



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

October 11, 2012

Mr. Jon A. Franke, Vice President  
Crystal River Nuclear Plant (NA2C)  
ATTN: Supervisor, Licensing & Regulatory Programs  
15760 W. Power Line Street  
Crystal River, Florida 34428-6708

SUBJECT: CRYSTAL RIVER UNIT 3 NUCLEAR GENERATING PLANT– RELIEF  
REQUEST 11-001-MX RELATED TO SUSPENSION OF CONCRETE  
CONTAINMENT EXAMINATION FOR THE FOURTH-10-YEAR INTERVAL OF  
THE INSERVICE INSPECTION PROGRAM (TAC NO. ME7729)

Dear Mr. Franke:

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated December 27, 2011, as supplemented by letter dated September 19, 2012, Florida Power Corporation (the licensee) submitted Relief Request (RR) 11-001-MX for the fourth 10-year inservice inspection (ISI) interval (second containment ISI interval) for Crystal River Unit 3 Nuclear Generating Plant (CR-3).

The licensee requested relief from the examination requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel (ASME Code), Section XI, Subsection IWL. The RR requested suspension of the examination schedule requirements of paragraph IWL-2410 for concrete and paragraph IWL-2420 for the unbonded post-tensioning system applicable to the 35<sup>th</sup> year ISI and forgoing any outstanding examinations during the period of repair of the delaminated CR-3 containment wall delaminations. Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(g)(5)(iii) the licensee requested relief on the basis of impracticality due to the ongoing/planned repair of the CR-3 containment. The licensee in its letter dated September 19, 2012, committed to submit a proposal for alternatives to the requirements in ASME Code, Section XI, Subsection IWL in accordance with 10 CFR 50.55a(a)(3)(i) to establish a surveillance program for the repaired containment concrete and unbonded post-tensioning system one year prior to the completion of the CR-3 containment repair.

The NRC staff has reviewed the subject request and concludes, as set forth in the enclosed safety evaluation, that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a. The NRC staff concludes that compliance with the ASME Code examination schedule requirements related to the 35<sup>th</sup> year ISI are impractical due to the ongoing/proposed extensive repair of the delaminated CR-3 containment. Further, the NRC staff determines that granting the requested relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

J. Franke

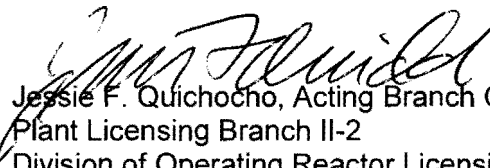
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Therefore, pursuant to 10 CFR 50.55a(g)(6)(i), the NRC staff grants RR 11-001-MX, considering the regulatory commitment in the licensee's letter dated September 19, 2012, for the duration until completion of the repair of the delaminated CR-3 containment, as defined by completion of the repair/replacement pressure tests, or until the due date for the 40<sup>th</sup> year IWL examinations, whichever occurs earlier.

All other ASME Code, Section XI requirements for which relief was not specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

If you have any questions, please contact Farideh Saba at 301-415-1447.

Sincerely,

  
Jessie F. Quichocho, Acting Branch Chief  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-302

Enclosure: Safety Evaluation

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ON THE FOURTH 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM

RELIEF REQUEST 11-001-MX

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3 NUCLEAR GENERATING PLANT

DOCKET NO. 50-302

1.0 INTRODUCTION

By letter to the U.S. Nuclear Regulatory Commission (Commission, NRC) dated December 27, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12004A074), as supplemented by letter dated September 19, 2012 (ADAMS Accession No. ML122701371), Florida Power Corporation (the licensee) submitted Relief Request (RR) 11-001-MX for the fourth 10-year inservice inspection (ISI) interval (second containment ISI (CISI) interval) for Crystal River Unit 3 Nuclear Generating Plant (CR-3).

The licensee requested relief from the examination requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel ASME Code, Section XI, Subsection IWL. The RR requested suspension of the examination schedule requirements of paragraph IWL-2410 for concrete and paragraph IWL-2420 for the unbonded post-tensioning system applicable to the 35<sup>th</sup> year ISI and forgoing any outstanding examinations during the period of repair of the delaminated CR-3 containment wall delaminations. Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(g)(5)(iii) the licensee requested relief on the basis of impracticality due to the ongoing/planned repair of the CR-3 containment. The licensee in its letter dated September 19, 2012, committed to submit a proposal for alternatives to the requirements in ASME Code, Section XI, Subsection IWL in accordance with 10 CFR 50.55a(a)(3)(i) to establish a surveillance program for the repaired containment concrete and unbonded post-tensioning system one year prior to the completion of the CR-3 containment repair.

2.0 REGULATORY EVALUATION

Section 50.55a(g)(1) of 10 CFR states, in part, that for a boiling or pressurized water-cooled nuclear power facility whose construction permit was issued before January 1, 1971, components (including supports) must meet the requirements of paragraphs (g)(4) and (g)(5) of this section to the extent practical.

Enclosure

Section 50.55a(g)(4) of 10 CFR, in part, requires that throughout the service life of a nuclear power facility, components classified as ASME Class CC pressure retaining components and their integral attachments must meet the inservice examination requirements, except the design and access provisions and the preservice examination requirements, set forth in Section XI of the ASME Code, and its editions/addenda incorporated by reference in paragraph (b)(2) and subject to the conditions listed in paragraphs (b)(2)(vi), (b)(2)(viii) and (b)(2)(ix) of 10 CFR 50.55a. The appropriate edition/addenda of the code to be used for successive 120-month inspection intervals is determined pursuant to paragraph (g)(4)(ii)

Section 50.55a(g)(5)(iii) of 10 CFR requires that if the licensee has determined that conformance with certain code requirements is impractical for its facility, the licensee shall notify the Commission and submit, as specified in 10 CFR 50.4, information to support its determinations.

Pursuant to 10 CFR 50.55a(g)(6)(i), the Commission will evaluate determinations under paragraph (g)(5) that code requirements are impractical. The Commission may grant such relief and may impose such alternative requirements as it determines is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

### 3.0 TECHNICAL EVALUATION

The NRC staff has evaluated the information provided by the licensee in support of RR 11-001-MX for relief from, the ASME Code requirements and the bases for disposition are documented below.

#### 3.1 The licensee's Relief Request

The licensee requested relief for the concrete and the unbonded post-tensioning system of the CR-3 Class CC concrete containment.

The CR-3 applicable code of record for the fourth 10-year ISI interval (second CISI) is the ASME, Section XI, 2001 Edition, up to and including the 2003 Addenda.

The following ASME Code requirements are affected by this relief request:

##### IWL-2410 Concrete

- (a) Concrete shall be examined in accordance with IWL-2410 at 1, 3, and 5 years following the completion of the containment Structural Integrity Test CC-6000 and every 5 years thereafter.
- (c) The 10-year and subsequent examinations shall commence not more than 1 year prior to the specified dates and shall be completed not more than 1 year after such dates. If plant operating conditions are such that examination of portions of the

concrete cannot be completed within this stated time interval, examination of those portions may be deferred until the next regularly scheduled outage.

IWL-2420 Unbonded Post-Tensioning Systems

- (a) Unbonded post-tensioning systems shall be examined in accordance with IWL-2420 at 1, 3, and 5 years following the completion of the containment Structural Integrity Test (SIT) and every 5 years thereafter.
- (c) The 10-year and subsequent examinations shall commence not more than 1 year prior to the specified dates and shall be completed not more than 1 year after such dates.

The licensee requested relief, in accordance with 10 CFR 50.55a(g)(5)(iii), due to the ongoing/planned major repair of the CR-3 containment. Specifically, the licensee requested relief from the examination schedules in IWL-2410(c) and IWL-2420(c) as they apply to CR-3's 35<sup>th</sup> year examination (9<sup>th</sup> Surveillance) specified in IWL-2410(a) and IWL-2420(a), and to forgo performance of any outstanding examinations due to the extensive repair/replacement activities on the delaminated CR-3 containment.

The licensee stated in the December 27, 2011, submittal that the current CR-3 surveillance interval, the 35<sup>th</sup> year (9<sup>th</sup> Surveillance), since the SIT including the 1-year allowance, will end November 3, 2012. The licensee stated that in October 2009, during the concrete removal of the containment wall for the steam generators replacement, CR-3 discovered delamination within the concrete in the containment wall between buttresses 3 and 4 (bay 3-4). On March 14, 2011, during the final phase of containment retensioning to complete the repair of bay 3-4, CR-3 experienced an additional delamination of concrete in the bay 5-6 containment wall. On July 26, 2011, acoustic monitors on CR-3's repair site sounded indicating surface spalling on the bay 1-2 containment wall. The surface spalling occurred in an isolated area of the wall. In the course of investigating the spalling, indications of additional delamination were discovered within the wall of bay 1-2. An analysis completed in November 2011 confirmed the presence of delamination in this bay. The announced repair plan includes systematically removing and replacing the concrete in nearly all areas of the containment wall (to the liner from near the top of the bays to the rooflines of adjacent structures and below in some cases), except in the lowest elevations and in areas where the concrete was already replaced during the original repair of bay 3-4.

In the December 27, 2011, submittal, the licensee stated that the vast majority of the unbonded post-tensioning tendons in the cylinder of the containment will be detensioned. In the areas where the concrete is being removed and replaced the tendons will also be removed and replaced. These tasks will extend beyond November 3, 2012. Further, the licensee stated that due to the delaminations and the repair/replacement activities, examinations of the concrete and tendons during the required schedule period are for the most part impossible and any examinations that could be accomplished would be meaningless in terms of providing evidence of the containment continuing to satisfy its design basis. The licensee concluded that conducting the required examinations according to the current schedule would not provide valid results.

The duration of the proposed relief, requested by the licensee, is until completion of the repair/replacement activities of the CR-3 containment, as defined by completion of the repair/replacement pressure test(s).

### 3.2 NRC Staff Evaluations

The licensee requested suspension of the schedule requirements of IWL-2410(a) and (c) and IWL-2420(a) and (c) of Subsection IWL of the ASME Code, Section XI, for performing concrete and unbonded post-tensioning system examinations applicable to CR-3's 35<sup>th</sup> year (since the original SIT) inservice inspection. The licensee also requested to forgo performance of any outstanding 35<sup>th</sup> year examinations during the period of major repair of the delaminated CR-3 containment.

The RR applies to all items under Examination Category L-A "Concrete" and Examination Category L-B "Unbonded Post-tensioning System" in Table IWL-2500-1 of the ASME Code, Section XI, Subsection IWL. The NRC staff notes that this relief does not apply to the containment steel liner inservice examination in accordance with Subsection IWE and the preservice examination of containment repair/replacement activities in accordance with Subsections IWE and IWL.

During the course of repair of the delamination of bay 3-4 of the containment wall, discovered in fall 2009, the containment wall experienced additional extensive delaminations in bay 5-6 and bay 1-2. The licensee's repair plan for the delaminated CR-3 containment includes systematically removing and replacing the concrete in nearly all areas of the cylindrical wall (to the liner from near the top of the bays to the rooflines of adjacent structures and below in some cases), except in the lowest elevations and in the already repaired bay 3-4. The vast majority of post-tensioning tendons in the cylindrical wall will need to be detensioned, and/or removed and replaced.

The proposed repair would take at least two to three years to complete from the time of contract award for repair construction. CR-3 is currently shutdown for repair with fuel removed from the reactor (defueled or no mode). Since the CR-3 containment is currently in a state of ongoing/planned extensive repair due to the delaminated conditions, it is not in a structural configuration consistent with its design basis required for continued operation and will remain so well beyond November 3, 2012 (the code required completion date for the 35<sup>th</sup> year IWL inservice examinations). Therefore, the NRC staff finds that it is impractical for the licensee to comply with the code required schedule examinations of the containment concrete and unbonded post-tensioning system (including tendon surveillance) related to the 35<sup>th</sup> year inspection prior to November 3, 2012.

Further, performing the required IWL examinations related to the 35<sup>th</sup> year ISI according to the current ASME Code schedule would not provide meaningful or valid results with regard to providing evidence of containment structural and leaktight integrity for continued operation. For example, performing tendon lift-off testing without all of the tendons being fully tensioned in the structure, doing tendon lift-off testing for tendons that will be detensioned and/or replaced, or performing visual examinations of concrete that will be removed and replaced will not provide any technical value. Therefore, the NRC staff finds that imposing the conduct of the required

35<sup>th</sup> year inservice examinations according to the current required schedule in compliance with Subsection IWL of the ASME Code would be a burden on the licensee.

Since the CR-3 is shutdown and the reactor is in the defueled state (no mode) and will remain so past November 3, 2012, and at least until a substantial part of the repair is complete, the NRC staff finds that suspension of and forgoing the required schedule examinations of the containment concrete and unbonded post-tensioning system related to the 35<sup>th</sup> year inservice inspection during the period of repair will not compromise the public health and safety.

The licensee stated in the December 27, 2011, submittal that once the repair/replacement activities of the delaminated CR-3 containment are completed, the ASME Code required pressure test(s) as well as a SIT will be performed. The licensee further stated that prior to completing the repair/replacement activities, a proposal for alternatives to the requirements in Subsection IWL in accordance with 50.55a(a)(3)(i) to supplement this RR and to restart the surveillance program will be submitted to the NRC for review.

By letter dated September 19, 2012, the licensee committed to the following regulatory commitment with regard to resumption of the suspended concrete containment ISI activities.

<b>Regulatory Commitments</b>	<b>Date Due/Event</b>
CR-3 will submit a proposal for alternatives to the requirements in ASME Section XI sub-Section IWL in accordance with 10 CFR 50.55a(a)(3)(i) to establish surveillance program for the repaired containment concrete and unbonded post-tensioning system.	One year prior to the completion of the CR-3 containment repair.

Based on the information provided in the licensee's submittals and the above staff evaluation, the NRC staff concludes that compliance with the ASME Code examination schedule requirements in IWL-2410(a) and (c) and IWL-2420(a) and (c) related to the 35<sup>th</sup> year ISI are impractical due to ongoing/proposed extensive repair of the delaminated CR-3 containment.

#### 4.0 CONCLUSION

As set forth above, the NRC staff determines that granting the requested relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Therefore, the NRC staff grants RR 11-001-MX, considering the above regulatory commitment by the licensee, pursuant to 10 CFR 50.55a(g)(6)(i), for the duration until completion of the repair of the delaminated CR-3 containment, as defined by completion of the repair/replacement pressure tests, or until the due date for the 40<sup>th</sup> year IWL examinations, whichever occurs earlier.

All other ASME Code, Section XI requirements for which relief was not specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: George Thomas

Date: October 11, 2012



J. Franke

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Therefore, pursuant to 10 CFR 50.55a(g)(6)(i), the NRC staff grants RR 11-001-MX, considering the regulatory commitment in the licensee's letter dated September 19, 2012, for the duration until completion of the repair of the delaminated CR-3 containment, as defined by completion of the repair/replacement pressure tests, or until the due date for the 40<sup>th</sup> year IWL examinations, whichever occurs earlier.

All other ASME Code, Section XI requirements for which relief was not specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

If you have any questions, please contact Farideh Saba at 301-415-1447.

Sincerely,

*/RA/*

Jessie F. Quichocho, Acting Branch Chief  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-302

Enclosure: Safety Evaluation

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