocks with a correction factor as shown in Nonmandatory Appendix A for examination of piping greater than 20 inches in diameter.

The use of flat calibration blocks for examination surfaces with diameters greater than 20 inches is now shown as an alternative in the recently approved 1989 Edition of Section XI of the ASME Boiler and Pressure Vessel Code in Appendix I, Supplement 3 - CALIBRATION BLOCKS FOR EXAMINATION OF PARTS WITH CURVED SURFACES - which states in paragraphs (b)(3)(a):

(b) For calibration blocks for examination surfaces with diameters greater than 20 in., one of the following shall be applied.

(3) A flat calibration block may be used meeting the following requirements:

**Basis for requesting relief (continued)**

- (a) The minimum radius to be examined shall be determined and the search unit contact area and frequency shall be selected so that the minimum radius is greater than the critical radius as determined by Appendix A of Article 5 of Section V.

**IV. Alternate Examination:**

Examination of ASME Class 1 and 2 ferritic piping with diameters greater than 20 inches will be performed in accordance with the requirements of the 1989 Edition of the ASME Boiler and Pressure Vessel Code Section XI Appendix I, Supplement 3.

**V. Implementation Schedule:**

Examinations will be performed beginning with Florida Power Corporations' Refuel Outage 10 scheduled for February of 1996.