WBN2Public Resource

From: Poole, Justin
Sent: Wednesday, August 31, 2011 7:34 AM
To: Bryan, Robert H Jr
Cc: Crouch, William D; WBN2HearingFile Resource
Subject: RE: Revision to the handout for tomorrow's fire protection meeting
Attachments: WB2 FP RAIs group 7 draft handout v2.docx

Sorry, forgot to attach the file.

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From: Poole, Justin
Sent: Tuesday, August 30, 2011 4:42 PM
To: Bryan, Robert H Jr
Cc: 'Crouch, William D'; WBN2HearingFile Resource
Subject: Revision to the handout for tomorrow's fire protection meeting

Attached is a revision to the RAIs that will be a handout for tomorrows meeting. Other than some editorial fixes, the one change of note is a new question RAI FPR General -8.

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Hearing Identifier: Watts_Bar_2_Operating_LA_Public
Email Number: 518

Mail Envelope Properties (19D990B45D535548840D1118C451C74DA9200F8F94)

Subject: RE: Revision to the handout for tomorrow's fire protection meeting
Sent Date: 8/31/2011 7:34:00 AM
Received Date: 8/31/2011 7:34:02 AM
From: Poole, Justin

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Files	**Size**	**Date & Time**
MESSAGE	735	8/31/2011 7:34:02 AM
WB2 FP RAIs group 7 draft handout v2.docx	36044	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

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

- A number of the information requests may involve modifications to the fire protection report (FPR). This status is indicated at the end of the specific requests.

- References to the "FPR" refer to the August 2011 as-designed version of that document.

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-7

The reviewers have found that not all RAI responses have been successfully incorporated into the FPR. Two examples:

1. The TVA response to RAI II-8 (in the March 16, 2011 TVA letter) states, in part:

   > However, WBN does not reduce a fire watch from continuous to hourly roving in areas containing fire safe shutdown equipment for a unit in Modes 1 to 4, inclusive. WBN does reduce a fire watch from continuous to hourly roving for areas where a fire would impact the units in Modes 5, 6, and core empty.
   >
   > The FPR will be revised to clarify that this reduction only applies to areas and equipment affecting the unit in Modes 5, 6, and core empty and does not apply to areas that affect the other unit while in Modes 1 to 4 inclusive.

   However, the FPR contains numerous locations where this change has not been made. Some examples:

   > When either unit is in Modes 5 and 6 or core empty, roving fire watches may be used in lieu of continuous fire watches when approved by the Fire Protection Supervisor (or designee). Locations where a continuous fire watch would be required in Modes 1 - 4 may be combined and patrolled by a roving fire watch. [pg. II-47]
   >
   > **NOTE 4**: With either unit in Modes 5, 6, or core empty, locations where a continuous fire watch would be required may be combined and patrolled by a

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roving fire watch when approved by the Fire Protection Supervisor (or designee). [pg. II-52]

NOTE 1: With either unit in Modes 5, 6, or core empty, locations where a continuous fire watch would be required may be combined and patrolled by a roving fire watch when approved by the Fire Protection Supervisor (or designee). [pg. II-53]

Other instances of this condition exist in the FPR.

2. The TVA response to RAI FPR III-13 (in the May 6, 2011 TVA letter) states, in part: "Part III, Section 4.7 is incorrect. The third paragraph should read: "The CCS system provides cooling for the following safe shutdown equipment per unit." (emphasis added)

   However, Part III, Section 4.7, of the FPR reads: The CCS system provides cooling for the following safe shutdown equipment per Unit 1: (emphasis added)

To resolve the problems with RAI response incorporation:

- Correct the FPR to bring it into alignment with these RAI responses in all instances.

- Provide assurance that other, similar deficiencies with respect to modifying the FPR to align with other RAI responses have been found and corrected.

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

RAI FPR General-8

The reviewers continue to identify problems with Information Quality Control and other inconsistencies in the FPR. Two examples:

- An important explanatory sentence was deleted from Part VI Section 3.26.1 [pg. VI-437]. With the change, this section now reads:

  Deviations: The justification for intervening combustibles such as insulation on cables in trays and Thermo-Lag is documented in Part VII, Section 2.4.
  a. Wide range steam generator level
  b. Tank level for the condensate storage tank (CST) and refueling water storage tank (RWST).
  c. RCS cold leg temperature (T_c).
  The justifications are documented in Part VII, Section 2.1.

- A change was made to Part VI, Section 3.22.2.1 [pg. VI-363] to add a protected cable to analysis volume AV-041M. However, summary Table I-1 was not updated to reflect this change.

Perform an information quality and consistency review on the FPR and incorporate the results.

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RAI FPR I-3

In the revised summary Table I-1, a number of rooms are indicated as having both required manual actions (and repairs) and no FSSD equipment installed. Examples include: 713.0-A10, 713.0-A17, and 737.0-A10.

Provide a technical justification for this configuration or correct the Table. Provide assurance that other inconsistencies between the summary Table and the balance of the FPR have been identified and corrected.

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

RAI FPR II-37.1.1

The TVA response to RAI FPR II-37.1, in the August 5, 2011 TVA letter indicates that the FPR would be modified to provide requirements for inaccessible areas outside of containment.

However Part II, Section 14.1.2.b of the FPR is not clear that it applies only to inaccessible areas. Modify the text to indicate this, or explain the difference in applicability between 14.1.2.b and 14.1.1.

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

RAI FPR II-44.1

The TVA response to RAI FPR II-44, in the August 5, 2011 TVA letter, provides the basis for B.14.2.f, specifically, "The TIR bases, B.14.2.f, calls for this testing to compare the friction loss characteristics of the piping to previous tests."

Additionally, B.14.2.f states, "Any flow test that results in unacceptable deterioration of available flow and pressure shall be fully investigated."

- Provide the technical justification that demonstrates that, since the licensing of Unit 1, there has not been an "unacceptable degradation" in friction loss characteristics based on the testing described by B.14.2.f.

- Provide a summary of the representative testing and discussion of how the results since licensing of Unit 1 demonstrate that the flow characteristics of the piping system are capable of providing for flows representative of those expected during a fire.

- Describe the criteria used in making the determination of "unacceptable deterioration."

RAI FPR II-44.2

The TVA response to RAI FPR II-44, in the August 5, 2011 TVA letter, states: "The hose station flow paths from the main header are hydraulically separate from the main header to sprinkler flow paths and thus the hose stations do not impose hydraulic loads on the sprinkler paths."

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Page VIII-40 of the FPR states: “Adequate fire fighting water requirements are considered to be the calculated flow and pressure to provide flow and pressure to meet suppression system design basis, including hose stream allowance and unisolated RSW loads.”

The RAI response is inconsistent with the FPR since the FRP states that the hydraulic calculations consider not only the hose station loads, but also the unisolated RSW loads. Since the hose and RSW loads are considered in the calculation, they also need to be considered in the testing.

Describe how the flow tests performed at WBN account for the additional flow for the fire hoses and the unisolated RSW loads?

RAI FPR II-46

Part II, “Fire Pump Inoperability and Compensatory Measures” Table of the FPR, appears to be inconsistent with the configuration of the plant.

Based on the Part II, Section 12.1, there are 4 electric motor driven fire pumps (EMFPs) and there is one diesel fire pump (DFP).

Examples:

- Column 14.2.2 in the Table shows two EMFPs, one operable, one inoperable. What is the presumed status of the other two EMFPs?

- Table column 14.2.3, states one DFP operable and 2 inoperable, whereas 14.2.3 of the text stays, “With no electric driven pumps operable. . .”

Explain the discrepancy between the number of EMFPs in the Table versus the other information provided in the FPR.

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

RAI FPR II-47

A change was made in Part II of the FPR to delete TIR 14.10.n.

Explain this change and provide a technical justification for the deletion of TIR 14.10.n.

RAI FPR V-13.1

TVA’s response to RAI FPR V-13 (in the August 5, 2011 TVA letter) indicates that there are no differences between the t=0 definition for fires where the reactor trip is performed from the main control room and where an automatic reactor trip is caused by the fire.

However, the FPR still defines t=0 as the time when the reactor is tripped from the Main Control Room.

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Revise the FPR to reflect the definition of t=0 as described in the TVA RAI response.

Additionally, the reviewers noted that TVA also provided additional information referencing Appendix E of NEI-00-01, Revision 2. This Appendix has not been endorsed by the NRC.

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

RAI FPR VII-2.6.1

RAI FPR VII-2.6 requests, in part, that TVA: "Provide a detailed summary of the trending information for each of the monitored hose stations."

The TVA response to RAI FPR VII-2.6, in the August 5, 2011 TVA letter, directs the reader to the response to RAI FPR VII-2.3 for this information. However, examination of the response to RAI FPR VII-2.3 shows that it does not contain information on trending. The response to RAI FPR VII-2.2 does provide some discussion of trending, but does not provide the detailed discussion that RAI FPR VII-2.6 was requesting.

- Provide a detailed summary of the trending results for each of the eight trending points identified in parts 1 and 2 of the TVA response to RAI FPR VII-2.2 from Unit 1 licensing to the present.

RAI FPR VII-2.7

During the July 12, 2011, public meeting, it was noted that there are pressure/flow tests required for ASME Class 3 piping per ASME code. At the meeting neither TVA nor the NRC was able to determine in detail what these tests were, or whether they were being performed at the Watts Bar site.

- Provide a summary of the testing performed on the high pressure fire protection Train A and Train B safety related headers because of their classification as ASME Class 3 piping. The summary should include, at a minimum, a description of each test, the test frequency, and acceptance criteria.

RAI FPR VII-18

It is unclear whether there is fire detection in the tunnel of Fire Zone 692.0-A1B. A plain reading of Part VII, Section 8.3.3.4 of the FPR would indicate that, although there is no suppression, there is detection. However, both Table I-1, and Part VII, Section 3.1.1, indicate that there is no detection or suppression.

Clarify whether there is detection in tunnel of Fire Zone 692.0-A1B.

RAI FPR VII-19

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A number of areas where a fire causes a manual action to be performed lack both detection and suppression. Examples of these areas are found in Part VII, Sections 8.3.14, 8.3.15, 8.3.18, 8.3.19, and 8.3.24 of the FPR.

Provide a description of the entry conditions for the manual action, since detection of the fire through automatic means is not available.

For example, how will the operators know to perform OMA 1016 (for a fire in room 729.0-A2, for example), without knowing a fire has occurred in the area?

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

RAI FPR VII-20

There are inconsistencies in the level of detail provided in Part VII of the FPR regarding OMA Staffing Requirements. Two examples:

1. Section 8.3.42.5 includes a relevant paragraph regarding OMAs 1022 and 1023, as Unit 2 OMAs. This paragraph is relevant since it provides actual demonstration time for the combination of actions for Unit 1 (mirror image actions) and describes that the OMAs occur are performed in the same room. This paragraph is followed by 12 paragraphs that are not related to the submitted evaluation.

2. Section 8.3.9.8 is only one paragraph with one sentence listing the operator and the actions that they are performing. Of the eight operators, only the seventh operator is performing the OMAs described in the evaluation. This paragraph lacks the useful description of the demonstration time for the combination of actions and a statement regarding the rooms that the OMAs need to be performed. This is especially relevant since OMAs 1016 and 1024 are described as performed in Room 737.0-A9 and OMA 1482 is described as performed in Room 713.0-A1B.

Provide consistent level of detail for the Staffing Requirements sections of Part VII, Section 8 Evaluations. Include information regarding combination of actions that are performed by the operator or operators that are performing the OMAs evaluated.

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

RAI FPR VII-21

There exists a conflict between Part VII, Sections 4.5 and 8.3.44.2, of the FPR.

Part VII, Section 8.3.44, includes OMAs required for safe shutdown. Part VII, Section 8.3.44.2, references Part VII, Section 4.5, for justification of why no detection is required in the Refueling Room, 757.0-A13. Part VII, Section 4.5 states as part of the justification for no detection: “A fire in the Refueling Room or in the adjacent rooms of Fire Area 10 will not impact FSSD capability.” The quoted statement in Section 4.5 conflicts with the need for OMAs in 757.0-A13, Refueling Room.

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Resolve this inconsistency between the sections of Part VII. Provide a technical justification for the lack of detection in the Refueling Room in the context of the need for OMAs in that area.

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

RAI FPR VII-22

A number of the evaluations in Part VII, Section 8 of the FPR state that a particular room does not have dedicated procedures for fire safe shutdown. One example is Section 8.3.45, which states in part: "Room 757.0-A14 does not currently have a dedicated procedure for fire safe shutdown."

The submitted FPR is intended to be the as-designed version of the FPR. Therefore, the statements should either include a reference to a commitment or be written as if the procedures have been completed, even if all the procedures are not yet completed. These statements indicate that it would be acceptable not to have a procedure.

Confirm that there will be procedures for these OMAs.

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

RAI FPR VII-23

Part VII, Sections 8.3.86, 8.3.87, 8.3.88, and 8.3.89, [Accumulator Room 2, Fan Room 2, Unit 2 Lower Containment Instrument Room, and Outside Crain Wall (North), respectively], lack descriptions of fire detection, fire suppression, combustibles and ignition sources.

Provide the missing information. If detection is not available in the rooms, provide a technical justification that operators will have sufficient information available to know to initiate the OMAs.

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

RAI FPR VII-24

Part VII, Section 8.3.10.5, of the FPR, discusses OMA 1275 in Fire Zone 713.0-A1B. In this section, travel time has been approximated for each of the operator manual actions.

Provide the technical basis for assuring that the travel time includes all likely locations of the AUOs where they could be at the beginning of the actions.

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

RAI FPR VII-25

Part VII, Section 3.1.1, of the FPR was changed to indicate more rooms within Fire Area 1 contain fire safe shutdown (FSSD) equipment. In particular, the following rooms were changed

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from “None” to “Yes” in the summary table: 674.0-A1, 674.0-A2, 692.0-A29, and 692.0-A30. Room 692.0-A18 was changed from “Yes” to “None”.

The reviewers have identified the following inconsistencies:

- Room 674.0-A2 is indicated as containing FSSD equipment, but there is no evaluation provided for this room. Additionally, Table I-1 shows this room as having no FSSD equipment.

- The new evaluation provided for rooms 692.9-A29 and -A30 (one sentence) is insufficient. Provide a level of detail equivalent to the other evaluations.

- Part VII, section 3.1.1, was changed to add an evaluation of room 692.0-A23. However an evaluation for this room already exists in section 3.1.7.

- The evaluations in Section 3.1.1 for rooms 692.0-A10, -A22, and -A23 are not indicated in Table I-1 (or Part VI for -A10).

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

<u>RAI FPR VIII-21.1</u>

RAI FPR VIII-21 requested that TVA:

> Identify the locations where combustible oil filled transformers are installed. Provide the locations to the level of detail of room subdivisions used to assemble analysis volumes (for example, room 692.0-A1 has been subdivided into 692.0-A1A1, -A1A2, -A1A3, -A1AN, -A1B1, -A1B2, -A1B3, -A1BN and -A1C).

The explicit intent of this question was to determine which portion of the subdivided areas houses the transformers with combustible liquid.

For example, Analysis Volume AV-005 in Fire Area 1 includes room 692.0-A1 which is subdivided into numerous areas including A1BN. A1BN is central to the entire area, and would be considered a “buffer zone.” If transformers are located in this portion of AV-005, they have the potential to impact the analysis volume analysis of Part III, Section 10.3.1. Specifically, Section 10.3.1 relies on Deviation Request 2.4 of Part VII of the FPR for the treatment of intervening combustibles. Combustible liquid filled transformers were not listed in Deviation Request 2.4, whereas much less significant combustibles were, such as plastics in junction boxes. Therefore, even with enhanced suppression provided in the area, specific analysis of combustible liquid transformers should be included where they could represent an intervening combustible in such a “buffer zone.”

Provide the specific sub-area where each of the combustible liquid transformers is located. Area and analysis volume do not provide sufficient information regarding where in the plant these transformers are located. In particular, it appears that this detail was not provided (in the in the August 5, 2011 TVA letter) for transformers 0-OXF-228-3, -228-4, -226-A, and -226-B.

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If any of the combustible liquid transformers are located in “buffer zones,” as described in Part III, Section 10.3.1, provide the technical justification that locating such an ignition source with integral combustibles in that buffer zone would not impact safe shutdown capability.

In addition, update Section 2.4 of Part VII to include combustible liquid filled transformers as an intervening combustible, if these transformers are in areas that have been evaluated for intervening combustibles.

RAI FPR VIII-21.2

The response to RAI FPR VIII-21 in the August 5, 2011 TVA letter contains the following statement as a basis of acceptability: “Silicone fluid fires are extinguished in 20 to 30 seconds with a water application of 0.15 gpm/sq. ft.”

Provide a basis for this statement using technical analysis or test results from an independent testing laboratory, or provide other technical information that supports the statement.

RAI FPR VIII-22

A change was made in Part VIII, element F.12, of the FPR, to delete text in the ‘Plant Conformance” column that indicated that automatic detection is installed in the fuel receipt area and New Fuel Vault. Additionally, the following was added to the “Alternatives” column: “Detection is not provided in the New Fuel Storage Vault (el. 741.5). Refer to Part VII, Section 4.5 of the FPR.”

Part VII, Section 4.5 is an evaluation of the lack of detection in the refueling room (757.0-A13), and does not mention the New Fuel Storage Vault or any other rooms.

Provide a technical justification for the lack of automatic detection in the New Fuel Storage Vault. One means might be to expand the evaluation in Part VII, Section 4.5, to encompass this area.

Is there automatic detection installed in the fuel receipt area? If not, provide a technical justification for the lack of automatic detection in this area.

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

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