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L-2016-114
10 CFR 50.90

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

St. Lucie Nuclear Plant, Units 1 and 2
Docket Nos. 50-335 and 50-389

Re: Response to Request for Additional Information Regarding License Amendment Request to Adopt TSTF-505, "Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4B"

References:

1. Florida Power & Light Company letter L-2014-242 "Application to Adopt TSTF-505, Revision 1, Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4B," December 5, 2014 (ML14353A016)
2. NRC E-mail "Request for Additional Information - St. Lucie TSTF-505 EICB - MF5372 & MF 5373," March 28, 2016
3. NRC E-mail "Request for Additional Information - St. Lucie TSTF-505 APLA - MF5372 & MF5373," April 13, 2016

In Reference 1, Florida Power & Light Company (FPL) submitted a license amendment request (LAR) for St. Lucie Units 1 & 2. 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 References 2 and 3, the NRC staff requested additional information to complete its review of the LAR. The Enclosure to this letter provides FPL's response to the requests for additional information. As discussed with the NRC staff, FPL will provide its response to the four remaining questions (RAI-MF5372/73-EICB-01, RAI-MF5372/73-APLA-08 R1, RAI-MF5372/73-SBPB-01, and RAI-MF5372/73-SBPB-02) by July 26, 2016.

Attachments 1 and 2 to the Enclosure provide markups of the TS for Unit 1 and Unit 2, respectively, showing revisions to the proposed changes. These markups supersede the corresponding markups provided in Reference 1. Revised TS pages for Unit 1 and Unit 2 are provided in Attachments 4 and 5, respectively. The revised TS pages supersede the corresponding pages provided in Reference 1. Attachment 3 contains a proposed TS Bases change that was not included in Reference 1 and an updated Bases change to Unit 2.

The revisions to the proposed changes included in this response do not alter the conclusion 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.

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NRR

No new or revised commitments are included in this letter.

Should you have any questions regarding this submittal, please contact Mr. Mike Snyder, Licensing Manager, at (772) 467-7036

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

Executed on July 8, 2016

Sincerely,

Christopher R. Costanzo

Site Vice President
St. Lucie Nuclear Plant

Enclosure

cc: NRC Regional Administrator, Region II
NRC Senior Resident Inspector, St. Lucie Units 1 and 2
NRC Project Manager
Ms. Cindy Becker, Florida Department of Health

ENCLOSURE

Response to Request for Additional Information Regarding License Amendment Request to Adopt TSTF-505, "Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4B"

EICB RAIs

RAI-MF5372/73-EICB-02

NEI 06-09 Rev. 0-A states that a Risk Informed Completion Time (RICT) cannot be used in a condition where there is a total loss of Technical Specification (TS) specified safety function; however, the LAR does not describe how it will be determined if there is a total loss of safety function.

For each I&C function where there is a proposed ACTION for the condition where two or more less than the minimum number of operable channels are OPERABLE, please describe the process of how it will be determined if there is total loss of TS specified safety function.

FPL Response

Loss of a TS specified safety function will not result if a sufficient number of channels remain operable or PRA functional to initiate a reactor trip or engineered safety features actuation signal when plant parameters exceed the actuation setpoint. For manual actuations with two redundant channels, at least one channel must be operable or PRA functional to provide manual actuation capability. For automatic actuations involving a 2-of-3 or 2-of-4 actuation logic, at least two channels must remain operable or PRA functional to initiate automatic actuation. A functional channel may include an inoperable channel that is in the tripped condition. Guidance on crediting PRA functionality will be addressed in the implementing procedures for the Risk Informed Completion Time Program.

RAI-MF5372/73-EICB-03

For each FUNCTIONAL UNIT in TS Tables 3.3-1 and 3.3-3 (to which TSTF-505 is being applied), please identify the minimum number of channels that must be OPERABLE or PRA Functional for there not to be a total loss of TS specified safety function.

FPL Response

The table below identifies the minimum number of channels that must be operable or PRA functional to avoid a total loss of TS specified safety function (for the instrumentation functions to which TSTF-505 is being applied).

Functional Unit	Total No. of Channels	No. of Channels to Meet Safety Function (No. of channels to trip)
St. Lucie Unit 1 - TS Table 3.3-1		
1. Manual Reactor Trip	2	1
St. Lucie Unit 1 - TS Table 3.3-3		
1.a Safety Injection Manual (Trip Buttons)	2	1
2.a Containment Spray Manual (Trip Buttons)	2	1
2.b Containment Spray Containment Pressure - High-High	4	2
3.a Containment Isolation Manual (Trip Buttons)	2	1

Functional Unit	Total No. of Channels	No. of Channels to Meet Safety Function (No. of channels to trip)
4.a Main Steam Line Isolation Manual (Trip Buttons)	2/SG	1/SG
5.a Containment Sump Recirculation Manual RAS (Trip Buttons)	2	1
5.b Containment Sump Recirculation Refueling Water Tank - Low	4	2
7.a Auxiliary Feedwater Manual (Trip Buttons)	4/SG	2/SG
7.b Auxiliary Feedwater Automatic Actuation Logic	4/SG	2/SG
7.c Auxiliary Feedwater SG Level (1A/1B) - Low	4/SG	2/SG
8.a Auxiliary Feedwater Isolation SG-1A-1B Differential Pressure	4/SG	2/SG
8.b Auxiliary Feedwater Isolation Feedwater Header 1A-1B Differential Pressure	4/SG	2/SG
St. Lucie Unit 2 - TS Table 3.3-1		
1. Manual Reactor Trip	4	2
St. Lucie Unit 2 - TS Table 3.3-3		
1.a Safety Injection Manual (Trip Buttons)	2	1
1.d Safety Injection Automatic Actuation Logic	2	1
2.a Containment Spray Manual (Trip Buttons)	2	1
2.b Containment Spray Containment Pressure - High-High	4	2
2.c Containment Spray Automatic Actuation Logic	2	1
3.a Containment Isolation Manual CIAS (Trip Buttons)	2	1
3.e Containment Isolation Automatic Actuation Logic	2	1
4.d Main Steam Line Isolation Automatic Actuation Logic	2	1
5.a Containment Sump Recirculation Manual RAS (Trip Buttons)	2	1
5.b Containment Sump Recirculation Refueling Water Tank Low	4	2
5.c Containment Sump Recirculation Automatic Actuation Logic	2	1
6.a.(1) Loss of Power 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	2/bus	2/Bus
6.a.(2) Loss of Power 480 V Emergency Bus Undervoltage (Loss of Voltage)	3/bus	2/Bus
6.b.(1) Loss of Power 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	3/bus	2/Bus
6.b.(2) Loss of Power 480 V Emergency Bus Undervoltage (Degraded Voltage)	3/bus	2/Bus
7.a Auxiliary Feedwater Manual (Trip Buttons)	4/SG	2/SG
7.b Auxiliary Feedwater Automatic Actuation Logic	4/SG	2/SG
7.c Auxiliary Feedwater SG Level (2A/2B) - Low	4/SG	2/SG
8.a Auxiliary Feedwater Isolation SG 2A - 2B Differential Pressure	4/SG	2/SG
8.b Auxiliary Feedwater Isolation Feedwater Header 2A - 2B Differential Pressure	4/SG	2/SG

RAI-MF5372/73-EICB-04

The Model Application to TSTF-505, Revision 1, "Proposed Revision to the Model Application for TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b'," Enclosure 1 (ADAMS Accession No. ML12032A065) states:

This enclosure [Enclosure 1, "List of Revised Required Actions to Corresponding PRA Functions"] should provide a description of PRA functionality for each associated specified safety function that corresponds to each proposed Required Action that is applicable when all trains of equipment are inoperable as discussed in Section 2.3.1.10 of NEI 06-09. For example, the number and identity of instrumentation and control channels (or functions) required to be PRA functional is highly dependent on the specific plant and associated equipment design.

Enclosure 1 guidance is included as part of the model application because the NRC staff seeks clarity in how PRA Functional will be used during full power operation following "loss of a specified safety function or inoperability of all required trains or divisions of a system."

In the LAR, Enclosure 1, "List of Revised Required Actions to Corresponding PRA Functions," the "PRA Success Criteria" is indicated as being the same as the "Design Success Criteria," that is, the same minimum number of channels actuate.

In several cases the LAR, Enclosure 1 identifies that I&C SSCs are not modeled in the PRA, rather are surrogated to conservatively bound the risk increase is used (e.g., operator action). NEI 06-09 Section 2.3.1 Item No 11 includes criteria for determining PRA functionality of components, and these criteria were developed based on the assumption the function would be modeled in the PRA.

Please describe how the criteria of Item No. 11 will be applied to surrogates.

FPL Response

Surrogate events are only used when representing "PRA dysfunction" where one or more events are set to True to represent failure of a function. The criteria of Item No. 11 are applicable for "PRA functionality" where degraded or failed function is argued to be "PRA functional" for the purpose of RICT calculation and nothing is used to represent any functional failure. Therefore, the criteria of Item No. 11 are not applicable to conditions where a surrogate event is used or applied.

RAI-MF5372/73-EICB-05

The LAR appears to be making the same changes to both units; however, Insert No. 3 (see Attachment 7 page 2 of 15) contains an insert that is not on Unit 1 (i.e., for "B.3.3.2, Engineered Safety Features Actuation System Instrumentation"). Please explain.

FPL Response

The LAR is making similar changes to TS Table 3.3-3, Engineered Safety Features Actuation System Instrumentation, for St. Lucie Units 1 & 2; however, the LAR did not contain the associated TS Bases changes for Unit 1. Attachment 3 contains proposed changes to the Unit 1 Bases for TS 3.3.2, Engineered Safety Features Actuation System Instrumentation, similar to those for Unit 2.

RAI-MF5372/73-EICB-06

The LAR appears to be making the same changes to both units; however, the wording associated with the two units is different (Attachment 2 Insert No. 6 vs. Attachment 3 Insert No. 4). The meaning of these two texts is different when applied to the Manual (trip buttons). Please explain.

Furthermore, for Unit 1 option "a." and option "b." address the same condition when applied to the Manual (trip buttons). Please explain.

FPL Response

The changes provided in Insert No. 6 in Attachment 2 (Unit 1) and Insert No. 4 in Attachment 3 (Unit 2) are associated with auxiliary feedwater actuation (AFAS) instrumentation. The requirements in TS Table 3.3-3 for AFAS are the same for both units. FPL has revised the proposed change in Insert No. 6 in Attachment 2 for Unit 1 to use wording consistent with that used in the corresponding change for Unit 2. The existing Action addresses the condition where one channel is inoperable. The proposed new Action will address the condition in which two channels are inoperable. This change will also eliminate the discrepancy that option "a." and option "b." address the same condition when applied to the function "Manual (trip buttons)."

The proposed Action for two inoperable AFAS channels (Insert No. 4 in Attachment 3) incorrectly specifies a completion time of 48 hours. FPL has changed this completion time to one hour, consistent with TSTF-505.

Attachments 1 and 2 contain markups of the TS showing the revised proposed changes, and clean pages are provided in Attachments 4 and 5.

RAI-MF5372/73-EICB-07

The LAR adds an action "d." to Action No. 10. This action addresses the condition when "two or more less than the minimum channels of the Containment Pressure High-High" are OPERABLE. If only one channel is INOPERABLE then the applicant must place that channel in trip within 48 hours (see action "a."); however, for more degraded conditions (see actions "c." and "d." there is not comparable requirement. Please explain.

Also, the way Action No. 10 (on Unit 1) is formatted, it appears that the preamble text is applicable to all sub-actions (i.e., "a." through "d."), but it does not apply to actions "c." and "d.". The same condition exists on Unit 2. Please explain.

FPL Response

Action 10c (Unit 1) and Action 18c (Unit 2), which address the condition in which the number of operable channels is one less than the minimum channels operable requirement, require placing one inoperable channel in the tripped condition within one hour. As a result, FPL has revised proposed Actions 10d and 18d, which address a more severe condition, to include an additional requirement to place one inoperable channel in the tripped condition within one hour. (Action 10 (Unit 1) and Action 18 (Unit) have been reformatted so that originally proposed Actions 10d and 18d are now Actions 10C and 18C.)

The preamble text in Action 10 (Unit 1) and Action 18 (Unit 2) states "With the number of OPERABLE channels one less than the Total Number of Channels,..." However, this text is not applicable to sub-actions 10c and 18c, which address the condition where the number of operable channels is one less than the minimum channels operable requirement. These Actions have been re-formatted to resolve this discrepancy. In addition, a similar discrepancy exists in Action 14 (Unit 1) and Action 20 (Unit 2) of TS table 3.3-3. In each case, the preamble text does not apply to sub-action "c." FPL proposes to resolve this discrepancy with an editorial change that establishes the "c" sub-actions as separate Actions.

Attachments 1 and 2 contain markups of the TS showing the revised proposed changes, and clean pages are provided in Attachments 4 and 5.

APLA RAIs

RAI-MF5372/73-APLA-01 (Internal event probabilistic risk assessment (PRA))

a. Facts and Observations (F&Os) AS-06 from the internal events probabilistic risk assessment (IEPRA) peer review listed in Table E2-A1 of the LAR states that scenarios that involve loss of all Main Feedwater (MFW) and Auxiliary Feedwater (AFW) are conservatively modeled because use of Condensate pumps to provide low-pressure feed is not credited. Clarify how not crediting the Condensate pumps impacts the risk-informed completion time (RICT) estimates.

b. F&O IE-01 from the IEPRA peer review listed in Table E2-A1 of the LAR states that the Loss of Off-Site Power (LOSP) frequency used in the PRA was derived from early generic industry data and introduces a "high degree of conservatism" into the PRA. The disposition to this F&O explains that more current LOSP data published in an Electric Power Research Institute (EPRI) report of industry data from 1997 to 2008, "will be considered during the cyclical maintenance and update of this calculation", and that, "the downward trend of LOSP annual frequency should have improved effects on the model." This explanation appears to indicate that the LOSP frequency has not yet been updated and therefore the LOSP frequency used in the PRA remains conservatively high. Clarify how using outdated LOSP frequency estimates impacts the RICT estimates.

c. F&O IE-04 from the IEPRA peer review listed in Table E2-A1 of the LAR states that the PRA did not address multiple 120 VAC instrument bus failure initiating events. PRA standard Supporting Requirement (SR) IE-A5 cited with the F&O states that, "a systemic evaluation of each system, including support systems," should be performed to assess the possibility of an initiating event, and SR IE-A6 (cited with the F&O) states that such an assessment should include, "multiple failure if the equipment failures result from a common cause." The disposition to this F&O states that, "[m]ultiple instrument bus failures are judged to be a low probability," but does not justify this conclusion, particularly for RICT calculations where one or more buses may be unavailable as part of the TS condition. Clarify how the simplified modelling of instrument busses impacts the RICT estimates.

FPL Response

a. Not crediting low pressure injection from the Condensate pumps for scenarios involving total loss of feedwater or those requiring initiation of once-through-cooling would increase the risk impact associated with plant configurations where these scenarios are considered top risk contributors, and would reduce the associated RICT. Therefore, the existing model is conservative with regard to the related RICT calculations.

b. The F&O was developed during 2002 peer review. The current approved evaluation for LOSP frequency is completed using the more recent data. Therefore, this is not an issue for RICT Program implementation.

c. The model includes individual loss of 120V instrument buses as initiating events, but does not consider multiple simultaneous failure of two or more buses due to low probability. This conclusion is justified by the low frequency of the single instrument bus initiating event (about 9E-04/yr), and the fact that historical plant-specific data updates since the IPE submittal have not identified such failures. However, common cause failures of instrument bus inverters are considered in the model for mitigation. Not including low frequency initiating events in the model would have a very small impact on RICT estimates.

RAI-MF5372/73-APLA-02 (Fire PRA)

Enclosure 1, page 16 of 23 in the LAR states that the estimated risk-informed completion time (RICT) will be calculated using the fire PRA (or results) from NFPA 805 (LAR Reference 5: Report 0493060006.105 Rev. 4, St. Lucie Nuclear Plant Fire PRA Summary Report, NUREG/CR-6850 Task 16, ERIN Engineering, March 2013). This does appear to be the latest version of the Fire PRA. For example, the response to NFPA PRA RAI 21 by letter dated October 10, 2014 (ADAMs Accession Number (ADAMS) ML14296A435), summarizes a variety of method and model changes that were required to utilize only acceptable methods in the final NFPA 805 fire PRA.

a) Is the fire PRA that will be used to support the RICT calculations the same fire PRA that was determined to be acceptable for the NFPA 805 transition and future self-approval?

b) How will the maintenance and change process ensure that the latest model of record used in the RICT program reflects the as-built, as-operated plant.

FPL Response

a) The latest revision of the fire PRA used to support the RICT calculations will be the same model determined to be acceptable for the NFPA-805 transition and future self-approval.

b) The model maintenance and update process and its respective standard PRA procedure included requirements to update the model of record by various triggering factors to ensure that the model is consistent with as-built, as operated plant, to be followed by update of respective PRA applications, including the PHOENIX Model, which is the

model currently being used as the "On-Line Risk Monitor" for the site. The PHOENIX model is planned to be replaced by an integrated fire PRA and internal events model to support the 4b application and RICT calculations. The PHOENIX Software developed by EPRI has the capability to perform RICT calculations using the integrated PRA model. Therefore, per the PRA process, each time a model of record is updated, an integrated PHONEIX Model supporting RICT calculation is also updated for use at the site.

RAI-MF5372/73-APLA-03 (Technical Specification (TS) Limiting (Condition of Operation) LCO 3.6.1.3, 3.6.1.7 and 3.6.3.1)

The disposition for PRA Success Criteria associated with TS LCO 3.6.1.7 (Unit 2 Containment Ventilation) presented in LAR Enclosure 1, Table E1-1 states, "The PRA Model includes a large, pre-existing containment leak; this would be bounding for the risk associated with an inoperable air lock door closed, and can be used as a bounding surrogate." The disposition for PRA functionality associated with TS LCO 3.6.3.1 (Containment Isolation Valves) and TS LCO 3.6.1.3 (Containment Air Locks) also refer to use of this leak event in the PRA as a surrogate. Explain why the leakage for a "large pre-existing containment leak" is a "bounding surrogate" for the leak events above.

FPL Response

The "large pre-existing containment leak" basic event results in all core damage scenarios going directly to a large early release. By setting this event to logical TRUE in the model when a RICT is in effect, all core damage scenarios become LERF scenarios. This bounds the impact of the actual plant condition where containment is still available by redundant isolation valves or a containment air lock door, and an additional failure must occur to cause a breach of the containment boundary.

NUREG/CR-4220 included St. Lucie Unit 2 example and values of leak area and respective probabilities. Most recent studies developed for containment integrated leak rate testing extensions included small breach (Class 3a assessed at 10La) and large breach (Class 3b, 100% LERF, assessed at 100La) to be significantly less than 1E-07/yr in each unit. However, while both events are logically equivalent to lead to LERF top event but with different probabilities depending on the breach size, setting the 100% LERF large breach event to logical TRUE would be a conservative bounding surrogate when used for smaller breach (but 100% LERF scenario) in RICT calculations.

RAI-MF5372/73-APLA-04 (TS LCO 3.3.1.1)

The disposition for PRA functionality associated with manual trip functions in TS LCOs 3.3.1.1 presented in LAR Enclosure 1, Table E1-1 explains that operator failures to manually initiate the trip functions will be used as surrogate events "to conservatively bound the risk increase associated with [these] function[s]." Please confirm this involves setting the surrogate Human Error Probabilities (HEP) = 1.0 (or to "True") to calculate RICT events.

FPL Response

Yes, FPL confirms that the manual trip functions in TS LCOs 3.3.1.1 will be evaluated using a surrogate Human Error Event with probability set =1.0 or TRUE.

RAI-MF5372/73-APLA-05 (Minimum Joint HEPs)

Guidance in NUREG-1792, "Good Practices for Implementing Human Reliability Analysis (HRA)," (Table 2-1) recommends joint human error probability (HEP) values should not be below 1E-05. Table 4-3 of EPRI 1021081, "Establishing Minimum Acceptable Values for Probabilities of Human Failure Events," provides a lower limiting value of 1E-06 for sequences with a very low level of dependence. F&O HG-G6-1 from the IEPRA peer review listed in LAR Enclosure 2, Table E2-A1 states "the dependency analysis that was performed did not have a reasonableness check of the combined human failures provided." The F&O noted that a number of HEP combinations from the PRA had resulted in probabilities in the 1E-10 to 1E-16 range. Based on the disposition to this F&O, it appears that minimum joint HEPs were not applied in the PRA and that no update was made to the PRA as a result of this F&O. The NRC staff notes that underestimation of minimum joint probabilities could result in non-conservative RICTs of varying degrees for different inoperable SSCs.

Furthermore, the staff has considered the licensee's response to NFPA 805, PRA RAI 21.b (October 10, 2014, ADAMS ML14296A435) which clarified the disposition of RAI 17.b.01 by discussing the minimum joint HEP value and the use of final composite analysis. The NRC concluded that the fire PRA values include an acceptable minimum joint HEP value but these changes were not reviewed for internal events.

Given that it is not clear from the F&O disposition whether or to what extent a dependency analysis was performed as part of the HRA, and whether minimum joint probabilities were applied to combinations of HEPs appearing in the same 'cutset,' provide the following:

a) Describe the HRA dependency analysis performed in response to this F&O used in the PRA and whether it is consistent with NRC accepted guidance. In the response, specifically address how each of the issues identified by the peer review was dispositioned. If the approach to performing HRA dependency analysis is not consistent with NRC guidance, then justify this departure.

b) Also, confirm that each joint HEP value used in the internal events PRA below 1.0E-06, and each joint HEP used in the fire PRA below 1E-05, includes its own separate justification that demonstrates the inapplicability of the NUREG-1792 lower guideline values. Provide an estimate of the number of joint HEPs below the guideline values, discuss the range of values, and provide at least two different examples where justification has been developed.

c) If the assessment described in item b) has not been performed or if minimum joint probability "floor" was not applied or the value of the "floor" cannot be justified, then explain how underestimating joint human error probabilities impacts the RICT estimates.

FPL Response

a) The current St. Lucie internal events and fire PRA models both employ a joint HEP floor consistent with the NRC guidance.

b) The current internal events model has a joint HEP floor of 1E-06. Five joint HEPs were evaluated in detail and assigned a probability lower than 1E-06, based on the THERP dependency analysis algorithm in the HRA Calculator. This was done after a detailed review of the sequences to confirm that the timing, cues, manpower, and stress levels of the constituent HFEs justify the lower probability. In all five cases, the cues for the constituent HFEs were unique, and the actions were separated by at least one hour. Further, the sequences for all five combination events spanned a time period of nearly 12 hours, allowing for shift changes and support from the TSC and EOF to decrease the likelihood of dependency between the operator actions. The joint HEP probabilities for these five ranged in value from 4.7E-09 to 2.35E-10.

   Joint HEP Example 1: Operators fail to implement long-term make-up to the CST via the TWST, operators fail to establish shutdown cooling, operators fail to provide suction to Unit 1 AFW from the U2 CST, and operators fail to initiate once-through cooling given AFW fails due to CST depletion.

   Joint HEP Example 2: Operators fail to align instrument air compressor 1A/1B given a LOOP, operators fail to provide suction to Unit 1 AFW from the U2 CST, and operators fail to initiate once-through cooling given AFW fails due to CST depletion.

   The St. Lucie fire PRA model has a joint HEP floor of 1E-05, no exceptions.

c) There is no underestimation as the models apply a joint HEP floor as described above.

RAI-MF5372/73-APLA-06 (Bounding Analyses for Excluded Risk Sources)

From LAR Enclosure 4, the guidance in NUREG-1855 was used in performing the bounding analysis of certain external hazards that are not included in the PRA. The dispositions in LAR Enclosure 4, Table E4-1 state that the risks associated with external flooding, transportation accidents, extreme winds and tornados are insignificant to the calculation of configuration-specific risk on the basis that the current as-built and as-operated plant conforms to the design-basis requirements in the 1975 Standard Review Plan (SRP). A similar basis is provided for excluding seismic events in that the re-evaluated seismic hazard was shown not to exceed the current design basis. However, per NUREG-1855, conforming to design-basis requirements is insufficient justification for concluding that these external hazards are insignificant to the calculation of configuration risk. NUREG-1855 specifically cautions against placing emphasis on comparisons with the design bases of the safety-related systems and structures and further clarifies that, "it may be necessary to perform some conservative estimates of the risk for both lower and higher magnitude events," given that (i) "non-safety-related systems [credited in the PRA] may provide important risk contributions;" (ii) "the magnitude of an external event may exceed the plant design basis;" and (iii) "a significant risk contribution from lower magnitude events is possible if the susceptibility of the plant to damage (fragility) is relatively insensitive to the magnitude of the event."

a) Explain how the reported evaluations for each hazard incorporate the latest available information (e.g. external flooding to reactor auxiliary building reported in NRC INSPECTION REPORT 05000335/2014010 AND 05000389/2014010, ADAMS ML14323A786). If they do not incorporate the latest available information, please update the evaluations.

b) Explain how the licensee's proposal is consistent with the guidance in Section 3.3.5 of NEI 06-09, Revision 0-A.

FPL Response

a) The reported evaluations included the latest PRA information for external hazards (e.g., external flooding, transportation accidents, extreme winds and tornados, etc.) for the site. The reported seismic PRA information has included the integration of the latest publication of EPRI Ground Motion Response Spectra (GMRS) data for the site, and updated plant-level fragility curve obtained by using the High Confidence of Low Probability of Failure (HCLPF), which was then integrated with the mean hazard curve for the site as documented in NUREG-1488 to estimate a plant-level Seismic CDF. The updated seismic CDF was included in the reported evaluation.

   As a result of the referenced flood event, FPL implemented immediate corrective actions, including repair of flood seals, improved flood response procedures, additional site walkdowns of flood protection features, improved internal and external flood barrier integrity, risk levels of internal and external flood barrier deficiencies or/and impairment have been restored to baseline or better. Such improvements are expected to be carried over in future RICT calculations to lower the flood hazard impacts and allow for longer allowed RICT time if desired. However, estimated risk due to flood hazard as presented in the LAR need not to change at this time.

b) Consistent with NEI 06-09, Revision 0-A, Section 3.3.5, FPL has provided a current disposition of external hazards in Table E4-1 of the license amendment request, which demonstrates these hazards are not significant and are not required to be evaluated for the RICT Program.

RAI-MF5372/73-APLA-07 (Translation to Configuration Risk Management Program (CRMP) Model)

LAR Enclosure 8 Section E8-2.0 describes the process that will be used to translate the baseline PRA models for use in the CRMP model to be used in the RICT Program. The description implies that the CRMP model has not yet been developed and, furthermore, the translation process itself does not appear to be fully developed. Specifically, some expected adjustments or changes to the baseline model are not identified, such as use of a plant availability factor for determining the average annual risk that would not be applicable to configuration-specific risk.

a) Summarize the translation process.

b) Provide a comprehensive discussion of the changes made to the baseline PRA model to produce the CRMP model and how it is assured that these changes are appropriate and comprehensive.

FPL Response

a) The baseline PRA model is modified by removing mutually exclusive maintenance events logic excluding configurations prohibited by plant procedures or guidelines, and altering the flag file and alignment events to allow those using the risk monitoring software for a configuration-specific risk analysis to designate the alignments in effect at the time.

b) After the changes described above have been made to the baseline model to create the model to be used in the CRMP model, the CRMP model is exercised in the risk monitor and the results verified by comparing them to results obtained by quantifying the baseline model with the mutual exclusive event logic, alignments, and flags set appropriately.

RAI-MF5372/73-APLA-09 (NFPA 805 Modification Implementation)

U.S. Nuclear Regulatory Commission (NRC) approved Topical Report (TR) NEI 06-09, "Risk Informed Technical Specifications Initiative 4b: Risk Managed Technical Specification (RMTS)," Revision 0-A (ADAMS ML12286A322), includes the NRC Safety Evaluation (SE) for NEI 06-09 (ADAMS ML071200238) which approved and provided limitations and conditions for use of the TR. Section 4.0, Item 6, of the SE requires that the licensee provide the plant-specific total CDF and LERF to confirm that these are less than 1E-4/year and 1E-5/year, respectively. This is consistent with the risk acceptance guidelines in Regulatory Guide 1.174 (ADAMS ML100910006).

In Enclosure 5 of the application, the licensee states that the St. Lucie Unit 1 CDF and LERF are 6.53E-05/year and 8.66E-06/year, respectively, and that the Unit 2 CDF and LERF are 8.40E-05/year and 8.94E-06/year, respectively. The licensee also notes that, "[l]isted values reflect the anticipated configuration of the plant upon full implementation of NFPA 805 and related plant modifications to resolve fire protection issues. At the time of implementation of the RICT Program, the PRA model used will reflect the existing configuration of the plant."

If the licensee receives the RICT amendment approval before the NFPA-modifications are completed and wants to implement the RICT program before the modifications are completed:

a. Provide an estimate of the total CDF and LERF for the as-built, as-operated plant at the time the RICT program will be implemented to ensure that it satisfies the limitations and conditions in Section 4.0, Item 6, of the NEI 06-09 SE.

b. Confirm that modifications that are not yet installed are not credited in the CDF and LERF calculation for each RICT calculation.

An alternative option to providing the information in parts a and b, would be for the licensee to propose a license condition that delays implementation of the RICT program until the NFPA-modifications are complete.

FPL Response

a. The CDF and LERF for the as-built, as-operated plant at the time of implementation of the RICT program cannot be determined at this time since several NFPA 805 modifications are being implemented. At the time of implementation of the RICT program, CDF, and 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 SE.

b. At the time of implementation of RICT, any modifications that are not installed will not be credited in the estimation of CDF or LERF.

RAI-MF5372/73-APLA-10 (Human Action Surrogate Events)

The RICT program is equipment-oriented (e.g., SSCs may be out of service), but allows a proper surrogate to be used for the equipment not modeled in the PRA. In some instances Operator actions are used "as a surrogate to conservatively bound the risk increase associated with [certain] functions." For each such surrogate in your PRA models, explain how the action fully models each different failure mode, and partial failure modes, of the equipment being represented by the action.

FPL Response

The following surrogates related to instrumentation TS are identified in Table E1-1 of the license amendment request:

- TS 3.3.1.1 (Unit 1) / TS 3.3.1 (Unit 2), Reactor Protective Instrumentation

  Function 1 – Manual Reactor Trip

- TS 3.3.2.1(Unit 1) / TS 3.3.2 (Unit 2), Engineered Safety Features Actuation System (ESFAS) Instrumentation

  Function 1a SIAS – Manual

  Function 2a CSAS – Manual

  Function 3a (unit 1)/3e (unit 2) CIAS – Manual

  Function 4a (unit 1)/4d (unit 2) MSIS – Manual

  Function 5a RAS – Manual

  Function 7a AFAW – Manual

There are two channels for each function, either of which will actuate a reactor trip or associated ESFAS function when manually actuated by the operator. When any of these TS Conditions are in effect under the RICT Program, the associated operator action in the PRA will be set to logical TRUE, which fails the manual actuation function. This bounds the condition of one of two channels inoperable and non-functional because it does not credit any operable or PRA Functional channel.

The following surrogates related to containment TS are identified in Table E1-1 of the license amendment request:

- TS 3.6.1.3, Containment Air Locks
- TS 3.6.1.7 (Unit 2), Containment Ventilation
- TS 3.6.3.1 (Unit 1) / TS 3.6.3 (Unit 2), Containment Isolation Valves

The inoperability of these containment penetrations is evaluated using a surrogate of a large pre-existing containment leak. The "large pre-existing containment leak" basic event results in all core damage scenarios going directly to a large early release. By setting this event to logical TRUE in the model when a RICT is in effect, all core damage scenarios become LERF scenarios. This bounds the impact of the actual plant condition since the RICT calculation assumes the effective leakage through the inoperable component results in a large early release and does not take credit for redundant air lock doors or containment isolation valves, which are either operable or PRA Functional.

RAI-MF5372/73-APLA-11 (Instrumentation Models)

Instrumentation is often not modeled in detail in PRAs and in some cases is only modeled as a single, generic basic event generally representing all trains.

a. Clarify how individual instrument unavailability can be accounted for in the RICT calculations that use a single basic event (i.e., TS 3.3.1.1 (Unit1)).

b. Alternatively describe how instrumentation is modeled in sufficient detail in the PRA to appropriately model the effects of different numbers of trains (e.g., one, two, three, and four trains) unavailable in order to estimate a RICT.

c. Confirm that "Function 2b – CSAS – Containment Pressure – High-High" in Table E1-1, is modeled in sufficient detail in the PRA to model individual instrument and signal processing component failures as implied by the statement in the disposition and summarize how this high resolution model will be included in the RICT.

FPL Response

a. If an individual instrument channel is inoperable, and the PRA does not include sufficiently detailed modeling of the instrument channel, then a RICT is conservatively calculated by assuming a bounding failure of other equipment or failure of an operator action as stated in Table E1-1. For example, TS 3.3.1.1 (Unit 1) and TS 3.3.1 (Unit 2) require two manual reactor trip channels; this equipment is not modeled in the PRA. If one channel is inoperable, the remaining operable channel can still be actuated by the operator to achieve a manual reactor trip. A bounding RICT is calculated by not crediting the required operator action to initiate a reactor trip using the manual trip channel, which is a more limiting situation than one channel out of two being inoperable because if the operator action is not credited for the RICT, then the remaining operable channel is also not being credited.

b. Similar bounding calculations for the RICT Program are identified in Table E.1-1 for other manual actuations (SI, containment spray, containment isolation, main steam line isolation, containment sump recirculation, and AFW actuation). The proposed TS changes for the RICT Program do not otherwise include individual instrument channels which are not modeled in the PRA.

   For TS 3.3.1.1 (Unit 1) and TS 3.3.1 (Unit 2) for Reactor Protective Instrumentation, actions associated with individual instrument unavailability is not in the proposed scope of the RICT Program. For TS 3.3.2.1 (unit 1) and TS 3.3.2 (unit 2) for ESFAS Instrumentation, as stated in Table E1-1 for each function, the PRA model includes the individual instrumentation channels; therefore, inoperability of individual instrument channels can be assessed directly by the PRA for the RICT Program.

c. The scope of TS Function 2b addresses inoperability of any of the four containment pressure channels to actuate a CSAS. The PRA model includes the equipment associated with this function, and inoperability of this equipment can be directly assessed to calculate a RICT.

ATTACHMENTS

1. Markups of the Technical Specifications - Unit 1
2. Markups of the Technical Specifications - Unit 2
3. Proposed Bases Changes
4. Revised Technical Specifications Pages - Unit 1
5. Revised Technical Specifications Pages - Unit 2

ATTACHMENT 1

Markups of the Technical Specifications - Unit 1

INSERT 4-A (Replaces Insert 4 in Attachment 2)

NOTE
Actions 10B and 10C not applicable when two or more CSAS trip units or associated instruments intentionally made inoperable.

INSERT 5-A (Replaces Insert 5 in Attachment 2)

ACTION 10C - With the number of OPERABLE channels two or more less than the Minimum Channels OPERABLE, place one inoperable channel in the tripped condition within one hour. Restore inoperable channels to OPERABLE status within 1 hour or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

INSERT 6-A (Replaces Insert 6 in Attachment 2)

a. With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

NOTE
Action not applicable when second AFAS manual trip or actuation logic channel intentionally made inoperable.

b. With two channels inoperable, restore the inoperable channels to OPERABLE status within 1 hour or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

TABLE 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION	
1. SAFETY INJECTION (SIAS)						
a. Manual (Trip Buttons)	2	1	2	1, 2, 3, 4	8	
b. Containment Pressure – High	4	2	3	1, 2, 3	9	†
c. Pressurizer Pressure – Low	4	2	3	1, 2, 3(a)	9	†
2. CONTAINMENT SPRAY (CSAS)					10A, 10B, 10C	
a. Manual (Trip Buttons)	2	1	2	1, 2, 3, 4	8	
b. Containment Pressure – High-High	4	2(b)	3	1, 2, 3	~~10a, 10b, 10c~~	†
3. CONTAINMENT ISOLATION (CIS)						
a. Manual (Trip Buttons)	2	1	2	1, 2, 3, 4	8	
b. Containment Pressure – High	4	2	3	1, 2, 3	9	†
c. Containment Radiation – High	4	2	3	1, 2, 3, 4	9	†
d. SIAS	---------- (See Functional Unit 1 above) ----------					
4. MAIN STEAM LINE ISOLATION (MSIS)						
a. Manual (Trip Buttons)	2/steam generator	1/steam generator	2/operating steam generator	1, 2, 3, 4	8	
b. Steam Generator Pressure – Low	4/steam generator	2/steam generator	3/steam generator	1, 2, 3(c)	9	†

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
5. CONTAINMENT SUMP RECIRCULATION (RAS)					
a. Manual RAS (Trip Buttons)	2	1	2	1, 2, 3, 4	8
b. Refueling Water Tank - Low	4	2	3	1, 2, 3	13
6. LOSS OF POWER					
a. 4.16 kv Emergency Bus Under-voltage (Loss of Voltage)	2/Bus	2/Bus	1/Bus	1, 2, 3	12
b. 4.16 kv Emergency Bus Under-voltage (Degraded Voltage)	2/Bus	2/Bus	1/Bus	1, 2, 3	12
c. 480 V Emergency Bus Under-voltage (Degraded Voltage)	2/Bus	2/Bus	1/Bus	1, 2, 3	12
7. AUXILIARY FEEDWATER (AFAS)					
a. Manual (Trip Buttons)	4/SG	2/SG	4/SG	1, 2, 3	11
b. Automatic Actuation Logic	4/SG	2/SG	3/SG	1, 2, 3	11
c. SG Level (1A/1B) - Low	4/SG	2/SG	3/SG	1, 2, 3	14a, 14b, ~~14c~~
8. AUXILIARY FEEDWATER ISOLATION					
a. SG 1A – SG 1B Differential Pressure	4/SG	2/SG	3/SG	1, 2, 3	14a, 14b, ~~14c~~
b. Feedwater Header 1A – 1B Differential Pressure	4/SG	2/SG	3/SG	1, 2, 3	14a, ~~14c~~

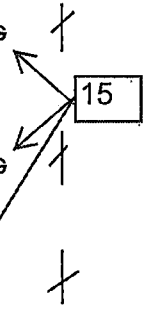

TABLE 3.3-3 (continued)

TABLE NOTATION

10A

ACTION ~~10~~ - With the number of OPERABLE channels one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the bypassed or tripped condition and the Minimum Channels OPERABLE requirement is demonstrated within 1 hour. If the inoperable channel can not be restored to OPERABLE status within 48 hours, then place the inoperable channel in the tripped condition.

INSERT 4-A

b. Within 1 hour, all functional units receiving an input from the inoperable channel are also bypassed or tripped.

ACTION 10B - ~~c.~~ With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, operation may proceed provided one of the inoperable channels has been bypassed and the other inoperable channel has been placed in the tripped condition within 1 hour. Restore one of the inoperable channels to OPERABLE status within 48 hours or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

INSERT 1

INSERT 5-A (ACTION 10C)

ACTION 11 - ~~With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channels to OPERABLE status within 48 hours or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.~~

INSERT 6-A

ACTION 12 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed until performance of the next required CHANNEL FUNCTIONAL TEST provided the inoperable channel is placed in the tripped condition within 1 hour.

TABLE 3.3-3 (continued)

TABLE NOTATION

ACTION 13 - With the number of OPERABLE channels one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

INSERT 2

cannot

a. The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. If OPERABILITY ~~can not~~ be restored within 48 hours, be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 2 hours while performing tests and maintenance on that channel provided the other inoperable channel is placed in the tripped condition.

ACTION 14 - With the number of channels OPERABLE one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. If an inoperable SG level channel can not be restored to OPERABLE status within 48 hours, then AFAS-1 or AFAS-2 as applicable in the inoperable channel shall be placed in the bypassed condition. If an inoperable SG DP or FW Header DP channel can not be restored to OPERABLE status within 48 hours, then both AFAS-1 and AFAS-2 in the inoperable channel shall be placed in the bypassed condition. The channel shall be returned to OPERABLE status no later than during the next COLD SHUTDOWN.

b. Within 1 hour, all functional units receiving an input from the inoperable channel are also bypassed or tripped.

ACTION 15

~~c.~~ With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, operation may proceed provided one of the inoperable channels has been bypassed and the other inoperable channel has been placed in the tripped condition within 1 hour. Restore one of the inoperable channels to OPERABLE status within 48 hours ~~or~~ be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

INSERT 1

ATTACHMENT 2

Markups of the Technical Specifications - Unit 2

INSERT 4-A (Replaces Insert 4 in Attachment 3)

NOTE
Action not applicable when second AFAS manual trip or actuation logic channel intentionally made inoperable.

b. With two channels inoperable, restore the inoperable channels to OPERABLE status within 1 hour or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

INSERT 5-A (Replaces Insert 5 in Attachment 3)

NOTE
Actions 18B and 18C not applicable when two or more CSAS trip units or associated instruments intentionally made inoperable.

INSERT 6-A (Replaces Insert 6 in Attachment 3)

ACTION 18C - With the number of OPERABLE channels two or more less than the Minimum Channels OPERABLE, place one inoperable channel in the tripped condition within one hour. Restore inoperable channels to OPERABLE status within 1 hour or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

TABLE 3.3-3

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. SAFETY INJECTION (SIAS)					
a. Manual (Trip Buttons)	2	1	2	1, 2, 3, 4	12
b. Containment Pressure – High	4	2	3	1, 2, 3	13, 14
c. Pressurizer Pressure – Low	4	2	3	1, 2, 3(a)	13, 14
d. Automatic Actuation – Logic	2	1	2	1, 2, 3, 4	12
2. CONTAINMENT SPRAY (CSAS)					
a. Manual (Trip Buttons)	2	1	2	1, 2, 3, 4	12
b. Containment Pressure – High-High	4	2	3	1(b), 2(b), 3(b)	~~18a, 18b, 18c~~
c. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	12
3. CONTAINMENT ISOLATION (CIAS)					
a. Manual CIAS (Trip Buttons)	2	1	2	1, 2, 3, 4	12
b. Safety Injection (SIAS)	See Functional Unit 1 for all Safety Injection Initiating Functions and Requirements				
c. Containment Pressure – High	4	2	3	1, 2, 3	13, 14
d. Containment Radiation – High	4	2	3	1, 2, 3	13, 14
e. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	12

delete hyphen

18A, 18B, 18C

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
6. LOSS OF POWER (LOV)					
a. (1) 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	2/Bus	2/Bus	1/Bus	1, 2, 3	17
(2) 480 V Emergency Bus Undervoltage (Loss of Voltage)	3/Bus	2/Bus	2/Bus	1, 2, 3	17
b. (1) 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	3/Bus	2/Bus	2/Bus	1, 2, 3	17
(2) 480 V Emergency Bus Undervoltage (Degraded Voltage)	3/Bus	2/Bus	2/Bus	1, 2, 3	17
7. AUXILIARY FEEDWATER (AFAS)					
a. Manual (Trip Buttons)	4/SG	2/SG	4/SG	1, 2, 3	15
b. Automatic Actuation Logic	4/SG	2/SG	3/SG	1, 2, 3	15
c. SG Level (2A/2B) – Low	4/SG	2/SG	3/SG	1, 2, 3	20a, 20b, ~~20e~~
8. AUXILIARY FEEDWATER ISOLATION					
a. SG 2A – SG 2B Differential Pressure	4/SG	2/SG	3/SG	1, 2, 3	20a, 20b, ~~20e~~
b. Feedwater Header 2A – 2B Differential Pressure	4/SG	2/SG	3/SG	1, 2, 3	20a, ~~20e~~

21

TABLE 3.3-3 (Continued)

TABLE NOTATION

ACTION 14 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, STARTUP and/or POWER OPERATION may continue provided the following conditions are satisfied:

a. Verify that one of the inoperable channels has been bypassed and place the other inoperable channel in the tripped condition within 1 hour.

b. All functional units affected by the bypassed/tripped channel shall also be placed in the bypassed/tripped condition as listed below.

Process Measurement Circuit	Functional Unit Bypassed/Tripped
1. Containment Pressure -	Containment Pressure – High (SIAS, CIAS, CSAS) Containment Pressure – High (RPS)
2. Steam Generator Pressure -	Steam Generator Pressure – Low (MSIS) AFAS-1 and AFAS-2 (AFAS) Thermal Margin/Low Pressure (RPS) Steam Generator Pressure – Low (RPS)
3. Steam Generator Level -	Steam Generator Level – Low (RPS) If SG-2A, then AFAS-1 (AFAS) If SG-2B, then AFAS-2 (AFAS)
4. Pressurizer Pressure -	Pressurizer Pressure – High (RPS) Pressurizer Pressure – Low (SIAS) Thermal Margin/Low Pressure (RPS)

a.

INSERT 1

ACTION 15 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channels to OPERABLE status within 48 hours or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

INSERT 4-A

ACTION 16 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or declare the associated valve inoperable and take the ACTION required by Specification 3.7.1.5.

ACTION 17 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or place the inoperable channel in the tripped condition and verify that the Minimum Channels OPERABLE requirement is demonstrated within 1 hour; one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.

INSERT 1

TABLE 3.3-3 (Continued)

TABLE NOTATION

18A

ACTION ~~18~~ - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in either the bypassed or tripped condition and the Minimum Channels OPERABLE requirement is demonstrated within 1 hour. If the inoperable channel can not be restored to OPERABLE status within 48 hours, then place the inoperable channel in the tripped condition.

INSERT 5-A

b. With a channel process measurement circuit that affects multiple functional units inoperable or in test, bypass or trip all associated functional units as listed in ACTION 13.

ACTION 18B -

~~c.~~ With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, operation may proceed provided one of the inoperable channels has been bypassed and the other inoperable channel has been placed in the tripped condition within 1 hour. Restore one of the inoperable channels to OPERABLE status within 48 hours ~~or~~ be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

INSERT 6-A
(ACTION 18C)

INSERT 1

ACTION 19 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

a. Within 1 hour the inoperable channel is placed in either the bypassed or tripped condition. If OPERABILITY can not be restored within 48 hours, be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

INSERT 2

b. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.

TABLE 3.3-3 (Continued)

TABLE NOTATION

ACTION 20 - With the number of channels OPERABLE one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. If an inoperable SG level channel can not be restored to OPERABLE status within 48 hours, then AFAS-1 or AFAS-2 as applicable in the inoperable channel shall be placed in the bypassed condition. If an inoperable SG DP or FW Header DP channel can not be restored to OPERABLE status within 48 hours, then both AFAS-1 and AFAS-2 in the inoperable channel shall be placed in the bypassed condition. The channel shall be returned to OPERABLE status no later than during the next COLD SHUTDOWN.

b With a channel process measurement circuit that affects multiple functional units inoperable or in test, bypass or trip all associated functional units as listed in ACTION 13.

ACTION 21

~~c.~~ With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, operation may proceed provided one of the inoperable channels has been bypassed and the other inoperable channel placed in the tripped condition within 1 hour. Restore one of the inoperable channels to OPERABLE status within 48 hours or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

INSERT 1

ATTACHMENT 3

Proposed Bases Changes
(Information only)

BASES FOR SECTION 3/4.3

3/4.3 INSTRUMENTATION

BASES

3/4.3.1 and 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION

The OPERABILITY of the protective and ESF instrumentation systems and bypasses ensure that 1) the associated ESF action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof reaches its setpoint, 2) the specified coincidence logic is maintained, 3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and 4) sufficient system functional capability is available for protective and ESF purposes from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundancy and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the accident analyses.

Insert B 3.3.2 ESFAS →

The surveillance requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests are sufficient to demonstrate this capability. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. For the Steam Generator Water Level - Low Functional Unit, the trip setpoint and the methodology used to determine the trip setpoint, the as-found acceptance criteria band, and the as-left acceptance criteria are specified in the UFSAR. The two table notations are consistent with the recommended notes provided in NRC's letter to the NEI Technical Specifications Methods Task Force for Setpoint Allowances dated September 5, 2005.

The measurement of response time at the specified frequencies provides assurance that the protective and ESF action function associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

INSERT B 3.3.2 ESFAS (Unit 1)

If two Manual Trip channels are inoperable (Action 8) or two AFAS Manual Trip or Actuation Logic channels are inoperable (Action 11), the Action is to restore at least one channel to OPERABLE status within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of at least one channel. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

Actions 8 and 11 are modified by a Note stating they are not applicable when the second channel is intentionally made inoperable. This Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one Manual Trip or Actuation Logic channel is inoperable for any reason and a second Manual Trip or Actuation Logic channel is found to be inoperable, or if two Manual Trip or Actuation Logic channels are found to be inoperable at the same time.

With three or more containment spray actuation system (CSAS) trip units or associated instruments inoperable (i.e., two or more channels less than the Minimum Channels OPERABLE requirement) , the Action is to restore sufficient trip units or associated instruments to OPERABLE status within 1 hour to restore the containment spray actuation system initiation function. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of sufficient channels to restore initiation function. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

Actions 10B (two CSAS trip units inoperable) and 10C (three or more CSAS trip units inoperable) are modified by a Note stating the Action is not applicable when two or more CSAS trip units or associated instruments are intentionally made inoperable. These Actions are not intended for voluntary removal of redundant systems or components from service. The Actions are only applicable if one CSAS trip unit or associated instrument is inoperable for any reason and additional CSAS trip units or associated instruments are found to be inoperable, or if two or more CSAS trip units or associated instruments are found to be inoperable at the same time.

BASES FOR SECTION 3/4.3

3/4.3 INSTRUMENTATION

BASES

3/4.3.1 and 3/4.3.2 REACTOR PROTECTIVE AND ENGINEERED SAFETY FEATURES ACTUATION SYSTEMS INSTRUMENTATION

The OPERABILITY of the reactor protective and Engineered Safety Features Actuation Systems instrumentation and bypasses ensure that (1) the associated Engineered Safety Features Actuation action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof reaches its setpoint, (2) the specified coincidence logic is maintained, (3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and (4) sufficient system functional capability is available from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundancy, and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the safety analyses.

INSERT B 3.3.2 ESFAS

The Surveillance Requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests are sufficient to demonstrate this capability. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. For the Steam Generator Water Level Low Functional Unit, the trip setpoint and methodology used to determine the trip setpoint, the as-found acceptance criteria band, and the as-left acceptance criteria are specified in the UFSAR. The two table notations are consistent with the recommended notes provided in NRC's letter to NEI Technical Specifications Methods Task Force for Setpoint Allowances dated September 5, 2005.

INSERT B 3.3.2 ESFAS

If two auxiliary feedwater actuation system (AFAS) manual trip or actuation logic channels are inoperable, the Action is to restore at least one channel to OPERABLE status within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of at least one channel. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Action is modified by a Note stating it is not applicable when the second AFAS manual trip or actuation logic channel is intentionally made inoperable. This Action is not intended for voluntary removal of redundant systems or components from service. The Action is only applicable if one AFAS manual trip or actuation logic channel is inoperable for any reason and a second AFAS manual trip or actuation logic channel is found to be inoperable, or if two AFAS manual trip or actuation logic channels are found to be inoperable at the same time.

With three or more containment spray actuation system (CSAS) trip units or associated instruments inoperable (i.e., two or more channels less than the Minimum Channels OPERABLE requirement) the Action is to restore sufficient trip units or associated instruments to OPERABLE status within 1 hour to restore the containment spray actuation system initiation function. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of sufficient channels to restore initiation function. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

Actions 18B (two CSAS trip units inoperable) and 18C (three or more CSAS trip units inoperable) are modified by a Note stating the Action is not applicable when two or more CSAS trip units or associated instruments are intentionally made inoperable. These Actions are not intended for voluntary removal of redundant systems or components from service. The Actions are only applicable if one CSAS trip unit or associated instrument is inoperable for any reason and additional CSAS trip units or associated instruments are found to be inoperable, or if two or more CSAS trip units or associated instruments are found to be inoperable at the same time.

ATTACHMENT 4

Revised Technical Specifications Pages - Unit 1

TABLE 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. SAFETY INJECTION (SIAS)					
a. Manual (Trip Buttons)	2	1	2	1, 2, 3, 4	8
b. Containment Pressure – High	4	2	3	1, 2, 3	9
c. Pressurizer Pressure – Low	4	2	3	1, 2, 3(a)	9
2. CONTAINMENT SPRAY (CSAS)					
a. Manual (Trip Buttons)	2	1	2	1, 2, 3, 4	8
b. Containment Pressure – High-High	4	2(b)	3	1, 2, 3	10A, 10B, 10C
3. CONTAINMENT ISOLATION (CIS)					
a. Manual (Trip Buttons)	2	1	2	1, 2, 3, 4	8
b. Containment Pressure – High	4	2	3	1, 2, 3	9
c. Containment Radiation – High	4	2	3	1, 2, 3, 4	9
d. SIAS	---------- (See Functional Unit 1 above) ----------				
4. MAIN STEAM LINE ISOLATION (MSIS)					
a. Manual (Trip Buttons)	2/steam generator	1/steam generator	2/operating steam generator	1, 2, 3, 4	8
b. Steam Generator Pressure – Low	4/steam generator	2/steam generator	3/steam generator	1, 2, 3(c)	9

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
5. CONTAINMENT SUMP RECIRCULATION (RAS)					
a. Manual RAS (Trip Buttons)	2	1	2	1, 2, 3, 4	8
b. Refueling Water Tank - Low	4	2	3	1, 2, 3	13
6. LOSS OF POWER					
a. 4.16 kv Emergency Bus Under-voltage (Loss of Voltage)	2/Bus	2/Bus	1/Bus	1, 2, 3	12
b. 4.16 kv Emergency Bus Under-voltage (Degraded Voltage)	2/Bus	2/Bus	1/Bus	1, 2, 3	12
c. 480 V Emergency Bus Under-voltage (Degraded Voltage)	2/Bus	2/Bus	1/Bus	1, 2, 3	12
7. AUXILIARY FEEDWATER (AFAS)					
a. Manual (Trip Buttons)	4/SG	2/SG	4/SG	1, 2, 3	11
b. Automatic Actuation Logic	4/SG	2/SG	3/SG	1, 2, 3	11
c. SG Level (1A/1B) - Low	4/SG	2/SG	3/SG	1, 2, 3	14a, 14b, 15
8. AUXILIARY FEEDWATER ISOLATION					
a. SG 1A – SG 1B Differential Pressure	4/SG	2/SG	3/SG	1, 2, 3	14a, 14b, 15
b. Feedwater Header 1A – 1B Differential Pressure	4/SG	2/SG	3/SG	1, 2, 3	14a, 15

TABLE 3.3-3 (continued)
TABLE NOTATION

ACTION 10A - With the number of OPERABLE channels one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the bypassed or tripped condition and the Minimum Channels OPERABLE requirement is demonstrated within 1 hour. If the inoperable channel can not be restored to OPERABLE status within 48 hours, then place the inoperable channel in the tripped condition.

b. Within 1 hour, all functional units receiving an input from the inoperable channel are also bypassed or tripped.

NOTE
Actions 10B and 10C not applicable when two or more CSAS trip units or associated instruments intentionally made inoperable.

ACTION 10B - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, operation may proceed provided one of the inoperable channels has been bypassed and the other inoperable channel has been placed in the tripped condition within 1 hour. Restore one of the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

ACTION 10C - With the number of OPERABLE channels two or more less than the Minimum Channels OPERABLE, place one inoperable channel in the tripped condition within one hour. Restore inoperable channels to OPERABLE status within 1 hour or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

ACTION 11 - a. With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

NOTE
Action not applicable when second AFAS manual trip or actuation logic channel intentionally made inoperable.

b. With two channels inoperable, restore the inoperable channels to OPERABLE status within 1 hour or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

ACTION 12 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed until performance of the next required CHANNEL FUNCTIONAL TEST provided the inoperable channel is placed in the tripped condition within 1 hour.

TABLE 3.3-3 (continued)

TABLE NOTATION

ACTION 13 - With the number of OPERABLE channels one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. If OPERABILITY cannot be restored within 48 hours or in accordance with the Risk Informed Completion Time Program, be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 2 hours while performing tests and maintenance on that channel provided the other inoperable channel is placed in the tripped condition.

ACTION 14 - With the number of channels OPERABLE one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. If an inoperable SG level channel can not be restored to OPERABLE status within 48 hours, then AFAS-1 or AFAS-2 as applicable in the inoperable channel shall be placed in the bypassed condition. If an inoperable SG DP or FW Header DP channel can not be restored to OPERABLE status within 48 hours, then both AFAS-1 and AFAS-2 in the inoperable channel shall be placed in the bypassed condition. The channel shall be returned to OPERABLE status no later than during the next COLD SHUTDOWN.

b. Within 1 hour, all functional units receiving an input from the inoperable channel are also bypassed or tripped.

ACTION 15 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, operation may proceed provided one of the inoperable channels has been bypassed and the other inoperable channel has been placed in the tripped condition within 1 hour. Restore one of the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

ATTACHMENT 5

Revised Technical Specifications Pages - Unit 2

TABLE 3.3-3

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1.	SAFETY INJECTION (SIAS)					
	a. Manual (Trip Buttons)	2	1	2	1, 2, 3, 4	12
	b. Containment Pressure – High	4	2	3	1, 2, 3	13, 14
	c. Pressurizer Pressure – Low	4	2	3	1, 2, 3(a)	13, 14
	d. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	12
2.	CONTAINMENT SPRAY (CSAS)					
	a. Manual (Trip Buttons)	2	1	2	1, 2, 3, 4	12
	b. Containment Pressure – High-High	4	2	3	1(b), 2(b), 3(b)	18A, 18B, 18C
	c. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	12
3.	CONTAINMENT ISOLATION (CIAS)					
	a. Manual CIAS (Trip Buttons)	2	1	2	1, 2, 3, 4	12
	b. Safety Injection (SIAS)	See Functional Unit 1 for all Safety Injection Initiating Functions and Requirements				
	c. Containment Pressure – High	4	2	3	1, 2, 3	13, 14
	d. Containment Radiation – High	4	2	3	1, 2, 3	13, 14
	e. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	12

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
6. LOSS OF POWER (LOV)					
a. (1) 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	2/Bus	2/Bus	1/Bus	1, 2, 3	17
(2) 480 V Emergency Bus Undervoltage (Loss of Voltage)	3/Bus	2/Bus	2/Bus	1, 2, 3	17
b. (1) 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	3/Bus	2/Bus	2/Bus	1, 2, 3	17
(2) 480 V Emergency Bus Undervoltage (Degraded Voltage)	3/Bus	2/Bus	2/Bus	1, 2, 3	17
7. AUXILIARY FEEDWATER (AFAS)					
a. Manual (Trip Buttons)	4/SG	2/SG	4/SG	1, 2, 3	15
b. Automatic Actuation Logic	4/SG	2/SG	3/SG	1, 2, 3	15
c. SG Level (2A/2B) – Low	4/SG	2/SG	3/SG	1, 2, 3	20a, 20b, 21
8. AUXILIARY FEEDWATER ISOLATION					
a. SG 2A – SG 2B Differential Pressure	4/SG	2/SG	3/SG	1, 2, 3	20a, 20b, 21
b. Feedwater Header 2A – 2B Differential Pressure	4/SG	2/SG	3/SG	1, 2, 3	20a, 21

TABLE 3.3-3 (Continued)

TABLE NOTATION

ACTION 14 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, STARTUP and/or POWER OPERATION may continue provided the following conditions are satisfied:

a. Verify that one of the inoperable channels has been bypassed and place the other inoperable channel in the tripped condition within 1 hour.

b. All functional units affected by the bypassed/tripped channel shall also be placed in the bypassed/tripped condition as listed below.

Process Measurement Circuit	Functional Unit Bypassed/Tripped
1. Containment Pressure -	Containment Pressure – High (SIAS, CIAS, CSAS) Containment Pressure – High (RPS)
2. Steam Generator Pressure -	Steam Generator Pressure – Low (MSIS) AFAS-1 and AFAS-2 (AFAS) Thermal Margin/Low Pressure (RPS) Steam Generator Pressure – Low (RPS)
3. Steam Generator Level -	Steam Generator Level – Low (RPS) If SG-2A, then AFAS-1 (AFAS) If SG-2B, then AFAS-2 (AFAS)
4. Pressurizer Pressure -	Pressurizer Pressure – High (RPS) Pressurizer Pressure – Low (SIAS) Thermal Margin/Low Pressure (RPS)

ACTION 15 - a. With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

NOTE

Action not applicable when second AFAS manual trip or actuation logic channel intentionally made inoperable.

b. With two channels inoperable, restore the inoperable channels to OPERABLE status within 1 hour or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

ACTION 16 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Program, or declare the associated valve inoperable and take the ACTION required by Specification 3.7.1.5.

ACTION 17 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program or place the inoperable channel in the tripped condition and verify that the Minimum Channels OPERABLE requirement is demonstrated within 1 hour; one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.

TABLE 3.3-3 (Continued)

TABLE NOTATION

ACTION 18A - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in either the bypassed or tripped condition and the Minimum Channels OPERABLE requirement is demonstrated within 1 hour. If the inoperable channel can not be restored to OPERABLE status within 48 hours, then place the inoperable channel in the tripped condition.

b. With a channel process measurement circuit that affects multiple functional units inoperable or in test, bypass or trip all associated functional units as listed in ACTION 13.

NOTE

Actions 18B and 18C not applicable when two or more CSAS trip units or associated instruments intentionally made inoperable.

ACTION 18B - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, operation may proceed provided one of the inoperable channels has been bypassed and the other inoperable channel has been placed in the tripped condition within 1 hour. Restore one of the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

ACTION 18C - With the number of OPERABLE channels two or more less than the Minimum Channels OPERABLE, place one inoperable channel in the tripped condition within one hour. Restore inoperable channels to OPERABLE status within 1 hour or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

ACTION 19 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

a. Within 1 hour the inoperable channel is placed in either the bypassed or tripped condition. If OPERABILITY cannot be restored within 48 hours, or in accordance with the Risk Informed Completion Time Program be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.

TABLE 3.3-3 (Continued)

TABLE NOTATION

ACTION 20 - With the number of channels OPERABLE one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. If an inoperable SG level channel can not be restored to OPERABLE status within 48 hours, then AFAS-1 or AFAS-2 as applicable in the inoperable channel shall be placed in the bypassed condition. If an inoperable SG DP or FW Header DP channel can not be restored to OPERABLE status within 48 hours, then both AFAS-1 and AFAS-2 in the inoperable channel shall be placed in the bypassed condition. The channel shall be returned to OPERABLE status no later than during the next COLD SHUTDOWN.

b With a channel process measurement circuit that affects multiple functional units inoperable or in test, bypass or trip all associated functional units as listed in ACTION 13.

ACTION 21 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, operation may proceed provided one of the inoperable channels has been bypassed and the other inoperable channel placed in the tripped condition within 1 hour. Restore one of the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.