

## **NRR-PMDAPEm Resource**

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**From:** Wentzel, Michael  
**Sent:** Thursday, August 10, 2017 2:06 PM  
**To:** Guth, Mitch  
**Cc:** Kilby, Gary; Mack, Jarrett; Hanek, Olga  
**Subject:** Request for Additional Information - Turkey Point 3 & 4 LAR-236 (CACs MF5455 & MF5456)

Mitch,

By letter dated December 23, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15029A297), as supplemented by letters dated June 16, 2016, August 11, 2016, February 9, 2017, and April 27, 2017 (ADAMS Accession Nos. ML16180A178, ML16243A104, ML17060A249, and ML17117A618, respectively), Florida Power & Light Company (FPL, the licensee) submitted License Amendment Request (LAR) No. 236 for Turkey Point Nuclear Generating Unit Nos. 3 and 4 (Turkey Point). The proposed amendments would revise the Technical Specifications (TSs) to Implement TS Task Force (TSTF)-505, Revision 1, "Provide Risk-Informed Extended Completion Times RITSTF [Risk-Informed TSTF] Initiative 4b." By letter dated November 15, 2016 (ADAMS Accession No. ML16281A021), the U.S. Nuclear Regulatory Commission (NRC) staff informed the TSTF of its decision to suspend approval of TSTF-505, Revision 1 because of concerns identified during the review of plant-specific license amendments requesting adoption of the traveler. The NRC staff is reviewing the licensee's application as a site-specific proposal to address the staff's concerns with TSTF-505, Revision 1.

The NRC's Probabilistic Risk Assessment (PRA) Licensing Branch (APLA), Technical Specifications Branch (STSB), and Electrical Engineering Operating Reactor Branch (EEOB) staff have reviewed the application and identified areas where they need additional information to support their review.

The NRC staff's request for additional information (RAI) is provided below. Draft copies of the RAIs were provided to your staff on June 27, July 18, and August 3, 2017. Based on a clarification call with your staff on July 10, 2017, APLA RAI-2.01 was modified to add additional discussion to the basis for that request. As discussed with Mr. Gary Kilby of the licensee's staff on August 9, 2017, the NRC staff requests your response to the RAI within 60 days of the date of this email.

Sincerely,

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### **APLA RAIs**

#### **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).

#### **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.

#### **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).

#### **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.

- 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.

#### **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.

#### **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).

#### **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.

#### **APLA RAI-14 Evaluation of Common Cause Failure for Emergent Conditions**

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.

### **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)

### **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.*

### **APLA RAI-17 External Events**

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.

### **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.

## **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.

### **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.

### **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 the measured 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.

### **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.

## **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:

<b>TS LCO/Action</b>	<b>Description</b>	<b>Current Completion Time</b>
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

<b>TS LCO/Action</b>	<b>Description</b>	<b>Current Completion Time</b>
3.8.1.1 b**	One required diesel generator inoperable and one startup transformer inoperable	72h
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 - LC 4C and/or MCC 4C Inoperable	2h (or N/A)
	With all AC Trains OPERABLE - LC 4H and/or MCC 4D Inoperable	2h (or 72h)
	With all AC Trains OPERABLE - LC 4B and/or MCC 4B Inoperable	2h (or N/A)
	With AC Trains 3A, 3B, & 4A OPERABLE - LC 4A Inoperable	72h
	With AC Trains 3A, 3B, & 4A OPERABLE - LC 4C and/or MCC 4C Inoperable	2h (or N/A)
	With AC Trains 3A, 3B, & 4A OPERABLE - LC 4H and/or MCC 4D Inoperable	2h (or 72h)
	With AC Trains 3A, 3B, & 4B OPERABLE - LC 4H and/or MCC 4D Inoperable	2h (or 72h)
	With AC Trains 3A, 3B, & 4B OPERABLE - LC 4B and/or MCC 4B Inoperable	2h (or N/A)
	With AC Trains 3A, 3B, & 4B OPERABLE - 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 - LC 3C and/or MCC 3C Inoperable	2h (or N/A)
	With all AC Trains OPERABLE	2h (or 72h)

TS LCO/Action	Description	Current Completion Time
	- LC 3H and/or MCC 3D Inoperable	
	With all AC Trains OPERABLE - LC 3B and/or MCC 3B Inoperable	2h (or N/A)
	With AC Trains 4A, 4B, & 3A OPERABLE - LC 3A Inoperable	72h
	With AC Trains 4A, 4B, & 3A OPERABLE - LC 3C and/or MCC 3C Inoperable	2h (or N/A)
	With AC Trains 4A, 4B, & 3A OPERABLE - LC 3H and/or MCC 3D Inoperable	2h (or 72h)
	With AC Trains 4A, 4B, & 3B OPERABLE - LC 3H and/or MCC 3D Inoperable	2h (or 72h)
	With AC Trains 4A, 4B, & 3B OPERABLE - LC 3B and/or MCC 3B Inoperable	2h (or N/A)
	With AC Trains 4A, 4B, & 3B OPERABLE - 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 (or 24h with 1 unit in Mode 5 or 6)

### **EEOB RAI-2**

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.

### **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.

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