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SUBJECT: Requests relief from certain requirements of ASME Section XI Code,1989 Edition.Util requesting approval to expand applicability of Code Case N-533 from class 1 sys to class 1 & 2 sys.

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FPL

APR 09 1998

L-98-61
10 CFR 50.55a

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

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Inservice Inspection Program
Third Ten Year Summary
Revised Relief Requests No.11 and 18

In accordance with 10 CFR 50.55a(a)(3), Florida Power and Light Co. (FPL) is requesting relief from certain requirements of ASME Section XI Code, 1989 Edition. Revised Relief Request No. 11, "Alternative Evaluation of Leakage," requests relief from ASME Section XI Code, 1989 Edition, Paragraph IWA-5250(a)(2), which requires that if leakage occurs at a bolted connection, during the conduct of a system pressure test, that all bolting be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100.

By letter L-94-118, dated May 31, 1994, FPL submitted Relief Request 11, which requested relief from removing and performing a VT-3 visual examination of all bolting on bolted connections when leakage is observed during a system pressure test. The FPL proposed alternative examinations included the removal of the bolt closest to the source of the leakage and performing a VT-1 examination, with the results compared against the acceptance criteria of IWB-3517.1. Removal of the remainder of the bolting was deferred to the next time that portion of the system is out of service, but no later than the next refueling outage. Approval of Relief Request 11 was issued by NRC letter dated March 31, 1995.

The alternatives proposed by FPL in the attached Revised Relief Request 11 allow for a systematic evaluation of the condition noted, taking into account factors such as the service age of the bolting, the bolt/component material, and the corrosiveness of the fluid in the evaluation of the degradation of the associated component and/or bolting. If the evaluation concludes that the leaking condition has not degraded the bolting, no further action is necessary. If the evaluation concludes that the bolting is degraded or is inconclusive in determining degradation, the bolt closest to the source of leakage shall be removed, VT-1 examined and evaluated in accordance with IWA-3100(a). When the removed bolting shows evidence of unacceptable degradation, all affected bolting shall be removed and VT-1 examined and evaluated in accordance with IWA-3100(a) or the affected bolting shall be replaced. The Revised Relief Request 11 proposed alternatives are similar to the alternatives to the Code requirements which have been approved by the NRC on January 16, 1997 for D.C. Cook Units 1 and 2.

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In accordance with 10 CFR 50.55a, Footnote 6, and 10 CFR 50.55a(a)(3), FPL is requesting approval to expand the applicability of Code Case N-533 from class 1 systems to class 1 and 2 systems.

By letter L-97-073, dated March 13, 1997, FPL submitted a relief request for the use of ASME Code Case N-533 (Relief Request 18). Approval of the relief request for the use of Code Case N-533 was issued by NRC letter dated March 26, 1997. Applicability of the currently approved Relief Request 18 is limited to class 1 connections only. The attached Revised Relief Request 18, proposes to expand the applicability of the Code Case N-533 alternatives to class 2 connections where Code compliance is determined to be impractical. The alternatives proposed include the performance of the examination of the bolted connections on systems borated for the purpose of controlling reactivity in accordance with the requirements of Code Case N-533. For class 1 systems, the insulation will be removed from the bolted connections and a VT-2 examination performed in accordance with paragraph (b) of the Code Case each refueling outage. For class 2 systems, this same examination will be performed once each period as defined by the Code. The connections are not required to be pressurized during the examination and any evidence of leakage will be evaluated in accordance with IWA-5250. In addition to these requirements, for class 1 systems borated for the purpose of controlling reactivity, the system pressure test and VT-2 examination will be performed at normal operating pressure and temperature with the insulation installed on the bolted joints, will include a 4-hour hold time, and will be completed prior to returning the unit to service. For class 2 systems a functional or inservice test, as required by the Code, will be performed with the applicable hold times prior to returning the unit to service. These system pressure tests will be conducted each refueling outage for class 1 systems and once each period for applicable class 2 systems.

Should there be any questions concerning this submittal, please contact us.

Very truly yours,

R. J. Hovey
Vice President
Turkey Point Plant

OIH

Attachment

cc: Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant
Project Manager, NRR, USNRC

Revised Relief Request No. 11
Alternative Evaluation of Leakage

I. Component Identification:

Turkey Point Units 3 & 4
Class 1, 2, and 3 Pressure Retaining Bolted Connections

II. Examination Requirements:

ASME Section XI Code, 1989 Edition with no addenda (the Code), paragraph IWA-5250(a)(2) requires that if leakage occurs at a bolted connection, during the conduct of a system pressure test, that the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100.

III. Relief Requested:

Florida Power and Light (FPL) requests relief from the Code requirement to remove and perform a VT-3 visual examination on all bolting when leakage is observed at a bolted connection during the conduct of a system pressure test. Additionally, when required, FPL proposes to perform a VT-1 visual examination of the affected bolting in lieu of the specified VT-3 examination.

IV. Basis for Relief:

During the 1997 Unit 4 refueling outage, evidence of leakage was identified at the 4B reactor coolant pump (RCP) flange. In the process of performing repairs, several bolts were required to be removed. Due to the difficulty associated with the removal of these bolts, expedited relief was obtained to alleviate the requirement for removal and examination of the remaining bolting. Justification for this relief was based on the alternative examinations performed coupled with the potential for damage to the pump casing, flange and/or studs and radiation dose which would have been expended in the process of removal.

In some cases, removal of any or all bolting where leakage has been observed is not the most prudent action. This requirement does not take into account factors such as the corrosiveness of the fluid, the bolting or component material, the type and location of the leakage, the service age of the bolting and the actual physical configuration of the bolted connection. Additionally, in recognition of the burden associated with the removal and examination of all bolting, later editions of the Code were revised to only require removal of the bolt closest to the source of leakage.

In regards to the practicality of performance of a VT-3 visual examination, ASME Section XI Code consistently references the VT-1 for examination of pressure retaining bolting. Guidance for performance of VT-1 examination of bolting is already incorporated within FPL procedures and is considered more stringent than a VT-3 examination.

V. Alternative Examinations:

As an alternative to the requirements of the 1989 Edition of the ASME Section XI Code, FPL proposes that if leakage is discovered at a bolted connection by VT-2 examination during a system pressure test, either the bolt closest to the source of leakage will be removed and a VT-1 examination conducted and evaluated in accordance with IWA-3100(a) or an engineering evaluation will be performed to determine the susceptibility of the bolting to corrosion and assess the potential for failure. The following factors will be considered, as applicable, when evaluating the acceptability of the bolting:

1. Service age of the bolting
2. Bolt and component material
3. Corrosiveness of process fluid
4. Leakage location and system function
5. Leakage history at the specific location
6. Visual evidence of corrosion at connection (while connection is assembled)
7. Physical configuration of the bolted connection

When the evaluation of the above criteria concludes that the leaking condition has not degraded the bolting, no further action is necessary. If the evaluation concludes that the bolting is degraded or is inconclusive in determining degradation, the bolt closest to the source of leakage shall be removed, VT-1 examined and evaluated in accordance with IWA-3100(a). When the removed bolt shows evidence of unacceptable degradation, all affected bolting shall be removed, VT-1 examined and evaluated in accordance with IWA-3100(a) or the affected bolting shall be replaced.

VI. Justification for Relief:

Removal of pressure retaining bolting at mechanical connections for VT-1 visual examination and subsequent evaluation in locations where leakage has been identified is not always the most prudent action. Many bolted connections associated with pumps and valves are simply studs threaded into the body of the component. Removal of these studs is typically very difficult and time consuming, and can easily result in additional damage to the main component as a result of the attempts or methods of removal. Additionally, the areas of these studs expected to be affected by the leaking fluid are readily visible when the connection is disassembled and the studs are still in place. The requirement to remove all bolting for these components, and on components when only minor leakage is noted, is a task that increases system out of service time and radiation exposure, and subjects the systems to a potential for internal contamination without a commensurate increase in safety or quality.

The Code requirement to remove, examine, and evaluate bolting does not allow the Owner to consider other factors which may indicate the acceptability of the bolted connection. FPL considers this requirement to be unnecessarily prescriptive and restrictive. The proposed alternative will allow FPL to utilize a systematic approach in the evaluation of leakage identified at

bolted connections during the conduct of a system pressure test. Approval of this alternative, in some cases, would also preclude the need for expedited relief, as was experienced recently for the 4B RCP. Based on the preceding, FPL considers the proposed alternative to provide an acceptable level of safety and quality.

VII. Implementation Schedule:

FPL will implement the alternative during the Turkey Point Unit 3 & 4 third 10-year inservice inspection interval.

VIII. Attachments:

None

Revised Relief Request No. 18
Use of Code Case N-533

I. Component Identification:

Turkey Point Units 3 & 4
Class 1 and 2 pressure retaining bolted connections on systems borated for the purpose of controlling reactivity.

II. Examination Requirements:

ASME Section XI Code, 1989 Edition with no addenda (the Code), paragraph IWA-5242 (a) requires that for systems borated for the purpose of controlling reactivity, insulation shall be removed from pressure retaining bolted connection for visual examination VT-2. Table IWB-2500-1, Category B-P, Items B15.10 through B15.71 requires VT-2 inspection of all pressure retaining boundaries following each refueling outage for class 1 systems. Table IWC-2500-1, Category C-H, Items C7.10 through C7.80 requires VT-2 inspections each inspection period for class 2 systems.

III. Relief Requested:

Relief is being requested from performing examinations on bolted connections on systems borated for controlling reactivity during system pressure tests as prescribed by Section XI Code, Article IWA-5242(a). Florida Power and Light (FPL) will utilize the alternative requirements of ASME Code Case N-533, Alternative Requirements for VT-2 Visual Examination of Class 1 Insulated Pressure Retaining Bolted Connections, Section XI, Division 1 and expand the application of these alternatives from only class 1 to class 1 and 2 systems, where compliance with the Code requirements is determined to be impractical.

IV. Basis for Relief:

The ambient conditions inside containment during the installation of insulation after VT-2 examinations at normal operating pressure and temperature (NOP/NOT) require heat stress work restrictions. Containment entries at NOP/NOT are physically demanding on personnel due to the adverse heat environment. Stay times for personnel in many areas are less than one hour and would require multiple containment entries to complete the examination activities. Ambient temperatures range from 95 to 110 degrees F. Personnel should not be exposed to such an adverse work environment unnecessarily without a compensating increase in the level of quality and safety. Additionally, the removal of scaffolding from containment necessary to support such inspections, would be through the reactor containment building personnel hatch rather than the equipment hatch since the plant is above Mode 4 with the equipment hatch secured. This will place added physical and heat stress limitations on the personnel involved.

Historical data indicate that personnel contaminations increase with increasing environmental temperatures due to the profuse sweating caused by the elevated temperatures. Reinstalling contaminated insulating material under adverse conditions, i.e., to piping that is at 2250 psia and greater than 500 degrees F would negatively impact total personnel contaminations and expose personnel to unnecessary safety risk. Additionally, increased dose would be accumulated due to reduced examination efficiency as a result of the necessity to wear special protective equipment, e.g., ice vest.

Examination of the remainder of the class 2 bolted connections located outside containment would, in some cases, require the erection of scaffolding or use of ladders in areas for which space is a premium and could jeopardize the operability of adjacent systems or components. Surface temperatures of some components to be inspected at normal operating temperatures and pressures would be in excess of safe contact temperatures. The removal and reinstallation of insulation and scaffolding for the purpose of performing a VT-2 inspection at operating conditions are not commensurate with good ALARA practices.

V. Alternate Examinations:

FPL will examine bolted connections on systems borated for the purpose of controlling reactivity in accordance with the requirements of Code Case N-533. This Code Case was written specifically for class 1 systems; however, FPL requests to apply it to class 2 systems, where Code compliance is determined to be impractical.

For class 1 systems, FPL will remove the insulation from the bolted connections and perform a VT-2 visual examination in accordance with paragraph (b) of the Code Case each refueling outage. For class 2 systems, this same examination will be performed once each period as defined by the Code. The connections are not required to be pressurized during the examination and any evidence of leakage will be evaluated in accordance with IWA-5250.

In addition to the requirements of paragraph (a) of the Code Case, the system pressure test and VT-2 examination with the insulation installed on the bolted joints at normal operating pressure and temperature will include a 4-hour hold time and be completed prior to returning the unit to service for class 1 systems. For class 2 systems, functional or inservice tests will be performed as required by the Code with the applicable hold times prior to returning the unit to service. These system pressure tests will be conducted each refueling outage for class 1 systems and once each period for applicable class 2 systems.

VI. Justification for Relief:

Code Case N-533 was approved for use by ASME on March 14, 1995, as an alternative to the Code requirements of IWA-5242(a). The Code Case was written when it was recognized that personnel safety during the conduct of the VT-2 examinations would be compromised, and that examination of bolted connections during plant shutdown would accomplish the desired results. Approval of a relief request for utilization of Code Case N-533 at Turkey Point in regards to the examination of class 1 bolted connections was previously obtained under TAC NOS. M98149 and M98150.

For class 1 and class 2 systems, performing a VT-2 visual examination during a system pressure test as required by Code Case N-533, with the insulation in place will result in the detection of any significant leakage when the appropriate hold time is imposed after pressurization, prior to the VT-2 visual examination. Furthermore, performing a VT-2 visual examination after removal of the insulation at atmospheric or static pressure during outages, as specified by Code Case N-533, will detect evidence of borated water leakage. Borated system leakage is manifested at atmospheric conditions in the form of boric acid residue. Evaluation of any boric acid residue observed at low energy conditions during outages provides additional time for the evaluation of the leakage and planning for repair, and is therefore a more effective and conservative method of assuring the Code intent is met. During the course of these inspections, any evidence of leakage noted will be evaluated in accordance with IWA-5250 of the Code.

The proposed alternative examinations presented in the Code Case will detect any evidence of leakage, in a manner comparable to the requirements of the Code. Based on the preceding, use of this Code Case provides an acceptable level of quality and safety by the use of an alternate method of performing VT-2 examinations.

VII. Implementation Schedule:

FPL will implement ASME Code Case N-533 during the Turkey Point Units 3 & 4 third 10-year inservice inspection interval. If this Code case is published in a future revision of Regulatory Guide 1.147, and FPL intends to continue implementation, any limitations issued in the Regulatory Guide will be implemented.

VIII. Attachments

Code Case N-533

CASE N-533

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: March 14,1995

See Numerical Index for expiration and any reaffirmation dates.

Case N-533

Alternative Requirements for VT-2 Visual Examination of Class 1 Insulated Pressure Retaining Bolted Connections, Section XI, Division 1

Inquiry: What alternative requirements may be used in lieu of those of IWA-5242(a) to remove insulation from Class 1 pressure-retaining bolted connections to perform a VT-2 visual examination?

Reply: It is the opinion of the Committee that, as an alternative to the requirements of IWA-5242(a) to remove insulation from Class 1 pressure-retaining bolted connections to perform a VT-2 visual examination, the following requirements shall be met.

(a) A system pressure test and VT-2 visual examination shall be performed each refueling outage without removal of insulation.

(b) Each refueling outage the insulation shall be removed from the bolted connection, and a VT-2 visual examination shall be performed. The connection is not required to be pressurized. Any evidence of leakage shall be evaluated in accordance with IWA-5250.