UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

April 13, 2011

LICENSEE: Tennessee Valley Authority

FACILITY: Watts Bar Nuclear Power Plant, Unit 2

SUBJECT: SUMMARY OF MARCH 29, 2011, MEETING WITH TENNESSEE VALLEY AUTHORITY REGARDING WATTS BAR NUCLEAR PLANT, UNIT 2, FINAL SAFETY ANALYSIS REPORT RELATED TO SECTION 9.5.1 FIRE PROTECTION

On March 29, 2011, a Category I public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) and representatives of Tennessee Valley Authority (TVA) at NRC Headquarters, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The purpose of the meeting was to discuss the NRC staff's questions and comments on the Watts Bar Nuclear Plant (WBN) Unit 2 Final Safety Analysis Report (FSAR), Section 9.5.1 Fire Protection, in support of TVA's application for an operating license. A list of participants is included as Enclosure 1.

The meeting consisted of the NRC staff and TVA discussing the outstanding issues for the review of Section 9.5.1 to the FSAR. The NRC staff provided a draft request for additional information (RAI) that was discussed in detail to ensure the questions were fully understood by TVA. Based on this discussion, the NRC staff will make some minor changes to a few questions that will provide additional clarification for TVA. These changes will be incorporated into the final version to be issued. The draft RAI is included as Enclosure 2.

The NRC staff and TVA also discussed TVA's RAI submittal and revision to the Fire Protection Report (FPR), both dated March 16, 2011. Due to the size of these documents and the relatively short timeframe, the NRC staff had not completed its review of these documents, but discussed what they had reviewed to this point. The NRC staff noted some administrative errors along with some changes that were mentioned in the RAI submittal but were not found in the FPR. TVA committed to correcting the FPR to ensure that all changes committed to in the RAI submittal will be found in the FPR.

TVA mentioned to the NRC staff that they are in the process of designing plant modifications that would eliminate some of the current operator manual actions found in the FPR. The NRC staff encouraged this effort but warned that depending on the timing of completing these changes, it could affect the schedule of the FPR review. TVA agreed to keep the staff informed of the changes they intend to make and to have further dialog with the staff in future public meetings.

There were two members of the public in attendance. Public Meeting Feedback forms were not received.

Please direct any inquiries to me at 301-415-2048 or Justin.Poole@nrc.gov.

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Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-391

Enclosures:
1. List of Attendees
2. Draft RAI

cc w/encls: Distribution via Listserv

LIST OF ATTENDEES

MARCH 29, 2011, MEETING WITH TENNESSEE VALLEY AUTHORITY

FINAL SAFETY ANALYSIS REPORT REVIEW

SECTION 9.5.1 FIRE PROTECTION

WATTS BAR NUCLEAR PLANT, UNIT 2

NAME	TITLE	ORGANIZATION
Stephen Campbell	Branch Chief	NRR\Division of Operating Reactor Licensing (DORL)
Patrick Milano	Sr. Project Manager	NRR\DORL
Justin Poole	Project Manager	NRR\DORL
Robert Haag	Branch Chief	R-II\Division of Construction Projects\Branch 3
Alex Klein	Branch Chief	NRR\Division of Risk Assessment (DRA) \Fire Protection Branch (AFPB)
Daniel Frumkin	Sr. Fire Protection Engineer	NRR\DRA\AFPB
Charles Moulton	Fire Protection Engineer	NRR\DRA\AFPB
Gary Cooper	Fire Protection Engineer	NRR\DRA\AFPB
Scott Burnell	Public Affairs Officer	Office of Public Affairs

NAME	TITLE	ORGANIZATION
William Crouch	Manager, Licensing Watts Bar 2	Tennessee Valley Authority (TVA)
Steve Hilmes	Manager, Electrical and Instrumentation	TVA
Charles Brush	Contractor	TVA
David Savino	Associate Producer	NHK New York
Hironobu Maeda	Cameraman	NHK New York

REQUEST FOR ADDITIONAL INFORMATION
OPERATING LICENSE APPLICATION

WATTS BAR, UNIT 2
DOCKET NO.: 50-391
TAC NO.: ME3091

Office of Nuclear Reactor Regulation
Division of Risk Assessment
Fire Protection Branch

- Note that while questions have been developed for a number of the parts of the Fire Protection Report (FPR), this is not an exhaustive list of questions. The Fire Protection Branch expects that additional questions will be developed as our review progresses as well as following the as-yet undelivered complete as-designed FPR.

- A number of the information requests involve modifications to the FPR. This status is indicated at the end of the specific requests.

- In a number of the information requests below, summary evaluations are requested. The following elements, as a minimum, are expected to be addressed by the summary: 1) identification of the issue evaluated; 2) a description of the evaluation method; 3) a discussion of key assumptions, including their bases; and 4) results of the evaluation.

- References to Revision 5 of the FPR refer to the version of the FPR that was submitted to the NRC and reviewed as part of NRC Supplemental Safety Evaluation Reports (SSERs) 18 and 19. In alignment with TVA's revision control process, specific pages of the FPR are marked with the last revision to change that page, so the individual pages in Revision 5 of the FPR may be marked "Revision 1" through "Revision 5".

- All "changes" listed below refer to changes between the submitted Revision 5 of the FPR and the January 14, 2011 version.

RAI number format Example: [RAI FPR V-1]
RAI – RAI
FPR – topic or document from which the comment originates
V – Section of the document
-1 – Sequential comment for that section

RAI FPR General-6

A number of the pages in the supporting documents section of the "WBN Fire Protection Report Summary 6 thru 40" document are illegible. This document was submitted by TVA on December 20, 2010 (ADAMS accession number ML110060493).

One example is the section supporting FPR revision 39 on pages 390 through 408.

Ensure that an extent of condition review has been performed to ensure that other, similar instances have been identified and corrected. Provide legible versions for all pages of this document.

RAI FPR II-12

A change has been made to Part II, Section 12.10.5 "Fire Dampers," of the as-designed FPR to delete a reference to electro-thermal links for fire dampers. TVA's December 18, 2010 letter states that electro-thermal links are "not used in fire safe shutdown areas."

It appears that this change was made between Revision 40 and the January 14, 2011 version of the FPR.

The use of electro-thermal links for fire dampers was specifically detailed in SSER 18.

Define "fire safe shutdown areas". This term is not used in the FPR. Discuss the differences between "fire safe shutdown areas" and "safety-related areas".

Confirm that electro-thermal links are not used in fire safe shutdown areas.

RAI FPR II-13

Part II, Section 14.3.1.b.1 of the FPR describes Unit 1 specific operating requirements for water based suppression systems in the Unit 1 reactor building. No Unit 2 information is included, however. Section B.14.3.1 indicates that this section should be applicable to both Units.

Provide the appropriate Unit 2 information. Ensure that an extent of condition review has been performed to ensure that other similar instances are identified and corrected.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-14

Changes have been made to Part II, Table 14.10, "Fire Safe Shutdown Equipment," and to Part II, "Testing and Inspection Requirements (TIR)" table, element 14.10.e, of the as-designed FPR to eliminate the entries for the Component Cooling System (CCS) Pump 2B-B. This piece of equipment is credited in numerous Analysis Volumes in Part VI. Examples include, but are not limited to: AV-023, AV-024, and AV-050.

This change also affects Part II, Section B14.10.e.

It appears that this change was made between Revision 40 and the January 14, 2011 version of the FPR.

Resolve the conflict that equipment relied on in Part VI is not included in Table 14.10 and the TIR table. Ensure that an extent of condition review has been performed to ensure that other, similar instances have been identified and resolved.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-15

A change has been made to Part II, Table 14.1 "Fire Detection Instrumentation" of the as-designed FPR report that deletes the Auxiliary Building detection zone 147 entry.

It appears that this change was made between Revision 40 and the January 14, 2011 version of the FPR.

Provide a summary evaluation and technical justification supporting this change.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-16

A change has been made to Part II, Table 14.1 "Fire Detection Instrumentation" of the as-designed FPR report that creates an entry for zone 413 "Unit 2 Motor Driven AFW Pumps". While the other entries in the Table exhibit a remarkable "Unit 1/Unit 2" mirroring, in this case, there does not appear to be a corresponding Unit 1 zone.

It appears that this change was made between Revision 40 and the January 14, 2011 version of the FPR.

Confirm that the number of detectors listed in Table 14.1 is correct for zone 413, and discuss the possible discrepancy.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-17

A change has been made to Part II, Table 14.1 "Fire Detection Instrumentation" of the as-designed FPR report that creates an entry for zone 153 "Add. Eqpt. Bldg., U2 El 763.5". In general, the entries in Part II, Table 14.1 "Fire Detection Instrumentation" of the as-designed FPR report exhibit a remarkable "Unit 1/Unit 2" mirroring. However, in this case, the added Unit 2 entry notes 4 smoke detectors, while the corresponding Unit 1 entry (zone 154) has 6.

It appears that this change was made between Revision 40 and the January 14, 2011 version of the FPR.

Confirm that the number of detectors listed in table 14.1 is correct for zones 153 and 154, and discuss the possible discrepancy.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-18

A change has been made to Part II, Table 14.8.2 "Fire Dampers" in the as-designed FPR in the entry for damper 2-ISD-31-3872. The entry was changed to indicate that the damper lies between rooms 713.0-A29 and 737.0-A8 rather than 737.0-A9 and 737.0-A8. This is in conflict with the entry in Part VI, Section 3.19.4, of the as-designed version, which aligns with the unchanged description of the fire damper location.

It appears that this change was made between Revision 40 and the January 14, 2011 version of the FPR.

Resolve this conflict. Ensure that an extent of condition review has been performed to ensure that other, similar instances have been identified and resolved.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-19

A change has been made to Part II, Table 14.8.2 "Fire Dampers" in the as-designed FPR in the entry for a 3 hour rated damper between rooms 772.0-A1 and 772.0-A7. The entry was changed to indicate that the damper is rated for 1.5 hours. Additionally, the damper identification number was changed from 1-ISD-31-2516 to 1-ISD-31-2561. This change is in conflict with the entries in Part VI [pp. VI-583 and VI-626 of the January 14, 2011 version] which aligns with the unchanged version.

It appears that this change was made between Revision 40 and the January 14, 2011 version of the FPR.

Resolve this conflict. Ensure that an extent of condition review has been performed to ensure that other, similar instances have been identified and resolved.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-20

References 4.2.19 "WBPE-026-9208002 -Appendix R -High Pressure Fire Protection Cable Separation Analysis" and 4.2.21 "WBPE063201005 -Appendix R -Safety Injection Analysis" that were included in Revision 5 of the FPR appear to have been deleted from the FPR Part II reference list in Revision 10.

Describe, at a high level, where the information that was formerly located in these documents currently resides.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-21

A change was made to Part II of the FPR, after Revision 5, to add the following to the definition of "Operable-Operability":

> Equipment being tested does not need to be declared inoperable provided appropriate manual actions by the test performer, stationed at the test location, are addressed under written procedures. The written procedures must provide the ability to recognize input signals for action, ready recognition of setpoints, design nuances that may complicate subsequent manual operation such as auto-reset, or other functions which are inherent to the fire protection system.

It appears that this change was made for Revision 7 of the FPR.

Provide a summary evaluation and technical justification supporting this change. Also provide examples of equipment where this would apply, and examples of equipment where it would not.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-22

A change was made to Part II of the FPR to delete the definition of "Regulatory Required." It appears that this change was made for Revision 7 of the FPR. The deleted text is as follows:

> Regulatory Required -(REG) Refers to the fire protection systems or features which are required to demonstrate compliance with NRC regulations. It also refers to those fire protection systems or features not required to demonstrate direct compliance with NRC regulations; however, specified commitments documented in this FPR have been made relative to the fire protection system or feature making the system or feature required to demonstrate compliance. [Emphasis added]

Describe what was meant by "those fire protection systems or features not required to demonstrate direct compliance with NRC regulations" in this context. Describe, at a high level, the "specified commitments documented in this FPR."

This change appears to remove a population of fire protection systems and features (those that had commitments documented in the FPR) from the list of fire protection systems and features required to demonstrate compliance.

Provide a technical justification for this change. Also, provide a summary of the differences in maintenance, testing, surveillance, etc., for those fire protection systems and features that are required to demonstrate compliance versus those that are not required to demonstrate compliance.

RAI FPR II-23

A change was made to remove the following text from Part II, Section 7.1, "TVA Corporate Management," of the FPR, after Revision 5:

> The General Manager, Operations Services, establishes fire protection programs and fire brigade training and qualification requirements and assesses their effectiveness. Agreements are maintained between the TVAN and TVA Fossil and Hydro Power organizations for providing training and qualification of fire brigade and Incident Commander personnel.

It appears that this change was made in Revision 10 of the FPR.

These elements were specifically approved by the NRC in SSER 18.

Describe where these responsibilities currently reside.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-24

A change was made to remove the description of the fire protection training provided as part of general employee training from Part II, Section 7.8, "Site Personnel," of the FPR.

It appears that this change was made in Revision 10 of the FPR.

Provide a justification of this change and describe where this information is maintained.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-25

Several changes were made to Part II, Section 8.1, "Program Changes and Associated Review and Approval," of the FPR.

1. Reference to Plant Operations Review Committee review of changes to the FPR was removed from 8.1.a.
2. A reference to "10 CFR 50.59" was replaced with "plant specific procedures" in 8.1.b.
3. The following text was removed from 8.1.c:

   > WBN may alter specific features of the approved Fire Protection Report provided: (a) such changes do not otherwise involve a change in a license condition or the technical specification or result in an unreviewed safety question, and (b) such changes do not result in failure to complete the Fire Protection Program as approved by NRC.

All of these changes affect elements that were specifically approved by the NRC in SSER 18.

It appears that these changes were made in Revision 27 of the FPR.

Provide a justification for each of these changes.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-26

A change was made to Part II, Section 8.3, "Audits/Inspections of the Fire Protection Program," of the FPR to remove a description of the "system of audits to be conducted to assess the WBN fire protection equipment and FPP implementation to verify continued compliance with NRC requirements and TVA commitments."

The description matched that provided in NRC Generic Letter 82-21 "Technical Specifications for Fire Protection Audits," and was specifically approved by the NRC in SSER 18.

This description was replaced with the statement that "the audit program is provided in the NQAP [Nuclear Quality Assurance Plan]."

It appears that this change was made in Revision 19 of the FPR.

Confirm that the audit program described and maintained in the NQAP document aligns with the program previously described in the FPR and approved by the NRC. Otherwise, justify any changes.

RAI FPR II-27

SSER 18 specifically references the "Shift Operations Supervisor" in the evaluation of the WBN fire brigade. However, a change was made to Part II, Section 9.1 of the FPR to replace references to "Shift Operations Supervisor" with "Shift Manager."

It appears that this change was made in Revision 10 of the FPR.

Describe the differences in roles, responsibilities, duties, etc., between the two positions.

RAI FPR II-28

Part II, Section 12.1, "Water Supply," of the FPR contains the following text:

> The water used in both the HPFP [High Pressure Fire Protection] and RCW [Raw Cooling Water] system is chemically treated to address concerns resulting from the use of raw water. A three-year evaluation period is being implemented to monitor the performance of the HPFP System. Periodic testing of the HPFP distribution system will be performed once a year for the first three years of plant operation. The results of the monitoring program will evaluate the adequacy of the existing fire suppression systems for testing frequency or possibly replacement plans.

SSER 18 describes a TVA commitment to continue this testing on a periodic basis.

Describe how the results of the initial testing period modified the testing frequency and replacement plans for the fire suppression systems. Describe the current monitoring and testing programs related to these topics (that is, the use of raw water and concern over microbiologically induced corrosion and other biological fouling).

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-29

A change was made to Part II, Section 12.10.4 "Fire Doors," of the FPR to remove a discussion of the process in place to perform fire door modifications.

It appears that this change was made in Revision 10 of the FPR.

Discuss the processes in place for fire door modification, or justify the removal of this information from the FPR.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-30

Are the time studies that support the continuous fire watch routes in Part II, Section 13.0.A "Fire Watch - Continuous [Primary]," of the FPR maintained at the WBN site in an auditable form? If so, please provide the appropriate references. If not, justify why not.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-31

Part II, Section 13.0 "Fire Protection System Impairments and Compensatory Actions," of the FPR states, in part:

> Impaired fire protection systems or features will be returned to operable condition in the time frame specified in the OR sections. Should this restoration not be done, a 10 CFR 50.72 and 10 CFR 50.73 review shall be performed and documented in accordance with site administrative procedures.

Similar statements exist throughout Part II, Section 14 "Fire Protection Systems and Features Operating Requirements (OR)." A typical example is found in Section 14.9.2:

> Restore the inoperable emergency battery lighting unit to Operable status within 14 days. If not restored within 14 days, continue the compensatory actions AND perform 10 CFR 50.72 and/or 10 CFR 50.73 reviews per site administrative procedures.

Describe how performing the 50.72 and 50.73 reviews and making an appropriate report, as needed, assists in returning a system or feature to operable status. Once any necessary report has been made, what is the path to operable status? What actions are to be taken for systems

or features that are not in operable status for extended periods beyond those outlined in Part II, Section 14? What actions are to be taken to restore the system or feature to operable status if the 10 CFR 50.72 and/or 10 CFR 50.73 review determines that no report is necessary?

RAI FPR II-32

A change was made to Part II, Section 14.2 "Water Supply," of the FPR to add Section 14.2.7 which deals with not as-designed loads or inhibited automatic isolation capability on the water supply system.

It appears that this change was made for Revision 7 of the FPR and expanded in Revision 10.

Provide a technical justification supporting this change.

Also,

- What is the timeframe for providing isolation capability (14.2.7.a)? What action is to be taken if this cannot be accomplished?
- What is the timeframe for completing 14.2.7.b actions (controlling the inhibited automatic isolation by procedure)? What action is to be taken if this cannot be accomplished?
- Identify and discuss the long term compensatory measures to be put in place if the operability time period in 14.2.7.c is missed.
- In this scenario, once any necessary report has been made, what is the path to operable status?

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-33

A change was made to Part II, Section 14.2 "Water Supply," of the FPR to add Section 14.2.8 which deals with fire pump automatic start impairments. Section B.14.2.8 appears to indicate that this section is intended to cover maintenance and testing. A 30 day period of allowed inoperability is inconsistent with maintenance and testing.

It appears that this change was made for Revision 27 of the FPR.

Provide a technical justification supporting this change, including the duration of the allowed non-operability.

Also,

- What is the timeframe for 14.2.8.a (controlling the inhibited automatic start circuitry by procedure)?

- Describe the long term compensatory measures to be put in place if the operability time period in 14.2.8.b is missed.

- In this scenario, once any necessary report has been made, what is the path to operable status?

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-34

There are a number of conflicts and inconsistencies between Part II, Section 14.2 "Water Supply" and the "Fire Pump Inoperability and Compensatory Actions" Table of the January 14, 2011 version of the FPR.

- What is the time period for implementing the actions in the "Planned Outage" row of the Table? Also, the "planned outage" concept is not reflected in the text of Section 14.2.

- The "14.2.1.c" column in the Table does not align with the actions described in the text of 14.2.1.c.

- The "14.2.4.a" column in the Table does not align with the actions described in the text of 14.2.4.a.

- The "14.2.5.a" column in the Table does not align with the actions described in the text of 14.2.5.a.

- The "14.2.5.b" column in the Table does not align with the actions described in the text of 14.2.5.b.

- There is no discussion in the text of the removing backup steps identified in columns "14.2.5.a" and "14.3.5.b" of the Table.

Resolve these conflicts.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-35

Part II, Section 14.8.1.c of the as-designed FPR states:

> If suppression (as listed in Section 14.3 and 14.4) and fire detection (as listed in Table 14.1) is designed to protect both sides of the inoperable barrier, then no compensatory actions are required.

Part II, Section 14.8.2 states:

> Restore the inoperable fire-rated assembly/fire barrier to Operable status within 30 days. If not restored within 30 days, continue the compensatory actions AND

perform 10CFR50.72 and/or 10CFR50.73 reviews per site administrative procedures. Also determine if any continuous fire watch routes are to be augmented as specified in Section 13.0.A.

The following questions relate to a scenario concerning an inoperable fire rated assembly falling under 14.8.1.c which enters 14.8.2.

- Describe the long term compensatory measures to be put in place if the operability time period in 14.8.2 is missed based on entry from 14.8.1.c. If no additional compensatory measures would be needed beyond suppression and detection on both sides of the inoperable barrier, provide a justification of why suppression and detection alone would be sufficient for an extended period (beyond 30 days).

- In this scenario, once any necessary report has been made, what is the path to operable status?

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-36

Is it TVA's position that one hour fire rated electrical raceway fire barrier systems (ERFBS) (which normally require suppression and detection systems to also be installed) fall under Section 14.8.1.c? If not, describe which section of 14.8.1 would apply. If so, justify the equivalence of the two configurations: detection plus suppression plus a one hour rated ERFBS vs. detection and suppression only in terms of maintaining defense in depth and safety margins.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-37

A change was made to Part II, Section 14.1.2 of the FPR to change the applicability of this section from inaccessible areas to containment. Section B.14.1.2 supports the original version.

It appears that this change was made in Revision 10 of the FPR.

Resolve this conflict. If the change is correct, provide appropriate sections that provide the requirements for inaccessible areas outside of containment and the associated bases.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-38

Part II, Section 14.2 "Water Supply," Note 2, of the FPR states, in part: "Section 14.5 is not applicable to the diesel driven pump control panel (e.g., 0-PNL-26-3150A)."

Describe the requirements that apply to this panel in lieu of Section 14.5.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-39

A change was made to add Part II, Section 14.10.2, to the FPR:

> With one or more of the breakers and/or valves specified in design output documents not in the noted position or condition, return the breakers and/or valve to the required position within 30 days.

It appears that this change was made for Revision 7 of the FPR and clarified in Revision 15.

Describe the compensatory actions to be taken in the 30 days between the discovery of the condition and the return to operability.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR II-40

Discuss the interaction and interface between the Operability Requirements and action statements in Part II, Section 14 "Fire Protection Systems and Features Operating Requirements (OR)," of the FPR and the Corrective Action Program (CAP) at WBN. Include in the discussion the point at which an item would be added to the CAP.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR III-5

Part III, Section 1.1, "Design Basis Evaluation," of the FPR states: "Loss of offsite power has been assumed for control building fires, for which alternative shutdown is provided."

The FPR, Part I, Section 2.0, "Purpose", states "The FPR documents WBN's Appendix R evaluation which ensures that safe shutdown capability can be maintained during and after a fire in accordance with Sections III.G, III.J, III.L and III.O of 10 CFR 50, Appendix R."

10 CFR 50, Appendix R (Appendix R), Section III.L.3, states:

> The shutdown capability for specific fire areas may be unique for each such area, or it may be one unique combination of systems for all such areas. In either case, the alternative shutdown capability shall be independent of the specific fire area(s) and shall accommodate postfire conditions where offsite power is available and where offsite power is not available for 72 hours. Procedures shall be in effect to implement this capability.

Confirm that the safe shutdown analysis, for alternate shutdown, addresses conditions where offsite power is available and where offsite power is not available for 72 hours. Also, confirm that procedures are in effect to implement this capability.

Provide a summary evaluation and technical justification for any fire areas that affect Unit 2 post- fire safe shutdown equipment and do not meet the above Appendix R criteria.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR III-6

Part III, Section 3.4.2, "Reactor Coolant Make-up Control," of the FPR states: "Reactor coolant make-up is available immediately post-reactor trip, except for a few fire locations where it is available within 75 minutes post reactor trip."

Identify the Unit 2 safe shutdown fire areas where reactor coolant make-up is not available immediately, but is available within 75 minutes post reactor trip. Confirm that the statement in Section 3.4.2 remains valid for Unit 2 and confirm that not having reactor coolant make-up available immediately will not have an adverse affect on Unit 2 post-fire safe shutdown.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR III-7

Part III, Section 3.4.3, "Reactor Coolant Pressure Control," of the FPR states:

> Establishing and maintaining a sufficient sub-cooling margin within the RCS is required to prevent void formation in the core and to ensure the ability to maintain natural circulation (if the RCPs are not operable) through the steam generators (SG). This is essential to achieving and maintaining safe shutdown. [emphasis added]

FPR Part III, Section 2.3, "Reactor Coolant Pressure Control," states, in part: "Reactor coolant pressure control is required to assure that the RCS is operated: [...] (3) With a sufficient sub-cooling margin to minimize void formation within the reactor vessel." [emphasis added]

Provide a technical justification that resolves the apparent conflict between the statements "prevent void formation in the core" and "minimize void formation within the reactor vessel".

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR III-8

Part III, Section 4.10.4, "125V DC Power System," of the FPR states:

> During normal operation, the 125V dc loads are fed from the battery chargers, with the batteries being supplied a 'trickle' charge floating on the system. Upon loss of ac power, the entire dc load is drawn from the batteries. The batteries are credited for two hours of operation after a loss of charging, predicated upon the continued operation of dc emergency equipment. However, the battery chargers can be manually aligned to alternate power sources to take over the load and recharge their associated battery.

Confirm that the basis used for crediting the batteries for two hours of operation after a loss of charging, considered potential fire induced faults on cables and equipment connected to the battery.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR III-9

Part III, Section 4.14, "Auxiliary Control Air System - Key 13," of the FPR states, in part:

> The ACAS air dryers operate continuously during normal operation. The dryers are dual stage regenerative types which operate automatically and independently of their respective compressors. [...] The electrical circuit is designed with interlocks that prevent a purge exhaust valve and an inlet switching valve on the same side of the dryer to be open at the same time. This precludes loss of air from the system through the purge valve.

Confirm that fire damage to the electrical interlock circuits for the ACAS air dryers will not prevent the equipment from performing its safe shutdown function in fire areas where it is required.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR III-10

Part III, Section 6.0, "Identification of Safe Shutdown Circuits and Cables," of the FPR states: "However, for some equipment, either a subset of cables or no cables were identified. For example, cables were not selected for valves where local manual operation is required during cooldown and nitrogen bottle control stations are used for AFW flow control."

Define the term "cooldown". Also, categorize the above identified manual operator actions as hot or cold shutdown.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR III-11

Part III, Section 7.3, "Associated Circuits by Spurious Operation," of the FPR states:

> The evaluation of Appendix R events ensures that any failure of associated circuits of concern by spurious operation (Type II) will not prevent safe shutdown. Credible electrical faults considered in the analysis included open circuit, short circuit (conductor-to-conductor), short to ground, and cable-to-cable (hot-short) including 3-phase hot shorts for high/low pressure interface valves. [emphasis added]

Appendix R, Section III.G.2, states:

> Except as provided for in paragraph G.3 of this section, where cables or equipment, including associated non-safety circuits that could prevent operation or cause maloperation due to hot shorts, open circuits, or shorts to ground, of redundant trains of systems necessary to achieve and maintain hot shutdown conditions are located within the same fire area outside of primary containment, one of the following means of ensuring that one of the redundant trains is free of fire damage shall be provided: [emphasis added]

Appendix R addresses hot shorts, open circuits and shorts to ground, but the FPR addresses these items in the singular tense as open circuit, short circuit (conductor-to-conductor), and short to ground.

Confirm that the fire induced circuit analysis methods in the FPR meet the requirements of Appendix R, Section III.G.2 for fire areas containing Unit 2 safe shutdown equipment. This includes circuits (plural) that could prevent operation or cause maloperation due to hot shorts, open circuits, or shorts to ground. Provide a summary evaluation and technical justification for any circuit analysis methods that do not meet these criteria.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR III-12

A change has been made to Part III, Section 10.1, "Overview of Evaluation Methodology," from revision 5 of the FPR to the as designed FPR that changes the text from:

> The resolutions may consist of modifications, use of alternate equipment, manual operator actions, fire barrier installation, pre-fire actions, post-fire repairs, engineering evaluations prepared in accordance with the guidance of Generic Letter 86-10, or deviation requests. [emphasis added]

to:

> The resolutions may consist of modifications, use of alternate equipment, manual operator actions, fire barrier and radiant energy shield installation, post-fire repairs, engineering evaluations prepared in accordance with the guidance of Generic Letter 86-10, or deviation requests. [emphasis added]

Provide a technical justification for the change from "pre-fire actions" to "radiant energy shield installation."

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR III-13

Part III, Section 4.7 "Component Cooling System (CCS) - Key 1B," of the as-designed FPR contains the following sentence: "The CCS system provides cooling for the following safe shutdown equipment in Unit 1:".

Is this sentence correct, or is the text intended to cover both units? If it is correct, provide the Unit 2 information. If it is not correct, correct the text.

Ensure that an extent of condition review has been performed to ensure that other, similar instances have been identified and corrected.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR IV-1

Part IV, Section 3.0, "Alternate Control Room Capabilities," of the FPR states "The instruments and controls located in the ACR are separated from, or can be electrically isolated from, the corresponding instrumentation and controls located in the MCR."

Describe the specific methods used to analyze and mitigate fire damage to circuits that could prevent operation or cause maloperation due to hot shorts, open circuits or shorts to ground, prior to the transfer of control to the auxiliary control room (ACR). This includes, fire induced spurious operation of equipment, including spurious operations that can cause equipment damage, system actuations such as ESFAS and ground faults on circuits of equipment to be controlled at the ACR. Also, describe the method used to ensure the safe shutdown capability will not be adversely affected by the one worst case spurious actuation or signal, resulting from the fire, before control is transferred to the ACR.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR IV-2

Part IV, Section 3.3, "Instruments and Controls Required for Alternative Shutdown not in the ACR," of the FPR states:

> The above instrumentation and controls are well in excess of that detailed in IE Information Notice 84-09. There are also numerous local indications and controls available to the operators outside the ACR which provide additional information and control which were not included in the above listing.

Confirm that the indications and controls outside the ACR are independent of the control building. If not independent of the control building, describe how the operators ensure that the instruments are providing accurate information and that the controls will function properly and not cause additional problems that may not be covered by procedure.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR IV-3

Part IV, Section 3.3 "Instruments and Controls Required for Alternative Shutdown Not in the ACR," of the as-designed FPR contains the following sentence: "The number in ( ) is the number available for Unit 1 shutdown."

Is this sentence correct, or is the text intended to cover both units? If it iscorrect, provide the Unit 2 information. If it is not correct, correct the text.

Ensure that an extent of condition review has been performed to ensure that other, similar instances have been identified and corrected.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR V-11

Part V, Section 2.1.2, "Operator Locations Prior to Initiating Manual Actions and t=0 Definition," of the FPR states:

> For the purposes of developing the safe shutdown procedures, all operators performing manual actions are dispatched from the main control room for fires in most plant locations, or from the Auxiliary Control Room for Control Building fires. The basis for dispatch locations is that the operators must obtain the operator-specific safe shutdown procedures from these locations.

This section also states: "The time requirements for completion of manual operator actions are based on defining the initiating time t = 0 as the time when the reactor is tripped from the Main Control Room (MCR)."

Confirm that using this definition of t=0 for fire areas containing Unit 2 safe shutdown equipment will ensure that safe shutdown capability can be maintained during and after a fire in accordance with Appendix R, Sections III.G, and III.L.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

RAI FPR VII-2

Part VII, Section 6 "General Engineering Evaluations," was added to the FPR after the WBN Fire Protection Program was approved by the NRC in SSER 18.

Probabilistic risk assessment (PRA) information is utilized throughout this section of the FPR as one element supporting the safety conclusions of the engineering evaluations the section contains and in some cases appears to be an important justification.

It is the NRC's position that licensees with a deterministic fire protection licensing basis cannot rely on risk information for their safety conclusions. Risk information may only be relied upon as part of a risk-informed licensing action request, not as part of the traditional fire protection self-approved engineering evaluation process.

Provide updated versions of the engineering evaluations in this section of the FPR that do not rely on or reference PRA information. Otherwise, provide further justification regarding the acceptability of this use of PRA information.

This RAI may involve an update to the FPR to incorporate the response to the RAI.

Please direct any inquiries to me at 301-415-2048 or Justin.Poole@nrc.gov.

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Docket No. 50-391

Enclosures:
1. List of Attendees
2. Draft RAI

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