June 8, 2004

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 - SAFETY EVALUATION FOR RELIEF REQUEST NOS. 1 AND 3 REGARDING THE THIRD 10-YEAR INSERVICE INSPECTION INTERVAL (TAC NOS. MC0937 AND MC0939)

Dear Mr. Stall:

By letter dated August 6, 2003, as supplemented by letter dated March 23, 2004, Florida Power and Light Company (the licensee) submitted Relief Requests (RRs) 1 and 3 for the third 10-year inservice inspection (ISI) interval at St. Lucie Unit 2. Specifically, RR 1 proposes to use the American Society of Mechanical Engineers (ASME) Section XI 1998 Edition through the 2000 Addenda in place of the 1995 Edition through the 1996 Addenda and RR 3 proposes to use the Electric Power Research Institute's (EPRI's) Dissimilar Metal Weld Criteria, Performance Demonstration Initiative Program in place of select ASME Code, Section XI, Appendix VIII, Supplement 10 provisions.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the licensee's proposed alternatives and has concluded that they provide an acceptable level of quality and safety. Therefore, the use of the 1998 Edition through the 2000 Addenda of the ASME Code, with the conditions stated in the enclosed Safety Evaluation is approved pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(g)(4)(iv) for the third 10-year ISI interval at St. Lucie Unit 2. Also, use of EPRI's Dissimilar Metal Weld Criteria, Performance Demonstration Initiative Program is authorized pursuant to 10 CFR 50.55a(3)(i) for the third 10-year ISI interval at St. Lucie Unit 2. The third 10-year ISI interval at St. Lucie Unit 2 began on August 8, 2003, and ends on August 7, 2013.

Further details on the bases for the NRC staff's conclusions are contained in the enclosed Safety Evaluation. If you have any questions regarding this issue, please feel free to contact Brendan Moroney at (301) 415-3974.

Sincerely,

/RA/

William F. Burton, Acting Section Chief, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-389

Enclosure: Safety Evaluation

cc: See next page

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DATE	5/10/04	5/10/04	5/7/04	Memo 4/23/04	5/11/04	6/8/04

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ST. LUCIE UNIT 2 - SAFETY EVALUATION FOR RELIEF REQUEST NOS. 1 AND 3 REGARDING THE THIRD 10-YEAR INSERVICE INSPECTION INTERVAL (TAC NOS. MC0937 AND MC0939)

Dated: June 8, 2004

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

INSERVICE INSPECTION PROGRAM

RELIEF REQUEST NOS. 1 AND 3

FLORIDA POWER AND LIGHT COMPANY, ET AL.

ST. LUCIE UNIT 2

DOCKET NO. 50-389

1.0 INTRODUCTION

By letter dated August 6, 2003, as supplemented by letter dated March 23, 2004, Florida Power and Light Company (the licensee) requested relief from certain American Society of Mechanical Engineers (ASME) Code requirements and requirements of Title 10, *Code of Federal Regulations* (10 CFR), Section 50.55a(g)(4)(ii) for the third 10-year Inservice Inspection (ISI) interval at St. Lucie Unit 2. Specifically, the licensee requested (Relief Request No. 1) to use the 1998 edition through the 2000 Addenda of the American Society of Mechanical Engineers (ASME) Code, Section XI in lieu of the 1995 Edition through the 1996 Addenda and the licensee proposed (Relief Request No. 3) using the Dissimilar Metal Weld criteria of the Electric Power Research Institute (EPRI) - Performance Demonstration Initiative (PDI) Program in lieu of select provisions of the ASME Code, Section XI, Appendix VIII, Supplement 10. The March 23, 2004, letter provided a complete revision to Relief Request No. 1 that was submitted on August 6, 2003.

2.0 REGULATORY EVALUATION

The inservice inspection of the ASME Boiler and Pressure Vessel Code (Code) Class 1, Class 2, and Class 3 components is to be performed in accordance with Section XI of the ASME Code and applicable edition and 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). As stated in 10 CFR 50.55a(a)(3), 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 (ISI) 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 third 10-year ISI interval for St. Lucie Unit 2 began on August 8, 2003, and ends on August 7, 2013. The ISI Code of record for the third 10-year interval for St. Lucie Unit 2 is the 1995 Edition through the 1996 Addenda. The components (including supports) may meet the requirements set forth in subsequent editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein and subject to Commission approval, pursuant to 10 CFR 50.55a(g)(4)(iv).

3.0 TECHNICAL EVALUATION

3.1 Relief Request No. 1:

Relief Request No. 1 proposes to use the 1998 Edition of ASME Code, Section XI, through 2000 Addenda.

3.1.1 Components for Which Relief is Requested:

Components inspected as required by the 1995 Edition of the ASME Code, Section XI through the 1996 Addenda, as modified by 10 CFR 50.55a for the third 10-year ISI Interval at St. Lucie Unit 2.

3.1.2 Code Requirements:

The version of 10 CFR 50.55a(g)(4)(ii) that was in effect on August 8, 2002, stated:

> Inservice examination of components and system pressure tests conducted during successive 120-month inspection intervals must comply with the requirements of the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section 12 months prior to the start of the 120-month inspection interval, subject to the limitations and modifications listed in paragraph (b) of this section.

For St. Lucie Unit 2, the Code incorporated by reference in 10 CFR 50.55a(b)(2), 12 months prior to the start of the licensee's third 120-month inspection interval (August 8, 2002), is the 1995 Edition through the 1996 Addenda of the ASME Code, Section XI. The revised 10 CFR 50.55a(b)(2) endorsed the 1998 Edition through the 2000 Addenda and became effective on October 28, 2002.

3.1.3 Proposed Alternative and Licensee Basis for Use:

The licensee proposed to use the 1998 Edition through the 2000 Addenda of the ASME Code, Section XI, as modified by 10 CFR 50.55a. After discussion with the NRC staff, the licensee submitted a complete revision to the aforementioned relief request, by letter dated March 23, 2004. In the revised submittal, the licensee committed to the following two limitations when using the 1998 Edition of the ASME Code, Section XI through the 2000 Addenda as modified by 10 CFR 50.55a:

1. Paragraph IWA-4340 regarding mitigation of defects by “modification” will not be used.

2. The repair and replacement activity provisions in IWA–4540(c) of the 1998 Edition of Section XI for pressure testing Class 1, 2, and 3 mechanical joints will be applied when using the 1998 Edition through the 2000 Addenda of Section XI.

3.1.4 Evaluation:

As stated in 10 CFR 50.55a(g)(4)(ii), it is required that an ISI during a given interval be performed in accordance with the requirements of the latest edition and addenda of the Code incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the 120-month inspection interval subject to the limitations and modifications listed therein. As stated in 10 CFR 50.55a(g)(4)(iv), inservice examination of components and system pressure tests may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in 10 CFR 50.55a(b) subject to Commission approval. The Code incorporated by reference in 10 CFR 50.55a(b), 12 months prior to the St. Lucie Unit 2 second interval expiration date of August 7, 2003, was the 1995 Edition through the 1996 Addenda. The 1998 Edition through 2000 Addenda was endorsed by a subsequent revision of 10 CFR 50.55a and became effective on October 28, 2002. Subsequent to the endorsement of the 1998 Edition through the 2000 Addenda in 10 CFR 50.55a, the NRC staff has taken issue with the following two items.

Provisions outlined in IWA-4340 were added to the 2000 Addenda in order to provide requirements for the mitigation of defect by “modification.” Paragraph IWA-4340 allows a defect to remain in a component provided that the defect can be eliminated from the pressure boundary by “modification.” It is the NRC staff’s view that the scope of the activity envisioned or permitted by this subarticle does not provide limitations on the applicability of its provisions to specific ASME Classes or components. As written, this provision could be used in applications with widely varying safety significance and levels of difficulty in implementation. A proposed rule published in the *Federal Register* Vol. 69, No. 4 on January 7, 2004, seeks to prohibit the use of IWA-4340 when using the 2001 Edition through the 2003 Addenda of the Code. By letter dated March 23, 2004, the licensee agreed to the following limitation when using the 1998 Edition though the 2000 Addenda. “Paragraph IWA-4340 regarding mitigation of defects by modification will not be used.”

The requirements to pressure test Class 1, 2 and 3 mechanical joints following repair and replacement activities were deleted in the 1999 Addenda of Section XI. Therefore, pressure testing of mechanical joints is no longer required by Section XI when performing IWA-4000 repair and replacement activities. The NRC staff has articulated that there is no justification for eliminating the requirements for pressure testing Class 1, 2, and 3 mechanical joints. Pressure testing of mechanical joints affected by repair and replacement activities is necessary to ensure and verify structural and leakage integrity of the pressure boundary. A proposed rule published in the *Federal Register* Vol. 69, No. 4 on January 7, 2004, seeks to retain the pressure testing requirements in IWA-4540(c) of the 1998 Edition when using the 2001 Edition through the 2003. By letter dated March 23, 2004, the licensee agreed to the following condition when using the 1998 Edition though the 2000 Addenda. “The repair and replacement activity provisions in IWA–4540(c) of the 1998 Edition of Section XI for pressure testing Class 1, 2, and 3 mechanical joints will be applied when using the 1998 Edition through the 2000 addenda of Section XI.”

3.1.5 Conclusion:

The NRC staff concludes that the licensee's request to use the 1998 Edition through the 2000 Addenda of the ASME Code, with the conditions stated above, in lieu of the 1995 Edition through the 1996 Addenda as required by 10 CFR 50.55a(b)(2), provides an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(g)(4)(iv), the NRC staff approves the use of the 1998 Edition of ASME Section XI through the 2000 Addenda as modified by 10 CFR 50.55a with the following conditions that the licensee agreed to by letter dated March 23, 2004.

1. Paragraph IWA-4340 regarding mitigation of defects by "modification" will not be used.

2. The repair and replacement activity provisions in IWA–4540(c) of the 1998 Edition of Section XI for pressure testing Class 1, 2, and 3 mechanical joints will be applied when using the 1998 Edition through the 2000 addenda of Section XI.

Approval is granted for the third 10-year ISI interval at St. Lucie Unit 2, which began on August 8, 2003, and ends on August 7, 2013. As a result of public comments, should the final rule reflect restrictions or modifications relative to the two conditions that are different to what the licensee has committed, the licensee will only be bound to the requirements as stated in the final rule. All other ASME Code, Section XI requirements for which relief was not specifically requested and approved in this relief request remain applicable, including third party review by the Authorized Nuclear Inservice Inspector.

3.2 Relief Request No. 3:

Relief Request No. 3 proposes an alternative to the requirements of the 1998 Edition ASME Section XI, 2000 Addenda, Appendix VIII, Supplement 10 as implemented through the PDI program.

3.2.1 Components for Which Relief is Requested:

Class 1 and 2 pressure retaining dissimilar metal welds subject to ultrasonic (UT) examination using procedures, personnel, and equipment ASME Code, Section XI qualified, 1998 Edition, 2000 Addenda, Appendix VIII, Supplement 10.

3.2.2 Code Requirements:

The licensee proposed alternatives to the following Supplement 10 requirements.

Item 1 - Paragraph 1.1 (b) states in part - Pipe diameters within a range of 0.9 to 1.5 times a nominal diameter shall be considered equivalent.

Item 2 - Paragraph 1.1 (d) states - All flaws in the specimen set shall be cracks.

Item 3 - Paragraph 1.1(d)(1) states - At least 50 percent of the cracks shall be in austenitic material. At least 50 percent of the cracks in austenitic material shall be contained wholly in weld or buttering material. At least 10 percent of the cracks shall be

in ferritic material. The remainder of the cracks may be in either austenitic or ferritic material.

Item 4 - Paragraph 1.2(b) states in part - The number of unflawed grading units shall be at least twice the number of flawed grading units.

Item 5 - Paragraph 1.2(c)(1) and 1.3(c) state in part - At least one-third of the flaws, rounded to the next higher whole number, shall have depths between 10 percent and 30 percent of the nominal pipe wall thickness. Paragraph 1.4(b) distribution table requires 20 percent of the flaws to have depths between 10 percent and 30 percent.

Item 6 - Paragraph 2.0 first sentence states - The specimen inside surface and identification shall be concealed from the candidate.

Item 7 - Paragraph 2.2(b) states in part - The regions containing a flaw to be sized shall be identified to the candidate.

Item 8 - Paragraph 2.2(c) states in part - For a separate length sizing test, the regions of each specimen containing a flaw to be sized shall be identified to the candidate.

Item 9 - Paragraph 2.3(a) states - For the depth sizing test, 80 percent of the flaws shall be sized at a specific location on the surface of the specimen identified to the candidate.

Item 10 - Paragraph 2.3(b) states - For the remaining flaws, the regions of each specimen containing a flaw to be sized shall be identified to the candidate. The candidate shall determine the maximum depth of the flaw in each region.

Item 11 - Table VIII-S2-1 provides the false call criteria when the number of unflawed grading units is at least twice the number of flawed grading units.

3.2.3 Proposed Alternative and Licensee Basis for Use:

The licensee proposed the following alternative requirements to selected provisions of the ASME Code, Section XI, Appendix VIII, Supplement 10 requirements for St. Lucie Unit 2, for the third 10-year ISI interval. The proposed alternative, as implemented through the PDI program is attached to the licensee's submittal.

Item 1-Paragraph 1.1 (b) alternative:

The specimen set shall include the minimum and maximum pipe diameters and thicknesses for which the examination procedure is applicable. Pipe diameters within a range of 0.5 inch (13 mm) of the nominal diameter shall be considered equivalent. Pipe diameters larger than 24 inches (610 mm) shall be considered to be flat. When a range of thicknesses is to be examined, a thickness tolerance of ±25 percent is acceptable.

Technical Basis - The change in the minimum pipe diameter tolerance from 0.9 times the diameter to the nominal diameter minus 0.5 inch provides tolerances more in line with industry practice. The alternative is less stringent for small diameter pipe because they typically have a thinner wall thickness than larger diameter piping. A thinner wall

thickness results in shorter sound path distances that reduce the detrimental effects of the curvature. This change maintains consistency between Supplement 10 and the recent revision to Supplement 2.

Item 2-Paragraph 1.1 (d) alternative:

At least 60 percent of the flaws shall be cracks, the remainder shall be alternative flaws. Specimens with Intergranular Stress Corrosion Cracking shall be used when available. Alternative flaws, if used, shall provide crack-like reflective characteristics and shall be limited to the case where implantation of cracks produces spurious reflectors that are uncharacteristic of actual flaws. Alternative flaw mechanisms shall have a tip width of less than or equal to 0.002 inch (.05 mm). Note, to avoid confusion the proposed alternative modifies instances of the term ‘cracks’ or ‘cracking’ to the term ‘flaws’ because of the use of alternative flaw mechanisms.

Technical Basis - Implanting a crack requires excavation of the base material on at least one side of the flaw. While this may be satisfactory for ferritic materials, it does not produce a useable axial flaw in austenitic materials because the sound beam, which normally passes only through base material, must now travel through weld material on at least one side, producing an unrealistic flaw response. In addition, it is important to preserve the dendritic structure present in field welds that would otherwise be destroyed by the implantation process. To resolve these issues, the proposed alternative allows the use of up to 40 percent fabricated flaws as an alternative flaw mechanism under controlled conditions. The fabricated flaws are isostatically compressed which produces ultrasonic reflective characteristics similar to tight cracks.

Item 3-Paragraph 1.1(d)(1) alternative:

At least 80 percent of the flaws shall be contained wholly in weld or buttering material. At least one and a maximum of 10 percent of the flaws shall be in ferritic base material. At least one and a maximum of 10 percent of the flaws shall be in austenitic base material.

Technical Basis - Under the 1998 Edition with 2000 Addenda, as few as 25 percent of the flaws are contained in austenitic weld or buttering material. Recent experience has indicated that flaws contained within the weld are the likely scenarios. The metallurgical structure of austenitic weld material is ultrasonically more challenging than either ferritic or austenitic base material. The proposed alternative is, therefore, more challenging than the current Code.

Item 4 - Paragraph 1.2(b) alternative:

Detection sets shall be selected from Table VIII-S10-1. The number of unflawed grading units shall be at least one and a half times the number of flawed grading units.

Technical Basis - Table S-10-1 [new Table VIII-S10-1] provides a statistically based ratio between the number of unflawed grading units and the number of flawed grading units. The proposed alternative reduces the ratio to 1.5 to reduce the number of test samples to a more reasonable number from the human factors perspective. However, the statistical basis used for screening personnel and procedures is still maintained at the

same level with competent personnel being successful and less skilled personnel being unsuccessful. The acceptance criteria for the statistical basis are in Table VIII-S10-1.

Item 5 - Paragraph 1.2(c)(1)&1.3(c) alternative:

The proposed alternative to the flaw distribution requirements of Paragraph 1.2(c)(1) (detection) and 1.3(c) (length) is to use the Paragraph 1.4(b) (depth) distribution table (see below) for all qualifications.

Flaw Depth (Percent Wall Thickness)	Minimum Number of Flaws
10 - 30 percent	20 percent
31 - 60 percent	20 percent
61 - 100 percent	20 percent

Technical Basis - The proposed alternative uses the depth sizing distribution for both detection and depth sizing because it provides for a better distribution of flaw sizes within the test set. This distribution allows candidates to perform detection, length, and depth sizing demonstrations simultaneously utilizing the same test set. The requirement that at least 75 percent of the flaws shall be in the range of 10 to 60 percent of wall thickness provides an overall distribution tolerance, yet, the distribution uncertainty decreases the possibilities for testmanship that would be inherent to a uniform distribution. It must be noted that it is possible to achieve the same distribution utilizing the present requirements, but it is preferable to make the criteria consistent.

Item 6 - Paragraph 2.0 alternative to the first sentence:

For qualifications from the outside surface, the specimen inside surface and identification shall be concealed from the candidate. When qualifications are performed from the inside surface, the flaw location and specimen identification shall be obscured to maintain a ‘blind test.’

Technical Basis - The 1998 Edition with 2000 Addenda requires that the inside surface be concealed from the candidate. This makes qualifications conducted from the inside of the pipe (e.g., Pressurized Water Reactor nozzle to safe end welds) impractical. The proposed alternative differentiates between Inside Diameter and Outside Diameter scanning surfaces, requires that they be conducted separately, and requires that flaws be concealed from the candidate. This is consistent with the recent revision to Supplement 2.

Items 7 and 8 - Paragraphs 2.2(b) and 2.2(c) alternative:

. . . containing a flaw to be sized may be identified to the candidate.

Technical Basis - The 1998 Edition with 2000 Addenda requires that the regions of each specimen containing a flaw to be length sized shall be identified to the candidate. The candidate shall determine the length of the flaw in each region (note, that length and depth sizing use the term “regions” while detection uses the term “grading units” - the two terms define different concepts and are not intended to be equal or

interchangeable). To ensure security of the samples, the proposed alternative modifies the first “shall” to a “may” to allow the test administrator the option of not identifying specifically where a flaw is located. This is consistent with the recent revision to Supplement 2.

Items 9 and 10 - Paragraph 2.3(a) and 2.3(b) alternative:

. . . regions of each specimen containing a flaw to be sized may be identified to the candidate.

Technical Basis - The 1998 Edition with 2000 Addenda requires that a large number of flaws be sized at a specific location. The proposed alternative changes the “shall” to a “may” which modifies this from a specific area to a more generalized region to ensure security of samples. This is consistent with the recent revision to Supplement 2. It also incorporates terminology from length-sizing for additional clarity.

Item 11 - Paragraph 3.1 alternative:

Use the acceptance table VIII-S10-1 which is a modification of Table VIII-S2-1.

Technical Basis - The proposed alternative adds a new Table VIII-S10-1. It is a modified version of Table VIII-S2-1 to reflect the reduced number of unflawed grading units and allowable false calls. As a part of ongoing Code activities, Pacific Northwest National Laboratory has reviewed the statistical significance to this new Table VIII-S10-1.

3.2.4 Evaluation:

The licensee proposed to use the program developed by PDI that is similar to the Code requirements. The differences between the Code and the PDI program are discussed below.

Paragraph 1.1(b)

The Code requirement of “0.9 to 1.5 times the nominal diameter are equivalent” was established for a single nominal diameter. When applying the Code-required tolerance to a range of diameters, the tolerance rapidly expands on the high side. Under the current code requirements, a 5-inch outside diameter pipe would be equivalent to a range of 4.5-inch to 7.5-inch diameter pipe. Under the proposed PDI guidelines, the equivalent range would be reduced to 4.5-inch to 5.5-inch diameter pipe. With current Code requirements, a 16-inch nominal diameter pipe would be equivalent to a range of 14.4-inch to 24-inch diameter pipe. The proposed alternative would significantly reduce the equivalent range to between 15.5-inch and 16.5-inch diameter pipe. The difference between Code and the proposed PDI program for diameters less than 5 inches is not significant because of shorter metal path and beam spread associated with smaller diameter piping. The NRC staff considers the proposed alternative to be more conservative overall than current Code requirements. The NRC staff finds that the proposed alternative will provide an acceptable level of quality and safety and, therefore, is acceptable.

Paragraph 1.1(d)

The Code requires all flaws to be cracks. Manufacturing test specimens containing cracks free of spurious reflections and telltale indicators is extremely difficult in austenitic material. To overcome these difficulties, PDI developed a process for fabricating flaws that produce UT acoustic responses similar to the responses associated with real cracks. PDI presented its process for discussion at public meetings held June 12 through 14, 2001, and January 31 through February 2, 2002, at the EPRI Non-Destructive Evaluation Center, Charlotte, NC. The NRC staff attended these meetings and determined that the process parameters used for manufacturing fabricated flaws resulted in acceptable acoustic responses. PDI is selectively installing these fabricated flaws in specimen locations that are unsuitable for real cracks. The NRC staff finds that the proposed alternative will provide an acceptable level of quality and safety and, therefore, is acceptable.

Paragraph 1.1(d)(1)

The Code requires that at least 50 percent of the flaws be contained in austenitic material and 50 percent of the flaws in the austenitic material shall be contained fully in weld or buttering material. This means that at least 25 percent of the total flaws must be located in the weld or buttering material. Field experience shows that flaws identified during ISI of dissimilar metal welds are more likely to be located in the weld or buttering material. The grain structure of austenitic weld and buttering material represents a much more stringent ultrasonic scenario than that of a ferritic material or austenitic base material. Flaws made in austenitic base material are difficult to create free of spurious reflectors and telltale indicators. The proposed alternative of 80 percent of the flaws in the weld metal or buttering material provides a challenging testing scenario reflective of field experience and minimizes testmanship associated with telltale reflectors common to placing flaws in austenitic base material. The NRC staff considers the proposed alternative to be more conservative overall than current Code requirements. The NRC staff finds that the proposed alternative will provide an acceptable level of quality and safety and, therefore, is acceptable.

Paragraph 1.2(b)

The Code requires that detection sets meet the requirements of Table VIII-S2-1, which specifies the minimum number of flaws in a test set to be five with 100 percent detection. The current Code also requires the number of unflawed grading units to be two times the number of flawed grading units. The proposed alternative would follow the detection criteria of the table beginning with a minimum number of flaws in a test set being 10, and reducing the number of unflawed grading units to one and a half times the number of flawed grading units. The allowable number of false calls is also reduced in order to maintain the statistical basis for the pass/fail criteria. The NRC staff finds that the proposed alternative will provide an acceptable level of quality and safety and, therefore, is acceptable.

Paragraphs 1.2(c)(1) and 1.3(c)

For detection and length sizing, the Code requires at least one third of the flaws be located between 10 and 30 percent through-wall thickness and one third located greater than 30-percent through-wall thickness. The remaining flaws would be located randomly throughout the wall thickness. The proposed alternative sets the distribution criteria for detection and

length sizing to be the same as the depth sizing distribution, which stipulates that at least 20 percent of the flaws be located in each of the increments of 10 - 30 percent, 31 - 60 percent and 61 - 100 percent. The remaining 40 percent would be located randomly throughout the pipe thickness. With the exception of the 10 - 30 percent increment, the proposed alternative is a subset of the current Code requirements. The 10 - 30 percent increment would be in the subset if it contained at least 30 percent of the flaws. The change simplifies assembling test sets for detection and sizing qualifications and is more indicative of conditions in the field. The NRC staff finds that the proposed alternative will provide an acceptable level of quality and safety and, therefore, is acceptable.

Paragraph 2.0

The Code requires the specimen inside surface be concealed from the candidate. This requirement is applicable for test specimens used for qualification performed from the outside surface. With the expansion of Supplement 10 to include qualifications performed from the inside surface, the inside surface must be accessible while maintaining the specimen integrity. The proposed alternative requires that flaws and specimen identifications be obscured from candidates, thus maintaining blind test conditions. The NRC staff considers this to be consistent with the intent of ASME Code requirements. The NRC staff finds that the proposed alternative will provide an acceptable level of quality and safety and, therefore, is acceptable.

Paragraphs 2.2(b) and 2.2(c)

The Code requires that the location of flaws added to the test set for length sizing shall be identified to the candidate. The proposed alternative is to make identifying the location of additional flaws an option. This option provides an additional element of difficulty to the testing process because the candidate would be expected to demonstrate the skill of detecting and sizing flaws over an area larger than a specific location. The NRC staff considers the proposed alternative to be more conservative than current Code requirements. The NRC staff finds that the proposed alternative will provide an acceptable level of quality and safety and, therefore, is acceptable.

Paragraphs 2.3(a) and 2.3(b)

In Paragraph 2.3(a), the Code requires that 80 percent of the flaws be sized in a specific location that is identified to the candidate. The proposed alternative allows identification of the specific location to be an option. This permits detection and depth sizing to be conducted separately or concurrently. In order to maintain a blind test, the location of flaws cannot be shared with the candidate. For depth sizing that is conducted separately, allowing the test administrator the option of not identifying flaw locations makes the testing process more challenging. The NRC staff considers the proposed alternative to be more conservative than current Code requirements. The NRC staff finds that the proposed alternative will provide an acceptable level of quality and safety and, therefore, is acceptable.

In Paragraph 2.3(b), the Code also requires that the location of flaws added to the test set for depth sizing shall be identified to the candidate. The proposed alternative is to make identifying the location of additional flaws an option. This option provides an additional element of difficulty to the testing process because the candidate would be expected to demonstrate the skill of finding and sizing flaw's in an area larger than a specific location. The NRC staff considers the

proposed alternative to be more conservative than current Code requirements. The NRC staff finds that the proposed alternative will provide an acceptable level of quality and safety and, therefore, is acceptable.

3.2.5 Conclusion:

The NRC staff concludes that the licensee's proposed alternative to Supplement 10, as administered by the EPRI PDI program, provides an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the NRC staff authorizes the proposed alternative described in the licensee's letter dated August 6, 2003, for St. Lucie Unit 2 for the third 10-year ISI interval, which began on August 8, 2003, and ends on August 7, 2013. All other ASME Code, Section XI requirements for which relief was not specifically requested and approved in this relief request remain applicable, including third party review by the Authorized Nuclear Inservice Inspector.

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