October 30, 2017
L-2017-168
10 CFR 50.90

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

Re: Turkey Point Nuclear Plant, Units 3 and 4
Docket Nos. 50-250 and 50-251

Response to Fourth Request for Additional Information Regarding License Amendment Request 236, Revision to the Technical Specifications to Adopt Risk Informed Completion Times TSTF-505, Revision 1, "Provide Risk-Informed Extended Completion Times – RITSTF Initiative 4b"

References:

1. Florida Power & Light Company letter L-2014-369, "License Amendment Request No. 236 Revision to the Technical Specifications to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times – RITSTF Initiative 4B'," December 23, 2014 (ML15029A297)
2. NRC E-mail "Request for Additional Information re. Turkey Point 3 & 4 LAR-236 (CACs MF5455 & MF5456)," April 14, 2016 (ML16105A459)
3. NRC E-mail "Request for Additional Information - Turkey Point 3 & 4 LAR-236 (CACs MF5455 & MF5456)," April 18, 2016 (ML16110A004)
4. NRC E-mail "Request for Additional Information re. Turkey Point 3 & 4 LAR-236 (CACs MF54555 & MF5456)," June 1, 2016 (ML16154A339)
5. Florida Power & Light Company letter L-2016-116, "Response to Request for Additional Information Regarding License Amendment Request 236, Revision to the Technical Specifications to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times- RITSTF Initiative 4b'," June 16, 2016 (ML16180A178)
6. Florida Power & Light Company letter L-2016-136, "Second Response to Request for Additional Information Regarding License Amendment Request 236, Revision to the Technical Specifications to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b'," August 11, 2016 (ML16243A104)

7. Florida Power & Light Company letter L-2017-006, "Supplement to License Amendment Request 236, Revision to the Technical Specifications to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times – RITSTF Initiative 4b'," February 9, 2017 (ML17060A249)
8. NRC E-mail "Request for Additional Information Re. Turkey Point TSTF-505 LAR 236 (CACs MF5455 and MF5456)" March 30, 2017
9. Florida Power & Light Company letter L 2017-063, "Response to Third Request for Additional Information Regarding License Amendment Request 236, Revision to the Technical Specifications to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times –RITSTF Initiative 4b',“ April 27, 2017 (ML17117A618)
10. NRC E-mail "Request for Additional Information - Turkey Point 3 & 4 LAR-236 (CACs MF5455 & MF5456)," August 10, 2017 (ML17223A061)

In Reference 1, as supplemented by References 5, 6, 7, and 9, Florida Power & Light Company (FPL) submitted license amendment request (LAR) 236 for Turkey Point Units 3 and 4. The proposed amendment would revise the Technical Specifications (TS) to implement TSTF-505, Revision 1, "Provide Risk-Informed Extended Completion Times RITSTF [Risk Informed TSTF] Initiative 4b."

In Reference 10, the NRC staff requested additional information to support its review of the LAR. The Enclosure to this letter provides FPL's response to the request for additional information (RAI).

Attachment 1 to the Enclosure provides markups of the operating licenses for Turkey Point Units 3 and 4 that add a license condition regarding the Risk Informed Completion Time Program. Attachment 2 provides a markup of TS 6.8.4.n, Risk Informed Completion Time. This markup supersedes the markup of proposed TS 6.8.4.m, Risk Informed Completion Time, in Reference 7.

This RAI response does not alter the conclusions in Reference 1 that the changes do not involve a significant hazards consideration pursuant to 10 CFR 50.92, and there are no significant environmental impacts associated with the changes.

No new or revised commitments are included in this letter.

Should you have any questions regarding this submittal, please contact Mr. Mitch Guth, Licensing Manager, at (305) 246-6698.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on October 30, 2017

Sincerely,

Thomas Summers
Regional Vice President - Southern Region
Florida Power & Light Company

Enclosure

cc: NRC Regional Administrator, Region II
NRC Senior Resident Inspector
NRC Project Manager
Ms. Cindy Becker, Florida Department of Health

## **Response to Request for Additional Information (RAI)**

### **APLA RAI-2.01 Fire PRA**

In response to APLA RAI 02, the licensee stated that the fire PRA that will be used to support the risk-informed completion times (RICT) calculations will be the same fire PRA that was determined to be acceptable for the NFPA 805 transition and future self-approval. In a related response to APLA RAI 09, FPL states that "[a]t the time of implementation of the RICT program, core damage frequency (CDF), and large early release frequency (LERF) will be estimated based on modifications completed for NFPA 805 as well as other changes in the model. The RICT program will only be implemented if it satisfies the limitations and conditions in Section 4, item 6 of the NEI 06-09 [safety evaluation]."

As discussed in the May 28, 2015, safety evaluation on the amendment to transition the fire protection program to Section 50.48(c) of Title 10 of the *Code of Federal Regulations* (10 CFR), FPL used the guidance in frequently asked question (FAQ) 08-0046, "Closure of National Fire Protection Association 805 Frequently Asked Question 08-0046 Incipient Fire Detection Systems" to incorporate its very early warning fire detection system (VEWFDS) into the fire PRA. When FAQ 08-0046 was released, there was limited test data and PRA experience available for in-cabinet applications. In December 2016, the NRC staff published new guidance on modeling VEWFDS in NUREG-2180, "Determining the Effectiveness, Limitations, and Operator Response for Very Early Warning Fire Detection Systems in Nuclear Facilities, (Delores-VEWFIRE)," which resulted from a confirmatory research program (including the evaluation of recent operating experience) to advance the state of knowledge for in-cabinet applications. The research program was unable to confirm several key assumptions from FAQ 08-0046 that were used in the calculation of risk. Upon further evaluation of operating experience and the results of recent testing, the program determined that the risk reduction available for cabinet fires that are monitored by a VEWFDS system using the new assumptions was significantly reduced. The method provided in NUREG-2180 is more robust and technically justifiable. The methodology in NUREG-2180 is currently the best available guidance and replaces the guidance in FAQ 08-0046, which has been retired.

By letter dated November 17, 2016 (ADAMS Accession No. ML16253A111), the NRC staff informed the industry that, "[i]f a licensee is performing a periodic or interim PRA update, performing a fire risk evaluation in support of self-approval, or submitting a future risk informed license amendment request, the staff's expectation is that they will assess the impact of new operating experience and information [e.g., NUREG-2180] on their PRA analyses and incorporate the change as appropriate per Regulatory Guide 1.200, Revision 2."

a) If FPL will use the methodology in NUREG-2180 please provide
   1. An estimate of the current CDF and LERF for all quantified hazards using the NUREG-2180 methodology in the fire PRA.
   2. If the current CDF and LERF estimates do not satisfy the limitations and conditions in Section 4, item 6 of the NEI 06-09 safety evaluation explain how these guidelines will be met before implementation of the RICT program.

3. If the methodology (e.g., approach, methods, data, and assumptions) has not been incorporated into the fire PRA (i.e., PRA model changes and documentation completed and the upgrade peer reviewed), explain when it will be incorporated into the PRA model of record that will be used to estimate RICTs (response may reference the response to APLA RAI 15 which requests a list of implementation items).

b) If FPL proposes not to use the methodology in NUREG-2180 please provide

1. Confirmation that the methodology in the retired FAQ 08-0046 is not the proposed methodology.
2. A description of the proposed methodology (e.g., approach, methods, data, and assumptions) that will be used in the fire PRA. The description should include a detailed comparison of that proposed methodology with the methodology in NUREG-2180.
3. Justification of the proposed methodology including comparison with available experimental results. Development and use of a proposed alternative may result in additional RAIs and significantly extend the time and resources required to complete the review.
4. An estimate of the current CDF and LERF for each quantified hazard with fire PRA results: (1) without credit for VEWFDS, (2) that would be obtained had the guidance in NUREG-2180 been applied, and (3) obtained using the proposed methodology.
5. If the current CDF and LERF estimates do not satisfy the limitations and conditions in Section 4, item 6 of the NEI 06-09 safety evaluation, explain how these guidelines will be met before implementation of the RICT program.
6. An evaluation on how using the proposed methodology instead of the NUREG-2180 methodology could impact the RICT estimates.
7. If the methodology (e.g., approach, methods, data, and assumptions) has not been incorporated into the fire PRA (i.e., PRA model changes and documentation completed and the upgrade peer reviewed), explain when it will be incorporated into the PRA model of record that will be used to calculate the RICTs (response may reference the response to APLA RAI 15 which requests list a of implementation items).

### *FPL Response*

a) FPL will follow the methodology in NUREG-2180 or the latest approved operating experience (OE).

1. A sensitivity study performed with NUREG-2180 for all quantified hazards indicate the result is slightly over the threshold for CDF. However, these results do not include credit for mitigating strategies. For example, there is currently no credit for local operation of the auxiliary feedwater pumps due to assumed loss of indication in Fire PRA. Additionally Flex mitigating strategy is not included in fire PRA. Considering these credits offsets any increase in risk due to incipient detection.

2. These guidelines will be met by continually incorporating operating experience and methodology enhancements into the fire PRA consistent with the maintenance and upgrade process.
3. The methodology in NUREG-2180 will be incorporated into the fire PRA model of record used to estimate RICTs as part of the next fire PRA model consistent with the maintenance and update process in Regulatory Guide 1.200, An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities.

b) Not applicable

**APLA RAI-4.01 Containment Spray CDF/LERF impacts**

The response to RAI-04 states that, "Containment spray and emergency containment cooling do not directly impact CDF or LERF." The response also states, "their failure impacts other equipment that does impact CDF and late containment failure. Therefore, their impact on risk can be quantified." Please explain how the impact on CDF and LERF is quantified, including identifying the impacted equipment and the impact on the equipment of an unavailable containment spray.

*FPL Response*

The containment spray and emergency containment cooling systems are modeled in the master fault tree and directly affect late containment failure and impact CDF via their role in providing a favorable environment (environmental qualification) for operation of the hot leg injection motor-operated valves (MOVs), the residual heat removal suction MOVs, and containment sump level instrumentation. Their impact on CDF and LERF is quantified just like any other component; their failure probability is set to 1.0 or True and CDF and LERF are calculated using the modified fault tree.

**APLA RAI-6.b.01 - Minimum Joint HEPs**

The response to APLA RAI-06 part b explains that the current internal events PRA does not apply a minimum joint human error probability (HEP) floor and states:

> In the next internal events model update, however, a joint HEP floor of 1E-06 will be applied. If a joint HEP is assigned a probability lower than 1E-06, it will only be after a detailed review of the sequence to confirm that the timing, cues, manpower, and stress levels of the constituent human failure events justifies it. This model update will be completed and implemented before 4b implementation.

Please provide an implementation item confirming that this change will be implemented before RICT program implementation (response may reference the response to APLA RAI 15 which requests a list of implementation items).

*FPL Response*

The HEP floor for the internal events model update applies a joint HEP floor of 1E-06. For future model updates, if a joint HEP is assigned a probability lower than 1E-06, it will only be after a detailed review of the sequence to confirm that the timing, cues, manpower, and stress levels of the constituent human failure events justifies it. See RAI 15 for implementation item.

**APLA RAI-8.01 Loss of Function**

The purpose of your February 9, 2017, supplement, was to remove all loss of function provisions from the license amendment request, which included removing “the application of RICTs to existing Actions that represent a loss of function.” However, the February 2017 supplement includes a RICT for Limiting Condition for Operation (LCO) 3.4.2.2 when one pressurizer code safety valve is inoperable, and a RICT for LCO 3.5.1a when one accumulator is inoperable.

1) Please (a) confirm that 2 of 3 code safety valves provide sufficient relief capability for all design bases accident scenarios; (b) remove the proposed RICT; or (c) compare the design basis success criteria parameter values with the PRA success criteria parameter values, explain how the RICT is consistent with the new TS 6.8.4.m.d, and discuss any effect on defense-in-depth and safety margins if the design basis success criteria parameters will not be met during the RICT. If the licensee is proposing to apply a RICT to this condition, then provide the proposed backstop (e.g. 24 hours, 30 days, etc.) in addition to the justification.

*FPL Response*

FPL is withdrawing the proposed change to Technical Specification (TS) 3.4.2.2 that added a risk-informed completion time for an inoperable code safety valve.

2) Please (a) confirm that 2 of 3 accumulators provide sufficient injection capability for all design bases accident scenarios; (b) remove the proposed RICT; or (c) compare the design basis success criteria parameter values with the PRA success criteria parameter values, explain how the RICT is consistent with the new TS 6.8.4.m.d, and discuss any effect on defense-in-depth and safety margins if the design basis success criteria parameters will not be met during the RICT. If the licensee is proposing to apply a RICT to this condition, then provide the proposed backstop (e.g. 24 hours, 30 days, etc.) in addition to the justification.

*FPL Response*

FPL is withdrawing the proposed change to TS 3.5.1, Action a that added a risk-informed completion time for an inoperable accumulator.

**APLA-11.01 Instrumentation Channels**

In response to RAI-APLA 11, the licensee stated that when individual instrument channels are failed, the signal is modelled as fully failed which "is a more limiting situation than one channel out of two being inoperable since the remaining operable channel is also not being credited." The February 9, 2017, supplement, removed RICT applicability to multiple inoperable channels, but has retained a RICT for one inoperable channel (i.e., ACTIONs 18, 25, 26, and 27).

a) Please explain how instrumentation is modelled in the PRA. If there are different types of models (e.g., multiple channel basic events versus a single combined basic event) that are used for different instrumentation, please explain all the different models.

b) Clarify how each of the models will be changed to model the impact of an unavailable channel and why this modelling, given one unavailable channel, is correct or will conservatively bound the RICT calculation.

*FPL Response*

| **TS LCO/Condition** | **a) Please explain how instrumentation is modelled in the PRA. If there are different types of models (e.g., multiple channel basic events versus a single combined basic event) that are used for different instrumentation, please explain all the different models** | **b) Clarify how each of the models will be changed to model the impact of an unavailable channel and why this modelling, given one unavailable channel, is correct or will conservatively bound the RICT calculation.** |
|---|---|---|
| 3.3.2 Engineered Safety Features Actuation System (ESFAS) Instrumentation | | |
| Function 1c – Safety Injection (SI) - Containment Pressure - High | SSCs are modeled consistent with the TS scope. | Function can be directly evaluated using the model. |
| Function 1d – Safety Injection (SI) – Pressurizer Pressure - Low | | |
| Function 1e – Safety Injection (SI) – High Differential Pressure Between the Steam Line Header and any Steam Line | | |

<table>
<tr><th>TS LCO/Condition</th><th>a) Please explain how instrumentation is modelled in the PRA. If there are different types of models (e.g., multiple channel basic events versus a single combined basic event) that are used for different instrumentation, please explain all the different models</th><th>b) Clarify how each of the models will be changed to model the impact of an unavailable channel and why this modelling, given one unavailable channel, is correct or will conservatively bound the RICT calculation.</th></tr>
<tr><td>Function 1f – Safety Injection (SI) – Steam Line flow - High Coincident with: Steam Generator (SG) Pressure - Low or $T_{avg}$ - Low</td><td rowspan="2">SSCs are modeled consistent with the TS scope.</td><td rowspan="2">Function can be directly evaluated using the model.</td></tr>
<tr><td>Function 2b – Containment Spray – Containment Pressure High-High Coincident with: Containment Pressure - High</td></tr>
<tr><td>Function 3a1 – Phase A Isolation – Manual Initiation</td><td>SSCs for the manual Phase A isolation can be evaluated by a bounding assessment as permitted by NEI 06-09. The PRA model includes event Containment Isolation Failure Due to Large Pre-Existing Leak. This event is equivalent to all the isolations in Phase A; this would be bounding for risk associated with an inoperable manual Phase A Isolation channel, and can be used as a bounding surrogate.</td><td>In the case of one failed Phase A Isolation - Manual Initiation Pushbutton, the Containment Isolation Failure Due to Large Pre-Existing Leak event would be set to True. This is conservative for one Pushbutton as it mathematically will be failure of the Phase A isolation.</td></tr>
<tr><td>Function 6b – Auxiliary Feedwater (AFW) – Steam Generator (SG) Water Level – Low-Low</td><td>SSCs for AFW actuation on SG Water Level – low-low can be evaluated by a bounding assessment as permitted by NEI 06-09. The PRA model includes an event which involves a common cause miscalibration error of all level sensors; this would be bounding for risk associated with inoperable channel(s), and can be used as a bounding surrogate.</td><td>In the case of one failed Channel, the common cause miscalibration error of all level sensors event would be set to True. This is more conservative than one as it mathematically will be failure of the entire SG Low-Low Level input to AFW actuation.</td></tr>
</table>

**APLA RAI-12 Remaining Unresolved F&Os**

In Table 1 in LAR Enclosure 2, the licensee identified eleven unresolved facts and observations (F&Os) from the 2013 focused scope peer review. For each F&O FPL stated, "[t]his will be resolved in the next model update to take place before implementation of 4b at [Turkey Point]. Expected to have little effect on 4b RICTs."

However, the NRC staff notes that it has not reviewed any proposed resolution to these F&Os during this 4b review and therefore has not accepted any of these resolutions as part of its review. The NRC staff can review proposed changes to the PRA during the review of the LAR. However, the anticipated license condition will limit future changes to the PRA to acceptable PRA methods.

a) Please provide the resolution to any of these F&Os, with supporting evaluation as appropriate, for the staff to accept the resolution during the completion of the LAR review.

b) Please provide an implementation item identifying all remaining unresolved F&Os and specifying that Turkey Point shall resolve them using NRC approved methods (response may reference the response to APLA RAI 15 which requests a list of implementation items).

*FPL Response*

The eleven findings listed as unresolved at the time of the LAR submittal have been resolved or closed in accordance with the NRC approved F&O closeout process.

As part of the process for F&O close out, some findings that were considered resolved in the submittal were determined to be not closed pending documentation update or additional justification. As part of the response to APLA RAI 15, these findings will be closed or a sensitivity case will be completed prior to implementation the RICT Program.

**APLA RAI-13 Evaluation of Common Cause Failure for Planned Maintenance**

While the guidance in NEI 06-09 states that no common cause failure (CCF) adjustment is required for planned maintenance, the NRC approval of NEI 06-09 is based on Regulatory Guide (RG) 1.177, as indicated in the NRC safety evaluation to NEI 06-09. Specifically, Section 2.2 of the NRC safety evaluation for NEI 06-09 (ADAMS Accession No. ML071200238) states that, "specific methods and guidelines acceptable to the NRC staff are […] outlined in RG 1.177 for assessing risk-informed TS changes." Further, Section 3.2 of the NRC safety evaluation states that compliance with the guidance of RG 1.174 and RG 1.177, "is achieved by evaluation using a comprehensive risk analysis, which assesses the configuration-specific risk by including contributions from human errors and common cause failures."

The guidance in RG 1.177, Section 2.3.3.1, states that, "CCF modeling of components is not only dependent on the number of remaining inservice components, but is also dependent on the reason components were removed from service (i.e. whether for preventative or corrective maintenance)." In relation to CCF for preventive maintenance, the guidance in RG 1.177, Appendix A, Section A-1.3.1.1, states:

> If the component is down because it is being brought down for maintenance, the CCF contributions involving the component should be modified to remove the component and to only include failures of the remaining components (also see Regulatory Position 2.3.1 of [RG] 1.177).

According to RG 1.177, if a component from a CCF group of three or more components is declared inoperable, the CCF of the remaining components should be modified to reflect the reduced number of available components in order to properly model the as operated plant.

a) Please explain how CCF are included in the PRA model (e.g., with all combinations in the logic models as different basic events or with identification of multiple basic events in the cut sets)

b) Please explain how the quantification and/or models will be changed when, for example, one train of a 3X100 percent train system is removed for preventative maintenance and describe how the treatment of CCF either meets the guidance in RG 1.177 or meets the intent of this guidance when quantifying a RICT.

### *FPL Response*

a) Each independent failure event for a component is accompanied (in an OR gate) by all of the possible CCF combination failure events that include that component. For example, for a three-train system, in the failure OR gate for component A, there is an independent failure event for A; a CCF event for A, B, and C; a CCF event for A and B; and a CCF event for A and C. The other components are represented similarly.

b) Using the example above, if the A component is taken out of service, the independent failure of A is set to 1.0 or True, and the fault tree is quantified. All of the possible combinations of independent failures and CCFs are included in the quantification.

## <u>**APLA RAI-14 Evaluation of Common Cause Failure for Emergent Conditions**</u>

According to Section A-1.3.2.1 of Appendix A of RG 1.177, when a component fails, the CCF probability for the remaining redundant components should be increased to represent the conditional failure probability due to CCF of these components, in order to account for the possibility that the first failure was caused by a CCF mechanism. When a component fails, the calculation of the plant risk, assuming that there is no increase in CCF potential in the redundant components before any extent of condition evaluation is completed, could lead to a non-conservative extended completion time calculation, as illustrated by inclusion of the guidance in Appendix A of RG 1.177. Much of the discussion in Appendix A describes how configuration specific risk calculations should be performed.

In Section 3.2 of the NRC safety evaluation for NEI 06-09, the NRC staff stated that compliance with the guidance of RG 1.174 and RG 1.177, "is achieved by evaluation using a comprehensive risk analysis, which assesses the configuration-specific risk by including contributions from human errors and common cause failures."

The requirement to consider additional risk management actions (RMAs) prior to the completion of the extent of cause evaluation was included by the NRC staff in the safety evaluation for NEI 06-09 as an additional measure to account for the increased potential that the first failure was caused by a CCF mechanism. However no exception to the RG 1.177 guidance was taken in the calculation of the RICT with regards to the quantification of the unresolved potential for CCF before the extent of cause evaluation is complete. The NRC interprets the combined guidance in RG 1.177 and NEI 06-09 0-A could be met with the following process:

> When, prior to exceeding the front stop, there is a high degree of confidence based on the evidence collected there is no common cause failure mechanism that could affect the redundant components, the RICT calculation may use nominal CC factor probability.
>
> If a high degree of confidence cannot be established that there is no common cause failure that could affect the redundant components, the RICT shall account for the increased possibility of common cause failure. Accounting for the increased possibility of common cause failure shall be accomplished by one of the two methods below. If one of the two methods below is not used, the TS front stop shall not be exceeded.
>
> 1. The RICT calculation shall be adjusted to numerically account for the increased possibility of common cause failure, in accordance with RG 1.177, as specified in Section A-1.3.2.1 of Appendix A of the RG. Specifically, when a component fails, the common cause failure probability for the remaining redundant components shall be increased to represent the conditional failure probability due to common cause failure of these components, in order to account for the possibility the first failure was caused by a common cause mechanism.
>
> 2. Prior to exceeding the front stop, the licensee shall implement RMAs in addition to those already credited in the RICT calculation, that target the success of the redundant and/or diverse structures, systems or components (SSC) of the failed SSC, and, if practicable, reduce the frequency of initiating events which call upon the function(s) performed by the failed SSC. Documentation of RMAs shall be available for NRC review.

a) Please confirm and describe how the treatment of CCF, in the case of an emergent failure, either meets the guidance in RG 1.177 or meets the intent of this guidance together with the NEI 06-09 0-A guidance when quantifying a RICT.

b) Please propose where the guidance on how CCFs will be treated will be placed to ensure that the guidance is followed, e.g., as a license condition or in the Administrative TS that implements the RICT program.

*FPL Response*

a) For CCF, in the case of an emergent failure the following requirement will be followed:

   If the extent of condition evaluation for inoperable structures, systems, or components (SSCs) is not complete prior to exceeding the Completion Time, the RICT shall account for the increased possibility of common cause failure (CCF) by either:

   1. Numerically accounting for the increased possibility of CCF in the RICT calculation, or

   2. Risk Management Actions (RMAs) not already credited in the RICT calculation shall be implemented that support redundant or diverse SSCs that perform the function(s) of the inoperable SSCs, and, if practicable, reduce the frequency of initiating events that challenge the function(s) performed by the inoperable SSCs.

b) FPL proposes to add paragraph e below to the Risk Informed Completion Time Program in Specification 6.8.4.n in the administrative section of the TS.

   e. If the extent of condition evaluation for inoperable structures, systems, or components (SSCs) is not complete prior to exceeding the Completion Time, the RICT shall account for the increased possibility of common cause failure (CCF) by either:

      1. Numerically accounting for the increased possibility of CCF in the RICT calculation, or

      2. Risk Management Actions (RMAs) not already credited in the RICT calculation shall be implemented that support redundant or diverse SSCs that perform the function(s) of the inoperable SSCs, and, if practicable, reduce the frequency of initiating events that challenge the function(s) performed by the inoperable SSCs.

**APLA RAI-15 Implementation Items**

Please provide a list of activities (i.e., implementation items) that are credited as part of the approval of the request to implement a RICT program that will not be completed before issuing the amendment but must be complete before implementation of the RICT program.

a) Propose a mechanism to require the changes to be made before implementation of the RICT program such as a reference to the table of implementation items in a license condition in the proposed amendment to the Operating License.

b) The NRC staff considers the following as potential implementation activities.

   - Modelling VEWFDS according to NUREG-2180 in the fire PRA (RAI 2.01)

- Confirming that the all hazards CDF and LERF estimates will be less than 1E- 04/year and 1E-05/year respectively before implementing the RICT program (RAI 2)
- Implementing minimum joint HEP or sequence level justification into the internal events PRA (RAI 06.01.b)
- Resolving all of the eleven unresolved F&Os from the 2013 focused scope peer review identified in Table 1, LAR Enclosure 2. (RAI 12)

### *FPL Response*

a) FPL proposes the following license condition for Turkey Point Units 3 and 4:

FPL will complete the items listed in the table of implementation items in the enclosure to FPL letter L-2017-168 dated October 30, 2017 prior to implementation of the Risk Informed Completion Time Program.

b) Table of implementation items:

| Item | Implementation Date |
|---|---|
| 1. Confirm that the all hazards CDF and LERF estimates will be less than 1E- 04 per year and 1E-05 per year, respectively. | Prior to implementation of the Risk Informed Completion Time Program |
| 2. Close all open facts and observations findings or perform a sensitivity study case to determine the impact on the CDF and LERF results that could be adversely affected by each open finding. | |
| 3. Implement a joint HEP floor of 1E-06 or a similarly technically justified floor value in the internal events model. | |

### **APLA RAI-16 License Condition**

In Section 4.0, "Limitations and Conditions" of the NRC Staff safety evaluation to NEI 06-09, the staff stated:

> *As part of its review and approval of a licensee's application requesting to implement the [Risk Managed Technical Specifications] RMTS, the NRC staff intends to impose a license condition that will explicitly address the scope of the PRA and non-PRA methods approved by the NRC staff for use in the plant specific RMTS program. If a licensee wishes to change its methods, and the change is outside the bounds of the license condition, the licensee will need NRC approval, via a license amendment, of the implementation of the new method in its RMTS program.*

Please propose a license condition limiting the scope of the PRA and non-PRA methods to what is approved by the NRC staff for use in the plant-specific RMTS program. An example is provided below.

> The risk assessment approach, methods, and data shall be acceptable to the NRC, be based on the as-built, as-operated, and maintained plant; and reflect the operating experience at the plant. Acceptable methods to assess the risk from extending the completion times must be PRA methods accepted as part of this license amendment, or other methods currently approved by the NRC for generic use. If a licensee wishes to change its methods and the change is outside the bounds of this license condition, the licensee will need prior NRC approval, via a license amendment.

### *FPL Response*

In lieu of a license condition, FPL proposes to add paragraphs f and g below to the Risk Informed Completion Time Program in Specification 6.8.4.n in the administrative section of the TS. This addition to the program limits the scope of the PRA and non-PRA methods to those approved by the NRC staff for use in the plant-specific RMTS program.

f. A RICT must be calculated using internal events, internal floods, and fire PRA. The PRA maintenance and upgrade process (procedure EN-AA-105-1000, PRA Configuration Control and Model Maintenance) will validate that changes to the PRA models used in the RICT program follow the guidance in Appendix 1-A of ASME/ANS RA-Sa-2009, "Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications."

g. A report shall be submitted following each PRA upgrade and associated peer review, and prior to using the upgraded PRA to calculate a RICT. The report shall describe the scope of the upgrade.

### **<u>APLA RAI-17 External Events</u>**

NEI 06-09 Section 3.3.5 External Events Consideration, clarifies that external hazards' impact on incremental configuration risk should be addressed for each RICT calculation. Enclosure 4 of the LAR, "Information Supporting Justification of Excluding Sources of Risk not Addressed by the PRA Models," addresses external events. The Enclosure summarizes the evaluation of the risk of external hazards that appears to be consistent with the ASME/ANS PRA Standard, i.e., screening associated with the baseline risk contribution. The results of the evaluation summarized in Table E4-1 seem to indicate that all external hazards will be excluded from every configuration risk evaluation, e.g." no unique PRA model for extreme winds and tornadoes is required in order to assess configuration risk for the RICT Program." However, there may be situations where the hazard may be important in a configuration risk calculation even though the baseline risk can be screened out consistent with the ASME/ANS PRA Standard. For example, external floods (storm surge) seem to be excluded because the plant design conforms to the Standard Review Plan (SRP) criteria for a 20 foot flood wall. Presumably smaller flood levels may fail plant equipment not required to be protected by the SRP criteria which could affect configuration risk, and sometimes the flood barriers themselves may be degraded or undergoing maintenance which could affect configuration risk. Similarly, high wind seems to be fully excluded because the potential loss of the equipment identified in the Table E4-1 has low nominal risk but this nominal risk does not consider the plant configuration during a RICT.

Please clarify if all external hazard risks are excluded from the RICT program or if the program includes guidance to assure that the assumptions supporting the screening of the hazards remain applicable given the plant configuration during the RICT. If all hazards are fully excluded, please address the issue related to screening based on meeting the SRP criteria (e.g., design flood height and mitigating features) or based on low nominal risk values. If, instead guidance is provided please describe the guidance, e.g., in certain instances, hazards which were initially screened out from the RICT calculation may be considered quantitatively if the plant configuration could impact the RICT.

### *FPL Response*

Internal floods and internal fires are quantitatively included in the RICT program as PRA models. All other external hazards are quantitatively excluded from RICT. The program will include guidance to establish additional RMA's for the applicable hazards. For example, in the event of high winds, RMAs will protect the availability of the emergency diesel generators.

## **APLA RAI-18 Dual-Unit RICT Calculations**

Various TS action statements for which a RICT is being proposed (e.g., TS 3.8.2.1 ACTION A), "appl[y] to both units simultaneously." Enclosure 1 of the LAR states that, "[f]ollowing 4b implementation, the actual RICT values will be calculated on a unit-specific basis, using the actual plant configuration and the current revision of the PRA model representing the as-built, as-operated condition of the plant." Please clarify how the two units will calculate and apply a RICT to both units simultaneously. Specifically:

a) Confirm there are two complete and independent baseline PRAs (i.e., one for each unit).

    1. If not, summarize the available baseline PRA models.

    2. If the licensee is not using two complete and independent baseline PRAs, but plan to develop and use two independent configuration risk management program (CRMP) logic models, summarize how the single (but adaptable) baseline PRA model will be transformed into two independent CRMP models.

b) If two independent CRMP logic models will be developed and used:

1. Explain how a RICT will be simultaneously estimated for each unit considering that different SSCs may be out of service in the different units.

2. Summarize any anticipated interactions between the two models being run independently but simultaneously that could affect the RICT estimates.

c) If two independent CRMP models will not be developed:

1. Explain how the unit specific RICT calculations will be appropriately estimated given any differences between the units, interactions between the units caused by shared equipment, and different out of service SSCs in each unit.

*FPL Response*

a) There is one fault tree model comprised of two complete, interdependent PRA models (one for each unit). The units have several crossties and shared systems and components. Where systems or components are shared between the units, they are modeled once with proper ties to the individual units' fault tree logic. In this manner, the risk monitoring software managing the RICT calculations can properly calculate the impact of a configuration regardless of whether it impacts one or both units. The configuration of the plant (both units) is input to CRMP, and the software calculates and displays the results (including the RICTs) for each unit based on the configuration.

b) Not applicable

c) Not applicable

**STSB RAIs**

In the letter dated February 9, 2017, FPL stated that Attachment 2 to the letter provides a complete markup of the TS for this LAR, and superseded the TS markups provided previously. The letter also states FPL's intended approach in this supplement is to remove loss of function provisions. In the supplement dated April 27, 2017, FPL further reduced the scope of the requested TS changes.

The categories of items required to be in the TSs are provided in 10 CFR 50.36(c). As required by 10 CFR 50.36(c)(2)(i), the TSs will include LCOs, which are the lowest functional capability or performance levels of equipment required for safe operation of the facility. Per 10 CFR 50.36(c)(2)(i), when an LCO of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the TSs until the condition can be met.

Within the context of the RICT program, a TS Loss of Function (TS LOF) is considered to exist when there is insufficient OPERABLE equipment to fulfill a safety function. Additional administrative controls are needed to address TS LOF conditions due to safety margin and defense-in-depth considerations.

The staff requests the following information to support a determination that the proposed remedial actions and time frames for completion are appropriate.

**STSB RAI-1**

LCO 3.4.2.2 requires that all pressurizer Code safety valves shall be OPERABLE. The ACTION is applicable when one pressurizer Code safety valve is inoperable. The LAR proposes to apply a Risk Informed Completion Time to this ACTION.

The TS Bases state that during operation, all pressurizer Code safety valves must be OPERABLE to prevent the Reactor Coolant System from being pressurized above its Safety Limit. Based on this statement, it appears that the safety function could not be accomplished if one Code safety valve is inoperable.

If this condition does not represent a loss of function, please provide technical justification supporting that conclusion. If this condition does represent a loss of function, please provide additional justification for its inclusion in the RICT program, including appropriate administrative controls and explain how safety margin and defense-in-depth considerations are maintained

*FPL Response*

As discussed in the response to item 1 in APLA RAI-8.01, Loss of Function, FPL is withdrawing the proposed change to TS 3.4.2.2 that added a risk-informed completion time for an inoperable code safety valve.

**STSB RAI-2**

LCO 3.5.1 requires that each Reactor Coolant System accumulator shall be OPERABLE.

ACTION a applies with one accumulator inoperable, except as a result of boron concentration not being within limits. The LAR proposes to apply a Risk Informed Completion Time to this ACTION.

Section 6.2.2 of the Updated Final Safety Analysis Report (UFSAR) states that:

> The design capacity of the accumulators is based on the assumption that flow from one accumulator spills onto the containment floor through the ruptured loop, and the flow from the remaining accumulators provides sufficient water to fill the volume outside of the core barrel below the nozzles, the bottom plenum, and penetrate the core.

It is not clear to the staff how the assumptions in the accident analysis would be satisfied for a loss of coolant accident (LOCA) in which the contents of one accumulator is lost through the break, and a second accumulator is inoperable at the time of the event.

If this condition does not represent a loss of function, please provide technical justification supporting that conclusion. If this condition does represent a loss of function, please provide additional justification for its inclusion in the RICT program, including appropriate administrative controls and explain how safety margin and defense-in-depth considerations are maintained.

*FPL Response*

As discussed in the response to item 2 in APLA RAI-8.01, Loss of Function, FPL is withdrawing the proposed change to TS 3.5.1, Action a that added a risk-informed completion time for an inoperable accumulator.

**STSB RAI-3**

LCO 3.6.1.7 requires that each containment purge supply and exhaust valve be OPERABLE with the valves sealed closed, except during specified conditions, and that the valves not be opened wider than 33 or 30 degrees, respectively.

ACTION a applies with containment purge supply and/or exhaust isolation valve(s) open for reasons other than stated in the LCO. The action requires isolating the penetration(s) within 4 hours. The proposed change is to allow the calculation of a RICT for this configuration, which would allow postponement of isolating the penetration for up to 30 days.

ACTION b applies with containment purge supply and/or exhaust isolation valve(s) having a measured leakage rate exceeding the limits. The action requires restoring the valve to operable status or isolating the penetrations such that he measure leakage rate does not exceed the limits of within 24 hours. The proposed change is to allow the calculation of a RICT for this configuration, which would allow postponement of restoring the valve to operable status or isolating the penetration for up to 30 days.

The Turkey Point UFSAR Section 14.3.5.1, Environmental Consequences of a Loss-of-Coolant Accident – Analysis, states that

> A large pipe rupture in the reactor coolant system (RCS) is assumed to occur. As a result of the accident, it is assumed that core damage occurs and iodine and noble gas activity is released to the containment atmosphere. A portion of this activity is released via the containment purge system, which is open when the accident occurs and activity is released to the atmosphere through this path until the containment purge system is isolated.

The UFSAR also states:

> The containment purge system is assumed to be open at the time the accident occurs. However, the large break LOCA results in a containment isolation signal, which automatically closes the containment purge system isolation valve. Although the valve closure time is approximately 5 seconds, a closure time of 8 seconds is used in this analysis to account for time for signal generation.

Please explain how the specified safety function of the containment purge portion of the containment ventilation system would be accomplished during application of a RICT to these ACTIONS. Please explain how the proposed changes are consistent with the assumptions regarding isolation of the containment purge system in the accident analysis.

*FPL Response*

FPL is withdrawing the proposed changes that added risk-informed completion times to the Actions in TS 3.6.1.7 for inoperable containment purge valves.

**STSB RAI-4**

TS LCO 3.7.1.5 requires that each main steam line isolation valve (MSIV) be Operable. The ACTION for Mode 1 requires, in part, that with one MSIV inoperable but open, Power Operation may continue provided the inoperable valve is restored to Operable status within 24 hours.

The proposed change is to allow the calculation of a RICT for this configuration, which would allow postponement of restoring the valve to operable status for up to 30 days.

The TS Bases state that the operability of the MSIVs ensures that no more than one steam generator will blow down in the event of a steam line rupture. The UFSAR also describes that MSIV closure is one of the assumptions contained in the Containment HELB analysis to limit the energy release to containment.

It is not clear to the staff how the assumptions in the accident analysis would be satisfied when one MSIV is inoperable. If this condition does not represent a loss of function, please provide technical justification supporting that conclusion. If this condition does represent a loss of function, please provide additional justification for its inclusion in the RICT program, including appropriate administrative controls and explain how safety margin and defense-in-depth considerations are maintained.

*FPL Response*

Each main steam isolation valve (MSIV) assembly consists of the MSIV, the main steam check valve (MSCV), and the main steam bypass valve (MSBV). For breaks downstream of the MSIV, the MSIVs will fully close rapidly following a large break in the steam line, completely terminating the blowdown. For breaks between the steam generator exit and the MSIV, the passive MSCV will prevent blowdown from the intact steam lines. For any break, in any location, no more than one steam generator would experience an uncontrolled blowdown even if one of the MSIVs fails to close.

Based on the description above, the condition in which one MSIV is inoperable does not represent a loss of function. With a failure of the inoperable MSIV to close, the remaining operable MSIVs would close to isolate a leak downstream of the MSIVs, limiting any uncontrolled blowdown to one steam generator. In the event of a leak upstream of the MSIVs, closure of the operable MSIVs and the main steam check valves would limit blowdown to no more that one steam generator.

## EEOB RAIs

### EEOB RAI-1

The Commission's Policy on Probabilistic Risk Assessment ("Use of Probabilistic Risk Assessment Methods in Nuclear Regulatory Activities," dated August 16, 1995) identifies five key safety principles required for risk-informed decision-making applied to changes to TSs as delineated in RG 1.177 and RG 1.174. They are:

- The proposed change meets current regulations;
- The proposed change is consistent with defense-in-depth philosophy;
- The proposed change maintains sufficient safety margins;
- Increases in risk resulting from the proposed change are small and consistent with the Commission's Safety Goal Policy Statement; and
- The impact of the proposed change is monitored with performance measurement strategies.

NEI 06-09, "Risk Informed Technical Specifications Initiative 4b: Risk Managed Technical Specifications (RMTS)," Revision 0-A, states that Risk Management Actions (RMAs) and compensatory actions for significant components should be predefined to the extent practicable in plant procedures and implemented at the earliest appropriate time in order to maintain defense-in-depth.

Moreover, the NRC staff's safety evaluation for NEI 06-09, Section 4.0, "Limitations and Conditions," (ADAMS No. ML12286A322) states that a licensee's LAR adopting the NEI 06-09 initiative will describe the process to identify and provide compensatory measures and RMAs during extended Completion Times (CT), and provide examples of compensatory measures/RMAs.

In LAR dated December 23, 2014, Enclosure 12, "Risk Management Action Examples," the licensee provided two examples of RMAs that are considered during a RICT for: a) inoperable diesel generator, and b) inoperable battery.

Provide similar examples of RMAs to assure a reasonable balance of defense-in-depth is maintained for the following TS actions:

| TS LCO/Action | Description | Current Completion Time |
|---|---|---|
| 3.8.1.1 a Mode 1 | One of two startup transformers inoperable | 48h |
| 3.8.1.1 a Modes 2, 3, 4 | One of two startup transformers inoperable | 24h |
| 3.8.1.1 b** | One required diesel generator inoperable and | 72h |

| TS LCO/Action | Description | Current Completion Time |
|---|---|---|
| | one startup transformer inoperable | |
| 3.8.2.1 a | One battery charger not capable of being powered from its associated diesel generator | 72h |
| 3.8.3.1 a | One train of AC emergency busses not fully energized | 8h |
| 3.8.3.1 b (Unit 3) | Any required LCs and/or MCCs associated with the opposite unit inoperable: | |
| | With all AC Trains OPERABLE<br>- LC 4C and/or MCC 4C Inoperable | 2h (or N/A) |
| | With all AC Trains OPERABLE<br>- LC 4H and/or MCC 4D Inoperable | 2h (or 72h) |
| | With all AC Trains OPERABLE<br>- LC 4B and/or MCC 4B Inoperable | 2h (or N/A) |
| | With AC Trains 3A, 3B, & 4A OPERABLE<br>- LC 4A Inoperable | 72h |
| | With AC Trains 3A, 3B, & 4A OPERABLE<br>- LC 4C and/or MCC 4C Inoperable | 2h (or N/A) |
| | With AC Trains 3A, 3B, & 4A OPERABLE<br>- LC 4H and/or MCC 4D Inoperable | 2h (or 72h) |
| | With AC Trains 3A, 3B, & 4B OPERABLE<br>- LC 4H and/or MCC 4D Inoperable | 2h (or 72h) |
| | With AC Trains 3A, 3B, & 4B OPERABLE<br>- LC 4B and/or MCC 4B Inoperable | 2h (or N/A) |
| | With AC Trains 3A, 3B, & 4B OPERABLE<br>- LC 4D Inoperable | 72h |
| 3.8.3.1 b (Unit 4) | Any required LCs and/or MCCs associated with the opposite unit inoperable: | |
| | With all AC Trains OPERABLE<br>- LC 3C and/or MCC 3C Inoperable | 2h (or N/A) |
| | With all AC Trains OPERABLE<br>- LC 3H and/or MCC 3D Inoperable | 2h (or 72h) |
| | With all AC Trains OPERABLE<br>- LC 3B and/or MCC 3B Inoperable | 2h (or N/A) |
| | With AC Trains 4A, 4B, & 3A OPERABLE<br>- LC 3A Inoperable | 72h |
| | With AC Trains 4A, 4B, & 3A OPERABLE<br>- LC 3C and/or MCC 3C Inoperable | 2h (or N/A) |
| | With AC Trains 4A, 4B, & 3A OPERABLE<br>- LC 3H and/or MCC 3D Inoperable | 2h (or 72h) |
| | With AC Trains 4A, 4B, & 3B OPERABLE<br>- LC 3H and/or MCC 3D Inoperable | 2h (or 72h) |
| | With AC Trains 4A, 4B, & 3B OPERABLE<br>- LC 3B and/or MCC 3B Inoperable | 2h (or N/A) |

| TS LCO/Action | Description | Current Completion Time |
|---|---|---|
| | With AC Trains 4A, 4B, & 3B OPERABLE<br>- LC 3D Inoperable | 72h |
| 3.8.3.1 c (1) | One AC vital panel not energized from its associated inverter or connected to its associated DC bus | 2h |
| 3.8.3.1 c (2) | One AC vital panel not energized from its associated inverter or connected to its associated DC bus | 24h |
| 3.8.3.1 d | One DC BUS not energized from its associated battery bank or charger | 2h<br>(or 24h with 1 unit in Mode 5 or 6) |

### *FPL Response*

Examples of NEE standard RMAs will consist of the following:

- Discuss planned maintenance activity and the associated plant configuration risk impact with operations and maintenance shift crews and obtain operator awareness and approval of planned evolutions.
- Conduct pre-job briefing of maintenance personnel, emphasizing risk aspects of planned plant evolutions.

TS/LCO Action example RMAs:

| TS/LCO ACTION | Description | Current Completion Time | RMA |
|---|---|---|---|
| 3.8.1.1 a Mode 1 | One of two startup transformers inoperable | 48h | Ensure feedwater trains are fully operable<br>Ensure all EDGs operable/protected.<br>Complete 0-OSP-205.1 Startup Transformers and Onsite AC Power Distribution Verification for the Opposite Unit Startup Transformer |
| 3.8.1.1 a Modes 2, 3, 4 | One of two startup transformers inoperable | 24h | Ensure feedwater trains are fully operable<br>Ensure all EDGs operable/protected.<br>Complete 0-OSP-205.1 Startup Transformers and Onsite AC Power Distribution Verification for the Opposite Unit Startup Transformer |
| 3.8.1.1 b | One required diesel generator inoperable | 14 d | Ensure other EDGs operable/protected.<br>Protect unaffected AC trains |
| 3.8.1.1 c | One required diesel generator inoperable and one startup transformer inoperable | 48h or 72h | Ensure feedwater trains are fully operable<br>Ensure other EDGs operable/protected.<br>Complete 0-OSP-205.1 Startup Transformers and Onsite AC Power Distribution Verification for the Opposite Unit Startup Transformer |

| TS/LCO ACTION | Description | Current Completion Time | RMA |
|---|---|---|---|
| 3.8.2.1 a | One battery charger not capable of being powered from its associated diesel generator | 72h | Consider limiting the immediate discharge of the affected battery.<br>Ensure battery float voltage is equal to or greater than the minimum required float voltage<br>Ensure other battery chargers and associated electrical distribution is operable/protected |
| 3.8.3.1 a | One train of AC emergency busses not fully energized | 8h | Protect unaffected AC trains |
| 3.8.3.1 b (Unit 3) | Any required LCs and/or MCCs associated with the opposite unit inoperable: | | |
| | With all AC Trains OPERABLE - LC 4C and/or MCC 4C Inoperable | 2h (or N/A) | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining LCs/MCCs |
| | With all AC Trains OPERABLE - LC 4H and/or MCC 4D Inoperable | 2h (or 72h) | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining LCs/MCCs |
| | With all AC Trains OPERABLE - LC 4B and/or MCC 4B Inoperable | 2h (or N/A) | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining LCs/MCCs |
| | With AC Trains 3A, 3B, & 4A OPERABLE - LC 4A Inoperable | 72h | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining LCs |
| | With AC Trains 3A, 3B, & 4A OPERABLE - LC 4C and/or MCC 4C Inoperable | 2h (or N/A) | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining LCs/MCCs |
| | With AC Trains 3A, 3B, & 4A OPERABLE - LC 4H and/or MCC 4D Inoperable | 2h (or 72h) | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining LCs/MCCs |
| | With AC Trains 3A, 3B, & 4B OPERABLE - LC 4H and/or MCC 4D Inoperable | 2h (or 72h) | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining LCs/MCCs |
| | With AC Trains 3A, 3B, & 4B OPERABLE - LC 4B and/or MCC 4B Inoperable | 2h (or N/A) | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining LCs/MCCs |
| | With AC Trains 3A, 3B, & 4B OPERABLE - LC 4D Inoperable | 72h | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining LCs |
| 3.8.3.1 b (Unit 4) | Any required LCs and/or MCCs associated with the opposite unit inoperable: | | |
| | With all AC Trains OPERABLE | 2h (or N/A) | No planned maintenance on required systems, subsystems, trains, components, and devices that |

| TS/LCO ACTION | Description | Current Completion Time | RMA |
|---|---|---|---|
| | - LC 3C and/or MCC 3C Inoperable | | depend on the remaining LCs/MCCs |
| | With all AC Trains OPERABLE<br>- LC 3H and/or MCC 3D Inoperable | 2h (or 72h) | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining LCs/MCCs |
| | With all AC Trains OPERABLE<br>- LC 3B and/or MCC 3B Inoperable | 2h (or N/A) | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining LCs/MCCs |
| | With AC Trains 4A, 4B, & 3A OPERABLE<br>- LC 3A Inoperable | 72h | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining LCs |
| | With AC Trains 4A, 4B, & 3A OPERABLE<br>- LC 3C and/or MCC 3C Inoperable | 2h (or N/A) | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining LCs/MCCs |
| | With AC Trains 4A, 4B, & 3A OPERABLE<br>- LC 3H and/or MCC 3D Inoperable | 2h (or 72h) | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining LCs/MCCs |
| | With AC Trains 4A, 4B, & 3B OPERABLE<br>- LC 3H and/or MCC 3D Inoperable | 2h (or 72h) | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining LCs/MCCs |
| | With AC Trains 4A, 4B, & 3B OPERABLE<br>- LC 3B and/or MCC 3B Inoperable | 2h (or N/A) | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining LCs/MCCs |
| | With AC Trains 4A, 4B, & 3B OPERABLE<br>- LC 3D Inoperable | 72h | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining LCs |
| 3.8.3.1. c (1) | One AC vital panel not energized from its associated inverter or connected to its associated DC bus | 2h | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining vital AC panels and DC busses |
| 3.8.3.1 c (2) | One AC vital panel not energized from its associated inverter or connected to its associated DC bus | 24h | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining vital AC panels and DC busses |
| 3.8.3.1 d | One DC BUS not energized from its associated battery bank or charger | 2h<br>(or 24h with 1 unit in Mode 5 or 6) | No planned maintenance on required systems, subsystems, trains, components, and devices that depend on the remaining DC busses |

**<u>EEOB RAI-2</u>**

In the LAR, Enclosure 1, Table E1-1 (In Scope TS/LCO Conditions to Corresponding PRA Functions) describes the design success criteria for each TS LCO.

Provide a revised Table E1-1 for the Electrical Power Systems TSs that includes details for each action statement (see table in RAI 1 depicting details by TS action rather than by condition) to be utilized in the RICT Program. Provide the design success criteria for each action and clarify the absolute minimum set of equipment needed to accomplish the safety function.

*FPL Response*

| TS LCO/Action | Design Success Criteria | Minimum equipment |
|---|---|---|
| 3.8.1.1 AC Sources - Operating<br>a. With one of two startup transformers or an associated circuit inoperable | Providing offsite power to the required safety related loads to achieve and maintain safe shutdown (hot shutdown - STS Mode 4) of the units and provide power to the required safety related loads during a design basis accident on one unit. | One startup transformer |
| 3.8.1.1 AC Sources - Operating<br>b. With one of the required diesel generators inoperable | Providing onsite power to the required safety related loads during a Loss of Offsite Power (LOP) to achieve and maintain safe shutdown (hot shutdown - STS Mode 4) of the units and provide power to the required safety related loads during a design basis accident on one unit without availability of offsite power. | One Diesel Generator (Per Unit) |
| 3.8.1.1 AC Sources - Operating<br>c. With one startup transformer and one of the required diesel generators inoperable | Providing onsite power to the required safety related loads during a Loss of Offsite Power (LOP) to achieve and maintain safe shutdown (hot shutdown - STS Mode 4) of the units and provide power to the required safety related loads during a design basis accident on one unit with or without availability of offsite power. | One startup transformer.<br>and<br>one diesel generators (per Unit); |
| 3.8.2.1 DC Sources - Operating<br>a. With one or more of the required battery chargers OPERABLE but not capable of being powered from its associated OPERABLE diesel generator(s) | Sufficient power for safe shutdown and mitigation and control of accident conditions. | A minimum of one battery charger per operable DC bus. |

| TS LCO/Action | Design Success Criteria | Minimum equipment |
|---|---|---|
| 3.8.2.1 DC Sources - Operating<br>b. With one of the required battery banks inoperable, or with none of the full-capacity chargers associated with a battery bank OPERABLE | Sufficient power for safe shutdown and mitigation and control of accident conditions. | A minimum of one battery and charger per operable DC bus |
| 3.8.3.1 Onsite Power Distribution - Operating<br>a. With one of the required trains (3.8.3.1a., b., and c) of A.C. emergency busses not fully energized (except for the required LC's and MCC's associated with the opposite unit) | Sufficient power for safe shutdown and mitigation and control of accident conditions. | One Train per Unit consisting of<br>4160-Volt Bus A,<br>480V LC A, C, and H,<br>480V MCC A (Unit 4 only) and C,<br>OR<br>4160-Volt Bus B<br>480V LC B, D, and H<br>480V MCC B and D |
| 3.8.3.1 Onsite Power Distribution - Operating<br>b. With any of the required LC's and/or MCC's associated with the opposite unit inoperable | | One Train of LCs and MCCs:<br>480-V LC A, C, and H, and 480V MCC A (Unit 4 only) and C,<br>OR<br>480V LC B, D, and H and 480V MCC B and D |
| 3.8.3.1 Onsite Power Distribution - Operating<br>c. With one A.C. vital panel either not energized from its associated inverter, or with the inverter not connected to its associated D.C. bus | | Three Vital AC Panels each energized by its own inverter per unit.<br>Each inverter can only supply power to one vital AC panel. |
| 3.8.3.1 Onsite Power Distribution - Operating<br>d. With one D.C. bus not energized from its associated battery bank or associated charger | | One DC Bus per unit powered by One Battery and One Battery Charger |

**EEOB RAI-3**

In Attachment 2 of the LAR, the TS mark-ups include the TS Tables 3.8-1 (Unit 3) and 3.8-2 (Unit 4) corresponding to action 3.8.3.1 b for inoperability of the opposite unit's LCs and MCCs. The licensee proposed that conditions in these tables be included in the RICT program. However, the conditions for action 3.8.3.1 b were not included in Table E1-2 Unit 3, "In Scope TS/LCO Conditions RICT Estimate."

Provide the estimated RICTs for action 3.8.3.1 b to include each of the applicable conditions in Tables 3.8-1 and 3.8-2.

*FPL Response*

The calculated RICTs are provided in Table E1-2 for each individual condition to which the RICT applies (assuming no other SSCs modeled in the PRA are unavailable). The RICTs presented in the table are based on a Unit 3 model calculation. Due to the close similarity between the Unit 3 and Unit 4 models, the Unit 3 RICTs are considered adequate estimates for the Unit 4 RICTs as well. Following implementation of the RICT Program, the actual RICT values will be calculated on a unit-specific basis using the actual plant configuration and the current revision of the PRA model representing the as-built, as-operated condition of the plant as required by NEI 06-09 and the NRC safety evaluation, and may differ from the RICTs presented.

**Table E1-2: Unit 3 In Scope TS/LCO Conditions RICT Estimate**

| TS LCO/Condition | RICT Estimate (Days)[1] |
|---|---|
| 3.8.3.1 Onsite Power Distribution - Operating | |
| Action b (U3) With all AC Trains OPERABLE - LC 4C Inoperable | 30 |
| Action b (U3) With all AC Trains OPERABLE - MCC 4C Inoperable | 30 |
| Action b (U3) With all AC Trains OPERABLE - LC 4C and MCC 4C Inoperable | 30 |
| Action b (U3) With all AC Trains OPERABLE - LC 4H Inoperable | 30 |
| Action b (U3) With all AC Trains OPERABLE - MCC 4D Inoperable | 30 |
| Action b (U3) With all AC Trains OPERABLE - LC 4H and MCC 4D Inoperable | 30 |
| Action b (U3) With all AC Trains OPERABLE - LC 4B Inoperable | 30 |
| Action b (U3) With all AC Trains OPERABLE - MCC 4B Inoperable | 30 |
| Action b (U3) With all AC Trains OPERABLE - LC 4B and MCC 4B Inoperable | 30 |
| Action b (U3) With AC Trains 3A, 3B, & 4A OPERABLE - LC 4A Inoperable | 27 |
| Action b (U3) With AC Trains 3A, 3B, & 4A OPERABLE - LC 4C Inoperable | 22 |
| Action b (U3) With AC Trains 3A, 3B, & 4A OPERABLE - MCC 4C Inoperable | 30 |
| Action b (U3) With AC Trains 3A, 3B, & 4A OPERABLE - LC 4C and MCC 4C Inoperable | 22 |
| Action b (U3) With AC Trains 3A, 3B, & 4A OPERABLE - LC 4H Inoperable | 23 |
| Action b (U3) With AC Trains 3A, 3B, & 4A OPERABLE - MCC 4D Inoperable | 23 |

| | |
|---|---|
| Action b (U3) With AC Trains 3A, 3B, & 4A OPERABLE - LC 4H and MCC 4D Inoperable | 23 |
| Action b (U3) With AC Trains 3A, 3B, & 4B OPERABLE - LC 4H Inoperable | 30 |
| Action b (U3) With AC Trains 3A, 3B, & 4B OPERABLE - MCC 4D Inoperable | 30 |
| Action b (U3) With AC Trains 3A, 3B, & 4B OPERABLE -LC 4H and MCC 4D Inoperable | 30 |
| Action b (U3) With AC Trains 3A, 3B, & 4B OPERABLE - LC 4B Inoperable | 30 |
| Action b (U3) With AC Trains 3A, 3B, & 4B OPERABLE - MCC 4B Inoperable | 30 |
| Action b (U3) With AC Trains 3A, 3B, & 4B OPERABLE - LC 4B and MCC 4B Inoperable | 30 |
| Action b (U3) With AC Trains 3A, 3B, & 4B OPERABLE - LC 4D Inoperable | 15 |

[1] Estimated RICT with the 30 day maximum applied.

# ATTACHMENT 1

Markup of the Unit 3 and Unit 4 Operating Licenses

(3 pages follow)

**INSERT OL**

I. FPL is authorized to implement the Risk Informed Completion Time Program as approved in License Amendment No. XXX subject to the following condition:

FPL will complete the items listed in the table of implementation items in the enclosure to FPL letter L-2017-168 dated October 30, 2017 prior to implementation of the Risk Informed Completion Time Program.

H. PAD TCD Safety Analyses

1. PAD 4.0 TCD has been specifically approved for use for the Turkey Point licensing basis analyses. Upon NRC's approval of a revised generic version of PAD that accounts for Thermal Conductivity Degradation (TCD), FPL will within six months:

    a. Demonstrate that PAD 4.0 TCD remains conservatively bounding in licensing basis analyses when compared to the new generically approved version of PAD w/TCD, or
    b. Provide a schedule for the re-analysis using the new generically approved version of PAD w/TCD for any of the affected licensing basis analyses.

INSERT OL

4. This renewed license is effective as of the date of issuance, and shall expire at midnight July 19, 2032.

FOR THE NUCLEAR REGULATORY COMMISSION

Signed by
Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

Attachments:
Appendix A – Technical Specifications for Unit 3
Appendix B – Environmental Protection Plan

Date of Issuance: June 6, 2002

H. PAD TCD Safety Analyses

1. PAD 4.0 TCD has been specifically approved for use for the Turkey Point licensing basis analyses. Upon NRC's approval of a revised generic version of PAD that accounts for Thermal Conductivity Degradation (TCD), FPL will within six months:

   a. Demonstrate that PAD 4.0 TCD remains conservatively bounding in licensing basis analyses when compared to the new generically approved version of PAD w/TCD, or
   b. Provide a schedule for the re-analysis using the new generically approved version of PAD w/TCD for any of the affected licensing basis analyses.

INSERT OL

4. This renewed license is effective as of the date of issuance, and shall expire at midnight April 10, 2033.

FOR THE NUCLEAR REGULATORY COMMISSION

Signed by
Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

Attachments:
Appendix A – Technical Specifications for Unit 4
Appendix B – Environmental Protection Plan

Date of Issuance: June 6, 2002

# ATTACHMENT 2

Markup of the Technical Specifications

(2 pages follow)

**INSERT RICT PROGRAM**

n. Risk Informed Completion Time Program

This program provides controls to calculate a Risk Informed Completion Time (RICT) and must be implemented in accordance with NEI 06-09, "Risk-Informed Technical Specifications Initiative 4b: Risk-Managed Technical Specifications (RMTS) Guidelines," Revision 0-A, November 2006. The program shall include the following:

a. The RICT may not exceed 30 days;

b. A RICT may only be utilized in MODES 1 and 2;

c. When a RICT is being used, any plant configuration change within the scope of the Risk Informed Completion Time Program must be considered for the effect on the RICT.

1. For planned changes, the revised RICT must be determined prior to implementation of the change in configuration.

2. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Time (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less.

3. Revising the RICT is not required if the plant configuration change would lower plant risk and would result in a longer RICT.

d. Use of a RICT is not permitted for entry into a configuration which represents a loss of a specified safety function or inoperability of all required trains of a system required to be OPERABLE.

e. If the extent of condition evaluation for inoperable structures, systems, or components (SSCs) is not complete prior to exceeding the Completion Time, the RICT shall account for the increased possibility of common cause failure (CCF) by either:

1. Numerically accounting for the increased possibility of CCF in the RICT calculation, or
2. Risk Management Actions (RMAs) not already credited in the RICT calculation shall be implemented that support redundant or diverse SSCs that perform the function(s) of the inoperable SSCs, and, if practicable, reduce the frequency of initiating events that challenge the function(s) performed by the inoperable SSCs.

f. A RICT must be calculated using internal events, internal floods, and fire PRA. The PRA maintenance and upgrade process will validate that changes to the PRA models used in the RICT program follow the guidance in Appendix 1-A of ASME/ANS RA-Sa-2009, "Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications."

g. A report shall be submitted following each PRA upgrade and associated peer review, and prior to using the upgraded PRA to calculate a RICT. The report shall describe the scope of the upgrade.

PROCEDURES AND PROGRAMS (Continued)

l. Surveillance Frequency Control Program

This program provides controls for Surveillance Frequencies. The program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operations are met:

a. The Surveillance Frequency Control Program shall contain a list of frequencies of those Surveillance Requirements for which the frequency is controlled by the program.

b. Changes to the frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, " Risk-Informed Method for Control of Surveillance Frequencies," Revision 1.

c. The provisions of Surveillance Requirements 4.0.2 and 4.0.3 are applicable to the frequencies established in the Surveillance Frequency Control Program.

m. Snubber Testing Program

This program conforms to the examination, testing and service life monitoring for dynamic restraints (snubbers) in accordance with 10 CFR 50.55a inservice inspection (ISI) requirements for supports. The program shall be in accordance with the following:

a. This program shall meet 10 CFR 50.55a(g) ISI requirements for supports.

b. The program shall meet the requirements for ISI of supports set forth in subsequent editions of the Code of Record and addenda of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (BPV) Code and the ASME Code for Operation and Maintenance of Nuclear Power Plants (OM Code) that are incorporated by reference in 10 CFR 50.55a(a) subject to the use and conditions on the use of standards listed in 10 CFR 50.55a(b) and subject to Commission approval.

c. The program shall, as required by 10 CFR 50.55a(b)(3)(v), meet Subsection ISTA, "General Requirements" and Subsection ISTD, "Preservice and Inservice Examination and Testing of Dynamic Restraints (Snubbers) in Light-Water Reactor Nuclear Power Plants".

INSERT RICT PROGRAM

d. The 120-month program updates shall be made in accordance with 10 CFR 50.55a(g)(4), 10 CFR 50.55a(g)(3)(v) and 10 CFR 50.55a(b) (including 10 CFR 50.55a(b)(3)(v)) subject to the conditions listed therein.

6.8.5 DELETED