

WBN2Public Resource

From: Crouch, William D [wdcrouch@tva.gov]
Sent: Wednesday, June 09, 2010 12:53 PM
To: Wiebe, Joel
Subject: Fw: NRC RAI Master List for 6/10 Telecom
Attachments: Open Items List 5-25-2010 Master.xls

From: Clark, Mark Steven
To: Crouch, William D
Cc: Hilmes, Steven A; Knuettel, Edward Terry
Sent: Wed Jun 09 12:51:13 2010
Subject: NRC RAI Master List for 6/10 Telecom

Bill:

Please forward the attached list to Joel for review at tomorrow's telecom. Items changed are highlighted in yellow.

Thanks,

Steve

Steve Clark
Bechtel Power Corp.
Control Systems
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Hearing Identifier: Watts_Bar_2_Operating_LA_Public
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Subject: Fw: NRC RAI Master List for 6/10 Telecom
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From: Crouch, William D

Created By: wdcrouch@tva.gov

Recipients:
"Wiebe, Joel" <Joel.Wiebe@nrc.gov>
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Agenda for Weekly Telecom with TVA (I&C Chapter 7 only)							
Licensee Open Items to be Resolved for SER Approval							
No	Issue	TVA Response(s)	Status/Current Action	Resolution Path	RAI Date	RAI Response Date	Comments
1	November 19, 2009 (ML093260343, RAI 1) The Watts Bar Nuclear Plant FSAR red-line for Unit 2 (Agency wide Documents Access and Management System Accession Number ML080770366) lists changes to the Unit 1 FSAR and depicts how Chapter 7 of the Unit 2 FSAR will appear at fuel load. Have additional changes been made to Chapter 7 of the Unit 2 FSAR beyond those indicated in ML080770366? Which of the changes identified correspond to digital instrumentation and controls (I&C) components and systems that have not been previously reviewed and approved by the NRC? Originator: EICB (Carte)	12/15/2009 Presentation Slides: This item was partially addressed during the December 15, 2009 meeting. TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 1 on Page 1 of 15): TVA responded to this request for additional information.	Date: 3/15/2010 Responsibility: NRC (All) RAI response received.	Closed			NNC 11/19/09: The FSAR contains mostly description of the function that the various TVA systems must perform. Therefore this question was asked to determine how the systems have been changed. NNC 4/15/10: The response addresses many systems and should be read by all EICB reviewers.
2	November 19, 2009 (ML093260343, RAI 2) Are there I&C components and systems that have changed to a new or different digital technology without the change being reflected in the FSAR markup? Are there any not-redlined I&C components and systems that have been changed or replaced by digital base technology since Unit 1 was approved? Originator: EICB (Carte)	12/15/2009 Presentation Slides: This item was partially addressed during the December 15, 2009 meeting. TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 2 on Page 2 of 15): TVA responded to this request for additional information.	Date: 3/15/2010 Responsibility: NRC (All) RAI response received.	Closed			NNC 11/19/09: The FSAR contains mostly description of the function that the various TVA systems must perform. Therefore this question was asked to determine how the systems have been changed. NNC 4/15/10: The response addresses many systems and should be read by all EICB reviewers.
3	November 19, 2009 (ML093260343, RAI 3) Because a digital I&C platform can be configured and programmed for different applications, the review process can be divided between a review of the platform and a review of the application. For planning and scheduling reasons, it is important to know beforehand which platform has been used in each digital component and system. What is the base platform of each unreviewed digital I&C component and system (e.g., Common Q)? Originator: EICB (Carte)	12/15/2009 Presentation Slides: This item was partially addressed during the December 15, 2009 meeting. TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 3 on Page 2 of 15): TVA responded to this request for additional information.	Date: 3/15/2010 Responsibility: NRC (All) RAI response received.	Closed			NNC 11/19/09: The FSAR contains mostly description of the function that the various TVA systems must perform. Therefore this question was asked to determine how the systems have been changed. NNC 4/15/10: The response addresses many systems and should be read by all EICB reviewers.
4	November 19, 2009 (ML093260343, RAI 4) Please identify the documentation that will be submitted for each unreviewed digital I&C system and component and the associated docketing schedule. Originator: EICB (Carte)	1/13/10 Public Meeting: TVA identified a schedule for docketing some Post Accident Monitoring System (PAMS) documentation, and the new setpoint methodology. No other documentation was discussed. TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 4 on Page 3 of 15): TVA responded to this request for additional information	Date: 3/15/2010 Responsibility: NRC (All) and TVA (Hilmes) Carte to review the PAMS instruments for D3 analysis. TVA to address the question of how a Foxboro IA common mode or complete failure impacts the plant accident analysis as described in Chapter 15 of the FSAR. (Prove segments are independent)	Open Due _____			NNC 11/19/09: LIC-110 Rev. 1 Section 6.2.2 states: "Design features and administrative programs that are unique to Unit 2 should then be reviewed in accordance with current staff positions...TVA will supply a description of the changes implemented at Unit 1 but have not been reviewed for Unit 2 by the NRC technical staff...TVA will also provide the applicable portion of the FSAR and the proposed TSs...In addition, the staff should review items that are identical for WBN Units 1 and 2 that have not previously been reviewed and approved by the NRC staff. These items are changes in the design and licensing basis for WBN Unit 1 that TVA has implemented without NRC prior approval under the 10 CFR 50.59 process." NNC 4/15/10: The response addresses many systems and should be read by all EICB reviewers.
5	December 11, 2009 (ML093431118, RAI 5) Originator: EICB (Carte)	TVA Letter Dated February 5, 2010: TVA provided the Unit 2 setpoint methodology (WCAP-177044-P Revision 0 - dated _____)	Date: 3/15/2010 Responsibility: NRC (Garg) and TVA (Hilmes and Crouch)	Open Due _____			NNC 4/15/10: Related to setpoints and SE Section 7.1.3.1.

Agenda for Weekly Telecom with TVA (I&C Chapter 7 only)							
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	<p>By letter date February 28, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML080770366) TVA provided a "red-lined" version of the FSAR for WBN Unit 2. The purpose of this FSAR "red-line" version was to depict how the Unit 2 FSAR will appear at fuel load. This letter identified "significant FSAR changes" and provided a "X-REF" number for each.</p> <p>Change 7.3-1 refers to the following two Summary Reports:</p> <p>TVA Letter, P. L. Pace to NRC, dated February 9, 1998, "Watts Bar Nuclear Plant (WBN) Unit 1 - 10 CFR 50.59(b)(2), Changes, Tests and Experiments Summary Report"</p> <p>TVA Letter, P. L. Pace to NRC, dated September 30, 2005, "Watts Bar Nuclear Plant (WBN) Unit 1 - 10 CFR 50.59, Changes, Tests and Experiments Summary Report"</p> <p>Please submit the 50.59 Evaluations for each of these Summary Reports and identify which parts are relevant to the Unit 2 Setpoint Methodology.</p>	<p>December.</p> <p>TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 5 on Page 5 of 15): TVA responded to this request for additional Information</p>	<p>RAI response received.</p> <p>This item requires further discussion between TVA and the staff concerning the setpoint methodology employed for WBN2.</p> <p>See Item 8.</p>				
6	<p>December 11, 2009 (ML093431118, RAI 6)</p> <p>Originator: EICB (Carte for Garg)</p> <p>Amendment 95 of the FSAR, Chapter 7.3, shows that change 7.3-1 consists of updating a reference from revision 5 to revision 7 and making it applicable to Unit 1 only, while adding a new reference, applicable only to Unit 2.</p> <p>Reagan, J. R., "Westinghouse Setpoint Methodology for Protection Systems, Watts Bar Units 1 and 2, Eagle 21 Version," WCAP-12096 Rev. 7, (Westinghouse Proprietary Class 2), Unit 1 Only</p> <p>WCAP "Westinghouse Setpoint Methodology for Protection System, Watts Bar Unit 2, Eagle 21 Version, WCAP-17044-P, Unit 2 Only.</p> <p>Please provide both setpoint methodology documents identified above.</p>	<p>By letter dated February 5, 2010: TVA provided the Unit 2 setpoint methodology (WCAP-177044-P Revision 0 - dated December 2009).</p> <p>TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 6 on Page 7 of 15): TVA responded to this request for additional Information.</p>	<p>Date: 2/16/2010 Responsibility: NRC (Garg)</p> <p>The Westinghouse Setpoint methodology document (WCAP-17044-P Revision 0) identifies that the intermediate and source range calculations were performed by TVA (2-NMD-092-0131). Please provide the intermediate and source range calculations performed by TVA (2-NMD-092-0131).</p> <p>The Westinghouse Setpoint methodology document (WCAP-17044-P Revision 0) identifies that the undervoltage and underfrequency calculations were performed by TVA (2-27-068-0031). Please provide the undervoltage and underfrequency calculations performed by TVA (2-27-068-0031).</p> <p>Work with Item 7 for WCAP-12906 issues.</p>	<p>Open Revised Response Due 7/23/10</p>			<p>NNC: WCAP-12096 Rev. 7 (ML073460281) is in ADAMS.</p> <p>NNC: WCAP-12096 Rev. 8 is the current revision for Unit 1.</p> <p>NNC 4/15/10: Hukam, please update this open item as appropriate.</p> <p>TVA to docket Rev. 8 and identify that Rev. 8 is the current revision for Unit 1. TVA to identify any NRC approval of Rev. 8.</p> <p>TVA to describe how TVA calculations for Unit 2 are different than Unit 1. If they are the same, TVA to docket such statement under oath and Affirmation.</p>
7	<p>December 11, 2009 (ML093431118, RAI 7)</p> <p>Originator: EICB (Carte for Garg)</p> <p>The setpoint methodology has been reviewed and approved by the NRC staff in Section 7.1.3.1 of NUREG-0847 (ML072060490), NUREG-0847 Supplement No. 4 (ML072060524), and NUREG-0847 Supplement No. 15 (ML072060488).</p> <p>Please describe all changes from the methodology that has been reviewed and approved by the staff.</p>	<p>TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 7 on Page 7 of 15): TVA responded to this request for additional Information.</p>	<p>Date: 1/13/2010 Responsibility: NRC (Garg)</p> <p>RAI response received. NRC to review response.</p> <p>TVA will submit WCAP-12096, Rev. 8 if there is a change to the methodology.</p> <p>TVA will supply the 50.59 letter for Rev. 8</p> <p>TVA to locate transmittal letter that submitted Rev. 7.</p> <p>TVA to determine the last revision of WCAP-12096 where there was a change in methodology.</p> <p>Work with Item 6 for WCAP-12906 issues.</p>	<p>Open Revised Response Due 7/23/10</p>			<p>NNC 4/15/10: Related to setpoints and SE Section 7.1.3.1.</p> <p>NNC 4/15/10: Hukam, please update this open item as appropriate.</p> <p>TVA to provide Rev. 8 of the Unit 1 document (which is the current one) if there is a change in methodology and identify how the Unit 2 document differs from it.</p>
8	<p>December 11, 2009 (ML093431118, RAI 8)</p> <p>Originator: EICB (Carte for Garg)</p>	<p>TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 8 on Page 7 of 15): TVA responded to this</p>	<p>Date: 5/24/10 Responsibility: NRC (Garg) and TVA (Hilmes/Crouch)</p>	<p>Open Due _____</p>			<p>TVA stated that they will follow TSTF-493 Rev. 4 as approved by the NRC.</p>

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Licensee Open Items to be Resolved for SER Approval							
No	Issue	TVA Response(s)	Status/Current Action	Resolution Path	RAI Date	RAI Response Date	Comments
	There are several staff positions that provide guidance on setpoint methodology (e.g., Reg Guide 1.105, BTP 7-12, RIS-2006-17 and TSIF-493 Rev. 4). Please identify how the Unit 2 setpoint methodology addresses staff guidance.	request for additional information	RAI response received. NRC to review response. This item requires further discussion between TVA and the staff concerning the applicability of the staff positions to WBN2. See Item 5				The TS have already been provided to the NRC. NNC 4/15/10: Related to setpoints and SE Section 7.1.3.1. NNC 4/15/10: Hukam, please update this open item as appropriate.
9	December 11, 2009 (ML093431118, RAI 9) Change 7.3-2, identified in Watts Bar Nuclear Plant FSAR red-line for Unit 2 (ADAMS Accession Number ML080770366), refers to the following Summary Report: TVA Letter, P. L. Pace to NRC, dated September 20, 2002, "Watts Bar Nuclear Plant (WBN) Unit 1 - 10 CFR 50.59, Changes, Tests and Experiments Summary Report" Please provide the 50.59 Evaluation summarized in this Summary Report.	Originator: EICB (Carte for Darbali) TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 9 on Page 8 of 15): TVA responded to this request for additional information	Date: 3/15/2010 Responsibility: NRC (Darbali) 50.59 evaluation was submitted in the RAI response. NRC to review.	Closed			NNC 4/15/10: Related SE Section 7.3.
10	December 11, 2009 (ML093431118, RAI 10) The original SER on Watts Bar (NUREG-0847) documents that the scope of the review of FSAR Section 7.3, "Engineered Safety Features Actuations System," included: "included single-line, function logic and schematic diagrams, and descriptive information for the ESFAS and those auxiliary supporting systems that are essential to the operation of either the ESFAS or the ESF systems. The review included the applicant's design criteria and design bases for the ESFAS and the instrumentation and controls of auxiliary supporting systems. The review also included the applicant's analyses of the manner in which the design of the ESFAS and the auxiliary supporting systems conform to the design criteria." Please provide the information referred to in the quotation and include a description of all changes since this information was reviewed and approved by the NRC staff. If some parts of this information is included in the FSAR (e.g., Design Criteria) this information can be explicitly referenced in the response to this question.	Originator: EICB (Carte for Darbali) TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 10 on Page 8 of 15): TVA responded to this request for additional information. TVA Letter (ML073550386) dated FEB 26 1992: docketed WCAP-12374 Rev. 1 (ML080500664).	Date: 3/15/2010 Responsibility: NRC (Darbali) NRC evaluating TVA response. NRC to discuss document requirements and provide additional information to resolve this item.	NRC Review			NNC 4/15/10: Related SE Section 7.3.
11	December 11, 2009 (ML093431118, RAI 11) NUREG-0847 Supplement No. 2 Section 7.3.2 documents an evaluation of a change in containment sump level measurement. Provide documentation to demonstrate that Unit 2 implements the containment sump level indication as described and evaluated in NUREG-0847 Supplement No. 2, Section 7.3.2, for Unit 1.	Originator: EICB (Carte for Darbali) TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 11 on Page 13 of 15): TVA responded to this request for additional information	Date: 3/15/2010 Responsibility: NRC (Darbali) Requested information was submitted in the RAI response.	Closed			NNC 4/15/10: Related SE Section 7.3.
12	December 11, 2009 (ML093431118, RAI 12) The original SER on Watts Bar (NUREG-0847) documents that the scope of the review of FSAR Section 7.4, "Systems Required for Safe Shutdown," included single-line and schematic diagrams: "The scope of the review of the systems required for safe shutdown included the single-line and schematic diagrams and the descriptive information for these systems and for the auxiliary systems essential for their operation." Please provide the single-line and schematic diagrams for the systems required for safe shutdown that are applicable to Unit 2, and include a description of all changes since these diagrams were reviewed and approved by the NRC staff.	Originator: EICB (Carte for Darbali) TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 12 on Page 13 of 15): TVA responded to this request for additional information	Date: 3/15/2010 Responsibility: TVA TVA to provide the following: 1. Description of what is different from Unit 1 2. Road map between functions listed in 7.4 and the FSAR section that describes the equipment that performs the function.	Open Revised Response Due 7/23/10			NNC 4/15/10: Related SE Section 7.4.
13	December 11, 2009 (ML093431118, RAI 13)	Originator: EICB (Carte for Garg) TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 13 on Page 14 of 15): TVA responded to this	Date: 3/15/2010 Responsibility: NRC (Garg)	NRC Review of T.S.			TS have been docketed.

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No	Issue	TVA Response(s)	Status/Current Action	Resolution Path	RAI Date	RAI Response Date	Comments
	Chapter 7 and Chapter 16 of Amendment 95 to the FSAR do not include any setpoint values. Please describe how and when setpoint values (e.g., TS allowable values) will be provided for Unit 2. Please describe the documentation that will be provided to justify the acceptability of these values.	request for additional information	RAI response received. NRC to review response.				NRC 4/15/10: Related to setpoints and SE Section 7.1.3.1. NRC 4/15/10: Hukam, please update this open item as appropriate. Related to SE Section 7.1.3.1.
14	December 22, 2009 (ML093560019, item 1) Provide the justification for any hardware and software changes that have been made since the previous U.S. Nuclear Regulatory Commission (NRC) staff review for Eagle 21 and other platforms.	Originator: EICB (Carte for Garg) Date: 4/27/10 Responder: TVA By letter dated April 27, 2010: TVA responded to this request for information (Enclosure, Item No. 1) stated: "In discussion with the staff, TVA's understanding is that the focus of this question is the Eagle 21 system. Please refer to Reference 2 [TVA Letter Dated March 12, 2010], Question 10, and TVA letter to NRC dated August 25, 2008, 'Watts Bar Nuclear Plant (WBN) - Unit 2 - Westinghouse Eagle 21 Process Protection System, Response to NRC I&C Branch request for additional information' (Reference 3 [TVA letter dated August 25, 2008]) for the discussion of changes to the Eagle 21 system." A listing of changes to other platforms was provided in TVA letter dated April 27, 2010, Enclosure 1, items 21 and 23.	Date: 4/27/10 Responsibility: NRC (Carte & Garg) NRC: I do not recall saying that the NRC is not interested in changes in other platforms. Please provide a description of changes to other platforms (e.g., SSPS). For Eagle 21, this response points to Open Item No. 10.	NRC Review			NNC 4/30/10: Related to Eagle 21; therefore Garg is responsible.
15	December 22, 2009 (ML093560019, item 2) Verify that the refurbishment of the power range nuclear instrumentation drawers resulted in only like-for-like replacements.	Originator: EICB (Carte for Garg) Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 2).	Date: 4/27/10 Responsibility: NRC (Garg) Awaiting NRC evaluation of response. Awaiting Garg to assign responsibility for the Nuclear Instrumentation system (NIS)	NRC Review			
16	December 22, 2009 (ML093560019, item 3) Identify the precedents in license amendment requests (LARs), if any, for source range monitors or intermediate range monitors.	Originator: EICB (Carte) Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 3).	Date: 4/27/10 Responsibility: NRC (Garg) Awaiting NRC evaluation of response.	NRC Review			
17	December 22, 2009 (ML093560019, item 4) Identify precedents in LARs, if any, for the solid state protection system. Also, identify any hardware deviation from the precedent.	Originator: EICB (Carte) Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 4).	Date: 4/27/10 Responsibility: NRC (Garg) Awaiting NRC evaluation of response.	NRC Review			
18	December 22, 2009 (ML093560019, item 5) Identify any changes made to any instrumentation and control (I&C) system based on prior knowledge of failures.	Originator: EICB (Carte for Garg) Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 5).	Date: 4/27/10 Responsibility: NRC (Garg) Awaiting NRC evaluation of response.	NRC Review			
19	December 22, 2009 (ML093560019, item 6)	Originator: EICB (Carte for Garg) Date: 4/27/10 Responder: TVA	Date: 4/27/10 Responsibility: NRC (Garg)	Pending Submittal 6/18/10			

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No	Issue	TVA Response(s)	Status/Current Action	Resolution Path	RAI Date	RAI Response Date	Comments
	Verify that the containment purge isolation radiation monitor is the same as used in Watts Bar Unit 1, or identify any hardware changes.	By letter dated April 27, 2010 TVA responded to this request for information (Enclosure 1, Item No. 6) for the ratemeter. A newer model, RD-52, of the RD-32 detector assembly used in Unit 1. The detector assembly replacement is due to obsolescence and improved reliability.	Awaiting NRC evaluation of response.				
20	December 22, 2009 (ML093560019, item 7) Provide environmental qualification pursuant to Section 50.49 of Title 10 of the Code of Federal Regulations (10 CFR) for safety-related actuation transmitters.	Originator: EICB (Carte for Garg) Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 7).	Date: 4/27/10 Responsibility: NRC (EEEB) Garg to coordinate with Weibi to ensure EEEB takes responsibility for this one.	Closed			NNC 4/30/10: SRP Section 7.0 states: "The organization responsible for the review of environmental qualification reviews the environmental qualification of I&C equipment. The scope of this review includes the design criteria and qualification testing methods and procedures for I&C equipment."
21	December 22, 2009 (ML093560019, item 8) For the Foxboro Spec 200 platform, identify any changes in hardware from the precedent systems. Provide the design report and the equipment qualification information.	Originator: EICB (Carte) Date: 5/25/10 Responder: D. McNeil No vendor system description is available for the Foxboro Spec 200 system. The hardware description and qualification documents are provided on a component level basis. A TVA generated system description is provided to assist the reviewer. The hardware differences from the unit 1 systems are provided in the loop and card comparison documents. As agreed with the reviewer, the component level documents are not required to be submitted at this time, but may be required based on the review of attached documents. The following documents are provided (Attachment 1): 1. Analog loop comparison 2. Analog card comparison 3. Analog system description The component level information is available for audit or will be submitted when requested by the reviewer.	Date: 5/24/10 Responsibility: TVA The understanding reached in the meeting on April 14, 2010, was that TVA should identify any changes, or state under oath and affirmation that there were no changes. If there were no changes, then the NRC would confirm by inspection. A revised response was requested at the 5/24/10 public meeting.	Pending Submittal 6/18/10			
22	December 22, 2009 (ML093560019, item 9) Verify the auxiliary feedwater control refurbishment results in a like-for-like replacement, and identify any changes from the identified precedents.	Originator: EICB (Carte for Garg) Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 9).	Date: 4/27/10 Responsibility: NRC (Garg) NRC to audit	Closed			
23	December 22, 2009 (ML093560019, item 10) Provide environmental qualification (10 CFR 50.49) information for safety-related control transmitters and complete the deviation section of the table.	Originator: EICB (Carte) Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 10).	Date: 12/22/09 Responsibility: NRC (EEEB) Garg to coordinate with Weibi to ensure EEEB takes responsibility for this one.	Closed			NNC 4/30/10: SRP Section 7.0 states: "The organization responsible for the review of environmental qualification reviews the environmental qualification of I&C equipment. The scope of this review includes the design criteria and qualification testing methods and procedures for I&C equipment."
24	December 22, 2009 (ML093560019, item 11)	Originator: EICB (Carte) During the January 13, 2010 meeting, TVA presented a schedule for completing various documents for the PAMS system. This	Date: 4/27/10 Responsibility: NRC (Carte & Darbali)	NRC Review			NNC 4/30/10: Carte to address response with respect to PAMS and Darbali to address

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	Provide a schedule by the January 13, 2010, meeting for providing documentation in accordance with I&C Interim Staff Guidance (ISG) 6.	schedule did not support TVA's desired schedule. TVA was so informed and said they would work on improving the schedule. TVA said that the setpoint methodology would be provided shortly. No other systems of documentation was discussed. By letter dated February 5, 2010 (see enclosure 1), TVA provided a list of documents and associated availability for PAMS. By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 11).	Awaiting NRC evaluation of response.				response with respect to RM1000.
25	December 22, 2009 (ML093560019, item 12) For the containment radiation high radiation monitor, verify that the information provided by TVA is consistent with the information provided with the previously-approved license amendment request for the Duane Arnold plant or provide Phase 3 information.	Originator: EICB (Carte for Darbali) Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 12).	Date: 12/22/09 Responsibility: NRC (Darbali) Garg to coordinate with Weibi to ensure EEBB takes responsibility for this one.	NRC Review			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
26	December 22, 2009 (ML093560019, item 13) Provide environmental qualification (10 CFR 50.49) information for safety-related monitoring transmitters.	Originator: EICB (Carte) Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 13).	Date: 12/22/09 Responsibility: NRC (EEEB) Garg to coordinate with Weibi to ensure EEBB takes responsibility for this one.	NRC Review			NNC 4/30/10: SRP Section 7.0 states: "The organization responsible for the review of environmental qualification reviews the environmental qualification of I&C equipment. The scope of this review includes the design criteria and qualification testing methods and procedures for I&C equipment."
27	December 22, 2009 (ML093560019, item 14) For Foxboro IA provide information regarding safety/non-safety-related interaction, common cause failures, and communication with safety related equipment in accordance with ISG 4.	Originator: EICB (Carte) Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 14): "There is no digital communications or interactions between Foxboro Intelligent Automation (IA) and any Safety-related system."	Date: 4/27/10 Responsibility: NRC (Carte)	Closed			
28	December 22, 2009 (ML093560019, item 15) For the turbine control AEH system, verify that the refurbishment results in a like-for-like replacement.	Originator: EICB (Carte for Garg) Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 15).	Date: 4/27/10 Responsibility: NRC (Garg) Awaiting NRC evaluation of response. Awaiting Garg to assign responsibility for the turbine control AEH system.	NRC Review			
29	December 22, 2009 (ML093560019, item 16) For the rod control system, verify that the refurbishment results in a like-for-like replacement.	Originator: EICB (Carte for Garg) Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 16).	Date: 4/27/10 Responsibility: NRC (Garg) Awaiting NRC evaluation of response. Awaiting Garg to assign responsibility for the rod control system.	NRC Review			
30	December 22, 2009 (ML093560019, item 17) Regarding the refurbishment of I&C equipment, identify any component digital upgrades and, if so, provide the supporting design information.	Originator: EICB (Carte for Garg) Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 17).	Date: 4/27/10 Responsibility: NRC (Garg) Awaiting NRC evaluation of response. Awaiting Garg to assign responsibility for the turbine control AEH system.	NRC Review			
31	December 22, 2009 (ML093560019, item 18) For the rod position indication system (CERPI), provide information in accordance with ISG 4. Need to consider cyber-security issues.	Originator: EICB (Carte) Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 18).	Date: 4/27/10 Responsibility: NRC (Carte) Awaiting NRC evaluation of response.	NRC Review			CERPI is non-safety related.

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No	Issue	TVA Response(s)	Status/Current Action	Resolution Path	RAI Date	RAI Response Date	Comments
32	December 22, 2009 (ML093560019, item 19) For the process computer, need to consider cyber security issues and emergency response data system needs.	Originator: EICB (Carte) Date: 4/27/10	Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 19).	Date: 4/27/10 Responsibility: NRC (Carte) Awaiting NRC evaluation of response.	NRC Review		
33	December 22, 2009 (ML093560019, item 20) For the loose parts monitoring system, provide information regarding interactions with safety related equipment.	Originator: EICB (Carte for Garg) Date: 4/27/10	Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 20).	Date: 4/27/10 Responsibility: NRC (Garg) Awaiting NRC evaluation of response. Awaiting Garg to assign responsibility for the loose parts monitoring system.	NRC Review		The loose parts monitoring system is not connected to any other system.
34	February 4, 2010 In the December 15, 2009 public meeting, TVA listed the significant changes made since the Watts Bar Unit 1 Licensing (see below). For each of the following significant changes: 1) Is the change unique to Unit 2, or will it be the same as what's currently installed in Unit 1? 2) If it's the same as Unit 1, was this change made under a license amendment or under a 50.59? 3) When do you plan to submit the detailed information regarding the changes?	Originator: EICB (Carte) Date: 4/27/10	Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 21).	Date: 4/27/10 Responsibility: NRC (All) Awaiting NRC evaluation of response.	NRC Review		
	Chapter 7.1 - Introduction			Responsibility: NRC (Garg)			
	Reactor Coolant System Flow Rate Measurement						
	Design Basis Analysis Parameters						
	Loose Parts Monitoring						
	Chapter 7.2 - Reactor Trip System			Responsibility: NRC (Garg)			
	Deletion of Neutron Flux Negative Rate Trip						
	Design Basis Analysis Parameters						
	Alternate Method for Use of Condenser Steam Dump						
	Reactor Coolant System Flow Rate Measurement						
	Foxboro I/A						
	Chapter 7.3 - ESFAS			Responsibility: NRC (Darbali)			
	Design Basis Analysis Parameters						
	Alternate Method for Use of Condenser Steam Dump						
	Chapter 7.5 - Instrumentation Systems Important to Safety			Responsibility: NRC (Carte)			
	Plant Process Computer Replacement						
	Containment Sump Level Transmitter Replacement						
	Safety Injection Systems Cold Leg Accumulator Level Measurement System						
	Common Q/PAMs						FSAR Section 7.5 Instrumentation Systems Important To Safety - SE Section 7.5.2
	Chapter 7.6 - All Other Systems Required for Safety		TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 1 on Page 1 of 15): TVA responded to this request for additional information.	Responsibility: NRC (Garg)			
	Plant Process Computer Replacement						
	Loose Parts Monitoring System						
	Chapter 7.7 Control Systems			Responsibility: NRC (Garg)			
	Alternate Means for Monitoring Control or Shutdown Rod Position						
	Eliminate Pressurizer Backup Heaters on High Level Signal						
	AMSAC Replacement						
	Foxboro I/A						
	WINCISE /Power Distribution Monitoring System (Beacon)						
35	February 18, 2010	Originator: EICB (Carte) Date:	Responder:	Date: 2/18/2010 Responsibility: TVA	NRC Review		LIC-110 Section 6.2.2 states: "Design features and

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No	Issue	TVA Response(s)	Status/Current Action	Resolution Path	RAI Date	RAI Response Date	Comments
	Please provide a system description of the Digital Metal Impact Monitoring System that contains sufficient detail to support a review of this system using current staff positions.	TVA Letter dated March 12, 2010 Enclosure 1, item 4 responded to this request for information.					administrative programs that are unique to Unit 2 should be reviewed in accordance with the current staff positions." Unit 2 FSAR Section 7.6.7, "Loose Part Monitoring (LPMS) system Description," describes a system design that is unique to Unit 2.
36	February 18, 2010 Please provide a system description of the Post Accident Monitoring System that contains sufficient detail to support a review of this system using current staff positions.	Originator: EICB (Carte) Date: 5/25/10 Responder: Clark In previous letters TVA has provided the Common Q documents that address this item.	Date: 2/18/2010 Responsibility: TVA	Closed			FSAR Section 7.5.1, SE Section 7.5.2 NNC: Unit 2 FSAR Section 7.5.1, "Post Accident Monitoring Instrumentation," describes a system design that is unique to Unit 2. LIC-110, "Watts Bar Unit 2 License Application Review," states: "Design features and administrative programs that are unique to Unit 2 should then be reviewed in accordance with the current staff positions."
37	February 18, 2010 Is the plant computer a safety-related display system?	Originator: EICB (Carte) Date: 5/25/10 Responder: Clark As identified in TVA letter dated March 12, 2010, Enclosure 1, item 2, the plant computer system is non-safety related. FSAR section 7.5 describes both safety and non-safety related devices and systems. A revision to FSAR section 7.1.1.2 will be developed for amendment 100 to clarify that 7.5 applies to both safety and non-safety related equipment.	Date: 2/18/2010 Responsibility: TVA	FSAR Amd 100			FSAR Section 7.5, "Instrumentation System Important to Safety," consists of two major subsections: 7.5.1, "Post Accident Monitoring Instrumentation (PAM)," and 7.5.2, "Plant Computer System." Regulatory Guide 1.70, "Standard format and content of Safety Analysis Reports for Nuclear Power Plants," Revision 3 dated November 1978 states (see Section 7.1.1): "List all instrumentation, control, and supporting systems that are safety-related including alarms, communication, and display instrumentation." FSAR Section 7.1.1.2, "Safety-Related Display Instrumentation," describes, in the first paragraph, the PAM system, and the second paragraph states: "All other safety-related instrumentation is discussed in Section 7.5." Therefore, to be consistent with the preceding paragraph, the FSAR states that the plant computer system is safety related. Contrary to the FSAR the slides presented at the December 15, 2010 meeting indicate that the plant process computer is not safety-related. Therefore the docketed material is inconsistent and needs to be clarified.
38	Please provide a description of the interfaces between: (1) the Safety Parameter Display System and (2) the Technical Support Center and Nuclear Data Links with the plant control and safety systems. This Description should contain sufficient detail to support a review of these interfaces using current staff positions.	Originator: EICB () Date: 5/25/10 Responder: Clark Response will be provided no later than 7/23/10	Date: Responsibility: TVA	Open Due 7/23/10			The slides presented at the December 15, 2010 meeting (ML093520967) indicate that the plant process computer has been replaced.
39	January 13, 2010 Please describe the change to the calculation of the estimated average hot leg temperature (see FSAR Section 7.2.1.1.4, page 7.2-14 Version WBNP-96) in sufficient detail to support a review of this system using current staff positions.	Originator: EICB (Carte for Garg) Date: 5/25/10 Responder: Clark Refer to revised equations in FSAR amendment 98.	Date: 1/13/2010 Responsibility: TVA	Closed			The equation for the calculation of the estimated average hot leg temperature on page 7.2-13 of Revision WBNP-96 of the Unit 2 FSAR is different than the calculation of the average hot leg temperature shown at the top of page 7.2-14 of version WBNP-1 of the UNIT 1 FSAR.

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No	Issue	TVA Response(s)	Status/Current Action	Resolution Path	RAI Date	RAI Response Date	Comments
40	January 13, 2010 Please describe the change to the calculation of the power fraction (see FSAR Section 7.2.1.1.4, page 7.2-13 Version WBNP-96) in sufficient detail to support a review of this system using current staff positions.	Originator: EICB (Carte for Garg) Date: 5/25/10 Responder: Clark Refer to revised equations in FSAR amendment 98.	Date: 1/13/2010 Responsibility: TVA Awaiting TVA response.	Closed			The equation for the calculation of the power fraction on page 7.2-14 of Revision WBNP-96 of the Unit 2 FSAR is different than the calculation of the power fraction shown at the top of page 7.2-14 of version WBNP-1 of the UNIT 1 FSAR.
41	February 19, 2010: Audit Please provide the following Westinghouse documents: (1) WNA-DS-01617-WBT Rev. 1, "PAMS System Requirements Specification" (2) WNA-DS-01667-WBT Rev. 0, "PAMS System Design Specification" (3) WNA-CD-00018-GEN Rev. 3, "CGD for QNX version 4.5g" Please provide the following Westinghouse documents or pointers to where the material was reviewed and approved in the CO TR or SPM: (4) WNA-PT-00058-GEN Rev. 0, "Testing Process for Common Q Safety systems" (5) WNA-TP-00357-GEN Rev. 4, "Element Software Test Procedure"	Originator: EICB (Carte) Date: 5/25/10 Responder: WEC (1) Docketed by Letter dated April 8, 2010 (2) Docketed by Letter dated April 8, 2010 Per Westinghouse letter WBT-D-1526, items (3), (4) and (5) WNA-CD-00018-GEN Rev. 3, "CGD for QNX version 4.5g," WNA-PT-00058-GEN Rev. 0, "Testing Process for Common Q Safety systems" and WNA-TP-00357-GEN Rev. 4, "Element Software Test Procedure" are available at the Westinghouse Rockville office for audit and will not be submitted.	Date: 2/19/2010 Responsibility: TVA Awaiting completion of TVA response.	Pending Submittal 6/18/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
42	February 25, 2010: Telecom On December 16, 2009: EICB stated to DORL: "I am having trouble reading the drawings in the binder that was given to me. Is it possible to produce a set of full size drawing that are in the FSAR?" On February 23, 2010: EICB received a set of enlarged Chapter 7 FSAR pages (drawings) that are still unreadable. This type of delay and quality is unacceptable for someone who is concerned about schedule. Please produce a large and legible set of drawing that are the ones in Chapter 7 of the FSAR.	Originator: EICB (Carte) Date: 5/25/10 Responder: Clark Attachment 2 provides a drawing cross reference list for FSAR Chapter 7 and electronic copies of the fully legible current drawings previously submitted in full size hard copies.	Date: 2/25/2010 Responsibility: TVA TVA provided readable drawings.	Pending Submittal 6/18/10			The drawing provided did not have the identification numbers as in the FSAR. It is interesting that TVA does not have a readable version of the drawings in the FSAR.
43	February 19, 2010 The PAMS ISG6 compliance matrix supplied as Enclosure 1 to TVA letter dated February 5, 2010 is a first draft of the information needed. The shortcomings of the first three lines in the matrix are: Line 1: Section 11 of the Common Q topical report did include a commercial grade dedication program, but this program was not approved in the associated SE. Westinghouse stated that this was the program and it could now be reviewed. The NRC stated that TVA should identified what they believe was previously reviewed and approved. Line 2: TVA stated the D3 analysis was not applicable to PAMS, but provided no justification. The NRC asked for justification since SRP Chapter 7.5 identified SRM to SECV-93-087 Item II.Q as being SRP acceptance criteria for PAMS. Line 3: TVA identified that the Design report for computer integrity was completed as part of the common Q topical report. The NRC noted that this report is applicable for a system in a plant, and the CO topical report did no specifically address this PAMS system at Watts Bar Unit 2. NRC then concluded that TVA should go through and provide a more complete and thorough compliance matrix.	Originator: EICB (Carte) Date: 5/25/10 Responder: WEC The PAMS ISG6 compliance matrix supplied as Enclosure 1 to TVA letter dated February 5, 2010 is a first draft of the information needed. By letter dated April 8, 2010 TVA provided the PAMS Licensing Technical Report provided additional information. The revised Common Q ISG-6 Compliance Matrix is attached.	Date: 5/25/10 Responsibility: WEC Need revised compliance matrix	Pending Submittal 6/18/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
44	February 25, 2010	Originator: EICB (Carte)	Date: 5/25/10 Responder: Clark	Date: 2/25/2010 Responsibility: TVA	Pending Submittal		FSAR Section 7.5.1 Post Accident Monitoring

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No	Issue	TVA Response(s)	Status/Current Action	Resolution Path	RAI Date	RAI Response Date	Comments
	The PAMS system described in Section 7.5 of the FSAR is implemented in various manners. TVA should identify: (1) Those variables that are implemented identical to what was reviewed and approved for Unit 1. (2) Those variable that are implemented identical to Unit 1, but that have been changed (e.g., under 50.59) and not reviewed by the NRC. (3) Those variables that are implemented in a manner that is unique to Unit 2 (e.g., using Common Q). TVA should supply supporting information appropriate to the manner of implementation.	<u>See Response</u>	Awaiting TVA response.	6/18/10			Instrumentation - SE Section 7.5.2
45	February 25, 2010 For each system implemented using a digital technology, please identify any communications between divisions, or between safety-related equipment and non-safety-related equipment. Please describe the implementation of the associated communications isolation.	Originator: EICB (Carte) Date: 5/25/10 Responder: Clark	Date: 2/25/2010 Awaiting TVA response.	Responsibility: TVA	Open Due 7/23/10		
46	February 25, 2010 The Watts Bar Unit 1 Ser (Section 7.2.1, page 7-3) identifies that the RTS includes a trip from the "general warning alarm". Please identify where this trip is described in the current FSAR, or what SSER approved its removal.	Originator: EICB (Carte) Date: 5/25/10 Responder: Clark	FSAR amendment 98, Section 7.2.2.2, page 7.2-29 second paragraph states: "Auxiliary contacts of the bypass breakers are connected into the SSPS General Warning Alarm System of their respective trains such that if either train is placed in test while the bypass breaker of the other train is closed, both reactor trip breakers and both bypass breakers will automatically trip."	Date: 2/25/2010 Responsibility: TVA	Closed		
47	April 8, 2010 The PAMS System Requirements Specification (SysRS) references RG 1.97 Rev. 3 where the FSAR References Rev. 2. Please explain.	Originator: EICB (Carte) Date: 5/25/10 Responder: WEC	The licensing basis for WBN2 is Reg. Guide 1.97 Rev. 2. This item will be corrected at the next revision of the document scheduled for Nov 30, 2010. Common Q is licensed to Rev. 3. Response requires a comparison analysis to Rev. 2 to show that the system meets the requirements.	Date: 4/8/10 Awaiting TVA response.	Responsibility: TVA	Open Due 7/23/10	FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
48	April 8, 2010 Reference 16 of the PAMS System Requirements Specification (SysRS) is the Unit 1 precautions Limitations and Setpoints document. When and how will the transition to the unit 2 document be made.	Originator: EICB (Carte) Date: 5/25/10 Responder: WEC	The Unit 1 PLS was used as an input to the Common Q PAMS System Requirements Specification to ensure that the Unit 2 system would as a minimum meet the Unit 1 requirements. The Unit 2 PLS is an output document based on the actual Common Q PAMS system design. The Unit 2 Common Q PAMS PLS update was completed March 31, 2010 and is scheduled to be incorporated into the PLS starting July 6, 2010 with a completion date of July 26, 2010.	Date: 4/8/10 Awaiting TVA response.	Responsibility: TVA	Pending Submittal 6/18/10	FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
49	April 8, 2010 Please provide 00000-ICE-30156 Rev. 6. The PAMS SysRS incorporates sections of this document by reference.	Originator: EICB (Carte) Date: 5/25/10 Responder: WEC	The document will be available for audit in the Westinghouse Rockville office no later than 6/18/2010 and will not be submitted.	Date: 4/8/10 Need Steve Hilmes to authorize funding.	Responsibility: TVA	Pending Submittal 6/18/10	FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
50	April 8, 2010 How should the "shall" statements outside of the bracketed requirements be interpreted?	Originator: EICB (Carte) Date: 5/25/10 Responder: WEC		Date: 4/8/10 These sections are descriptive text and not requirements. The next revision of the Watts Bar Unit 2 PAMS System Requirements Specification will remove "shall" from the wording in those sections.	Responsibility: TVA	Pending Submittal 6/18/10	FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2

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No	Issue	TVA Response(s)	Status/Current Action	Resolution Path	RAI Date	RAI Response Date	Comments
51	April 15, 2010 NRC staff has issued RIS 2006-17, to provide guidance to the industry regarding the instrument setpoint methodology which complies with 10CFR50.36 requirements. The staff has requested all the licensees for the existing license to demonstrate how they meet the guidance provided in this RIS. The staff consider WBN 2 as a license amendment for all the setpoints in the TS. Provide the information on how WBN 2's setpoint methodology meets the guidance of RIS 2006 -17. You may also consider the guidance provided in TSTF - 493, rev.4 as a basis for meeting the RIS 2006 -17 guidance.	Originator: EICB (Garg) Date: 5/25/10 Responder: Clark A section will be added to the FSAR describing the setpoint methodology as part of amendment 100.	Date: 4/15/10 Responsibility: TVA This item is to be worked with item 108.	FSAR Amd 100			
52	April 19, 2010 Please identify the systems that will use the RM-1000 radiation monitors.	Originator: EICB (Carte) Date: 5/25/10 Responder: Slifer As identified in TVA letter dated March 12, 2010, Enclosure 1, item 3 the RM-1000 radiation monitors are used for the Containment High Range Post Accident Monitors.	Date: 4/19/10 Responsibility: NRC	NRC Review			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
53	April 19, 2010 Please identify all FSAR sections that apply to the RM-1000.	Originator: EICB (Carte) Date: 5/25/10 Responder: Slifer The containment high range post accident radiation monitors are discussed in FSAR amendment 98 sections 7.5 and 12.3.	Date: 4/19/10 Responsibility: NRC	Closed			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
54	April 19, 2010 Please describe all the different environments in which the RM-1000 will be required to operate. Please group these environments into two categories (a) Harsh environment, per 10 CFR 50.49, and (b) Mild Environment.	Originator: EICB (Carte) Date: 5/25/10 Responder: Slifer The RM-1000 monitors are installed in the Main Control Room a mild environment.	Date: 4/19/10 Responsibility: NRC	Pending Submittal 6/18/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
55	April 19, 2010 The "Qualification Test Report Supplement, RM-1000 Upgrades," Document No. 04508905-1SP Rev. A states that the qualification was done in accordance with IEEE 323-1974 and -1983. Please describe and justify all differences in this qualification methodology and that endorsed by Regulatory Guide 1.209. Specifically address EMI and RFI	Originator: EICB (Carte) Date: 5/25/10 Responder: Slifer The detectors for these loops will be located in a harsh environment. The ratemeters will be located in the main control room, which is a mild environment. The RM-1000 and associated I/F converters have been tested to the requirements present in IEEE Std. 323-1983 and -1974, as well as the System Requirements including EPRI TR 102323 (Sep. 94) in the design basis. There is nothing in IEEE Std. 323-2003 that would impact the way General Atomics performed there qualification. RG 1.209 also addresses the EM-RFI testing that has already been performed (the results of the testing are included in the Equipment Qualification Test Report submitted under TVA letter dated March 12, 2010). Since RG 1.209 was not issued until 2007, General Atomics test reports not mention it, but all the necessary qualifications are met.	Date: 4/19/10 Responsibility: NRC	Pending Submittal 6/18/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
56	April 19, 2010 The "RM-1000 Version 1.2 Software Verification and Validation Report," Document No. 04508906 Rev. A, is an incremental report. That is to say it addresses the verification and validation for changes that resulted in Version 1.2; therefore, the NRC has not received a software verification and validation report for all other aspects of the software. Please provide the last complete verification and validation report, and all incremental reports after the complete report.	Originator: EICB (Carte) Date: 5/25/10 Responder: Slifer The version 1.0 document was never issued. The proprietary version 1.1 document (04508005) is attached. The non-proprietary version will be submitted by _____. The proprietary version 1.2 was submitted on March 12, 2010.	Date: 4/19/10 Responsibility: NRC	Pending Submittal 6/18/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
57	April 19, 2010 Please describe the ability to change the software of the RM-1000 at site, including all required equipment and administrative controls (e.g., temporary digital connections).	Originator: EICB (Carte) Date: 5/25/10 Responder: Slifer The RM 1000 radiation monitors are installed with the software installed and functionally tested by the vendor. Other than parameter/setpoint updates, software (Firmware) is not changed by TVA personnel.	Date: 4/19/10 Responsibility: NRC Awaiting NRC to issue RAI.	Pending Submittal 6/18/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
58	April 19, 2010	Originator: EICB (Carte) Date: 5/25/10 Responder: Slifer	Date: 4/19/10 Responsibility: NRC	Pending Submittal			FSAR Section 7.5 Instrumentation Systems Important To

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No	Issue	TVA Response(s)	Status/Current Action	Resolution Path	RAI Date	RAI Response Date	Comments
	Please describe all digital communications used in the installed configuration.	It is TVA's understanding that this question is directed at the RM-1000. There are no digital communications between the RM-1000 and any other plant system.		6/18/10			Safety - SE Section 7.5.0
59	April 19, 2010 Previously TVA provided the "RM-1000 Digital Radiation Processor Technical Manual," Document No. 04508100-1TM Revision C dated October 2003. The "RM-1000 Version 1.2 Software Verification and Validation Report," Document No. 04508006 Rev. A is dated April 2008. (a) What software version does the technical manual address? (b) When was Version 1.2 implemented?	Originator: EICB (Carte) Date: Responder: Slifer (a) The technical manual is applicable to versions 1.1 and 1.2 of the software. (b) This information has been requested from the manufacturer. A response will be provided no later than 6/18/10.	Date: 4/19/10 Responsibility: NRC	Pending Submittal 6/18/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
60	April 19, 2010 The PAMS System Requirements Specification (SysRS) references RG 1.97 Rev. 3 where the FSAR References Rev. 2. Please explain.	Originator: EICB (Carte) Date: 5/25/10 Responder: Clark Duplicate of Item 47	Date: 4/19/10 Responsibility: NRC	Closed			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
61	April 19, 2010 Reference 16 of the PAMS System Requirements Specification (SysRS) is the Unit 1 precautions Limitations and Setpoints document. When and how will the transition to the unit 2 document be made.	Originator: EICB (Carte) Date: 5/25/10 Responder: Clark Duplicate of Item 48.	Date: 4/19/10 Responsibility: NRC	Closed			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
62	April 19, 2010 Please provide 00000-ICE-30156 Rev. 6. The PAMS SysRS incorporates sections of this document by reference.	Originator: EICB (Carte) Date: 5/25/10 Responder: Clark Duplicate of Item 49	Date: 4/19/10 Responsibility: NRC	Closed			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
63	April 19, 2010 How should the "shall" statements outside of the bracketed requirements be interpreted?	Originator: EICB (Carte) Date: 5/25/10 Responder: Clark Duplicate of Item 50	Date: 4/19/10 Responsibility: NRC	Closed			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
64	March 12, 2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the D3 Analysis was April 2, 2010.	Originator: TVA Date: 4/8/2010 Responder: TVA By letter dated April 8, 2010 TVA docketed WNA-LI-00058-WBT Rev. 0, April 2010. Section 4.11, "Plant Specific Action Item 6.11." addresses the D3 Analysis.	Date: 4/8/10 Responsibility: NRC (Carte)	NRC Review			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
65	March 12, 2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the FMEA was August 31, 2010.	Originator: TVA Date: 5/25/10 Responder: WEC No change to the original schedule	Date: 3/12/10 Responsibility: TVA Awaiting for document to be docketed by TVA.	Open Due 9/14/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
66	March 12, 2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the "Watts Bar 2 PAMS Software Design Description (two documents, one for flat panel display and one for AC160)" was March 31, 2010.	Originator: TVA Date: 5/25/10 Responder: Clark Per letter WBT-D-1961 these items are available at the Westinghouse Rockville office for audit and will not be submitted.	Date: 3/12/10 Responsibility: TVA Awaiting for document to be docketed by TVA.	Pending Submittal 6/18/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
67	March 12, 2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the "Commercial Grade Dedication Instructions for A1687, A1688, Upgraded PC node box and flat panels." was September 28, 2010.	Originator: TVA Date: 5/25/10 Responder: WEC See the revised WB2 Common Q ISG-6 Compliance Matrix (Item 43) for the revised schedule.	Date: 3/12/10 Responsibility: TVA Awaiting for document to be docketed by TVA.	Pending Submittal 6/18/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.0 & 7.5.2
68	March 12, 2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the "Summary Report on acceptance of A1687, A1688, Upgraded PC node box, flat panels, and power supplies." was September 28, 2010.	Originator: TVA Date: 5/25/10 Responder: WEC See the revised WB2 Common Q ISG-6 Compliance Matrix (Item 43) for the revised schedule.	Date: 3/12/10 Responsibility: TVA Awaiting for document to be docketed by TVA.	Pending Submittal 6/18/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
69	March 12, 2010	Originator: TVA Date: 5/25/10 Responder: WEC	Date: 3/12/10 Responsibility: TVA	Open			FSAR Section 7.5.1 Post Accident Monitoring

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Licensee Open Items to be Resolved for SER Approval							
No	Issue	TVA Response(s)	Status/Current Action	Resolution Path	RAI Date	RAI Response Date	Comments
	By letter dated March 12, 2010 TVA stated that the target submittal date for the "Watts Bar 2 PAMS Specific FAT Report" was October 2010.	No change to the original schedule	Awaiting for document to be docketed by TVA.	Due 11/15/10			Instrumentation - SE Section 7.5.2
70	March 12, 2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the "Concept and Definition Phase V&V Report" was March 31, 2010.	Originator: TVA Date: 5/25/10 Responder: WEC Per letter WBT-D-1961 this item is available at the Westinghouse Rockville office for audit and will not be submitted.	Date: 5/6/10 Responsibility: TVA Awaiting for document to be docketed by TVA.	Pending Submittal 6/18/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
71	March 12, 2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the "Design Phase V&V Report" was July 30, 2010.	Originator: TVA Date: 5/25/10 Responder: WEC No change to the original schedule	Date: 3/12/10 Responsibility: TVA Awaiting for document to be docketed by TVA.	Open Due 8/15/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
72	March 12, 2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the "Implementation Phase V&V Report" was September 30, 2010.	Originator: TVA Date: 5/25/10 Responder: WEC No change to the original schedule	Date: 3/12/10 Responsibility: TVA Awaiting for document to be docketed by TVA.	Open Due 10/15/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
73	March 12, 2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the "Integration Phase V&V Report" was October 29, 2010.	Originator: TVA Date: 5/25/10 Responder: WEC No change to the original schedule	Date: 3/12/10 Responsibility: TVA Awaiting for document to be docketed by TVA.	Open Due 11/15/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
74	March 12, 2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the "Final V&V Report" was November 30, 2010.	Originator: TVA Date: 5/25/10 Responder: WEC No change to the original schedule	Date: 3/12/10 Responsibility: TVA Awaiting for document to be docketed by TVA.	Open Due 12/15/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
75	March 12, 2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the "Watts Bar 2 PAMS Specific FAT Procedure" was September 30, 2010.	Originator: TVA Date: 5/25/10 Responder: WEC No change to the original schedule	Date: 3/12/10 Responsibility: TVA Awaiting for document to be docketed by TVA.	Open Due 10/15/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
76	March 12, 2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the "Watts Bar 2 PAMS Specific Processor Module Software Test" was August 31, 2010.	Originator: TVA Date: 5/25/10 Responder: WEC No change to the original schedule	Date: 3/12/10 Responsibility: TVA Awaiting for document to be docketed by TVA.	Open Due 9/15/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
77	March 12, 2010 By letter dated March 12, 2010 TVA stated that the target submittal date for seven other documents was "TDB". Please provide a schedule for the docketing of the remaining documents.	Originator: TVA Date: 5/25/10 Responder: WEC See the revised WB2 Common Q ISG-6 Compliance Matrix (Item 43) for the revised schedule.	Date: 3/12/10 Responsibility: TVA Awaiting for TVA to docket schedule for remaining documents.	Pending Submittal 6/18/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
78	April 26, 2010 FSAR Section 7.1.2.1.8 adds a reference 6 to the FSAR. However, Reference 6 is for instrument setpoint and has nothing to do with the diversity discussion on the FSAR Section. We believe the TVA wants to add reference 7 which is the diversity document, WCAP 13869, "Reactor Protection System Diversity in Westinghouse Pressurized Water Reactors." Please confirm this and add commitment to revise FSAR to correct the reference. Also, confirm whether this WCAP has been reviewed by NRC, if yes, provide reference and if not, then submit the WCAP to NRC. Also provide the justification for this reference to WBN2.	Originator: NRC(Garg) Date: 5/25/10 Responder: Clark This item will be addressed in FSAR amendment 100.	Date: 4/26/2010 Responsibility: TVA Awaiting TVA response.	FSAR Amd 100			
79	April 26, 2010 FSAR Section 7.1.2.1.9, Trip Setpoints, adds reference to 3, 4, and 5. However, reference 3 was deleted by FSAR amendment 81. Reference 4 has been changed to ISA-DS-67.04-1982. Justify applicability of this standard for WBN 2. Why the latest ISA standard endorsed by NRC has not been used? Also reference 5 is a topical report for Eagle 21, system. Please confirm that this topical report also discusses the setpoint for Eagle 21 system and whether it meets the recent guidance for the setpoint issued by the staff. Also, W setpoint methodology do not provide discussion on the AS Found Tolerance and As left value determination and how these values are used for the instrument operability, therefore, add the discussion of these topics in the FSAR, and add reference to other documents if it is discussed in some other document. Provide this document to the staff for review and approval	Originator: NRC(Garg) Date: 5/25/10 Responder: Clark This item will be addressed in FSAR amendment 100.	Date: 4/26/2010 Responsibility: TVA Awaiting TVA response.	FSAR Amd 100			
80	April 26, 2010	Originator: NRC(Garg) Date:	Responder: WEC Date: 4/26/2010 Responsibility: TVA	Open			

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Licensee Open Items to be Resolved for SER Approval							
No	Issue	TVA Response(s)	Status/Current Action	Resolution Path	RAI Date	RAI Response Date	Comments
	FSAR Table 7.1-1, Note 12 has been added to the table but it's justification has not been provided to the staff for review and approval.		A schedule for responding to this item will be provided no later than 6/18/2010 under item 102.				
81	<p>May 6, 2010</p> <p>Originator: NRC (Carte)</p> <p>The PAMS Licensing Technical Report (WNA-LI-00058-WBT Rev. 0, Dated April 2010), in Section 7, lists codes and standards applicable to the Common Q PAMS. This list contains references to old revisions of several regulatory documents, for example:</p> <p>(1) RG 1.29 - September 1978 vs. March 2007 (2) RG 1.53 - June 1973 vs. November 2003 (a) IEEE 379-1994 vs. -2000 (3) RG 1.75 - September 1975 vs. February 2005 (a) IEEE 384-1992 vs. -1992 (4) RG 1.100 - June 1988 vs. September 2009 (a) IEEE 344-1987 vs. -2004 (5) RG 1.152 - January 1996 vs. January 2006 (a) IEEE 7-4.33.2-1993 vs. -2003 (6) RG 1.168 - September 1997 vs. February 2004 (a) IEEE 1012-1986 vs. -1998 (b) IEEE 1028-1988 vs. -1997 (7) IEEE 279-1991 vs. 603-1991 (8) IEEE 323-1983 vs. -1974 (RG 1.89 Rev. 1 June 1984 endorses 323-1974)</p> <p>However, LIC-110, "Watts Bar Unit 2 License Application Review," states: "Design features and administrative programs that are unique to Unit 2 should then be reviewed in accordance with the current staff positions." Please identify all differences between the versions referenced and the current staff positions. Please provide a justification for the acceptability PAMS with respect to these differences.</p>	<p>Date: 6/18/10 Responder: WEC</p> <p>The codes and standards documents listed in Section 7 of the PAMS Licensing Technical Report are the documents that the Common Q platform was licensed to when the NRC approved the original topical report and issued the approved SER. The WBN2 PAMS is designed in accordance with the approved Common Q topical report and approved SER and the codes and standards on which the SER based. Since the current versions referenced are not applicable to WBN2, there is no bases for a comparison review.</p>	<p>Date: 5/6/2010 Responsibility: TVA</p> <p>Awaiting TVA response.</p>	Pending Submittal 6/18/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
82	<p>May 6, 2010</p> <p>Originator: NRC (Carte)</p> <p>The PAMS Licensing Technical Report (WNA-LI-00058-WBT Rev. 0, Dated April 2010), in Section 2.3, lists hardware/software changes to the Common Q PAMS previously reviewed by the NRC. However the Common Q ISG-6 Compliance Matrix does not contain activities that address qualification of all changes specifically:</p> <p>2.c - C1527 AF100 Peripheral Component Interconnect (PCI) interface card 3. - Common Q TC514 AF100 Fiber Optic Modems (Evolutionary Product Maintenance/Improvements) 4.a - PM646A Processor Module 4.b - C1631 AF100 Communication Interface Module 4.e - DO620 Digital Output Card</p> <p>Please provide sufficient detail regarding the changes for the NRC to independently evaluate the acceptability of the changes.</p>	<p>Date: 6/18/10 Responder: WEC</p> <p>The reviewer wants the response to specifically address Field Programmable Gate Arrays, and separate the commercially available digital components from those that are specific to the system or have limited application outside of Common Q.</p> <p>i.e. a commercial modem vs. a specific processor board.</p>	<p>Date: 5/6/2010 Responsibility: TVA</p> <p>A schedule for responding to this item will be provided no later than 6/18/2010 under item 102.</p>	Open			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
83	<p>May 6, 2010</p> <p>Originator: NRC (Carte)</p> <p>Please identify all FPGAs in the new or changed PAMS hardware.</p>	<p>Date: 6/18/10 Responder: WEC</p>	<p>Date: 5/6/2010 Responsibility: TVA</p> <p>A schedule for responding to this item will be provided no later than 6/18/2010 under item 102.</p>	Open			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
84	<p>May 6, 2010</p> <p>Originator: NRC (Carte)</p> <p>Please provide: TVA Design Criteria WB-DC-30-7 Rev. 22, Post Accident Monitoring Instrumentation.</p>	<p>Date: 6/18/10 Responder: Clark</p> <p>Design Criteria WB-DC-30-7 Rev. 22, Post Accident Monitoring Instrumentation is attached.</p>	<p>Date: 5/6/2010 Responsibility: TVA</p> <p>Awaiting TVA response.</p>	Pending Submittal 6/18/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
85	<p>May 6, 2010</p> <p>Originator: NRC (Carte)</p> <p>Please provide a detailed description of the PAMS MTP data link to the plant computer. This description should identify all equipment (model & version) and describe the functions that each piece of equipment performs. This description should be of sufficient detail for the NRC to independently evaluate the statements made in WNA-LI-00058-WBT Rev. 0, Section 5.3.</p>	<p>Date: Responder: WEC</p>	<p>Date: 5/6/2010 Responsibility: TVA</p> <p>A response will be provided no later than 7/23/10</p>	Open Due 7/23			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
86	<p>May 6, 2010</p> <p>Originator: NRC (Carte)</p>	<p>Date: 5/24/10 Responder: WEC</p>	<p>Date: 5/6/2010 Responsibility: TVA</p>	Pending Submittal			FSAR Section 7.5.1 Post Accident Monitoring

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Licensee Open Items to be Resolved for SER Approval							
No	Issue	TVA Response(s)	Status/Current Action	Resolution Path	RAI Date	RAI Response Date	Comments
	The PAMS Licensing Technical Report (WNA-LL-00058-WBT Rev. 0, Dated April 2010), in Section 6, lists references applicable to the Common Q PAMS. This list contains references to old revisions of several regulatory documents, for example: (1) DI&C-ISG04 - Rev. 0 (ML072540138) vs. Rev. 1 (ML083310185) However, LIC-110, "Watts Bar Unit 2 License Application Review," states: "Design features and administrative programs that are unique to Unit 2 should then be reviewed in accordance with the current staff positions." Please identify all differences between the versions referenced and the current staff positions. Please provide a justification for the acceptability PAMS with respect to these differences.	The regulatory documents listed in the Common Q PAMS Licensing Technical Report are the documents that the Common Q platform was licensed to when the NRC approved the original topical report and issued the approved SER. The WBN2 PAMS is designed in accordance with the approved Common Q topical report and approved SER and the regulatory documents on which the SER based. Since the current versions referenced are not applicable to WBN2, there is no bases for a comparison review.	Awaiting TVA response.	6/18/10			Instrumentation - SE Section 7.5.2
87	May 6, 2010 Regarding the Sorrento RM-1000 Digital Radiation Processor: Please identify the model and version to be installed. Please include explicit identification of software version.	Originator: Carte Date: 5/24/10 Responder: Slifer The software is version 1.2.	Date: 5/6/2010 Awaiting TVA response.	Responsibility: TVA	Pending Submittal 6/18/10		FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2.
88	May 6, 2010 Regarding the Sorrento RM-1000 Digital Radiation Processor: Please provide prior software V&V reports. The latest report only addresses Version 1.2.	Originator: Carte Date: 5/24/10 Responder: Slifer See response to item 56	Date: 5/6/2010 Awaiting TVA response.	Responsibility: TVA	Pending Submittal 6/18/10		FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2.
89	May 6, 2010 What FSAR functions are implemented using Foxboro Intelligent Automation (IA)?	Originator: Carte Date: Responder: Clark The list of FSAR functions is listed in TVA letter dated March 12, 2010, Enclosure 1, item 12	Date: 5/24/2010	Responsibility: NRC	NRC Review		
90	May 6, 2010 What FSAR Systems are implemented using Foxboro Intelligent Automation (IA)?	Originator: Carte Date: 5/25/10 Responder: Clark The list of FSAR systems is listed in TVA letter dated March 12, 2010, Enclosure 1, item 12	Date: 5/24/2010	Responsibility: NRC	NRC Review		
91	May 20, 2010 TVA to submit excerpts of EDCRs 52421, 52987, 52321, 52351 and 52601	Originator: Date: 5/25/10 Responder: Clark 52421 - Excerpt attached 52987 - Excerpt attached 52321 - Scheduled to be issued Oct 14, 2010 This item has been transferred to open item 103. 52351 - Scheduled to be issued June 17, 2010 This item has been transferred to open item 104. 52601 - Excerpt attached	Date:	Responsibility:	Pending Submittal 6/18/10		
92	May 20, 2010 TVA to review Licensee Open Item list and determine which items are proprietary.	Originator: Date: Responder: Himes Next review due 6/18/10	Date:	Responsibility:	Continuous review as items are added		
93	May 20, 2010 TVA to submit a letter committing to include setpoint methodology discussion in the FSAR no later than amendment 100.	Originator: Date: 5/25/10 Responder: Knuettel Letter Sent 5/25/10	Date:	Responsibility:	Closed		
94	May 20, 2010 TVA to locate and provide information on the TMI action item to add an anticipated reactor trip on turbine trip to the design bases in the FSAR	Originator: Date: 5/25/10 Responder: Clark This item is described in FSAR amendment 98, Section 7.2.1.1.2 Item 6 page 7.2.9, and Table 7.2-1 item 14, page 7.2-39.	Date:	Responsibility:	Closed		
95	May 20, 2010 TVA to review SER supplements 5 and 14 item 7.8.1 and supplement 4 item 7.8.4 and confirm if they are identical to Unit 1. If not provide differences.	Originator: Date: Responder:	Date: A response will be provided no later than 7/23/10	Responsibility:	Open Due 7/23		
96	May 20, 2010	Originator:	Date:	Responder:	Date:	Responsibility:	Open

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Licensee Open Items to be Resolved for SER Approval							
No	Issue	TVA Response(s)	Status/Current Action	Resolution Path	RAI Date	RAI Response Date	Comments
	TVA to provide information on implementation of IEN 79-22 and how it is addressed in the FSAR		A response will be provided no later than 7/23/10	Due 7/23			
97	May 20, 2010 TVA to review SER Supplement 7 item 7.4.25 deviation on Aux Control Room display of RCS cold leg temperature for applicability to Unit 2.	Originator: Date: Responder:	Date: Responsibility: A response will be provided no later than 7/23/10	Open Due 7/23			
98	May 25, 2010 Unit 1 SER Supplement 7, RCS Cold Leg Temperature instrumentation. How does Unit 2 address this change?	Originator: Darbali Date: Responder:	Date: Responsibility: A response will be provided no later than 7/23/10	Open Due 7/23/10			
99	April 12, 2010 TVA will provide non-proprietary versions of the following Common Q attached proprietary documents and the affidavits for the proprietary documents by June 30, 2010. 1. System Design Specification WNA-DS-01667-WBT, Rev. 1 2. System Requirements Specification WNA-DS-01617-WBT, Rev. 1 3. Watts Bar 2 - Common Q PAMS ISG-6 Compliance Matrix dated March 4, 2010 4. Watts Bar Unit 2 (WBN2) Post Accident Monitoring System (PAMS) Licensing Technical Report LTR-RCPL-10-XX 5. Software Requirements Specification WNA-SD-00239-WBT, Rev. 1	Originator: TVA Date: Responder: WEC	Date: Responsibility:	Open Due 6/30			
100	April 12, 2010 The following Common Q proprietary documents listed in the response and the affidavits for the proprietary documents will be provided by April 9, 2010. 1. System Design Specification WNA-DS-01667-WBT, Rev. 1 2. System Requirements Specification WNA-DS-01617-WBT, Rev. 1 3. Watts Bar 2 - Common Q PAMS ISG-6 Compliance Matrix dated March 4, 2010 4. Watts Bar Unit 2 (WBN2) Post Accident Monitoring System (PAMS) Licensing Technical Report LTR-RCPL-10-XX 5. Software Requirements Specification WNA-SD-00239-WBT, Rev. 1	Originator: TVA Date: Responder: Clark	Date: Responsibility:	Closed			
101	April 12, 2010 The non-proprietary versions of the following RM-1000, Containment High Range Post Accident Radiation Monitor documents will be provided by June 30, 2010. 1. V&V Report 04508006A 2. System Description 04508100-1TM 3. Qualification Reports 04508905-OR, 04508905-1 SP, 04508905-2SP, 04508905-3SP 4. Functional Testing Report 04507007-1TR	Originator: TVA Date: Responder: Slifer	Date: Responsibility:	Open Due 6/30			TVA is working with the vendor to meet the 6/30 date, however there is the potential this will slip to 7/14.
102	May 24, 2010 Provide a schedule for resolution of items 80, 82 and 83	Originator: TVA Date: 5/24/10 Responder: WEC Item 80 - no later than _____ Item 82 - no later than _____ Item 83 - no later than _____	Date: Responsibility:	Pending Submittal 6/18/10			
103	May 27, 2010 TVA to submit excerpts of EDCR 52321	Originator: TVA Date: 5/27/10 Responder: Clark	Date: 5/27/10 Responsibility: TVA EDCR is scheduled for issue 10/13/10	Open Due 10/31/10			Submittal date is based on current EDCR scheduled issue date.
104	May 27, 2010 TVA to submit excerpts of EDCR 52351	Originator: TVA Date: 5/27/10 Responder: Clark	Date: 5/27/10 Responsibility: TVA EDCR is scheduled for issue 6/17/10	Open Due 7/23/10			Submittal date is based on current EDCR scheduled issue date.
105	April 29, 2010 Provide As-Found/As-Left methodology procedure	Originator: NRC Date: Responder: Langley Submitted copy of TR28 May 14/2010.	Date: 5/27/10 Responsibility: NRC	NRC Review			
106	May 6, 2010 Confirm that the Unit 1 and Unit 2 CERPI systems utilize the same processor (AC110 or AC160).	Originator: NRC Date: 5/25/10 Responder: Davies Per Westinghouse Unit 2 Drawing 6031420 Rev. 1, the processors are model AC160 which are the same that are utilized for Unit 1 (Westinghouse drawing 2E10006 Rev. 4)	Date: Responsibility:	Pending Submittal 6/18/10			
107	May 6, 2010	Originator: NRC Date: 5/28/10 Responder: Clark	Date: Responsibility:	Pending Submittal			

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Licensee Open Items to be Resolved for SER Approval							
No	Issue	TVA Response(s)	Status/Current Action	Resolution Path	RAI Date	RAI Response Date	Comments
	Describe any control functions associated with the RM-1000 radiation monitors.	The RM-1000 radiation monitors do not provide any control functions.		6/18/10			
108	May 6, 2010 We are requested to docket the fact that the appropriate sections of chapter 7 of the FSAR will be updated to include references to: a. TI-28 to address as-found/as-left issues b. RISC 2006-17	Originator: NRC Date: 5/25/10 Responder: Webb/Hilmes	Date: Responsibility: This item is to be worked with item 51.	FSAR Amd 100			
109	May 6, 2010 The reviewer was unable to identify the sections of the FSAR that correspond to the standard review plan sections 7.8 and 7.9.	Originator: NRC Date: NA Responder: NA	Date: NRC Responsibility: Wiebe J. Wiebe accepted this action.	NRC Action			
110	May 6, 2010 The reviewer was unable to locate the Eagle 21 WCAPs 12374 and 12375 for review within the NRC records. We agreed to provide the ADAMS numbers for the submittal.	Originator: NRC Date: Responder: Clark These items were docketed under ML073550386	Date: TVA Responsibility: Clark	Closed			
111	May 6, 2010 The reviewer was unable to locate information (SER) on the plant computer or annunciator systems and asked us to provide the location within the FSAR where these systems are described.	Originator: NRC Date: 5/28/10 Responder: Clark The annunciator system is not described in the WBN1 UFSAR. As such it is not included in the WBN2 FSAR. With the exception of the ERFDS functions in section 7.5 the plant computer is not described in the WBN1 UFSAR. As such it is not included in the WBN2 FSAR.	Date: Responsibility:	Pending Submittal 6/18/10			
112	June 1, 2010 What are the differences between the Unit 1 and Unit 2 Eagle 21 Systems?	Originator: NRC Date: Responder: Clark This information is included in TVA letter dated March 12, 2010, Enclosure 1, Item 10.	Date: Responsibility:	Closed			
113	June 1, 2010 Are the new model Eagle 21 power supplies installed in Unit 1?	Originator: NRC Date: 6/1/2010 Responder: Clark Yes. See Attached workorder.	Date: Responsibility:	Pending Submittal 6/18/10			
114	June 1, 2010 Provide the resolution of the Eagle 21 Rack 5 lockup on update issue.	Originator: NRC Date: Responder: WEC	Date: Responsibility:	Open Due 7/23/10			
115	February 25, 2010 Provide a list of digital 1E systems that have a digital communications path to non safety related systems and if it has: a. Been reviewed before for unit 1 b. Or installed in unit 1 under 50.59, or c. Is unique to unit 2	Originator: NRC Date: 6/2/10 Responder: Clark See response	Date: Responsibility:	Pending Submittal 6/18/10			
116	June 3, 2010 The Eagle 21 boards originally had a conformal coating. However, the new boards do not. Provide the basis for deletion of the conformal coating.	Originator: NRC Date: Responder: WEC	Date: Responsibility:	Open			Letter sent to Westinghouse requesting the basis information and documentation for submittal to the NRC.
117	Originator: Does TVA use a single sided or double sided methodology for as-found and as-left instrument setpoint values. (RIS2006-7)	Date: Responder: Webb/Powers	Date: Responsibility:	Open			
118	June 8, 2010 TVA to submit excerpts from EDCR 55385	Originator: NRC Date: Responder: Clark	Date: Responsibility:	Open Due 11/15/10			Submittal date is based on current EDCR scheduled issue date.
119	Originator:	Date: Responder:	Date: Responsibility:	Open			
120	Originator:	Date: Responder:	Date: Responsibility:	Open			
121	Originator:	Date: Responder:	Date: Responsibility:	Open			

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Licensee Open Items to be Resolved for SER Approval							
No	Issue	TVA Response(s)	Status/Current Action	Resolution Path	RAI Date	RAI Response Date	Comments
122	Originator:	Date: Responder:	Date: Responsibility:	Open			
123	Originator:	Date: Responder:	Date: Responsibility:	Open			
124	Originator:	Date: Responder:	Date: Responsibility:	Open			
125	Originator:	Date: Responder:	Date: Responsibility:	Open			
126	Originator:	Date: Responder:	Date: Responsibility:	Open			
127	Originator:	Date: Responder:	Date: Responsibility:	Open			
128	Originator:	Date: Responder:	Date: Responsibility:	Open			
129	Originator:	Date: Responder:	Date: Responsibility:	Open			
130	Originator:	Date: Responder:	Date: Responsibility:	Open			
131	Originator:	Date: Responder:	Date: Responsibility:	Open			
132	Originator:	Date: Responder:	Date: Responsibility:	Open			
133	Originator:	Date: Responder:	Date: Responsibility:	Open			
134	Originator:	Date: Responder:	Date: Responsibility:	Open			
135	Originator:	Date: Responder:	Date: Responsibility:	Open			

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Licensee Open Items to be Resolved for SER Approval

No	Issue	TVA Response	Status/Current Action	Resolution Path	Comments
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Safety Related System	Non Safety Related Interface	Unit 1 Review
Eagle 21	Plant Computer (ICS)	While Eagle was installed prior to Unit 1 Licensing, the interfaces to the ERFDS/P2500 main frame computers were analog. With the replacement of the ERFDS/P2500 mainframes by the Integrated Computer System (ICS), the interface became digital. Since ICS was installed under 50.59 the Unit 1 digital communications interface has not been reviewed.
Common Q	Plant Computer (ICS)	Common Q is not installed in Unit 1

Unit 2 Interface Review

The digital Eagle to ICS interface in Unit 1 is via node boxes on a ring network. The interface for Unit 2 is direct from the Eagle cabinets to a network switch on a star network. While the Unit 2 ICS computer hardware interface is different than Unit 1, the Eagle interface is the same in both units; via a mono-directional communication path described in Reference 1. Due to the difference in the ICS connection, the Unit 2 interface is unique.

The Common Q to Plant Computer interface is via the safety related Maintenance and Test Panel (MTP) fiber optic interface which blocks all except the minimum low level TCP/IP commands necessary to support communications. A detailed description of the MTP communications is contained in WNA-LI-00058-WBT, Revision 0, Watts Bar Unit 2 (WBN2) Post Accident Monitoring System (PAMS) Licensing Technical Report submitted under Reference 2. Additional communication isolation is provided by non-safety related data diodes (one for each train). The Common Q to ICS interface is unique to Unit 2.

Var.	Variable Name	Category	U2 Variable Source
1	Auxiliary Feedwater Flow	A1 D2	Foxboro Spec 200
2	Containment Lower Compartment Atmosphere Temperature	A1 D2	Foxboro Spec 200
3	Containment Pressure (Narrow Range)	A1 B1 C1 D2	Eagle 21
4	Containment Radiation	A1 C3 E1	Rad Monitor
5	Containment Sump Level (Wide Range)	A1 B1 C1 D2	Eagle 21
6	Core Exit Temperature	A1 B1 C1 D2	Common Q PAMS
7	Main Steam Line Radiation	C2 E2	Rad Monitor
8	Nuclear Instrumentation (Source Range)	A1 B1 D2	Source Range NI
9	RCS Pressurizer Level	A1 D1	Eagle 21
10	RCS Pressure Wide Range	A1 B1 C1 D2	Eagle 21
11	RCS Temperature T Cold	A1 B1 C1 D2	Eagle 21
12	RCS Temperature T Hot	A1 D2	Eagle 21
13	Refueling Water Storage Tank Level	A1 D2	Eagle 21
14	Steam Generator Level (Narrow Range)	A1 B1	Eagle 21
15	Steam Generator Pressure	A1 B1 D2	Eagle 21
16	Subcooling Margin Monitor	A1 B2 C1 D2	Common Q PAMS
17	Auxiliary Building Passive Sump Level	B1 C1	Unit 1 Instrument Racks
18	Containment Isolation Valve Position Indication	B1 D2	Valve Limit Switches
19	Containment Hydrogen Concentration	C3 D3 E3	Containment Hydrogen Monitor
20	Control Rod Position	D3	CERPI
21	Nuclear Instrumentation (Intermediate Range)	B1 D2	Intermediate Range NI
22	Reactor Vessel Level	B1 C1 D2	Common Q PAMS
23	Containment Pressure (Wide Range)	C1	Eagle 21
24	Shield Building Vent (Noble Gas Activity)	C2 E2	Rad Monitor
25	ABGTS High Pressure Alarm Per Fan	D2	Unit 1 Instruments
26	ACAS Pressure	D2	Unit 1 Instruments
27	AFW Valve Status	D1	Valve Limit Switches
28	Accumulator Flow Isolation Valve Status	D3	Valve Limit Switches
29	Accumulator Tank Level	D3	Foxboro IA
30	Accumulator Tank Pressure	D3	Foxboro IA
31	Annulus Pressure	D2	Foxboro IA
32	Aux. Feed Pump Turbine Steam Supply Isolation Valve Status	D3	Valve Limit Switches
33	Battery Current (125 V DC Vital)	D2	Ammeter shunt
34	Bus Voltage (125V DC Vital)	D2	Direct
35	Bus Voltage (480V Shutdown)	D2	Direct
36	Bus Voltage (6.9KV Shutdown)	D2	PT
37	CCS Surge Tank Level	D3	Foxboro IA
38	Centrifugal Charging Pump Total Flow	D2	Foxboro IA

39	Charging Header Flow	D3	Foxboro IA
40	Component Cooling Water To ESF Flow	D2	Foxboro Spec 200
41	Component Cooling Water Supply Temperature	D2	Foxboro Spec 200
42	Condensate Storage Tank Water Level	D3	No change
43	Containment Air Return Fan Status	D2	Breaker limit switches
44	Containment Cooling Valve Status	D3	Valve Limit Switches
45	Containment Spray Flow	D2	Eagle 21
46	Containment Spray HX Outlet Outlet Temperature	D2	Foxboro IA
47	Containment Sump Water Level (Narrow Range)	D3	Foxboro IA
48	Containment Sump Water Temperature	D2	Eagle 21
49	Diesel Generator Power	D2	
50	Diesel Generator Volts	D2	
51	ECCS Valve Status	D2	Valve Limit Switches
52	ERCW Header Flow	D2	Foxboro Spec 200
53	ERCW Supply Temperature	D2	ICS
54	Emergency Gas Treatment Damper Position	D2	Damper Limit Switches
55	Emergency Ventilation Damper Status	D2	Damper Limit Switches
56	Hydrogen Recombiner Status – Not Used in Unit 2	N/A	N/A
57	Igniter Group Status	D3	268
58	Inverter Current (120V ac Vital)	D2	Ammeter shunt
59	Inverter Voltage (120V ac Vital)	D2	Direct
60	Letdown Flow	D3	Foxboro IA
61	MCR Pressure	D3	Common Pressure Inst.
62	MCR Radiation Level	D2	Common Rad Monitors
63	Main Feedwater Flow	D3	Eagle 21
64	Normal Emergency Boration Flow	D2	Foxboro IA
65	There is no Variable 65	NA	N/A
66	Pressurizer Heater Status (Electric Current)	D2	ICS
67	Pressurizer Pressure Relief Valve Position (PORV, Block, and Code)	D2	Local transmitters
68	Pressurizer Relief Tank Level	D3	Foxboro IA
69	Pressurizer Relief Tank Pressure	D3	Foxboro IA
70	Pressurizer Relief Tank Temperature	D3	Foxboro IA
71	RCP Seal Injection Flow	D3	Foxboro IA
72	RCS Head Vent Valve Status	D2	Valve Limit Switches
73	RHR Heat Exchanger Outlet Temperature	D2	Foxboro IA
74	RHR Pump Flow (RHR System Flow)	D2	Foxboro IA
75	RHR Valve Status	D3	Valve Limit Switches

76	Reactor Coolant Pump Status (Motor Current)	D3	CT
77	Safety Injection Pump Flow	D2	Foxboro IA
78	Safety Injection System Valve Status	D3	Valve Limit Switches
79	Spent Fuel Pool Level Alarm	D2	Common
80	Spent Fuel Pool Temperature Alarm	D2	Common
81	Steam Generator Blowdown Isolation Valve Status	D2	Valve Limit Switches
82	Steam Generator Level (Wide Range)	D1	Eagle 21
83	Main Steam Flow	D2	Eagle 21
84	Tritiated Drain Collector Tank Level	D3	Common
85	Volume Control Tank Level	D3	Foxboro IA
86	Waste Gas Decay Tank Pressure	D3	Common
87	Radiation Exposure Meters	E3	Not used Deviation 22
88	Airborne Radio-halogens and Particulates	E3	Portable Monitor
89	Plant and Environs Radiation	E3	Portable Monitor
90	Plant and Environs Radioactivity	E3	Portable Monitor
91	Auxiliary Building Vent (Noble Gas)	E2	Rad Monitor
92	Auxiliary Building Vent (Flow Rate)	E2	Rad Monitor
93	Auxiliary Building Vent (Particulates and Halogens)	E3	Rad Monitor
94	Condenser Vacuum Pump Exhaust Vent (Flow Rate)	E2	Foxboro IA
95	Condenser Vacuum Pump Exhaust Vent (Noble Gas)	C3 E2	Rad Monitor
96	ERCW Radiation Monitors	E2	Rad Monitor
97	POST ACCIDENT SAMPLING	E3	N/A
97a	Reactor Coolant Chloride Concentration	E3	Grab sample with onsite analysis
97b	Reactor Coolant Dissolved Hydrogen	E3	Grab sample with onsite analysis
97c	Reactor Coolant Dissolved Oxygen	E3	Grab sample with onsite analysis
97d	Reactor Coolant Total Dissolved Gas	E3	Grab sample with onsite analysis
97e	Reactor Coolant Boron	E3	Grab sample with onsite analysis
97f	Reactor Coolant pH	E3	Grab sample with onsite analysis
97g	Reactor Coolant Sample Activity	C3 E3	Grab sample with onsite analysis
97h	Reactor Coolant Gamma Spectrum	E3	Grab sample with onsite analysis
98	CONTAINMENT AIR	N/A	N/A
98a	Containment Air Hydrogen	E3	Not used Deviation 22

98b	Oxygen Content	NA	Not Used for WBN 1 or 2
98c	Gamma Spectrum Sample	E3	Grab Sample
99	Shield Building Vent Flow	E2	Rad Monitor
100	Shield Building Vent Monitor (Particulate and Iodine)	E3	Rad Monitor
101	Steam Generator Discharge Vent (Flow Rate and Noble Gas)	E2	Local standalone system
102	METEOROLOGY	N/A	N/A
102a	Vertical Temperature Difference	E3	Common
102b	Wind Direction	E3	Common
102c	Wind Speed	E3	Common
103	Radiation Exposure Rate	E3	Portable Monitor

NOTES:

1. In Unit 2 this variable is provided by the Foxboro Spec 200 hardware upgrade.
2. In Unit 2 this variable is provided by the RM1000 digital Containment Post Accident High Range Ra
3. In Unit 2 this variable is provided by the Common Q PAMS system
4. These variables are common for both units and are provided by the Unit 1 systems.
5. In Unit 2 this variable is provided by the single non safety related hydrogen monitor.
6. These variables are common for both units and are provided by common systems.
7. These variables are obtained via portable sampling equipment and laboratory analysis.
8. In Unit 2 this variable is provided by the non safety related Foxboro IA DCS.
9. In Unit 1, this variable was within the scope of the 50.59 for the Integrated Computer System (ICS)
10. In Unit 1, this variable was within the scope of the 50.59 for the vital inverter replacement modification
11. In service for Unit 1 Operation
12. In Unit 2, the transmitters for this variable have been changed to Rosemount and the transmitter range
13. In Unit 2, the transmitter range for this variable has changed to 4-20ma.
14. The source/intermediate range replacement in Unit 2 uses the same digital component (shutdown
15. In Unit 1, the transmitter and transmitter configuration were changed to improve reliability due to pr
16. For Unit 2, the hydrogen recombiners are abandoned in place.
17. Unit 1 replaced the rod position indication with the Combustion Engineering Rod Position Indicator
18. In Unit 2, the separate medium and high range monitors are replaced with a single extended range

U1 50.59?	Unique to U2?	Notes
N	Y	12
N	Y	1
N	Y	12
N	Y	2
Y	N	15
N	Y	3
N	N	
N	Y	14
N	Y	13
N	Y	12
N	N	
N	N	
N	Y	12
N	Y	12
N	Y	12
N	Y	3
N	N	4
N	N	
N	Y	5
Y	N	17
N	Y	14
N	Y	3, 13
N	N	12
N	N	
N	N	4
N	N	4
N	N	
N	N	
N	Y	8, 12
N	Y	8, 12
N	Y	8, 12
N	N	
N	N	11
N	N	11
N	N	
N	N	
N	Y	8, 12
N	Y	8, 12

N	Y	8, 12
N	Y	1, 12
N	Y	1, 12
N	N	11
N	N	
N	N	
N	Y	12
N	Y	8, 12
N	Y	8, 12
N	N	
N	N	11
N	N	11
N	N	
N	Y	1, 11
Y	N	9, 11
N	N	
N	N	11
N	Y	16
N	N	
Y	N	10
Y	N	10
N	Y	8, 12
N	N	11
N	N	11
N	N	
N	Y	8, 12
N/A	N/A	
Y	N	9
N	N	
N	Y	8, 12
N	Y	8, 12
N	Y	8, 12
N	Y	8, 12
N	N	
N	Y	8, 12
N	Y	8, 12
N	N	

N	N	
N	Y	8, 12
N	N	
N	N	6, 11
N	N	6, 11
N	N	
N	Y	12
N	Y	12
N	N	6
N	Y	8, 12
N	N	6
N	N	
N	N	
N	N	
N	N	6
N	N	6
N	N	6
N	Y	8, 12
N	Y	18
N	N	6
N/A	N/A	
N	Y	7
N	Y	7
N	Y	7
N	Y	7
N	Y	7
N	Y	7
N	Y	7
N	Y	7
N/A	N/A	
N	N	

N	N	
N	N	
N	N	
N	N	
N	N	
N/A	N/A	
N	N	6
N	N	6
N	N	6
N	N	

radiation monitors.

modification which replaced the P2500 and ERFDS mainframe computers.
tion.

range has changed to 4-20ma.

monitor) but the analog electronics and detectors have been upgraded.
problems with the fill fluid in the original capillary type transmitters (DCN 39608). Unit 2 copied t

system (CERPI) in 2003 (DCN 51072) under 10CFR50.59. The Unit 1 system has been upg
monitor.

the Unit 1 change (EDCR 52419 excerpts submitted March 12, 2010).

rated several times, most recently in 2009. Unit 2 copied the Unit 1 system including all upgrades thrc

ugh 2009.