

May 29, 2001

Mr. Dale E. Young, Vice President
Crystal River Nuclear Plant (NA1B)
ATTN: Supervisor, Licensing & Regulatory Programs
15760 W. Power Line Street
Crystal River, Florida 34428-6708

SUBJECT: CRYSTAL RIVER NUCLEAR PLANT, UNIT 3 — SAFETY EVALUATION FOR
AMERICAN SOCIETY OF MECHANICAL ENGINEERS, SECTION XI,
INSERVICE INSPECTION RELIEF REQUEST NO. 01-001-II
(TAC NO. MB1209)

Dear Mr. Young:

In a letter dated February 15, 2001, Florida Power Corporation (FPC) submitted a request for relief from certain American Society of Mechanical Engineers (ASME) Code, Section XI, nondestructive examination requirements. Specifically, FPC requested relief from performing at least 50% of the reactor vessel shell-to-flange weld examination by the end of the first inspection period, and requested to use ASME Code Case N-623 for deferral of the partial examination of the shell-to-flange weld examination to the end of the inservice inspection (ISI) interval.

The Nuclear Regulatory Commission (NRC) has reviewed and evaluated the information provided by the licensee. The NRC has determined that the proposed alternative to use Code Case N-623 for the reactor vessel shell-to-flange weld examination provides an acceptable level of quality and safety. The proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the third 10-year ISI interval at Crystal River Nuclear Plant, Unit 3, unless the three basic conditions (prerequisites) in Code Case N-623 are no longer valid, or until such time as Code Case N-623 is incorporated into a future revision of Regulatory Guide (RG) 1.147. Upon issuance of the future revision of RG 1.147, the licensee shall follow all provisions in Code Case N-623, including any exceptions or limitations discussed in the RG, if any.

The enclosed safety evaluation documents our review. If you have any questions, please contact John Goshen at 301-415-1437.

Sincerely,
/RA by R.Hernan Acting for/
Patrick M. Madden, Acting Chief, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-302

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO THE THIRD 10-YEAR INSERVICE INSPECTION PROGRAM
RELIEF REQUEST NO. 01-001-II
CRYSTAL RIVER NUCLEAR PLANT UNIT 3
FLORIDA POWER CORPORATION
DOCKET NUMBER 50-302

1.0 INTRODUCTION

By letter dated February 15, 2001, Florida Power Corporation (FPC) submitted a request for relief from certain American Society of Mechanical Engineers (ASME) Code, Section XI, nondestructive examination requirements at Crystal River Unit 3 (CR-3). The information provided by the licensee in support of the request for relief has been evaluated pursuant to the provisions of 10 CFR 50.55a(a)(3)(i). The basis for disposition is documented below.

2.0 BACKGROUND

Inservice inspection (ISI) of the ASME Code, Class 1, 2 and 3 components, is to be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). It is stated in 10 CFR 50.55a(a)(3) that alternatives to the requirements of paragraph (g) may be used, when authorized by the Nuclear Regulatory Commission (NRC), if the licensee demonstrates that (i) the proposed alternatives would provide an acceptable level of quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2 and 3 components (including supports) shall meet the requirements, except the design and access provisions and the 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. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The Code of record for CR-3's third 10-year ISI interval is the 1989 Edition of Section XI of the ASME Boiler and Pressure Vessel Code.

ENCLOSURE

3.0 THE COMPONENTS FOR WHICH RELIEF IS REQUESTED

Class 1 reactor vessel shell-to-flange weld (Category B-A)

3.1 Code Requirements and Request for Relief (as stated)

The ASME Code Section XI, 1989 Edition with no Addenda, Table IWB-2500-1, Examination Category B-A, requires inspection of Reactor Vessel Shell-to-Flange weld. Partial deferral of the volumetric examination is permitted. Per Notes 3 and 4 in Table IWB-2500-1, Category B-A, "If partial examinations are conducted from flange face, the remaining volumetric examinations required to be conducted from vessel wall may be performed at or near the end of each inspection interval. The examination of shell-to-flange welds may be performed during the first and third inspection periods in conjunction with the nozzle examinations of Exam. Cat. B-D (Program B). At least 50% of shell-to-flange welds shall be examined by the end of the first inspection period, and the remainder by the end of the third inspection period."

Pursuant to 10 CFR 50.55a(a)(3)(i), Florida Power Corporation (FPC) requests authorization to implement Code Case N-623, "Deferral of Inspections of Shell-to-Flange and Head-to-Flange Welds of a Reactor Vessel, Section XI, Division 1," for examination of only the shell-to-flange weld. Approval of this request will allow 100% deferral of the shell-to-flange examination at Crystal River Unit 3 (CR-3) to the end of the interval.

3.2 Licensee's Basis for Requesting Relief (as stated)

If the shell-to-flange weld examination is conducted in the first period it would be performed using manual techniques. When this weld is examined at the end of the interval, the examination can be performed using the same automated equipment that is used to examine the remaining reactor vessel welds. Use of this automated equipment achieves a significant reduction in personnel radiation exposure.

The Section XI Code Committee approved Code Case N-623 on February 26, 1999. The committee indicated in the code case that it may be applied if the following conditions have been met:

- (a) No welded repair/replacement activities have ever been performed on the shell-to-flange or head-to-flange weld.
- (b) Neither the shell-to-flange nor head-to-flange weld contains identified flaws or relevant conditions that currently require successive inspections in accordance with IWB-2420(b).
- (c) The vessel is not in the first inspection interval.

The CR-3 reactor vessel complies with these conditions.

The proposed alternative examination provides an acceptable level of quality and safety since the shell-to-flange weld will receive the same high quality examinations that have been required by ASME Code Section XI since the reactor was placed in commercial service. The only change is that the shell-to-flange weld would now be examined at the end of the interval, at the same time as the remainder of the reactor vessel welds, rather than at the beginning of the interval. This includes examination in conjunction with the nozzle examinations of Exam. Cat. B-D (allowed to be deferred by Code Case N-521, "Alternative Rules for Deferral of Inspections of Nozzle-to-Vessel Welds, Inside Radius Sections, and Nozzle-to-Safe End Welds of Pressurized Water Reactor Vessel, Section XI, Division 1," published in Regulatory Guide 1.147, Revision 12, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1"). No changes are being made to either the volumes or areas of material that are examined, to nondestructive examination (NDE) personnel qualifications, nor [sic] to NDE methods or acceptance criteria.

CR-3 is currently in the first period of the third interval. The entire shell-to-flange weld was examined from the vessel wall using enhanced automated ultrasonic techniques at the end of the second interval. The examination was performed in conjunction with the ten year reactor vessel examination. The head-to-flange weld was examined at the end of the second interval using manual techniques. No unacceptable indications were identified.

By performing the examination of the shell-to-flange weld at the end of the third interval, at the same time as examination of the remainder of the reactor vessel welds, the examination schedule for this weld is not expected to exceed the length of one inspection interval.

3.3 Licensee's Proposed Alternative Examination (as stated)

Code Case N-623 is to be applied as alternative rules to reactor vessel flange welds. The required examinations of the shell-to-flange weld will be performed at the end of the interval along with the other Reactor Vessel welds.

4.0 EVALUATION

Section XI of the ASME Code, 1989 Edition, Table IWB-2500-1, requires that the reactor pressure vessel (RPV) shell-to-flange weld be volumetrically examined once each inspection interval and the RPV head-to-flange weld be surface and volumetrically examined once each inspection interval. The footnotes to Table IWB-2500-1 provide partial deferrals for both of these welds. FPC proposes to follow the requirements of Code Case N-623. The staff finds that FPC meets the requirements listed in Code Case N-623 and that the implementation of the code case provides an acceptable level of quality and safety. The shell-to-flange weld will still receive the same high quality examinations that have been required by the ASME Code,

Section XI, since the reactor was placed in commercial service. The only change is that the RPV shell-to-flange weld and the RPV head-to-flange weld examinations will be deferred to the end of the inspection interval without conducting partial examinations from the flange face. FPC examined the entire shell-to-flange weld at the end of the second interval. Therefore, FPC's proposed examination of this weld will not exceed the length of one inspection interval. No changes are being made to the volumes or areas of material that are examined, or to the nondestructive examination (NDE) personnel qualifications. This relief request does not involve changes to NDE methods or acceptance criteria.

5.0 CONCLUSION

Based on the above evaluation, the staff has determined that the proposed alternative to defer examination of the shell-to-flange weld until the end of the interval in accordance with Code Case N-623 provides an acceptable level of quality and safety. Therefore, FPC's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the third 10-year ISI interval at CR-3 unless the three basic conditions (prerequisites) in Code Case N-623 are no longer valid or until such time as Code Case N-623 is incorporated into a future revision of Regulatory Guide 1.147. Upon issuance of the regulatory guide, the licensee will follow all provisions in Code Case N-623, including any exceptions or limitations discussed in the regulatory guide, if any.

Principal Contributor: Andrea Keim

Date: May 29, 2001

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Florida Power Corporation

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