July 27, 2016
10 CFR 50.55a
L-2016-141

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Fifth Ten-Year Inservice Inspection (ISI) Interval
Relief Request No. 4 – Response to Request for Additional Information

References: 1) NRC Email from Audrey Klett (NRC) to Mitch Guth (FPL), Subject: "Request for Additional Information - Turkey Point 3 & 4 - 5th 10-Year ISI RR#4 (CACs MF7277 & MF7278)" dated June 27, 2016, ML16180A024.

By letter L-2016-006 dated January 14, 2006 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16033A355), Florida Power & Light Company submitted Relief Request (RR) No. 4, which requested the approval of a Risk Informed Inservice Inspection (RI-ISI) program for use during the fifth ten-year Inservice Inspection (ISI) interval at Turkey Point Nuclear Unit Nos. 3 and 4. The program is a risk-informed Inservice Inspection Program (RI-ISI) for Class 1 and 2 piping based on Electric Power Research Institute (EPRI) Topical Report (TR) 112657 Revision B-A, "Revised Risk-Informed Inservice Evaluation Procedure," dated June 2012.

The U.S. Nuclear Regulatory Commission's (NRC's) Component Performance, NDE, and Testing Branch (EPNB) and PRA Licensing Branch (APLA) staff reviewed the application and identified areas where it needs additional information to support its review. Reference 1 provided the request for additional information. The FPL response to the request for additional information (RAI) is attached.

Please contact Mr. Mitch Guth, Licensing Manager, at 305-246-6698 if you have any questions or require any additional information about this submission.

Sincerely,

Thomas Summers
Site Vice President
Turkey Point Nuclear Plant

Attachment
Enclosures

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

AD47
NRR

L-2016-141
Attachment

Florida Power & Light Company

Turkey Point Units 3 and 4

Inservice Inspection Program (ISI)
Fifth Ten-Year Interval

Relief Request No. 4

Responses to NRC

Request for Additional Information (RAI) Questions

RAI-EPNB-1

EPRI TR 112657 Revision B-A (Section 3.6.4.2) and Section 3.5 of the submittal dated January 14, 2016, both state that 25% of high risk elements and 10% of medium risk elements will be selected for examination. Table 3.5 of the submittal dated January 14, 2016, appears to indicate that the elements selected for examination are well below these percentages. The NRC staff requests FPL to explain this discrepancy.

FPL Response to RAI-EPNB-1:

There was a clerical error made when transferring the information from Table 3.4 to Table 3.5. When Table 3.5 was assembled, the weld totals from the "With" column in Table 3.4 were mistakenly transferred into Table 3.5 instead of the values from the "Without" column. The "Total" column for each Risk Category in Table 3.5 should have reflected the number of welds excluding Flow Accelerated Corrosion (FAC) as identified in the "Without" column for each Risk Category in Table 3.4.

FAC is covered under a separate augmented examination program. During the re-validation of the numbers shown in Tables 3.4 and 3.5, an additional clerical error was identified in Table 3.4. In Table 3.4 for Unit 3, in the WDS system, the number of welds in the "Without" column in Risk Category 6 has been changed from "0" to "5" and the number of welds in the "Without" column in Risk Category 7, has been changed from "19" to "14".

The overall number of welds remains the same, the changes have no impact on the risk-informed application and there is no effect on Tables 3.6.1, 5.1.1 and 5.2.1 which already included the correct information.

Enclosure 1 provides the updated Tables 3.4 and 3.5. Based on these corrected numbers, Table 3.5 properly shows that Turkey Point is examining 39% (Unit 3) and 52% (Unit 4) of their High Risk welds and 15% (Unit 3) and 14% (Unit 4) of their Medium Risk welds. These percentages exceed the 25% and 10% values stipulated in EPRI TR-112657 for High and Medium Risk welds, respectively.

RAI-EPNB-2

The NRC staff noted there appears to be discrepancies between the numbers shown in Table 3.5 and the other tables in the submittal dated January 14, 2016. For example, for Unit 3, Table 3.5 shows there are 164 "High Risk" (Categories 1, 2 and 3) elements and 572 "Medium Risk" (Categories 4 and 5) elements these do not match numbers shown in Tables 5.1.1 and 5.2.1. Similar discrepancies were noted for Unit 4 in Tables 3.5, 5.2.1 and 5.2.2. The NRC staff requests FPL to explain the differences or supply corrected Tables.

FPL Response to RAI-EPNB-2:

There was a clerical error made when transferring information from Table 3.4 to Table 3.5. When Table 3.5 was assembled, the weld totals from the "With" column in Table 3.4 were mistakenly transferred into Table 3.5 instead of the values from the "Without" column. The "Total" column for each Risk Category in Table 3.5 should have reflected the number of welds

excluding Flow Accelerated Corrosion (FAC) as identified in the "Without" column for each Risk Category in Table 3.4. FAC is covered under a separate augmented examination program.

Enclosure 1 provides the updated Tables 3.4 and 3.5.

RAI-EPNB-3

EPRI TR 112657 Revision B-A (Section 3.6.4.2) and Section 3.5 of the submittal dated January 14, 2016, both state that if the percentage of Class 1 piping locations selected for examination falls substantially below 10%, then the basis for the low percentage shall be investigated. The submittal states the percentage of Class 1 welds selected per the RI-ISI process was 6.8% (54 of 789 welds) in Unit 3 and 6.9% (57 of 825 welds) in Unit 4. The licensee stated the 6.8% and 6.9% were not an extreme departure from 10%. However, the NRC staff notes that these percentages result in a greater than 30% reduction in the number of Class 1 welds to be examined: 54 versus 79 for Unit 3, and 57 versus 83 for Unit 4. The EPRI TR explains how the number of Class 1 welds can drop below 10% because of a high number of Class 1 segments being assigned to low risk categories. The NRC staff was unable to determine if this is the case with the licensee's submittal with the tables provided because of the mixing of Class 1 & 2 segments in the tables. The NRC staff requests FPL to provide further justification for the low percentage of Class 1 welds selected.

FPL Response to RAI-EPNB-3:

FPL provides further justification for the low percentage of Class 1 welds selected by documenting the breakdown shown below of the number of Class 1 piping welds listed by risk categories. (Note that the risk category breakdown is more accurately established based on the number of welds rather than the number of segments.) This breakdown can be extracted from Tables 5.1.1 (Unit 3) and 5.1.2 (Unit 4). The results shown in the table below are based upon considering only those welds in Class 1 Code Examination Categories B-F and B-J. During re-validation of the numbers in Tables 5.1.1, 5.1.2, 5.2.1 and 5.2.2, two additional clerical errors were identified in Table 5.1.1. The B-J "Low Risk" total welds should be 513 welds instead of 512 welds and the total "Sur only" should be 89 welds instead of 87 welds. The correct number of B-J welds were identified within each system and in the total combined population count for B-F and B-J welds were correct. The overall number of welds remains the same, the changes have no impact on the risk-informed application.

RISK CATEGORY	UNIT 3		UNIT 4	
	NO. OF WELDS	NO. OF WELDS SELECTED	NO. OF WELDS	NO. OF WELDS SELECTED
High	31	12	23	12
Medium	240	41	258	44
Low	518	1	544	1
TOTAL	789*	54	825*	57

* The total weld count includes both socket and non-socket welds.

As shown in the table above, the majority of Class 1 welds fall into the Low Risk Category. The reason for this departure is because the Turkey Point Core Damage Frequency (CDF) is much lower than most plants as described in Section 3.5 of Turkey Point Relief Request No. 4.

Enclosure 1 provides the updated Table 5.1.1.

RAI-EPNB-4

Of the welds not selected for future examinations in the RI-ISI program or FPL's augmented inspection programs, have previous examinations of any of these welds identified service induced degradation? If so, then what was the degradation mechanism, and what was done to mitigate the degradation?

FPL Response to RAI-EPNB-4:

During the Risk Informed Element Selection process, no welds identified with service induced degradation were eliminated from selection.

RAI-EPNB-5

Have any of the welds selected for examination in the RI-ISI been previously examined and resulted in limited examination coverage (i.e. less than 90%)? If so, the NRC staff requests FPL to explain why other welds have not been selected to minimize the number of examinations with limited exam coverage.

FPL Response to RAI-EPNB-5:

During the RI-ISI Element Selection meeting, welds were preferentially selected to avoid known limited coverage issues, whenever possible. However, in some instances the RI-ISI selection process limited which welds could be selected due to the existence of a postulated degradation mechanism in only a few welds. As a result, there were a few isolated instances where this option was not achievable.

RAI-APLA-1

In its submittal dated January 14, 2016, the licensee provided a list of Facts and Observations (F&Os) including DA-D5-01, and DA-D6 in Table 3, "Turkey Point PRA Model – SRs Not Met," with their associated supporting requirements (SRs) that do not meet the American Society of Mechanical Engineers (ASME)/American Nuclear Society (ANS) probabilistic risk assessment standard (ASME/ANS RA-Sa-2009) Capability Categories (CCs). Table 2-2 of EPRI TR 1021467-A, "Nondestructive Evaluation: Probabilistic Risk Assessment Technical Adequacy Guidance for Risk-Informed In-Service Inspection Programs," assigns CC-I to SRs DA-D6 and DA-D5 for RI-ISI applications using the EPRI traditional RI-ISI approach.

The NRC staff requests FPL to explain whether the F&Os associated with SRs DA-D5 and DA-D6 have been dispositioned and whether those SRs meet CC-I following the F&Os disposition. If those F&Os have not been dispositioned, then the NRC staff requests FPL to justify why not meeting CC-I (for those SRs) will not impact the RI-ISI application.

FPL Response to RAI-APLA-1:

The F&Os associated with SRs DA-D5 and DA-D6 have been dispositioned and changes have been made to ensure compliance with CC-II.

- DA-D5-01 was addressed in the CCF update for Revision 11 of the PTN PRA model. The CCF alpha factors were updated and the CAFTA CCF tool was used. The use of the CAFTA CCF tool resolved this F&O.

- DA-D6-01 was addressed in the data update PTN-BFJR-02-026, Rev. 2. No plant-specific CCFs were found.

Enclosure 2 provides the updated tables.

Table 3.4
Number of Elements by Risk Category With and Without Impact of FAC

Unit	System[1]	High Risk Region						Medium Risk Region				Low Risk Region			
		Category 1		Category 2		Category 3		Category 4		Category 5		Category 6		Category 7	
		With	Without	With	Without	With	Without	With	Without	With	Without	With	Without	With	Without
3	RCS	0	0	8	8	0	0	50	50	0	0	45	45	118	118
	CVCS	0	0	0	0	0	0	0	0	37	37	189	189	64	64
	SIS	0	0	7	7	0	0	157	157	0	0	191	191	173	173
	RHR	0	0	16	16	0	0	66	66	0	0	9	9	285	285
	SGBD	0	0	0	0	32	0	0	0	58	0	0	32	0	58
	FWS	0	0	0	0	39	0	0	0	77	5	0	43	0	68
	MS	0	0	0	0	45	0	0	0	83	0	0	45	0	83
	AFW	0	0	0	0	17	0	0	0	44	5	0	20	0	36
	CSS	0	0	0	0	0	0	0	0	0	0	0	0	117	117
	WDS	0	0	0	0	0	0	0	0	0	0	5	5	14	14
	Total	**0**	**0**	**31**	**31**	**133**	**0**	**273**	**273**	**299**	**47**	**439**	**579**	**771**	**1016**

Unit	System[1]	High Risk Region						Medium Risk Region				Low Risk Region			
		Category 1		Category 2		Category 3		Category 4		Category 5		Category 6		Category 7	
		With	Without	With	Without	With	Without	With	Without	With	Without	With	Without	With	Without
4	RCS	0	0	10	10	0	0	51	51	0	0	47	47	119	119
	CVCS	0	0	0	0	0	0	0	0	39	39	211	211	49	49
	SIS	0	0	3	3	0	0	172	172	0	0	209	209	131	131
	RHR	0	0	10	10	0	0	70	70	0	0	20	20	333	333
	SGBD	0	0	0	0	25	0	0	0	55	0	0	25	0	55
	FWS	0	0	0	0	25	0	0	0	69	4	0	30	0	60
	MS	0	0	0	0	42	0	0	0	80	0	0	42	0	80
	AFW	0	0	0	0	15	0	0	0	42	3	0	19	0	35
	CSS	0	0	0	0	0	0	0	0	0	0	0	0	92	92
	WDS	0	0	0	0	0	0	0	0	0	0	6	6	15	15
	Total	**0**	**0**	**23**	**23**	**107**	**0**	**293**	**293**	**285**	**46**	**493**	**609**	**739**	**969**

Note:

1. Systems are described in Table 3.1.

Table 3.5
Number of Elements Selected for Inspection by Risk Category Excluding Impact of FAC

Unit	System[1]	High Risk Region						Medium Risk Region				Low Risk Region			
		Category 1		Category 2		Category 3		Category 4		Category 5		Category 6		Category 7	
		Total	Selected	Total	Selected	Total	Selected	Total	Selected	Total	Selected	Total	Selected	Total	Selected
3	RCS	0	0	8	5	0	0	50	5	0	0	45	0	118	0
	CVCS	0	0	0	0	0	0	0	0	37	9	189	1	64	0
	SIS	0	0	7	2	0	0	157	17	0	0	191	0	173	0
	RHR	0	0	16	5	0	0	66	15	0	0	9	0	285	0
	SGBD	0	0	0	0	0	0	0	0	0	0	32	0	58	0
	FWS	0	0	0	0	0	0	0	0	5	1	43	0	68	0
	MS	0	0	0	0	0	0	0	0	0	0	45	0	83	0
	AFW	0	0	0	0	0	0	0	0	5	1	20	0	36	0
	CSS	0	0	0	0	0	0	0	0	0	0	0	0	117	0
	WDS	0	0	0	0	0	0	0	0	0	0	5	0	14	0
	Total	**0**	**0**	**31**	**12**	**0**	**0**	**273**	**37**	**47**	**11**	**579**	**1**	**1016**	**0**
Unit	**System[1]**	**High Risk Region**						**Medium Risk Region**				**Low Risk Region**			
		Category 1		**Category 2**		**Category 3**		**Category 4**		**Category 5**		**Category 6**		**Category 7**	
		Total	**Selected**	**Total**	**Selected**	**Total**	**Selected**	**Total**	**Selected**	**Total**	**Selected**	**Total**	**Selected**	**Total**	**Selected**
4	RCS	0	0	10	7	0	0	51	6	0	0	47	0	119	0
	CVCS	0	0	0	0	0	0	0	0	39	5	211	1	49	0
	SIS	0	0	3	1	0	0	172	18	0	0	209	0	131	0
	RHR	0	0	10	4	0	0	70	18	0	0	20	0	333	0
	SGBD	0	0	0	0	0	0	0	0	0	0	25	0	55	0
	FWS	0	0	0	0	0	0	0	0	4	1	30	0	60	0
	MS	0	0	0	0	0	0	0	0	0	0	42	0	80	0
	AFW	0	0	0	0	0	0	0	0	3	1	19	0	35	0
	CSS	0	0	0	0	0	0	0	0	0	0	0	0	92	0
	WDS	0	0	0	0	0	0	0	0	0	0	6	0	15	0
	Total	**0**	**0**	**23**	**12**	**0**	**0**	**293**	**42**	**46**	**7**	**609**	**1**	**969**	**0**

Note: Systems are described in Table 3.1.

Table 5.1.1
Unit 3 - Inspection Location Selection Comparison Between ASME Section XI Code and EPRI TR-112657 by Risk Region

System[1]	Code Category	High Risk Region					Medium Risk Region					Low Risk Region				
		Weld Count	Section XI[2]		EPRI TR-112657		Weld Count	Section XI[2]		EPRI TR-112657		Weld Count	Section XI[2]		EPRI TR-112657	
			Vol/ Sur	Sur Only	RI-ISI	Other[3]		Vol/ Sur	Sur Only	RI-ISI	Other[3]		Vol/ Sur	Sur Only	RI-ISI	Other[3]
AFW	C-F-2	0	0	0	0	0	5	0	0	1	0	56	0	0	0	0
CSS	C-F-3[4]	0	0	0	0	0	0	0	0	0	0	117	0	0	0	0
CVCS	B-J	0	0	0	0	0	37	0	6	9	0	253	0	48	1	0
FWS	C-F-2, C-F-4[4]	0	0	0	0	0	5	1	0	1	0	111	9	1	0	0
MS	C-F-2, C-F-4[4]	0	0	0	0	0	0	0	0	0	0	128	8	2	0	0
RCS	B-F, B-J	8	5	1	5	0	50	29	2	5	0	163	32	17	0	0
RHR	B-J, C-F-1, C-F-3[4]	16	4	1	5	0	66	20	0	15	0	294	27	0	0	0
SGBD	C-F-2	0	0	0	0	0	0	0	0	0	0	90	9	0	0	0
SIS	B-J, C-F-1, C-F-3[4]	7	0	3	2	0	157	0	25	17	0	364	15	24	0	0
WDS	B-J	0	0	0	0	0	0	0	0	0	0	19	0	6	0	0
Totals by Code Category	B-F	1	1	0	1	0	12	12	0	0	0	5	5	0	0	0
	B-J	30	8	5	11	0	228	37	28	41	0	513	28	89	1	0
	C-F-1	0	0	0	0	0	70	0	5	5	0	380	41	6	0	0
	C-F-2	0	0	0	0	0	10	1	0	2	0	371	26	3	0	0
	C-F-3 [4]	0	0	0	0	0	0	0	0	0	0	312	0	0	0	0
	C-F-4 [4]	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0

Notes:

1. Systems are described in Table 3.1.
2. Since a Risk-Informed program for Class 1 welds was implemented during the third period of the third interval, piping weld examinations performed prior to the third period of the third interval per the 1989 Edition of ASME Code Section XI were used for comparison purposes for Class 1 welds. However, since the Risk-Informed program implemented during the fourth interval was for Class 1 welds only, piping weld examinations performed during the fourth interval per the 1998 Edition with Addenda through 2000 of ASME Code Section XI were used for comparison purposes for Class 2 welds.
3. The column labeled "Other" is generally used to identify augmented inspection program locations credited per Section 3.6.5 of EPRI TR-112657. The EPRI methodology allows augmented inspection program locations to be credited if the inspection locations selected strictly for RI-ISI purposes produce less than a 10% sampling of the overall Class 1 weld population. The Turkey Point RI-ISI application did not rely on augmented inspection program locations beyond those selected by the RI-ISI process. The "Other" column has been retained in this table solely for uniformity purposes with the other RI-ISI application template submittals.
4. Code Categories C-F-3 and C-F-4 consist of Code Examination Category C-F-1 and C-F-2 welds respectively that were previously excluded from examination per Table IWC-2500-1 due to being welds in "thin wall piping". For the RI-ISI application, this exclusion does not exist.

Updated F&O DA-D5-01 and DA-06-01

F&O	SR	Issue	Basis for Significance	Possible Resolution	Initial Comment	Disposition
DA-D5-01	DA-D5	For several CCF groups, a "global common cause event" (as described at the end of Section 4.2 of PTN-BFJR-2008-012, Rev. 0) is used. While this is a reasonable simplification, the global common cause event needs to account for the common cause combinations that are not included explicitly. However, for several 6-component groups (AFW AOVs FTO, AFW CVs FTO, AFW MOVs FTO), the 5-of-6 term was not included and the 6-of-6 term was not adjusted. A similar issue appears to be present for SG SVs FTO (4-component group), where only the 4-of-4 term is included (the 2-of-4 and 3-of-4 terms are missing and the 4-of-4 term was not adjusted).	The missing CCF contribution from the 5-of-6 term (or the 2-of-4 and 3-of-4) should not be significant since the 6-of-6 term (or 4-of-4 term) is included and should dominate the CCF contribution.	Two alternatives. The missing CCF terms could be added to the CAFTA fault trees and CCF basic events calculated for the new terms. A simpler alternative is to revise the calculation of the $\alpha 6$ term to include the missing $\alpha 5$ value. Thus, $\alpha 6' = \alpha 5 + \alpha 6$. This overestimates the a5 contribution, since it is applied to the case where all 6 components fail, but this should be a small and conservative approximation. (Similar correction for the 4-component group, $\alpha 4' = \alpha 2 + \alpha 3 + \alpha 4$).	Could not find guidance regarding adding $\alpha 5$ to $\alpha 6$ to approximate the 5/6 combinations in INEL-94/0064, but it makes sense. Does the reviewer have a specific reference (document and page number) for this?	This was addressed in the CCF update for Revision 11 of the PTN PRA model. The CCF alpha factors were updated and the CAFTA CCF tool was used. The use of the CAFTA CCF tool resolved this F&O.

F&O	SR	Issue	Basis for Significance	Possible Resolution	Initial Comment	Disposition
DA-D6-01	DA-D6	The CCF notebook did not include a review of plant failure data for common cause events.	The SR includes a check to assure the CCF parameters are consistent with available plant-specific experience.	Review plant-specific component failure events from the most recent data update to identify any common cause failures. If CCFs are identified, verify that the CCF is modeled for the specific component and failure mode. If this data indicates a significantly larger fraction of failures are CCFs than the generic CCF parameters would predict, plant-specific CCF parameters should be calculated. If the data is limited (one or two failures in a specific component group), this would not be sufficient evidence to justify plant-specific CCF parameters.	This needs to be done to meet the Standard, but I don't expect to find any plant-specific CCFs.	Addressed in data update PTN-BFJR-02-026, Rev. 2. No plant-specific CCFs were found.