

ENCLOSURE 1

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE SECOND 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 12 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 3 and 4, second 10-year inservice inspection (ISI) Interval is the 1980 Edition through 1981 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)(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

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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 a letter dated April 1, 1993, the licensee, Florida Power and Light Company (FPL), proposed an amendment to a previously granted relief (Request for Relief 3) from the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Code Section XI. FPL proposed to eliminate the Regenerative Heat Exchanger (RHX) terminal ends from the Code-required examination.

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 Amended Request for Relief No. 3. Based on the information submitted, the staff adopts the contractor's conclusions and recommendations with the exception of the contractor's recommendation to deny Amended Request for Relief 3 pertaining to examination of terminal ends of piping connected to the RHX assembly. The contractor's evaluation and recommendations are presented in the Technical Evaluation Summary attached. The licensee has demonstrated the impracticality of performing the Code-required examinations because of geometrical, physical, and radiation dose considerations for the RHX vessels, welded supports, and associated interconnected piping welds and terminal ends. The alternative examinations which include visual examination at the beginning of the outage for leakage and boric acid accumulation and a VT-2 examination during the system leakage test provide reasonable assurance of operational readiness without endangering life or property or the common defense and is otherwise in the public interest. The alternatives contained in original Request for Relief 3 are authorized pursuant to 10 CFR 50.55a(g)(6)(i) because of impracticality of the examinations. With respect to the amended Request for Relief 3 pertaining to examination of terminal ends of piping connected to the RHX assembly it should be noted that the staff has reviewed Request for Relief 3 again in conjunction with its review of the Third 10-year Inservice Inspection Program Plan for the Turkey Point Nuclear Power Plant, Unit 3 and 4. In its SER for the Third 10-year inspection interval the staff requires that the terminal ends of piping at the inlets and outlets of the RHX assembly be nondestructively examined as required by the ASME Code, Section XI. Therefore, the amended Request for Relief 3 pertaining to examination of terminal ends of piping connected to the RHX assembly is granted pursuant to 10 CFR 50.55a(6)(i) because of impracticality of examination on a one-time basis for the second 10-year interval only. In granting this relief, the staff has given due consideration to the burden on the licensee of expending many man-hours and accumulating otherwise unnecessary radiation exposure to workers if the requirements were imposed.

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Date: May 12, 1995

ENCLOSURE 2

TECHNICAL EVALUATION SUMMARY

OF THE SECOND 10-YEAR INSERVICE INSPECTION INTERVAL

AMENDMENT TO RELIEF REQUEST NO. 3 FOR

FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT PLANT, UNITS 3 AND 4

DOCKET NUMBERS: 50-250 AND 50-251

1.0 INTRODUCTION

By letter dated April 1, 1993, the licensee, Florida Power and Light Company (FPL), submitted an amendment to Relief Request No. 3 for additional examination areas associated with the regenerative heat exchanger. The Idaho National Engineering Laboratory (INEL) staff has evaluated the amendment to the relief request in the following sections.

2.0 EVALUATION

The second 10-year interval for Turkey Point Plants, Unit 1 and 2, ends February 1994 and April 1994, respectively. The applicable Code for the second 10-year interval is the American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code, Section XI, 1980 Edition through the Winter 1981 addenda. The information provided by the licensee in support of the amendment to Relief Request No. 3, has been evaluated as documented below.

Amendment 1 to Relief Request No. 3, Examination Categories B-B, B-D, B-H, and B-J, for Examination Areas Associated with the Regenerative Heat Exchanger (RHX)

Note: Relief Request No. 3 was previously evaluated and granted in an NRC Safety Evaluation Report dated February 13, 1985. The licensee's amendment to this relief request is based on additional examination areas (primarily terminal ends of connecting pipe) associated with the RHX.

Code Requirement: The examination requirements for the examination areas addressed in Relief Request No. 3 are listed in the table below.

EXAM. CATEGORY	ITEM NO.	EXAMINATION REQUIREMENTS PER TABLE IWB-2500-1
B-B	B2.51 B2.61	Volumetric examination to include 100% of the length of circumferential tubesheet-to-shell welds and head-to-shell welds per Figures IWB-2500-1, -3, or -6 as applicable.
B-D	B3.150 B3.60'	Volumetric examination to include 100% of each nozzle-to-vessel weld and nozzle inside radius area per Figure IWB-2500-7.
B-H	B8.40	Volumetric or surface examination to include 100% of each integrally welded support per Figure IWB-2500-13, -14, or -15 as applicable.
B-J ^a	B9.21	Surface examination to include 100% of weld surface on approximately 25% of the total interconnecting piping joints per Figure IWB-2500-8.
B-J ^a	B9.40	Surface examination of essentially 100% of the weld length of selected welds during each interval per Figure IWB-2500-8.
<p>a. Per Table IWB-2500-1, Examination Category B-J, "Note: (1) Examinations shall include the following. (a) All terminal ends in each pipe of branch run connected to vessels"</p>		

Licensee's Code Relief Request: The licensee requested relief from the Code-required examinations on the RHX shell welds, interconnecting piping welds, support welds, and connecting terminal end piping welds as listed in the table below.

ITEM NO.	EXAMINATION AREAS	EXAMINATION REQUIREMENT	UNIT 3	UNIT 4
B2.51	Head to Shell	Volumetric	6 welds	6 welds
B2.61	Shell to Tubesheet welds	Volumetric	6 welds	6 welds
B3.150	Nozzle to Shell welds	Volumetric	12 welds	12 welds
B3.160	Nozzle Inside Radius Section	Volumetric	12 welds	12 welds
B8.40	Welded Support	Volumetric or Surface as Applicable	3 welds	3 welds
B9.21	Interstage Piping, butt welds	Surface	10 welds	10 welds
B9.40	Socket Welds:	Surface	2 welds	2 welds

Licensee's Basis for Requesting Relief: The licensee stated:

"The Regenerative Heat Exchanger is located in a locked high radiation area. This area has a general field of 2 Rem/hr with contact dose rates of up to 10 Rem/hr, is highly contaminated, and requires the use of a full face respirator. Turkey Point Health Physics (HP) rules require the constant presence of an HP technician during entry to this area. Other conditions in this area include limited accessibility to the examination areas due to the close proximity of the adjacent wall and floor, limited work area due to cubicle walls built to shield personnel in adjacent areas, and interference from other lines and supports in the immediate area.

During construction of Turkey Point Units 3 and 4, asbestos insulation was used extensively. Asbestos insulation is present in the area of the regenerative heat exchanger. Additional protection is required for personnel entering this area to avoid possible spreading and ingestion of this hazardous material (i.e., an extra layer of protective clothing, tenting, HEPA filters).

Performing Code required examinations would require large expenditures of man-hours and accumulated Man-Rem dose. The welds must be uninsulated for examination and temporary shielding and scaffold installed. Effective shielding reduces accessibility to the examination areas. Proper surface conditioning will add to the time and exposure required to perform valid surface and volumetric examinations. The area must be tented to avoid spreading of asbestos fibers found in the insulation. The design and arrangement of the regenerative heat exchanger are not conducive to meaningful examination (see sketches provided).

Florida Power and Light (FPL) has performed examinations on the regenerative heat exchanger for both Turkey Point Units 3 and 4 during the first inspection interval (approximately early 1972 through late 1983) before the original relief request was approved. This experience showed that the design arrangement and accessibility are not conducive to meaningful examinations. The configuration, limited accessibility, high radiation levels, and interference from supports, walls, and the floor do not allow the Code required 100% volumetric and/or surface examinations (see drawing RR-3.DWG).

Terminal ends in Category B-J welds are to receive surface and/or volumetric examinations. FPL has performed examinations on terminal end welds in other components in the Chemical Volume and Control system. No indications have been found. Since 1985, VT-2 and VT-3 examinations have been performed on the terminal end welds listed in this relief. These examinations were performed in accordance with the approved relief request, which required FPL to look for evidence of leakage around the Regenerative Heat Exchanger just after shutdown for a refueling outage; and a second time during the system pressure test at unit startup.

During the 1991 outages of both units, the system hydrostatic tests were performed on the affected systems. No evidence of leakage from the regenerative heat exchanger or its attached piping has been noted in either unit during any of the previous examinations.

Performing the alternative examinations will not increase the health and safety risk to the public."

Licensee's Alternative Examination: The licensee has proposed to perform a visual examination at the beginning of the outage for leakage and boric acid accumulation, and a VT-2 examination during the system leakage test.

Evaluation: In the NRC Safety Evaluation Report dated February 13, 1985, relief was granted for the RHX vessel welds, welded supports, and interstage piping. The amendment to this relief request is based on additional examination areas (primarily terminal ends of connecting pipe) associated with the RHX.

Based on the evaluation of the amended relief request, it is determined that the technical content of this request for relief regarding the RHX has not changed. Therefore, relief should remain granted for the vessels, welded supports and associated piping welds, (including terminal ends associated with the interstage piping) with the following exception. For the terminal ends of piping to the RHX assembly, there is a high probability that the connections are subjected to stresses related to the pipe moments acting at the connections. Based on the statement by the licensee that the Code-required examinations were performed on the RHX during the first 10-year interval, it is our opinion that performance of the Code-required examinations on the terminal ends of piping on the RHX assembly is not impractical and therefore, relief should be denied. Examination of the terminal ends associated with the RHX assembly, which relate to a critical segment of this system, will establish a relative level of assurance of structural integrity for the component on a general basis.

3.0 CONCLUSION

The INEL staff reviewed the licensee's submittal and concluded that pursuant to 10 CFR 50.55a(g)(6)(i), relief should remain granted and/or be granted as amended for the vessels, welded supports, and associated piping welds (including terminal ends associated with the interstage piping). However, relief should be denied for the terminal ends of piping to the RHX assembly. The examination requirements of Table IWB-2500-1 should be applied for the terminal ends of piping at the inlets and outlets of the RHX assembly.