



July 21, 2004

L-2004-148  
10 CFR 50.4  
10 CFR 50.55a

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

Re: St. Lucie Unit 2  
Docket No. 50-389  
Inservice Inspection Plan  
Unit 2 Third Ten-Year Interval  
Relief Requests 6 and 7

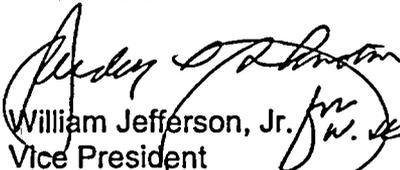
Florida Power and Light Company (FPL) requests approval of Relief Request 6 pursuant to 10 CFR 50.55a (a)(3)(i) and Relief Request 7 pursuant to 10 CFR 50.55a(g)(5)(iii). For Relief Request 6, FPL has determined that pursuant to 10 CFR 50.55a(g)(3)(i) that the utilization of the proposed alternative welding requirements provide an acceptable level of quality and safety. For Relief Request 7, FPL has determined that pursuant to 10 CFR 50.55a(g)(5)(iii) it would be impractical to characterize the flaws by non-destructive examination (NDE) and it would be impractical to show the flaws do not extend into the ferritic base material.

The NRC previously approved these relief requests for St. Lucie Unit 2 on June 17, 2003 for the second interval as Relief Requests 21 and 31. The second interval ended on August 8, 2003.

Unit 2 Relief Requests 6 and 7 are needed to support potential corrective actions resulting from the NRC First Revised Order EA-03-009 reactor pressure vessel head (RPVH) inspections. The RPVH inspections will be performed during the upcoming St. Lucie Unit 2 fall 2004 refueling outage (SL2-15) currently scheduled to start in late November.

Please contact George Madden at 772-467-7155 if there are any questions about this submittal.

Very truly yours,

  
William Jefferson, Jr. *for W. Jefferson, Jr.*  
Vice President  
St. Lucie Plant

WJ/GRM

Attachments

AD17

**Third Inspection Interval  
Relief Request Number 6, Revision 0**

**Information to Support NRC Re-Approval of a 10 CFR 50.55a Request  
For Use During a New 10-Year Interval  
Inservice Inspection Program**

**1. Previous 10 CFR 50.55a Request Approved by NRC**

**FPL Relief Request Number: Unit 2 No. 30**

**Applicable ASME Code Components: Reactor Vessel Closure Head Nozzle Penetrations, Class 1**

**Request Submittals: FPL letter L-2001-262 dated November 21, 2001 and supplemented by letter L-2002-178 dated September 26, 2002**

**NRC Approval Letter: NRC letter dated June 17, 2003; Subject: Saint Lucie Nuclear Plant, Units 1 and 2 - Relief Request Nos. 20, 21, 30 and 31, Revision 2, Regarding reactor vessel head penetration weld repair and flaw evaluation ( TAC Nos. MB6379 and MB6380)**

**2. Changes to the Applicable ASME Code Section**

The Construction Code of record for the St. Lucie Unit 2 reactor pressure vessel closure (RPV) head is the 1971 Edition of the ASME Boiler and Pressure Vessel Code, Section III through Summer 1972 Addenda.

ASME Section XI, 1989 edition, applicable for the second inspection interval, paragraph IWA-4120, states: "Repairs shall be performed in accordance with the Owner's Design Specification and the original Construction Code of the component or system. Later Editions and Addenda of the Construction Code or of Section III, either in their entirety or portions thereof, and Code Cases may be used."

Repairs to the RPV head CEDM nozzle penetrations, during the second inspection interval, were to be conducted in accordance with the 1989 Edition, no Addenda of Section III Subsection NB and alternative requirements discussed within the Relief Request.

For the third inspection interval, the Code of Record is ASME Section XI 1998 edition through the 2000 addenda. ASME Section XI, 1989 edition, paragraph IWA-4120 was replaced by ASME Section XI 1998 edition through the 2000 Addenda paragraph IWA-4220.

ASME Section XI 1998 edition through the 2000 Addenda IWA-4221(b)(1) requires replacements to meet the original Construction Code; IWA-4221(c) allows later

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Editions and Addenda of the Construction Code to be used provided the requirements of IWA-4222 through IWA-4226 are met.

The requirements of ASME Code Section XI, 1998 edition, IWA-4222 through IWA-4226 are shown below in *Italics* with the FPL response shown in standard font.

**CODE REQUIREMENT**

*IWA-4222 Reconciliation of Code and Owner's Requirements*

*IWA-4222(a)(1) Only technical requirements that could affect materials, design, fabrication, or examination, and affect the pressure boundary or core support or component support function need to be reconciled.*

**FPL RESPONSE**

The previously approved Relief Request affected materials, design, fabrication and examination and the changes were substantiated by the arguments within the Relief Request. Therefore, this section has no effect on the request.

**CODE REQUIREMENT**

*IWA-4222(a)(2) Administrative requirements, i. e., those that do not affect the pressure boundary or core support or component support function , need not be reconciled. Examples of such requirements include quality assurance, certification, Code Symbol Stamping, Data Reports, and Authorized Inspection.*

**FPL RESPONSE**

Accordingly, differing administrative requirements have not been reconciled. Therefore, this section has no effect on the request.

**CODE REQUIREMENT**

*IWA-4222(b) The administrative requirements of either the Construction Code of the item being replaced or the Construction Code of the item to be used for replacement shall be met.*

**FPL RESPONSE**

The administrative requirements of the proposed code will be used. Therefore, this section has no effect on the request.

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**CODE REQUIREMENT**

*IWA-4223 Reconciliation of Components*

*IWA-4223(a) Reconciliation of later Editions or Addenda of the Construction Code or alternative Codes as permitted by IWA-4221 is not required. The owner shall evaluate any changes in weight, configuration, or pressure temperature rating in accordance with IWA-4311.*

**FPL RESPONSE**

The work is to be done to a later edition of the Construction Code, the 1989 edition will be used, and therefore a specific Code reconciliation is not required. Changes in weight and configuration are minor and there is no change in pressure-temperature rating as is shown by the arguments in the previously approved Relief Request. Therefore, this section has no effect on the request.

**CODE REQUIREMENT**

*IWA-4223(b) An earlier Edition and Addenda of the same Construction Code may be used, provided all technical requirements of the earlier Construction Code are reconciled.*

**FPL RESPONSE**

An earlier edition of the construction code is not to be used. Therefore, this section has no effect on the request.

**CODE REQUIREMENT**

*IWA-4224 Reconciliation of Material*

*IWA-4224.1 Identical Material Procured to a Later Edition or Addenda of the Construction Code, Section III or Material Specification*

**FPL RESPONSE**

The previously approved relief requests affected materials, design, fabrication and examination and the changes were substantiated by the arguments within the relief requests. Therefore, this section has no effect on the request.

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**CODE REQUIREMENT**

*IWA-4224.2 Identical Material Procured to an Earlier Construction Code Edition or Addenda or Material Specification*

**FPL RESPONSE**

Material was not procured to an earlier edition of the Construction Code. Therefore, this section has no effect on the request.

**CODE REQUIREMENT**

*IWA-4224.3 Use of a Different Material*

*IWA-4224.3(a) Use of materials of a specification, grade, type, class, or alloy, and heat-treated condition, other than that originally specified shall be evaluated for suitability for the specified design and operating conditions in accordance with IWA-4311.*

**FPL RESPONSE**

The differences in materials have been evaluated in the previously approved Relief Requests and the changes have been found suitable. Alloy 600 was replaced by a more crack resistant material, Alloy 690. Therefore, this section has no effect on the request.

**CODE REQUIREMENT**

*IWA-4224.3(b) Material examination and testing requirements shall be reconciled to the Construction Code requirements of the item.*

**FPL RESPONSE**

The materials have been reconciled to the Construction Code by the evaluations that supported the previously approved Relief Requests and the changes have been found suitable. Therefore, this section has no effect on the request.

**CODE REQUIREMENT**

*IWA-4224.4 Substitution of Material Specifications*

*(a) When an SA or SB Specification is identified as being identical, or identical except for editorial differences, to the corresponding ASTM A or B Specification, either specification may be used.*

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*(b) When an SFA Specification is identified as being identical, or identical except for editorial differences, to the corresponding AWS specification, either specification may be used.*

**FPL RESPONSE**

All materials conform to ASME specifications, either SA, SB or SFA. The materials and specifications were evaluated in the previously approved relief requests and the changes have been found suitable. Therefore, this section has no effect on the request.

**CODE REQUIREMENT**

*IWA-4225 Reconciliation of Parts, Appurtenances and Piping Subassemblies*

*IWA-4225(a) Parts, appurtenances, and piping subassemblies may be fabricated to later Editions and Addenda of the Construction Code and later different Construction Codes , as permitted by IWA-4221(b), provided materials are reconciled in accordance with IWA-4224. The Owner shall evaluate any changes in weight, configuration, or pressure-temperature rating in accordance with IWA-4311.*

**FPL RESPONSE**

New parts were fabricated to a later Edition of the Construction Code. Code and material requirements were substantiated by the arguments within the original approved Relief Requests.

Changes in weight and configuration are minor and there is no change in pressure-temperature rating as is shown by the arguments in the previously approved Relief Requests.

Therefore, this section has no effect on the request.

**CODE REQUIREMENT**

*IWA-4225(b) An earlier Edition and Addenda of the same Construction Code may be used, provided all technical requirements of the original Construction Code of the component being replaced are met except as permitted by IWA-4224. Failure to meet the technical requirements of the original Construction Code may not be accepted by reconciliation.*

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**FPL RESPONSE**

An earlier edition of the Construction Code was not used. Therefore, this section has no effect on the request.

**CODE REQUIREMENT**

*IWA-4226 Reconciliation of Design Requirements*

*IWA-4226.1 Design to All Requirements of a Later Edition or Addenda of the Construction Code*

*IWA-4226.2 Design to Portions of the Requirements of a later Edition or Addenda of the Construction Code*

**FPL RESPONSE**

Design was reconciled to the original design requirements by the evaluations that supported the previously approved Relief Request. Therefore, this section has no effect on the request.

As is shown above, the changes in Code requirements since the previous Relief Request was approved, have been satisfied in the arguments supporting the previous approved Relief Request. Therefore, these sections have no effect on the request.

**3. Component Aging Factors**

The examination and repair of the RVCH penetrations are within the scope of the alloy 600 inspection program, which is one of the aging management programs described in the Unit 2 FSAR. The alloy 600 program is one of many programs that were described in the Unit 2 License Renewal Application. The purpose of the alloy 600 inspection program is to discover and correct instances of primary water stress corrosion cracking. Aging factors are addressed in the alloy 600 program, therefore aging factors do not have an effect on the basis for the request for which re-approval is being sought.

**4. Changes in Technology for the Affected ASME Code Component(s)**

Relief Request 30 addressed welding without post weld heat treatment by using an ambient temper bead technique. This alternate technique was proposed because of the metallurgical nature of the closure head base metal. There are no changes in technology that would permit welding on the base metal of the head without providing some control or compensation for the effects of the welding heat input on

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the grain structure of the base metal. Therefore, changes in technology do not affect the basis for the previous request.

**5. Confirmation of Renewed Applicability**

Pursuant to 10 CFR 50.55a (a)(3)(i), relief is requested to utilize alternative welding requirements than contained in the Construction Code of Record. The alternative requirements provide an acceptable level of quality and safety.

The Construction Code of record for the St. Lucie Unit 2 reactor pressure vessel closure (RPV) head is the 1971 Edition of the ASME Boiler and Pressure Vessel Code, Section III through Summer 1972 Addenda.

For the contemplated repairs to the RPV head CEDM nozzle penetrations, the Construction Code requires repairs to be post weld heat treated (PWHT) in accordance with its requirements. The PWHT requirement set forth therein would be extremely impractical to attain on a RPV head in containment without distortion of the head. In addition, the existing penetration to head welds were not qualified with PWHT and cannot be so qualified at this time.

The proposed repairs will be conducted in accordance with the ASME Boiler & Pressure Vessel Code, Section III, Subsection NB, 1989 Edition, no Addenda, and the alternative requirements discussed below.

FPL is proposing to sever the weld joining a leaking CEDM nozzle penetration to the head and make a new weld, in accordance with the requirements of ASME Section III, at a slightly removed location, to rejoin the CEDM nozzle penetration to the head. The welding will be performed with a remotely operated weld tool, utilizing the machine Gas Tungsten-Arc Welding (GTAW) process and the ambient temperature temper bead method with 50 degree F minimum preheat temperature and no post weld heat treatment.

Specifically relief is requested from the following Code requirements:

- NB-4622.1 and NB-4622.5 require post weld heat treatment. However, FPL proposes to use a temper bead welding technique using ambient preheat and no post weld heat treatment.
- NB-5245 requires a progressive surface examination (PT or MT) at the lesser of 1/2 the maximum weld thickness or 1/2-inch as well as a surface examination on the finished weld. FPL proposes a liquid penetrant and ultrasonic examination, only on the final weld surface, no sooner than 48 hours after the weld has cooled to ambient temperature.

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- NB-6111 requires a hydrostatic test. FPL proposes a system leakage test.

Based on the information provided in the previous 10 CFR 50.55a request, information contained within the NRC approval documents, and information above, the circumstances, and basis continues to be applicable to the proposed request.

**6. Duration of Re-Approved 10 CFR 50.55a Request**

The Relief Request is to remain valid for the remainder of the Third Inspection Interval.

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Relief Request Number 7, Revision 0**

**Information to Support NRC Re-Approval of a 10 CFR 50.55a Request  
For Use During a New 10-Year Interval  
Inservice Inspection Program**

**1. Previous 10 CFR 50.55a Request Approved by NRC**

**FPL Relief Request Number: Unit 2 No. 31**

**Applicable ASME Code Components: Reactor Vessel Closure Head Nozzle Penetrations, Class 1**

**Request Submittals: FPL letter L-2001-262 dated November 21, 2001 and supplemented by letter L-2002-178 dated September 26, 2002**

**NRC Approval Letter: NRC letter dated June 17, 2003; Subject: Saint Lucie Nuclear Plant, Units 1 and 2 - Relief Request Nos. 20, 21, 30 and 31, Revision 2, Regarding reactor vessel head penetration weld repair and flaw evaluation ( TAC Nos. MB6379 and MB6380)**

**2. Changes to the Applicable ASME Code Section**

ASME Section XI, 1989 Edition, no Addendum, was applicable for the second inspection interval. IWA-3100(a) stated that an evaluation shall be made of flaws detected during an inservice examination as required by IWB-3000 for Class 1 pressure retaining components. The evaluation was to include the following sections, among others: IWA-3300(b), IWB-3240, IWB-2420(b) and IWB-2420(c).

For the third ISI interval, the Code of Record is ASME Section XI 1998 edition through the 2000 addenda. The above stated sections of ASME Section XI 1989 edition have not changed in the 1998 edition of ASME Section XI through the 2000 Addenda. Therefore there are no Code changes that have an effect on this request.

**3. Component Aging Factors**

The examination and repair of the RVCH penetrations are within the scope of the alloy 600 inspection program, which is one of the aging management programs described in the Unit 2 FSAR. The alloy 600 program is one of many programs that were described in the Unit 2 License Renewal Application. The purpose of the alloy 600 inspection program is to discover and correct instances of primary water stress corrosion cracking. Aging factors are addressed in the alloy 600 program, therefore aging factors do not have an effect on the basis for the request for which re-approval is being sought.

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Relief Request Number 7, Revision 0**

**4. Changes in Technology for the Affected ASME Code Component(s)**

The previous relief request addressed repair of a defective condition without flaw characterization. Due to geometry of the repair areas it is impractical to characterize the indications by NDE. There have not been sufficient advances in NDE technology to characterize the unacceptable conditions since the previous request. Therefore, changes in technology do not affect the basis for the previous request.

**5. Confirmation of Renewed Applicability**

Pursuant to 10 CFR 50.55a (g)(5)(iii), relief is requested from ASME XI, which requires flaw characterization. It will be impractical to characterize the subject flaws by NDE and it will be impractical to show bounding flaws do not extend into the ferritic head base material.

Specifically, relief is requested from the following parts of the Code:

- IWA-3300(b) and IWB-3420; in lieu of flaw characterization, ASME Section XI calculations will be performed to show the flaws are acceptable.
- IWB-2420(b) and IWB-2420(c); reexamination for the next three inspection periods; since initial inspection is impractical, subsequent inspections will also be impractical and will not be performed.

Based on the information provided in the previous 10 CFR 50.55a request, information contained within the NRC approval documents, and information above, the circumstances and basis continue to be applicable to the proposed request.

**6. Duration of Re-Approved 10 CFR 50.55a Request**

The Relief Request is to remain valid for the remainder of the Third Inspection Interval.