



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

ENCLOSURE 1

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO THE THIRD TEN-YEAR INTERVAL INSERVICE INSPECTION
AMENDED REQUEST FOR RELIEF
FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT UNIT 3 AND UNIT 4
DOCKET NOS.: 50-250 AND 50-251

1.0 INTRODUCTION

The Technical Specifications for Turkey Point, Units 3 and 4, state that the inservice inspection and testing of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (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 difficulties without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first ten-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) on the date twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable edition of Section XI of the ASME Code for the Turkey Point, Units 2 and 3, third 10-year inservice inspection (ISI) Interval is the 1989 Edition. 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.

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Pursuant to 10 CFR 50.55a(g)(5), if the licensee determines that conformance with an examination requirement of Section XI of the ASME Code is not practical for its facility, information shall be submitted to the Commission in support of that determination and a request made for relief from the ASME Code requirement. After evaluation of the determination, pursuant to 10 CFR 50.55a(g)(6)(i), the Commission may grant relief and may impose alternative requirements that are determined to be authorized by law; will not endanger life, property, or the common defense and security; and are otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed. In letters dated March 29, 1995, and April 6, 1995, the licensee, Florida Power and Light Company (FPL), submitted Requests for Relief 9 and 10 from the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Code Section XI.

2.0 EVALUATION AND CONCLUSIONS

The staff, with technical assistance from the Idaho National Engineering Laboratory (INEL), has evaluated the information provided by the licensee in support of its Requests for Relief No. 9 and 10. Based on this review the staff adopts its contractor's conclusions and recommendations. The contractor's evaluation and recommendations are presented in the Technical Evaluation Report attached. The alternatives contained in Request for Relief 9 is authorized pursuant to 10 CFR 50.55a(a)(3)(i). The Request for Relief 10 is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) because of hardship without compensating increase in the level of quality or safety.

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Date: June 9, 1995

TECHNICAL LETTER REPORT
ON THE THIRD 10-YEAR INSERVICE INSPECTION INTERVAL
REVISED REQUESTS FOR RELIEF 9 AND 10
FOR
TURKEY POINT UNITS 3 AND 4
FLORIDA POWER AND LIGHT COMPANY
DOCKET NUMBERS: 50-250 AND 50-251

1.0 INTRODUCTION

By letters dated March 29, 1995, and April 6, 1995, Florida Power and Light Company submitted revised Requests for Relief 9 and 10. The Idaho National Engineering Laboratory (INEL) staff has evaluated the subject requests for relief in the following section.

2.0 EVALUATION

The Code of record for the Turkey Point Units 3 and 4 third 10-year inservice inspection interval, which began February 23, 1994, for Unit 3 and April 15, 1994, for Unit 4, is the 1989 Edition of the ASME Boiler and Pressure Vessel Code. The information provided by the licensee in support of the requests for relief from impractical requirements has been evaluated and the bases for granting relief from those requirements are documented below.

A. Request for Relief 9, Revision 1, Paragraphs IWB-2420, IWC-2420, and IWF-2420, Successive Examinations of Components

Code Requirement: Paragraphs IWB-2420, IWC-2420, and IWF-2420 require that the sequence of component examinations established during the first inspection interval be repeated during each successive inspection interval, to the extent practical.

Licensee's Code Relief Request: The licensee requested relief from repeating the sequence of examinations established during the first and second inspection intervals and permission to substitute like examination areas on the same or similar lines when radiation dose rates can be lowered significantly.

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

"FPL performed examinations on Class 1 systems during the first two periods of the first interval in accordance with the 1970 Edition of Section XI. During the third period, examinations were performed in accordance with the 1974 Edition with Addenda through Summer 1975 on all Code classes (pro-rated for the interval). With this schedule, the majority of the Class 2 and 3 examinations were not performed. The sequence of examinations for the majority of the Class 2 and 3 components and supports was established during the second interval.

"Since FPL began performing ISI examinations, the regulatory requirements for the selection and scheduling of ISI examination areas, controlling radiation exposure as low as is reasonably achievable (ALARA) and ensuring worker safety have changed significantly. Revising the previously established ISI schedule will allow FPL to minimize the work time being performed in radiation areas, meet safety and ALARA requirements, and satisfy Section XI scheduling criteria.

"Altering the sequence of examinations reduces the need for personnel to prepare and examine components in essentially the same area several times. The radiation exposure, time, and manpower required to perform these tasks can be significantly reduced by changing the sequence of examinations and the areas to be examined. Altering the ISI schedule will have no effect on the safe operation of the plant.

"Turkey Point has now gone through two outages with this revised schedule. A 40% to 45% dose reduction has been achieved from previous outages. This is approximately 35 to 40 man-rem of exposure per outage.

"Rescheduling ISI activities will lower radiation exposure, manpower, and costs associated with the preparation, examination, and recovery of the selected areas. This will also reduce exposure to other workers in the areas by eliminating barriers caused by scaffold and removed insulation, which increases the amount of time to perform work."

Licensee's Proposed Alternative Examination (as stated):

"FPL will schedule the same areas for examination that were examined during the second interval to the extent practical. The sequence of examinations established during the second interval will be followed to the extent practical, but may be altered to reduce radiation exposure and cost, and allow the examinations, preparation of areas, and the recovery process to be minimized. When substitute welds are selected, they will be similar in configuration to those originally scheduled. The number of examinations performed will meet the minimum number required by each category."

Evaluation: The Code requires that the sequence of component examinations established during the first inspection interval be repeated during each successive inspection interval. The licensee has proposed rescheduling examination areas for the third interval under a zone concept. In addition, the licensee proposes to substitute scheduled welds with welds similar in configuration when radiation exposures can be lowered.

The Code scheduling philosophy, as developed, requires periodic examination of selected areas to assure continued system operability and integrity. Modifying the schedule of examination areas for the third 10-year interval provides the licensee the means to reduce

radiation exposure and enhance the overall efficiency of the inservice inspection program. Considering ALARA's purpose to maintain radiation levels as low as reasonably achievable, it is reasonable to consider ISI program changes that can reduce radiation exposures without impacting quality and safety.

From the review of the tables and summary of scheduled examinations,¹ the following synopsis of rescheduled examination areas was developed. For Unit 3, 76 examinations will be performed earlier than in the previous 10-year interval, 143 examinations will be performed during the same period as in the previous 10-year interval, and 60 examinations will be performed later than in the previous 10-year interval. For Unit 4, 74 examinations will be performed earlier than in the previous 10-year interval, 161 examinations will be performed during same period as in the previous 10-year interval, and 50 examinations will be performed later than in the previous 10-year interval. Based on the information provided by the licensee, it appears that although the duration between successive examinations for some areas will exceed 10 years, other areas will be examined in less than 10 years, resulting in a balanced rescheduling scheme. This schedule allows the licensee to achieve its goal of reducing radiation exposure without compromising the quality and safety of the plants.

It is noted that the licensee is complying with the Code examination percentage requirements for each examination category as established by the Code in Tables IWB-2412-1 and IWC-2412-1. By complying with the subject tables, a representative sample of welds will be examined each period, substantiating the integrity of systems.

The INEL staff views the revision to the ISI Program schedules presented by the licensee as the plan for meeting ISI requirements for the third 10-year interval. The licensee has requested permission to select substitute, like, examination areas on the same or similar lines when radiation dose rates can be lowered significantly. The licensee has not, however, clearly established the criteria for substitutions. Therefore, the INEL staff finds this request acceptable only if the substitute welds satisfy all of the code selection and scheduling requirements (i.e. terminal ends, high stress welds, etc.).

The licensee has proposed the rescheduling of examination areas for the third interval to reduce radiation exposures and enhance the overall efficiency of the inservice inspection program. Because the proposed scheduling of examination areas maintains the required sample of examinations for each period, it can be concluded that generic degradation, if present, will be detected. As a result, an acceptable level of quality and safety is provided. Therefore, it is recommended that the use of the proposed alternative examination area schedule for the third interval be authorized, pursuant to 10 CFR 50.55a(a)(3)(i),

¹Tables supplied by the licensee are not included with this evaluation.

with the following condition. When substituting like examination areas on the same or similar lines when radiation dose rates can be lowered significantly, it is recommended that the proposed alternative be authorized only if the licensee satisfies all of the Code selection and scheduling requirements.

B. Request for Relief 10, Revision 1, Paragraph IWA-5242(a),
Visual Examination of Insulated Components

Code Requirement: Paragraph IWA-5242(a) requires that insulation be removed from pressure-retaining bolted connections for VT-2 visual examination of systems borated for the purpose of controlling reactivity.

Licensee's Code Relief Request: The licensee requested interim relief from the removal of insulation on pressure-retaining bolted connections in borated systems during VT-2 visual examination for the upcoming refueling outages scheduled for September 1995 (Unit 3) and March 1996 (Unit 4).

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

"For systems borated for the purpose of controlling reactivity, removal of insulation from bolted connections for the purpose of performing a visual examination for corrosion will involve a significant increase in man hours, radiation exposure, and material.

"The quantity of bolted connections which will require insulation removal and restoration, as determined by an initial review of drawings and other design documents, involves a significant increase in the amount of man hours and material. This hardship in turn, results in escalated operations maintenance costs, and radiation exposure, without a compensating increase in the level of quality and safety.

"In an effort to minimize the impact of these examinations in the future, FPL will evaluate the feasibility and cost benefit of an insulation modification at applicable locations, such that an examination may be performed without the need to remove insulation each time. The evaluation of the feasibility of this modification, however, cannot be completed until a walkdown of the piping is performed. This walkdown cannot be performed at power.

"This interim relief will provide time to resolve the scope of these examinations through the ASME Code process and evaluate the results of system walkdowns conducted inside containment to determine the feasibility of permanent design changes."



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Licensee's Proposed Alternative Examination (as stated):

"FPL will check bolted connections for leakage when performing system examinations as follows:

"As soon as possible, after coming off line for a refueling outage, a leak test is coordinated by the system engineers inside the containment per the plant surveillance program.

"During the outage, suitcase style insulation will be removed from the reactor coolant and charging systems inside containment, and the connections visually examined (VT-2) for evidence of leakage when the plant is depressurized. When evidence of leakage is identified, repairs will be performed in accordance with the current maintenance work practices.

"During the outage, any Class 1 or Class 2 insulated connections in the Reactor Coolant and Charging systems inside containment that are disassembled will be examined for evidence of leakage by maintenance personnel. When evidence of leakage is identified, repairs will be performed in accordance with the current maintenance work practices.

"Prior to reactor criticality, following a refueling outage, a system leakage test is performed at normal operating pressure and temperature with a 4 hour hold time.

"These leakage tests will include looking for the following conditions:

"Pooling of water directly under the bolted connections;

"Water leaking from the lowest elevation section of vertical lines containing bolted connections; and

"Discolorization or residue on surfaces examined shall be given particular attention to detect evidence of boric acid accumulations from borated reactor coolant leakage."

Evaluation: Paragraph IWA-5242(a) requires the removal of insulation from pressure-retaining bolted connections in borated systems for direct VT-2 visual examination during system pressure testing. The licensee has indicated that, based on their initial review of drawings and other design documents, the number of connections that would require insulation removal and subsequent insulation replacement is significant. As a result, the Code requirement will result in a significant increase in man hours, radiation exposure, and materials.

The licensee has proposed to visually examine bolted connections for leakage during leakage tests inside and outside of containment as part of the plant surveillance program. During the outage, suitcase-style insulation will be removed from the reactor coolant and charging systems inside containment, and a VT-2 visual examination of the

bolted connection will be performed. Where maintenance requires the removal of insulation on the reactor coolant and charging systems inside containment, maintenance personnel will look for evidence of leakage. In addition, prior to reactor criticality following refueling, the licensee will perform a VT-2 visual examination in conjunction with the leakage test at normal operating pressure following a 4-hour hold time. During this walkdown the licensee will look for evidence of leakage under bolted connections, water leaking from the lowest elevation of vertical piping containing bolted connections, and pay particular attention to discolorization or residue on surfaces from borated reactor coolant leakage.

During an April 27, 1995, conference call with the licensee, the licensee clarified the interim relief request. The licensee reiterated that interim relief was requested to allow them to perform walkdowns during the upcoming outages to determine the extent of insulation required to be removed and make plans for complying with Code requirements.

The INEL staff has reviewed the licensee's proposed alternatives to removal of insulation at bolted connections in systems borated for the purpose of controlling reactivity. Based on this evaluation, it is concluded that requiring the licensee to remove insulation on all bolted connections borated for the purpose of controlling reactivity during the upcoming refueling outages would result in a burden without a compensating increase in safety. The INEL staff believes that the licensee's proposed alternatives in the interim request for relief will provide reasonable assurance of operational readiness. Therefore, it is recommended that interim relief for the currently scheduled refueling outages of September 1995, for Unit 3, and March 1996, for Unit 4, be authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

3.0 CONCLUSION

The INEL staff has evaluated revised Requests for Relief 9 and 10. Based on these evaluations, it is recommended that Request for Relief 9, Revision 1, be authorized pursuant to 10 CFR 50.55a(a)(3)(i) with the following condition: when substituting like examination areas on the same or similar lines when radiation dose rates can be lowered significantly, the licensee must satisfy all of the Code selection and scheduling requirements associated with the substitute weld selections. For Request for Relief 10, Revision 1, it is recommended that interim relief be authorized, pursuant to 10 CFR 50.55a(a)(3)(ii), for the upcoming Turkey Point Units 3 and 4 refueling outages, currently scheduled for September 1995, for Unit 3, and March 1996, for Unit 4.

