



**FPL**

**DEC 17 2007**

L-2007-205  
10 CFR 50.55a

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

Re: Turkey Point Unit 4  
Docket No. 50-251  
Relief Request No.4 Risk-Informed Inservice Inspection Program

Pursuant to 10 CFR 50.55a (a)(3)(i), Florida Power and Light Company (FPL) requests approval of Relief Request No. 4 for the Fourth 10-year inservice inspection (ISI) interval. The ISI Program currently requires inspections on piping in accordance with the requirements of the ASME Boiler and Pressure Vessel Code Section XI, 1998 Edition through the 2000 Addenda as required by 10CFR50.55a. Turkey Point Unit 4 is currently in the second period of the Fourth 10-year inspection interval as defined by the ASME Section XI Code for Program B.

During the Third 10-year inspection interval, FPL requested by letter L-2002-022, dated July 8, 2002, to revise the Turkey Point Unit 4 ISI Program for Class 1 piping only, through the use of the Risk-Informed Inservice Inspection Program (RI-ISI) as an alternative to the requirements of the ASME Boiler and Pressure Vessel Code Section XI, as required by 10CFR50.55a. NRC approved this request on August 1, 2003 (TAC No. MB5551). In the original submittal, FPL committed to review and adjust the risk ranking of piping segments as a minimum on an ASME Section XI period basis.

The objective of this submittal is to continue the change to the ISI Program plan, for Class 1 piping only, Categories B-F and B-J welds, through the use of a RI-ISI Program for the Fourth 10-year ISI interval. The proposed revisions to the Turkey Point Unit 4 RI-ISI Program for Class 1 piping are based on the risk-informed process described in Westinghouse Owners Group (WOG) WCAP-14572, Revision 1-NP-A, "Westinghouse Owners Group Application of Risk-Informed Methods to Piping Inservice Inspection Topical Report," and WCAP-14572, Revision 1-NP-A, Supplement 1, "Westinghouse Structural Reliability and Risk Assessment (SRRA) Model for Piping Risk-Informed Inservice Inspection." As a risk-informed application, the submittal meets the intent and principles of Regulatory Guides (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant –Specific Changes to the Licensing Basis," and RG 1.178. "An Approach for Plant-Specific Risk Informed Decision Making: Inservice Inspection of Piping.

In accordance with 10 CFR 50.55a (a)(3)(i), FPL has determined that the proposed alternatives would provide an acceptable level of quality and safety.

Should there be any questions concerning this submittal, please contact the Turkey Point Licensing Manager Paul Infanger at (305) 246-6632.

Sincerely,

William Jefferson, Jr.  
Vice President  
Turkey Point Nuclear Plant  
SM

Attachment

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

A047  
NCR

**Attachment  
Turkey Point Unit 4  
FOURTH 10-YEAR INSPECTION INTERVAL  
RELIEF REQUEST No. 4**

**Proposed Alternative  
In Accordance with 10 CFR 50.55a(a)(3)(i)**

**--Alternative Provides Acceptable Level of Quality and Safety--**

**ASME Code Components Affected**

Class 1 pressure retaining similar and dissimilar metal piping welds

Exam Cat.	Item No.	Examination Description
B-F	B5.10	Reactor Vessel - NPS 4 or larger, Nozzle-to-Safe End Butt Welds
	B5.40	Pressurizer- NPS 4 or larger, Nozzle-to-Safe End Butt Welds
	B5.70	Steam Generator - NPS 4 or larger, Nozzle-to-Safe End Butt Welds
B-J	B9.11	Piping- NPS 4 or Larger, Circumferential Welds
	B9.21	Piping- Less than NPS 4, Circumferential Welds other than PWR high pressure safety injection systems
	B9.31	Piping- Branch Pipe Connection Welds, NPS 4 or Larger
	B9.32	Piping- Branch Pipe Connection Welds, Less than NPS 4
	B9.40	Piping- Socket Welds

**Applicable Code Edition and Addenda**

Inservice Inspections (ISI) are performed on piping to the requirements of the ASME Boiler and Pressure Vessel Code Section XI, 1998 Edition with 2000 Addenda as required by 10CFR50.55a.

**Applicable Code Requirement**

Pursuant to 10 CFR 50.55a (a)(3)(i), FPL requests to revise the Turkey Point Unit 4 ISI Program, for Class 1 piping only, through the use of a Risk-Informed Inservice Inspection Program (RI-ISI) as an alternative to the current requirements of Class 1 examination Categories B-F and B-J as specified in Table IWB-2500-1 of the 1998 Edition with 2000 Addenda of ASME Section XI.

The proposed revision to the ISI program, for Class 1 piping only, is based on the risk-informed process described in Westinghouse Owners Group WCAP-14572, Revision 1-NP-A, "Westinghouse Owners Group Application of Risk-Informed Methods to Piping Inservice Inspection Topical Report." A similar revision to the third interval ISI program was submitted by letter dated July 8, 2002, as supplemented by letter dated January 15, 2003 and was approved by SER dated August 1, 2003 (TAC No. MB5551). This request for alternative utilizes the identical methodology that was previously approved.

Turkey Point Unit 4 entered the fourth interval as defined by the Code for Program B. The fourth inspection interval for Turkey Point Unit 4 began April 15, 2004 and ends April 14, 2014.

**4. Reason for Request**

The objective of this submittal is to continue the change to the ISI program plan, for Class 1 piping only, through the use of a risk-informed inservice inspection (RI-ISI) program for the fourth

Attachment  
**Turkey Point Unit 4**  
**FOURTH 10-YEAR INSPECTION INTERVAL**  
**RELIEF REQUEST No. 4**

---

10-year interval. The risk-informed process used in this submittal is described in Westinghouse Owners Group WCAP-14572, Revision 1-NP-A, "Westinghouse Owners Group Application of Risk-Informed Methods to Piping Inservice Inspection Topical Report", (referred to as "WCAP-14572, A-version" for the remainder of this document).

**Proposed Alternatives and Basis for Use**

ASME Section XI Class 1 Categories B-F and B-J currently contain the requirements for examining (via non-destructive examination (NDE)) Class 1 piping components. This current program submittal is limited to ASME Class 1 piping, including piping currently exempt from requirements. The alternative RI-ISI program for piping is described in WCAP-14572, Revision 1-NP-A. FPL will substitute the Class 1 RI-ISI for the ASME Section XI, Category B-F and B-J examination program on piping. Other non-related portions of the ASME Section XI Code will be unaffected.

**Basis for Use**

The Turkey Point Unit 4 ISI program for the examination of Class 1 piping welds is in accordance with a risk-informed process submitted July 8, 2002. NRC approved this request on August 1, 2003 (TAC No. MB5551). In the original submittal, FPL committed to review and adjust the risk ranking of piping segments as a minimum on an ASME period basis. Most U.S. nuclear power plants have now implemented similar risk-informed inservice inspection programs, with similar review and update commitments. As a result, a task force was formed by the Nuclear Energy Institute (NEI) to formulate consistent guidance for maintaining these programs. The task force included representatives from reactor operating companies, ASME committees, EPRI, and Westinghouse. The result of this effort is document NEI 04-05, "Living Program Guidance To Maintain Risk-Informed Inservice Inspection Programs For Nuclear Plant Piping Systems", published April, 2004. While not specifically approved by the NRC, the NRC staff reviewed the document as it was being developed and provided comments.

In accordance with the guidance provided by NEI 04-05, a periodic evaluation and update was performed in conjunction with the end of the Third ISI Inspection Interval at Turkey Point Unit 4. The updated program resulting from this review is the subject of this request.

In accordance with the guidance provided by NEI 04-05, a table is provided as Attachment 1 identifying the number of welds added to and deleted from the originally approved RI-ISI program. Five VT-2 segments categorized as LSS (RC-034, RC-062, RC-064, RC-066, and RC-091) were removed from Risk Informed examinations. RC-034 was removed due to PRA consequence change and RC-062, RC-064, RC-066 and RC-091 were removed due to a decrease in the failure probability determination using Win SRRA simulation run vice conservative lookup table. Three large bore segments (SI-028, SI-101, and SI-105) and one VT-2 segment (RC-077) were added to the Risk Informed Inspection Plan. SI-028, SI-101 and SI-105 became HSS due to PWROG recommended sensitivity analysis and RC-077 became HSS due to a material change and pipe schedule decrease of the vent line during the Reactor Head replacement.

Three segments (SI-028, SI-101, and SI-105) became HSS which results in 3 volumetric examinations being added (one weld per segment) between the third and fourth interval. These additional volumetric examinations are reflected in the Attachment 1 table and one new segment (RC-077) requiring VT-2 was added to the Risk Informed Inspection Plan. All VT-2 examinations in the Risk Informed inspection plan are performed during the system pressure test each refueling outage.

Attachment  
Turkey Point Unit 4  
**FOURTH 10-YEAR INSPECTION INTERVAL  
RELIEF REQUEST No. 4**

---

A new Change in Risk Evaluation was performed, and the risk from the revised risk-informed ISI program continues to remain lower when compared to the last deterministic Section XI inspection program.

**Duration of Proposed Alternative**

FPL will implement the alternative requirements during the fourth 10-year Inservice Inspection interval at Turkey Point Unit 4.

**7. Precedents**

Turkey Point Unit 4 submitted, July 8, 2002, as supplemented by letters dated January 15, 2003 relief request #32, "Risk Informed Inservice Inspection Program" for implementation during the third inspection period of the third 10-year inspection interval. The request was approved by SER dated August 1, 2003 (TAC No. MB5551). This request for alternative utilizes the identical methodology that was previously approved.

**Attachments to the Request**

Attachment 1, Titled: "STRUCTURAL ELEMENT SELECTION RESULTS AND COMPARISON TO ORIGINAL PROGRAM AND PREVIOUS RI-ISI PROGRAM"

Attachment  
**Turkey Point Unit 4**  
**FOURTH 10-YEAR INSPECTION INTERVAL**  
**RELIEF REQUEST No. 4**

Attachment 1

STRUCTURAL ELEMENT SELECTION RESULTS AND COMPARISON TO ORIGINAL PROGRAM AND PREVIOUS RI-ISI PROGRAM												
System	Number of High Safety Significant Segments (No. of HSS in Aug. Program / Total No. of Segments in Aug. Program)	Degradation Mechanism(s)	Class	ASME Code Category (original 1989 Basis)	Weld Count		ASME XI Examination Methods (Volumetric (Vol) and Surface (Sur))		Third Interval Approved RI-ISI <sup>1</sup>		Fourth Interval RI-ISI <sup>1</sup>	
					Butt	Socket	Vol & Sur	Sur Only	SES Matrix Region	Number of Exam Locations	SES Matrix Region	Number of Exam Locations
CH (Chemical & Volume Control)	3 (0/0)	Thermal Fatigue	1	B-F	0	0	0	0	-	0	-	0
				B-J	120	206	0	70				
RC (Reactor Coolant)	14 (0/0)	Thermal Fatigue, Thermal Transients, Vibration Fatigue	1	B-F	18	0	18	9	1, 2	2 volumetric	1, 2	2 volumetric
				B-J	197	29	60	23				
SI (Safety Injection)	7 (0/0)	Thermal Fatigue	1	B-F	0	0	0	0	-	0	-	0
				B-J	60	187	16	45				3 volumetric
TOTAL	24 (0/0)		CL. 1	B-F	18	0	18	0		2 NDE		2 NDE
				B-J	377	422	76	138		18 NDE		21 NDE
			TOTAL		395	422	94	138		20 NDE <sup>2</sup>		23 NDE <sup>1</sup>

Summary: Original ASME Section XI selected a total of 94 non-destructive exams (surface only exams not included). The Third Interval RI-ISI program selected a total of 20 non-destructive exams and 11 VT-2 segments, and the Fourth Interval RI-ISI program selects a total of 23 non-destructive exams and 7 VT-2 segments.

Notes:  
<sup>1</sup>System pressure test requirements and VT-2 visual examinations shall continue to be performed in ASME Class 1 systems.