WBN2Public Resource

From: Poole, Justin
Sent: Tuesday, September 21, 2010 5:06 PM
To: Garg, Hukam; Carte, Norbert; Darbali, Samir; Singh, Gursharan; Marcus, Barry; Halverson, Derek
Cc: WBN2HearingFile Resource
Subject: FW: Updated NRC RAI List
Attachments: 20100917 Open Items List Master TVA Update 9-21-10.docx

Justin C. Poole
Project Manager
NRR/DORL/LPWB
U.S. Nuclear Regulatory Commission
(301)415-2048
email: Justin.Poole@nrc.gov

From: Stockton, Rickey A [mailto:rastockton@tva.gov]
Sent: Tuesday, September 21, 2010 2:45 PM
To: Poole, Justin
Cc: Knuettel, Edward Terry; Crouch, William D
Subject: FW: Updated NRC RAI List

Justin,

We had our folks look at the file you sent down this morning. Here is a corrected version of the file.

Please let me know if you need anything further,

Rickey Stockton
Unit 2 Licensing
(423) 365-7741

From: Clark, Mark Steven
Sent: Tuesday, September 21, 2010 2:40 PM
To: Stockton, Rickey A; Knuettel, Edward Terry
Subject: Updated NRC RAI List

Regards,

Steve

Steve Clark
Bechtel Power Corp.
Control Systems
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Hearing Identifier: Watts_Bar_2_Operating_LA_Public
Email Number: 113

Mail Envelope Properties (19D990B45D535548840D1118C451C74D6A92C8CB59)

Subject: FW: Updated NRC RAI List
Sent Date: 9/21/2010 5:06:15 PM
Received Date: 9/21/2010 5:06:18 PM
From: Poole, Justin

Created By: Justin.Poole@nrc.gov

Recipients:
"WBN2HearingFile Resource" <WBN2HearingFile.Resource@nrc.gov>
Tracking Status: None
"Garg, Hukam" <Hukam.Garg@nrc.gov>
Tracking Status: None
"Carte, Norbert" <Norbert.Carte@nrc.gov>
Tracking Status: None
"Darbali, Samir" <Samir.Darbali@nrc.gov>
Tracking Status: None
"Singh, Gursharan" <Gursharan.Singh@nrc.gov>
Tracking Status: None
"Marcus, Barry" <Barry.Marcus@nrc.gov>
Tracking Status: None
"Halverson, Derek" <Derek.Halverson@nrc.gov>
Tracking Status: None

Post Office: HQCLSTR02.nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	1008	9/21/2010 5:06:18 PM
20100917 Open Items List Master TVA Update 9-21-10.docx	269238	

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

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
001			EICB (Carte)	11/19/2009 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?	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.		Closed Date: 3/15/2010 RAI response received.	Closed	November 19, 2010 ML093230343 RAI 1	3/12/2010	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.
002			EICB (Carte)	11/19/2009 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?	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.		Closed Date: 3/15/2010 RAI response received.	Closed	November 19, 2010 ML093230343 RAI 2	3/12/2010	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.
003			EICB (Carte)	11/19/2009 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)?	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.		Closed Date: 3/15/2010 RAI response received.	Closed	November 19, 2010 ML093230343 RAI 3	3/12/2010	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.
004			EICB (Carte)	11/19/2009 Please identify the information that will be submitted for each unreviewed digital I&C system and component and the associated docketing schedule.	Responder: Webb 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. Add: By letter dated June 30, 2010, TVA docketed WNA-LI-00058-WBT-P &-NP, "PAMS Licensing Technical Report." WNA-LI-00058-WBT-P Section 4.11 addressed CCF and BTP 7-19. TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 4 on Page 3 of 15): TVA responded to this request for additional Information		Open Date: 3/15/2010 Responsibility: NRC (All) and TVA (Hilmes) 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. (Demonstrate segments are independent and how a common mode or complete failure is prevented by power supply design and	Open TVA to docket a D3 analysis for the Common Q PAMS. NNC 8/19/10: TVA segmentation analysis has been received - NRC to review.	November 19, 2010 ML093230343 RAI 4	January 13, 2010 March 12, 2010 June 30, 2010 August 11, 2010	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

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					Foxboro I/A Segmentation Analysis Calculation DCSSEGMENT, Rev. 0 submitted on TVA letter dated August 11, 2010. Data Storm Testing (a) Foxboro I/A Segmentation Analysis, Calculation DCSSEGMENT, Rev. 0 submitted on TVA letter to the NRC dated August 11, 2010 (Reference). (b) Attachment **Error! Reference source not found.** contains Foxboro proprietary drawings 08F802403-SC-2001 sheets 1 through 6. An affidavit for withholding and non-proprietary versions of the drawings will be submitted no later than _____. (c) Credible Mesh Network Failure Modes Attachment 42 contains the mesh network failure analysis. (d) Refer to the response to item (c) above.		segmentation.) NNC 8/19/10: The justification for not performing and D3 analysis contained in the CQ PAMS Licensing Technical Report is not acceptable. TVA to docket a D3 analysis for the CQ PAMS. This will be responded to in Item 64. NNC 8/25/10: The segmentation analysis has been read. Please explain why it is believed that failure will not propagate over the peer-to-peer network. Looking for an architectural description of the network interconnections similar to the ICS overview, identification of credible failure modes caused by the mesh network and what component(s) prevent mesh network failures from disabling the entire system. What prevents a segment failure from propagating across the mesh network and affecting other segments.				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..
005	7.1.3.1		EICB (Garg)	December 11, 2009 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. Change 7.3-1 refers to the following two Summary Reports: 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 TVA Letter, P. L. Pace to NRC, dated September 30,	Responder: Craig/Webb TVA Letter Dated February 5, 2010: TVA provided the Unit 2 setpoint methodology (WCAP-177044-P Revision 0 - dated December). TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 5 on Page 5 of 15): TVA responded to this request for additional Information This item is addressed as follows: 1. FSAR Amendment 100 which was submitted on TVA letter to the NRC dated August __, 2010 incorporates as-found and as-left setpoint tolerance discussion into section 7.1.2.1.9, adds EEB-TI-28, Setpoint Methodology to the section 7.1 references and adds a reference to 7.1.2.1.9 to section 7.2.1.1.10.		Closed Date: 3/15/2010 Responsibility: NRC (Garg) and TVA (Hilmes and Crouch) RAI response received. This item is closed as this is covered under item 154 later on. This item requires further discussion between TVA and the staff concerning the setpoint methodology employed for WBN2. See Item 8.	Closed FSAR AMD 100	ML093431118, RAI 5		NNC 4/15/10: Related to setpoints and SE Section 7.1.3.1.

Open Items to be Resolved for SER Approval

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				2005, "Watts Bar Nuclear Plant (WBN) Unit 1 - 10 CFR 50.59, Changes, Tests and Experiments Summary Report" Please submit the 50.59 Evaluations for each of these Summary Reports and identify which parts are relevant to the Unit 2 Setpoint Methodology.	TSTF-493, Rev. 4 Option A has been incorporated into the Unit 2 Tech Spec submittal dated February 2, 2010.						
006			EICB (Garg)	December 11, 2009 (ML093431118, RAI 6) 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. 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 WCAP "Westinghouse Setpoint Methodology for Protection System, Watts Bar Unit 2, Eagle 21 Version, WCAP-17044-P. Unit 2 Only. Please provide both setpoint methodology documents identified above.	By letter dated February 5, 2010: TVA provided the Unit 2 setpoint methodology (WCAP-177044-P Revision 0 - dated December 2009). TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 6 on Page 7 of 15): TVA responded to this request for additional Information. a. 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. In accordance with item 2, below, there is no change to the methodology, therefore revision 8 is not included in this response. Westinghouse letter WAT-D-10502 (Attachment 1) describes the two changes to WCAP-12096 Revision. 8. The first change addresses the containment sump level transmitter replacement. This change was submitted under 50.59 summary report (ML073460444, Page 77). The second change is to delete the power range negative flux rate trip. This item was submitted as a Technical Specification change (ML073201052). The Technical Specification change was subsequently approved. The current revision of Unit 1 WCAP-12096 is Revision 9. Revision 9 was issued to make the changes required by the Steam Generator Replacement Project. Unit 2 is using the original steam generators, therefore the changes in Revision 9 are not applicable to Unit 2. b. 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. TVA response letter dated March 12, 2010, Enclosure 1, Item Number. 7 addressed this request; however, the March 12 letter was not		Close This item is reviewed in FSAR amendment 100 review. Date: 2/16/2010 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). 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). Work with Item 7 for WCAP-12906 issues.	Open NRC Review TVA to reference TI-28 for as found and as left value. Also provide the reference to FSAR Section 7.1 for the setpoint methodology. This is addressed in FSAR Amendment 100.			NNC: WCAP-12096 Rev. 7 (ML073460281) is in ADAMS. NNC: WCAP-12096 Rev. 8 is the current revision for Unit 1. NNC 4/15/10: Hukam, please update this open item as appropriate. 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. 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.

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					submitted under oath and affirmation. This letter fulfills the oath and affirmation requirements for the previous response.						
007			EICB (Garg)	December 11, 2009 (ML093431118, RAI 7) 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). Please describe all changes from the methodology that has been reviewed and approved by the staff.	TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 7 on Page 7 of 15): TVA responded to this request for additional Information. a. TVA will submit WCAP-12096, Rev. 8 if there is a change to the methodology. No change in methodology, therefore WCAP-12906, Revision 8 is not submitted. b. TVA will supply the 50.59 letter for Rev. 8 Westinghouse letter WAT-D-10502 (Attachment 1) describes the two changes to WCAP-12096 Revision. 8. The first change addresses the containment sump level transmitter replacement. This change was submitted under 50.59 summary report (ML073460444, Page 77). The second change is to delete the power range negative flux rate trip. This item was submitted and approved as a Technical Specification change (ML073201052). c. TVA to locate transmittal letter that submitted Rev. 7. Refer to response to Item 1. TVA responded to this request for additional Information in letter dated March 12, 2010, Enclosure 1, Item Number 6. d. TVA to determine the last revision of WCAP-12096 where there was a change in methodology. Previous revisions to WCAP-12096 have been due to hardware changes. The calculation methodology has not changed since revision 0.		Close This item is reviewed in FSAR 100 review. Date: 1/13/2010 RAI response received. NRC to review response. TVA will submit WCAP-12096, Rev. 8 if there is a change to the methodology. TVA will supply the 50.59 letter for Rev. 8 TVA to locate transmittal letter that submitted Rev. 7. TVA to determine the last revision of WCAP-12096 where there was a change in methodology. Work with Item 6 for WCAP-12906 issues.	Open NRC Review Same as Item 6 above This is addressed in FSAR Amendment 100..			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. 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.
008	7.3		EICB (Garg)	December 11, 2009 There are several staff positions that provide guidance on setpoint methodology (e.g., Reg Guide 1.105, BTP 7-12, RIS-2006-17 and TSTF-493 Rev. 4). Please identify how the Unit 2 setpoint methodology addresses staff guidance.	TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 8 on Page 7 of 15): TVA responded to this request for additional Information This item is addressed as follows: 1. FSAR Amendment 100 which was submitted on TVA letter to the NRC dated August __, 2010 incorporates as-found and as-left setpoint tolerance discussion into section 7.1.2.1.9, adds		Closed	Closed FSAR AMD 100. Closed as it will be covered under item 154	ML093431118, RAI 8		

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					EEB-TI-28, Setpoint Methodology to the section 7.1 references and adds a reference to 7.1.2.1.9 to section 7.2.1.1.10. 2. TSTF-493, Rev. 4 Option A has been incorporated into the Unit 2 Tech Spec submittal dated February 2, 2010.						
009	7.3.2	5.6, 6.3.5	EICB (Darbali)	December 11, 2009 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.	TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 9 on Page 8 of 15): TVA responded to this request for additional Information		Closed Date: 3/15/2010 Responsibility: NRC (Darbali) 50.59 evaluation was submitted in the RAI response. NRC to review.	Closed	ML093431118, RAI 9		NNC 4/15/10: Related SE Section 7.3.
010	7.3	7.3	EICB (Darbali)	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.	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).		Open Date: 3/15/2010 NRC evaluating TVA response. NRC to discuss document requirements and provide additional information to resolve this item.	Open NRC Review			NNC 4/15/10: Related SE Section 7.3.
011	7.3.2	5.6, 6.3.5	EICB (Darbali)	December 11, 2009 (ML093431118, RAI 11) NUREG-0847 Supplement No. 2 Section 7.3.2 includes an evaluation of a change in containment sump level measurement. Provide information to demonstrate that Unit 2 implements the containment sump level indication as described and evaluated in	TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 11 on Page 13 of 15): TVA responded to this request for additional Information		Closed 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.

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				NUREG-0847 Supplement No. 2, Section 7.3.2, for Unit 1.							
012	7.4	7.4	EICB (Darbali)	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.	TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 12 on Page 13 of 15): TVA responded to this request for additional Information A revised response was included in the 7/30 letter that provides the requested information.		Closed Date: 3/15/2010 TVA provided 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. Item Closed.	Closed			NNC 4/15/10: Related SE Section 7.4.
013			EICB (Garg)	December 11, 2009 (ML093431118, RAI 13) 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 information that will be provided to justify the acceptability of these values.	TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 13 on Page 14 of 15): TVA responded to this request for additional Information		Closed Date: 3/15/2010 RAI response received. Westinghouse is completing the setpoint calculations which will be completed by May 11, 2011. NRC to review response.	Closed This item is closed for chapter 7. NRC will review T.S. under different chapter.			TS have been docketed. 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. Related to SE Section 7.1.3.1.
014			EICB (Carte)	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	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.		Closed Date: 4/27/10 Responsibility: NRC (Carte) NNC: 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. Response understood. Additional material will be requested separately to understand the systems described.	Closed			NNC 4/30/10: Related to Eagle 21; therefore Garg is responsible.
015			B (G	December 22, 2009 (ML093560019, item 2)	Date: 4/27/10 Responder: TVA		Closed	Closed			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				Verify that the refurbishment of the power range nuclear instrumentation drawers resulted in only like-for-like replacements.	By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 2).		Date: 4/27/10 Responsibility: NRC (Garg) Response acceptable. Close				
016			EICB (Carte)	December 22, 2009 (ML093560019, item 3) Identify the precedents in license amendment requests (LARs), if any, for source range monitors or intermediate range monitors.	Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 3).		Closed Date: 4/27/10 Responsibility: NRC (Garg) Acceptable. Close	Closed			
017	7.3.1	7.3.1, 5.5.5, 5.6	EICB (Darbali)	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.	Date: 4/27/10 By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 4).		Open Date: 4/27/10 Awaiting NRC evaluation of response.	Open NRC Review			
018			EICB (Garg)	December 22, 2009 (ML093560019, item 5) Identify any changes made to any instrumentation and control (I&C) system based on prior knowledge of failures.	Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 5).		Closed Date: 4/27/10 Responsibility: NRC (Garg) Acceptable. Close	Closed			
019			EICB (Garg)	December 22, 2009 (ML093560019, item 6) Verify that the containment purge isolation radiation monitor is the same as used in Watts Bar Unit 1, or identify any hardware changes.	Date: 4/27/10 By latter 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. Clarify electronics are analog and the same as unit 1 and the only difference is the detector assembly.		Close Date: 4/27/10 .	Open NRC Review			
020			EICB (Garg)	December 22, 2009 (ML093560019, item 7) Provide environmental qualification information pursuant to Section 50.49 of Title 10 of the Code of Federal Regulations (10 CFR) for safety-related actuation transmitters.	Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 7).		Closed 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."

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
021			EICB (Garg)	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.	Date: 5/25/10 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 later based on the review of attached documents. The following TVA generated documents are provided (Attachment 1): 1. Analog loop comparison 2. Analog card comparison 3. Analog system description		Open Date: 5/24/10 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.	Open NRC Review			
022	7.3.2	5.6, 6.3.5	EICB (Darbali)	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.	Date: 4/27/10 By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 9). The control function of the Auxiliary Feedwater (AFW) Flow for Steam Generator Level is the same as Unit 1. The controllers and signal modifiers/conditioners are Foxboro SPEC 200 discrete analog modules as Unit 1 control loops. The only different Unit 1 uses a 10-50ma signal and Unit 2 is using a 4-20ma. The SPEC 200 control modules operate with a 0-10mv system for both Unit 1 and Unit 2. The differences between the Units that have a control function for the AFW system is the differential pressure control upstream of the motor driven AFW pumps 2A-A and 2B-B. Unit 1 still has the analog Bailey/GEMac controllers and signal conditioners. Whereas Unit 2 has converted the controllers and signal conditioners to Foxboro SPEC 200 discrete analog components. Both		Open Date: 4/27/10 TVA should confirm if Woodward Governor is the only change. See Item 285 for follow up question.	Open NRC Review			

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					loops still maintain a Fisher modifier for valve control. The four (4) control loops are described below: 2-P-3-122A This loop controls the differential pressure of the Auxiliary Feedwater Pump 2A-A by varying valve 2-PCV-3-122. Differential Pressure Indicating Controller 2-PdIC-3-122A (on panel 2-M-4) can be used either in manual mode or in automatic mode. This loop controls this valve from the Main Control Room when transfer switch 2-XS-3-122 (on panel 2-L-11A) is in the normal position. 2-P-3-122C This loop controls the differential pressure of the Auxiliary Feedwater Pump 2A-A by varying valve 2-PCV-3-122. Differential Pressure Indicating Controller 2-PdIC-3-122C (on panel 2-L-10) can be used either in manual mode or in automatic mode. This loop controls this valve from the Auxiliary Control Room when transfer switch 2-XS-3-122 (on panel 2-L-11A) is in the auxiliary position. 2-P-3-132A This loop controls the differential pressure of the Auxiliary Feedwater Pump 2B-B by varying valve 2-PCV-3-132. Differential Pressure Indicating Controller 2-PdIC-3-132A (on panel 2-M-4) can be used either in manual mode or in automatic mode. This loop controls this valve from the Main Control Room when transfer switch 2-XS-3-132 (on panel 2-L-11B) is in the normal position. 2-P-3-132C This loop controls the differential pressure of the Auxiliary Feedwater Pump 2B-B by varying valve 2-PCV-3-132. Differential Pressure Indicating Controller 2-PdIC-3-132C (on panel 2-L-10) can be used either in manual mode or in automatic mode. This loop controls this valve from the Auxiliary Control Room when transfer switch 2-XS-3-132 (on panel 2-L-11B) is in the auxiliary position.						

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					Unit 2 controllers are Foxboro model N-250HM-M2NH-F; Signal Converters, current-voltage IN are model N-2AI-I2V, and voltage-current OUT are N-2AO-VAI; Control Card is model N-2AX+A4. All components are supplied in accordance with requirements of 10CFR50 Appendix B and ASME NQA-1 as defined in Invensys Systems, Inc. Corporate Quality Assurance Program Requirements, QMS, Revision S, dated October 26, 2007. All components were manufactured with the same materials and processes as those qualified for Nuclear Class 1E Service per IEEE-323-1974 and IEEE-344-1975.						
023			EICB (Garg)	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.	Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 10).		Closed 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."
024			EICB (Carte)	December 22, 2009 (ML093560019, item 11) Provide a schedule by the January 13, 2010, meeting for providing information in accordance with I&C Interim Staff Guidance (ISG) 6.	During the January 13, 2010 meeting, TVA presented a schedule for completing various documents for the PAMS system. This 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). By letter Dated June 18, 2010 (see Attachment 3) TVA provided a table, "Watts Bar 2 - Common Q PAMS ISG-6 Compliance Matrix."		Closed Date: 4/27/10 The explanations provided by TVA (that certain information is not required) are unacceptable. NNC 8/18/10: The TVA agreement in the Comments column conflicts with the TVA responses to other open items where TVA states that information is available for audit.	Closed Closed to Item 43	;		NNC 4/30/10: Carte to address response with respect to PAMS and Darbali to address response with respect to RM1000. TVA has agreed to submit the requested information on the docket.
025			B (Sin	December 22, 2009 (ML093560019, item 12) For the containment radiation high radiation monitor,	Date: 4/27/10 By letter dated April 27, 2010 TVA responded to		Open Date: 07/28/2010	Open NRC Review			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				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.	this request for information (Enclosure, Item No. 12).		NRC review in progress. Need Radiation Monitoring System Description/Design Criteria Are detectors different than Unit 1 Are there any commercially dedicated parts in the RM-1000. State digital communication ports are not used.				
026			EICB (Garg)	December 22, 2009 (ML093560019, item 13) Provide environmental qualification (10 CFR 50.49) information for safety-related monitoring transmitters.	Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 13).		Closed 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."
027			EICB (Carte)	December 22, 2009 (ML093560019, item 14) For Foxboro I/A provide information regarding safety/non-safety-related interaction, common cause failures, and communication with safety related equipment in accordance with ISG 4.	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."		Closed Date: 4/27/10 Responsibility: NRC (Carte)	Closed			
028			EICB (Garg)	December 22, 2009 (ML093560019, item 15) For the turbine control AEH system, verify that the refurbishment results in a like-for-like replacement.	Responder: Mark Scansen Date: 4/27/10 By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 15). The requested 50.59 is included in Attachment 1.		Close Provide 50.59 evaluation. Response acceptable.	Open Provide 50.59			
029			EICB (Carte)	December 22, 2009 (ML093560019, item 16) For the rod control system, verify that the refurbishment results in a like-for-like replacement.	Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 (ML101230248) TVA responded to this request for information (Enclosure, Item No. 16 & Attachment 5): TVA stated on a card by card basis that the refurbished cards have the same form fit and function.		Closed Date: 4/27/10 Responsibility: NRC (Carte)	Closed			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
030			EICB (Garg)	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.	Responder: Clark Date: 4/27/10 By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 17). There are no other I&C upgrades which contain an imbedded digital processor.		Close Date: 4/27/10 Does not state if there are no other upgrade which contain imbedded digital processor. Revised response acceptable.	Open			
031			EICB (Carte)	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.	Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 18).		Closed Date: 4/27/10 Responsibility: NRC (Carte) Response acceptable.	Closed			CERPI is non-safety related.
032			EICB (Carte)	December 22, 2009 (ML093560019, item 19) For the process computer, need to consider cyber security issues and emergency response data system needs.	Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 19).		Closed Date: 4/27/10 Responsibility: NRC (Carte) EICB will no longer consider cyber issues.	Closed			
033			EICB (Carte)	December 22, 2009 (ML093560019, item 20) For the loose parts monitoring system, provide information regarding interactions with safety related equipment.	Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 20): Loose parts is not connected to any other system.		Closed Date: 4/27/10 Responsibility: NRC (Carte) TVA stated that there are no interactions.	Closed			The loose parts monitoring system is not connected to any other system.
034			EICB (Garg)	2/4/2010 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?	Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 21). Remove all references to Elbow Tap Methodology from Unit 2 Licensing Bases.		Open Awaiting NRC evaluation of response.	Open NRC review			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
034.1			EICB (Garg/Singh)	Chapter 7.1 – Introduction Reactor Coolant System Flow Rate Measurement Design Basis Analysis Parameters Loose Parts Monitoring			Open	Open			
034.2			EICB (Garg)	Chapter 7.2 - Reactor Trip System 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			Open	Open			
034.3	7.3	7.3	EICB (Darbali)	Chapter 7.3 – ESFAS Design Basis Analysis Parameters Alternate Method for Use of Condenser Steam Dump			Open	Open			
034.4			EICB (Carte)	Chapter 7.5 - Instrumentation Systems Important to Safety Plant Process Computer Replacement Containment Sump Level Transmitter Replacement Safety Injection Systems Cold Leg Accumulator Level Measurement System Common Q/PAMs			Open	Open			
034.5			EICB (Marcus/Singh)	Chapter 7.6 - All Other Systems Required for Safety Plant Process Computer Replacement Loose Parts Monitoring System			Open	Open			
034.6			EICB (Singh/Darbali)	Chapter 7.7 Control Systems 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)			Open	Open			
035			EICB (Sin	2/18/2010 Please provide a system description of the Digital	Responder: Clark TVA Letter dated March 12, 2010 Enclosure 1,		Open Description provide is not of	Open TVA to docket the			LIC-110 Section 6.2.2 states: "Design features and administrative programs that are unique to Unit 2

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				Metal Impact Monitoring System that contains sufficient detail to support a review of this system using current staff positions.	item 4 responded to this request for information. Attachment **Error! Reference source not found.** contains the non-proprietary system description which was developed from proprietary Westinghouse Watts Bar Unit 2 DIMMS-DX Operations and Maintenance Manual, 1TS3176 Rev.0 (Reference). Westinghouse approved this non-proprietary version for public release via letter WBT-D-2281 dated August 17, 2010 (Reference)		sufficient detail to allow a regulatory determination. TVA to send the proprietary information for NRC review. At the 9-2 meeting G. Singh stated the system description provided was acceptable and the proprietary information was not required at this time.	information including proprietary information for LPMS.			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.
036			EICB (Carte)	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.	Date: 5/25/10 Responder: Clark In previous letters TVA has provided the Common Q documents that address this item:		Closed 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."
037	7.5.5	7.5.2	EICB (Marcus)	2/18/2010 Is the plant computer a safety-related display system?	Responder: Clark Date: 5/25/10 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. FSAR section 7.1.1.2 is revised in FSAR Amendment 100 submitted to the NRC on TVA letter to the NRC dated September 1, 2010.		Closed August 19, 2010 - TVA to submit markup of FSAR Amendment 100. Plant computer system is non-safety related.	Closed			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

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											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.
038	7.5.5	7.5.2	EICB (Marcus)	2/18/2010 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.	Responder: Clark Date: 5/25/10 FSAR sections 7.1.1.2 and 7.5.2 are revised to address this comment in FSAR Amendment 100 submitted to the NRC on TVA letter to the NRC dated September 1, 2010.		Open August 19, 2010 - TVA to submit markup of FSAR Amendment 100.	Open NRC review			The slides presented at the December 15, 2010 meeting (ML093520967) indicate that the plant process computer has been replaced.
039			EICB (Garg)	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.	Responder: Clark Date: 5/25/10 Refer to revised equations in FSAR amendment 98.		Closed Date: 1/13/2010 Responsibility: TVA NRC staff will review	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.
040			EICB (Garg)	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.	Responder: Clark Date: 5/25/10 Refer to revised equations in FSAR amendment 98.		Closed Date: 1/13/2010 Responsibility: TVA NRC staff will review	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.
041			EICB (Carte)	2/19/2010 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 CQ TR or SPM: (4) WNA-PT-00058-GEN Rev. 0, "Testing Process for	Responder: WEC Items (1) and (2) were docketed by TVA letter dated April 8, 2010. Item (3) will be addressed by NRC audit of Westinghouse in New Stanton, Connecticut on September 20 and 21. Item (4) will be addressed by Westinghouse developing a WBN2 Specific Test Plan to compensate for the fact that the NRC disapproved WNA-PT-00058-GEN during the original Common Q review. No date is available from		Open The SysRS and SRS incorporate requirements from many other documents by reference. NNC 8/25/10: (3) An earlier version of this report was docketed for the Common Q topical report; therefore, there should be no problem to docket this version. (4) Per ML091560352, the testing	Open TVA to docket information indentified in ISG6. TVA to provide date when information will be docketed.			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2 See also Open Item Nos. 226 & 270.

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				Common Q Safety systems" ~~(5) WNA-TP-00357-GEN Rev. 4, "Element Software Test Procedure"~~	Westinghouse when this document will be sent to TVA. TVA will provide the document to the NRC within two weeks of receipt. Item (5) WNA-TP-00357-GEN is superseded by the SPM compliance matrix in the Licensing Technical Report next revision scheduled from Westinghouse September 30, 2010. This document will be provided to the NRC within two weeks of receipt.		process document does not address the test plan requirements of the SPM. Please provide a test plan that implements the requirements of the SPM.				
042			EICB (Carte)	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.	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.		Closed Date: 2/25/2010 Responsibility: TVA TVA provided readable drawings.	Closed			The drawing provided did not have the identification numbers as in the FSAR.
043			EICB (Carte)	2/19/2010 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 CQ topical report did no specifically address this PAMS system at Watts Bar Unit 2.	Responder: WEC Date: 5/25/10 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. Attachment 3 contains the revised Common Q PAMS ISG-6 Compliance Matrix, dated June 11, 2010, that addresses these items (Reference 13). By letter Dated June 18, 2010 (see Attachment 3) TVA provided a table, "Watts Bar 2 - Common Q PAMS ISG-6 Compliance Matrix." This item will be addressed in the next revision of the Licensing Technical Report.		Open Revised compliance matrix is unacceptable. NNC 8/12/10: It is not quite enough to provide all of the documents requested. There are two possible routs to review that the NRC can undertake: (1) follow ISG6, and (2) follow the CQ SPM. The TVA response that was originally pursued was to follow ISG6, but some of the compliance items for ISG6 were addressed by referencing the SPM. The NRC approved the CQ TR and associated SPM; it may be more appropriate to review the WBN2 PAMS application to for adherence to the SPM that to ISG6. In either path chosen, the applicant should provide documents and a justification for the acceptability of any deviation from the path	Open TVA to docketed requested material. TVA to provide date when information will be docketed.			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2 NNC 8/25/10: A CQ PAMS ISG6 compliance matrix was docketed on: (1) February, 5 12010, (2) March 12, 2010, & (3) June 18, 2010. The staff has expressed issued with all of these compliance evaluations. The staff is still waiting for a good compliance evaluation.

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				NRC then concluded that TVA should go through and provide a more complete and thorough compliance matrix.			chosen. For example, it appears that the Westinghouse's CDIs are commercial grade dedication plans, but Westinghouse maintains that they are commercial grade dedication reports; this apparent deviation should be justified or explained.				
044			EICB (Carte)	February 25, 2010 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.	Date: 5/25/10 Responder: Clark By letter Dated June 18, 2010 (see Enclosure 1 Item 6) TVA provided information requested.		Closed Date: 2/25/2010 Responsibility: TVA	Closed			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2.
045			EICB (Carte)	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.	Date: 5/25/10 Responder: Clark There are no communications between divisions. The response includes the description of communications and isolation between the Common Q PAMS, Eagle 21 and RM-1000 radiation monitors and non safety systems.		Closed Date: 2/25/2010 Responsibility: TVA TVA provided information by letter dated July 30, 2010 (ML102160349) - See Enclosure 1 Item No. 4.	Closed				
046			EICB (Carte)	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.	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."		Closed Date: 2/25/2010 Responsibility: TVA	Closed			
047			EICB (Carte)	4/8/2010 The PAMS System Requirements Specification (SysRS) references RG 1.97 Rev. 3 where the FSAR References Rev. 2. Please explain.	Responder: WEC/Hilmes Date: 5/25/10 The licensing basis for WBN Unit 2 is Regulatory Guide 1.97 Revision 2. The Common Q PAMS system was designed to Regulatory Guide 1.97 Revision 3, which is why the basis for the System		Open TVA provided information by letter dated July 30, 2010 (ML102160349) - See Enclosure 1 Item No. 5.	Open TVA to provide additional information as described.			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					Requirements Specification references revision 3. In order to resolve this discrepancy an engineering evaluation of the Common Q PAMS was performed. Attachment 2 contains an engineering evaluation of the Common Q PAMS design against the requirements of Reg. Guide 1.97 Rev. 2. The evaluation concluded that the Common Q PAMS meets all requirements of Reg Guide 1.97 Rev. 2. This evaluation will be added to design criteria WB-DC-30-7, Post Accident Monitoring Instrumentation by October 1, 2010.		NNC 8/9/10: There are two aspects of this issue. The first aspect has been addressed by the response. The second aspect is: How could Westinghouse Design, and TVA approve a design to the wrong requirement?				
048			EICB (Carte)	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.	Date: 5/25/10 Responder: WEC To ensure technical fidelity with the Unit 1 ICCM-86 system, the Unit 1 PLS was used as an input to the Common Q PAMS System Requirements Specification. This was done to ensure the Unit 2 PAMS had at a minimum the same capabilities and accuracy as the unit 1 system. The Unit 2 Common Q PAMS PLS section was developed based on the actual Common Q PAMS system design as reflected in the System Requirements Specification. As such, the Common Q PAMS PLS section is an output of the Common Q PAMS System Requirements Specification. Therefore, no “transition” from the Unit 1 to the Unit 2 PLS is required. The Unit 2 PLS is scheduled to be issued December 13, 2010.		Closed Date: 4/8/2010 Responsibility: TVA Requested information was provided.	Closed			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
049			EICB (Carte)	4/8/2010 Please provide 00000-ICE-30156 Rev. 6. The PAMS SysRS incorporates sections of this document by reference.	Responder: WEC Date: 5/25/10 Per Westinghouse letter WBT-D-2024 (Reference 7), this document is available for audit at the Westinghouse Rockville office. This document was submitted on September 2, 2010.		Open This information must be on the docket.	NRC Review TVA to revise response or other documentation. TVA to provide date when information will be docketed.			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
050			EICB (Carte)	4/8/2010 How should the "shall" statements outside of the bracketed requirements be interpreted?	Responder: WEC Date: 5/25/10 These sections are descriptive text and not requirements. The next revision of the Watts Bar Unit 2 PAMS System Requirements Specification		Open TVA response is inconsistent (e.g., WNA-DS-01667-WBT Rev. 1 page 1-1, Section 1.3.1	Open TVA to revise response or other documentation.			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					will remove “shall” from the wording in those sections. A date for completing the next revision of the System Requirements Specification will be provided no later than August 31, 2010. The System Requirements Specification will be revised by September 30, 2010 and submitted within two of receipt from Westinghouse.		implies that "SysRS Section ###" has requirements. See also SDS4.4.2.1-1 on page 4-32). Is there a requirement on the shall referenced above??	TVA to provide date when information will be docketed.			
051			EICB (Garg)	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.	Date: 5/25/10 Responder: Craig/Webb This item is addressed as follows: 1. FSAR Amendment 100 which was submitted on TVA letter to the NRC dated August __, 2010 incorporates as-found and as-left setpoint tolerance discussion into section 7.1.2.1.9, adds EEB-TI-28, Setpoint Methodology to the section 7.1 references and adds a reference to 7.1.2.1.9 to section 7.2.1.1.10. 2. TSTF-493, Rev. 4 Option A has been incorporated into the Unit 2 Tech Spec submittal dated February 2, 2010. 3. Refer to TVA to NRC letter dated August 25, 2008.		Closed Date: 4/15/2010 Responsibility: TVA This item is to be worked with item 108.	Closed This item is closed as it will be reviewed under item 154. FSAR AMD 100			
052			EICB (Singh)	April 19, 2010 Please identify the systems that will use the RM-1000 radiation monitors.	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.		Closed Date: 4/19/2010 Responsibility: NRC	Closed			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
053			EICB (Singh)	April 19, 2010 Please identify all FSAR sections that apply to the RM-1000.	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.		Closed Date: 4/19/2010 Responsibility: NRC	Closed			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
054			EICB (Singh)	4/19/2010 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.	Responder: Slifer Date: 5/25/10 The only safety-related application for the RM-1000 is the Containment High Range radiation monitors. The Containment High Range radiation monitors will be installed in the Main Control Room, a mild environment. The detectors will be installed remotely in the containment.		Open NRC Review	Open			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					For WBN Unit 2, a mild environment is defined as: A defined room or building zone where (1) the temperature, pressure, or relative humidity resulting from the direct effects of a design basis event (DBE) (e.g., temperature rise due to steam release) are no more severe than those which would occur during an abnormal plant operational condition, (2) the temperature will not exceed 130°F due to the indirect effects of a DBE (e.g., increased heat loads from electrical equipment), (3) the event radiation dose is less than or equal to 1 x 104 rads, and (4) the total event plus the 40 year TID (total integrated dose) is less than or equal to 5 x 104 rads. (Reference 3).						
055			EICB (Singh)	4/19/2010 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	Responder: Slifer Date: 5/25/10 The detectors for these loops will be located in a harsh environment (inside containment). The RM-1000 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 (Sept. 94) in the design basis. Electro-Magnetic-Interference and Radio Frequency Interference (EMI-RFI) testing was performed (the results of the testing are included in the Equipment Qualification Test Report submitted under TVA letter dated March 12, 2010, Reference 4). Since RG 1.209 was not issued until 2007, General Atomics test reports do not reference it. For WBN Unit 2, a harsh environment is defined as: A defined room or building zone where either (1) the temperature, pressure, and relative humidity resulting from the direct effects of a DBE (e.g., temperature rise due to steam release) are more severe than those which would occur during an abnormal plant operational condition, (2) the temperature will exceed 130°F due to the indirect effects of DBE (e.g., increased heat loads from electrical equipment), (3) the event radiation dose is greater than 1 x 104 rads, or (4) the total event plus the 40-year TID is greater than 5 x 104 rads.		Open	Open NRC Review			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					(Reference 3)						
056			EICB (Singh)	April 19, 2010 The "RM-1000 Version 1.2 Software Verification and Validation Report," Document No. 04508006 Rev. A, is an incremental report. That is to say it addresses the verification an 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.	Date: 5/25/10 Responder: Slifer The initial draft Software Verification and Validation (V&V) report document, version 1.0, was never issued. Attachment 4 contains the latest complete proprietary version 1.1 Software V&V report (04508005). The non-proprietary version and withholding affidavit will be submitted by July 14, 2010. Submittal of the non-proprietary version and withholding affidavit is tracked by Responses to Licensee Open Items to be Resolved for SER Approval item 119. The latest proprietary version is 1.2, (an incremental report that addresses the differences from the version 1.1 report) was submitted by TVA Letter dated March 12, 2010 (Reference 4). Submittal of the non-proprietary version and withholding affidavit is tracked by Responses to Licensee Open Items to be Resolved for SER Approval item 101, due June 30, 2010.		Closed Date: 4/19/2010 Responsibility: NRC TVA provided the requested Software V&V Report.	Closed			Sorrento Radiation Monitoring
057			EICB (Singh)	4/19/2010 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).	Responder: TVA I&C Staff Date: 5/25/10 Firmware/software changes are done by connecting a laptop to a port on the front of the RM-1000 and placing the Operate/Calibrate switch in the Calibrate position. The first physical barrier to access is the location of the RM-1000 in the main control room which has limited access. The RM-1000 Operate/Calibrate switch is located behind the hinged front panel. The front panel must be opened (held closed by two thumbscrews) to access the switch. This provides a physical barrier to inadvertent switch operation. The system malfunction alarm is visible locally and will annunciate on the control board when the switch is in the Calibrate position. Administrative control of software/firmware updates is in accordance with TVA Standard Specification SS-E18.15.01, Software Requirements for Real-Time Data Acquisition and Control Computer Systems, and TVA procedures SPP-9.3, Plant Modifications and Engineering Change Control, and SPP-2.6, Computer		Open Requested information provided. NRC to review. Further Information Requested: Please confirm that the laptop is secure and access to this laptop is commensurate with the access to the equipment for which it will be used. Is the laptop dedicated for calibration of radiation monitors? If the laptop is used for more than one application then please describe the equipment for which the laptop may be used. In addition please explain how software security is assured and that only the software intended for the specific application is used. Is the connection to the radiation monitors made via a special cable/connectors? Please	Open Response path acceptable. TVA to submit the information for docketing.			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					Software Control. Approved changes to software/firmware are implemented utilizing the TVA work order process. (1) A laptop is not used to calibrate the monitor. All TVA in-house activities (calibration, alarm setpoint adjustment, etc.) are performed using the touchpad on the monitor. An external computer (laptop etc.) is only used to perform software or firmware updates. TVA does not perform software or firmware updates using in-house resources therefore no TVA computer is ever connected to the monitor. If software or firmware updates are required, they are approved via the TVA design change process previously described and implemented by a vendor representative under the TVA work order and Quality Assurance processes. (2) A laptop is not used to calibrate the monitor. (3) See the response to Item 1. (4) See the response to Item 1. (5) No. The connection between the computer and the RM-1000 is made via a standard RS-232 cable. (6) The RS-232 connection on the RM-1000 is used to upload new software versions and is not for calibration. (7) A physical control switch is located behind the front panel on the front edge of the Output Board to change between Operate and Calibration modes on the RM-1000. Placing the switch in the Calibrate position makes the monitor inoperable. (8) See the response to Item 1.		confirm that the RS-232 communication port of the radiation monitors will only be used for calibration purposes. Also please confirm that the radiation monitor will not be in operation during the calibration mode. In addition please confirm that password protection is provided for logging on to the laptop prior to start of calibration.				
058			EICB (Singh)	April 19, 2010 Please describe all digital communications used in the installed configuration.	Date: 5/25/10 Responder: Slifer There are no digital communications between the RM-1000 and any other plant system or component.		Closed Date: 4/19/2010 Responsibility: NRC Requested information provided. NRC to review.	Closed See ML101940236, Encl 1, Item 13			FSAR Section 7.5 Instrumentation Systems Important To Safety - SE Section 7.5.0
059			EICB (Singh)	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?	Date: Responder: Slifer (a) The technical manual is applicable to versions 1.1 and 1.2 of the software. (b) Version 1.2 was implemented April 1, 2008		Closed Date: 4/19/2010 Responsibility: NRC Requested information provided. NRC to review.	Closed			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
060			EICB (Carte)	April 19, 2010 The PAMS System Requirements Specification (SysRS) references RG 1.97 Rev. 3 where the FSAR References Rev. 2. Please explain.	Date: 5/25/10 Responder: Clark Duplicate of Item 47		Closed Date: 4/19/2010 Responsibility: NRC	Closed			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
061			EICB (Carte)	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.	Date: 5/25/10 Responder: Clark Duplicate of Item 48.		Closed Date: 4/19/2010 Responsibility: NRC	Closed			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
062			EICB (Carte)	April 19, 2010 Please provide 00000-ICE-30156 Rev. 6. The PAMS SysRS incorporates sections of this document by reference.	Date: 5/25/10 Responder: Clark Duplicate of Item 49		Closed Date: 4/19/2010 Responsibility: NRC	Closed			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
063			EICB (Carte)	April 19, 2010 How should the "shall" statements outside of the bracketed requirements be interpreted?	Date: 5/25/10 Responder: Clark Duplicate of Item 50		Closed Date: 4/19/2010 Responsibility: NRC	Closed			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
064			EICB (Carte)	3/12/2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the D3 Analysis was April 2, 2010.	Responder: Webb Date: 4/8/2010 The WBN2 Common Q PAMS provides redundant signal processing and indication of two RG-1.97 Type A variables: Core-Exit Temperature (CET) and Subcooled Margin. In the event of a common-cause failure of the Common Q PAMS, instrumentation diverse from Common Q is available for these two variables. Wide Range (WR) Hot Leg Temperature indication is specified as a diverse variable for CET in the Post-Accident Monitoring Design Criteria, WB-DC-30-7 (Attachment). WR Hot Leg Temperature indication from all four hot legs is available on control board indicators and plant computer displays. Temperature and pressure saturation margin calculations are also performed in the plant computer independently of Common Q utilizing different hardware and software. Isolated outputs from the Eagle 21 protection system are provided		Open TVA provided roughly a page of description as to why a D3 analysis is not required. The NRC requires additional information to determine the acceptability of this response.	Open TVA to provide requested information. TVA to provide date when information will be docketed.			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					to the plant computer for four WR Hot Leg Temperature channels and four WR RCS Pressure channels. The temperature channels and two of the pressure channels are the same as those used in the Common Q saturation margin calculations. The plant computer temperature saturation margin is calculated as the difference in the maximum temperature input and the saturation temperature of the minimum pressure input. The temperature saturation margin is displayed as point ID U0987. The plant computer pressure saturation margin is calculated as the difference in the minimum pressure input and the saturation pressure of the maximum temperature input. The pressure saturation margin is displayed as point ID U0984. Reactor Vessel Level Indication (RVLIS) is defined as a Type B1 variable. Redundant indication for this variable is provided by the core exit thermocouples/T_{hot} and reactor coolant system (RCS) pressure. So long as the RCS pressure is greater than the saturation pressure for the temperature indicated by the core exit thermocouples/T_{hot}, there is reasonable assurance that a steam void has not formed in the core and the vessel is full. This is indicated by the subcooled margin monitor/plant computer previously discussed.						
065			EICB (Carte)	3/12/2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the FMEA was August 31, 2010.	Responder: WEC Date: 5/25/10 Attachment 37 contains the proprietary version of the Common Q PAMS FMEA and the affidavit for withholding. A non-proprietary version will be provided at a later date.		Open 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
066			EICB (Carte)	3/12/2010 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.	Responder: WEC Date: 5/25/10 Per Westinghouse letter WBT-D-1961 (Reference 8), these items are available for audit at the Westinghouse Rockville office. • WNA-SD-00250-WBT Rev. 0 (AC160) was submitted on TVA letter to the NRC dated August 20, 2010 (Reference 7). • WNA-SD-00248-WBT, Rev. 0 (FPDS) was submitted on TVA letter to the NRC dated SEPT 2, 2010 (Reference 8).		Open Regulations require that the NRC review be based on docketed material. The SRP directs that reviewer to review the Software Design Specification (sometimes called an SDD). NNC 8/25/10: By letter dated august 20, 2010, one (Reference 7) SDD has been	Open TVA to provide remaining information. NRC to review information provided.			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
							provided.				
067			EICB (Carte)	3/12/2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the "Commercial Grade Dedication Instructions for AI687, AI688, Upgraded PC node box and flat panels." was September 28, 2010.	Responder: WEC Date: 5/25/10 The following status is from the revised WB2 Common Q PAMS ISG-6 Compliance Matrix submitted in response to Item 43: a. AI687, AI688 – Scheduled for September 28, 2010 b. Upgraded PC node box and flat panel displays – Per Westinghouse letter WBT-D-2024 (Reference 7), these items are available for audit at the Westinghouse Rockville office. c. Power supplies – Per Westinghouse letter WBT-D-2035 (Reference 12), these items are available for audit at the Westinghouse Rockville office. To be addressed during 9/20-9/21 audit		Open Regulations require that the NRC review be based on docketed material.	Open TVA to provide requested information. TVA to provide date when information will be docketed.			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.0 & 7.5.2
068			EICB (Carte)	3/12/2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the "Summary Report on acceptance of AI687, AI688, Upgraded PC node box, flat panels, and power supplies." was September 28, 2010.	Responder: WEC Date: 5/25/10 The following status is from the revised WB2 Common Q PAMS ISG-6 Compliance Matrix submitted in response to Item 43: a. AI687, AI688 – Scheduled for September 28, 2010 b. Upgraded PC node box – Per Westinghouse letter WBT-D-2024 (Reference 7), this item is available for audit at the Westinghouse Rockville office. c. Flat panel displays – Per Westinghouse letter WBT-D-2024 (Reference 7), this item is available for audit at the Westinghouse Rockville office. d. Power supplies – Per Westinghouse letter WBT-D-2035 (Reference 12), these items are available for audit at the Westinghouse Rockville office. To be addressed during 9/20-9/21 audit		Open Awaiting for document to be docketed by TVA.	Open TVA to provide requested information. TVA to provide date when information will be docketed.			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
069			EICB (Carte)	3/12/2010 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.	Responder: WEC Date: 5/25/10		Open Awaiting for document to be docketed by TVA.	Open Due 11/30/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
070			(C	3/12/2010	Responder: WEC Date: 5/25/10		Open	Open			FSAR Section 7.5.1 Post Accident

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				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.	Per Westinghouse letter WBT-D-1961, (Reference 8) this document is available for audit at the Westinghouse Rockville office. WNA-VR- 00283-WBT, Rev 0 was submitted on TVA letter to the NRC dated August 20, 2010 (Reference 7). The submitted V&V did not address the Requirements Traceability Matrix and did not summarize anomalies. At the September 15th public meeting, Westinghouse agreed to include the Concept and Definitions Phase Requirements Traceability Matrix (RTM) in the next IV&V report along with partial Design Phase updates to the RTM.		Regulations require that the NRC review be based on docketed material. Awaiting for document to be docketed by TVA. NNC 8/25/10: Requirements Phase SVVR provided by TVA letter dated 8/20/10.	NRC to review information provided			Monitoring Instrumentation - SE Section 7.5.2
071			EICB (Carte)	3/12/2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the "Design Phase V&V Report" was July 30, 2010.	Responder: Clark Date: 5/25/10 Verify schedule dates for the next submittal of this matrix against update WEC schedule.		Open Awaiting for document to be docketed by TVA.	Open Due 9/23/10			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
072			EICB (Carte)	3/12/2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the "Implementation Phase V&V Report" was September 30, 2010.	Responder: Clark Date: 5/25/10 Verify schedule dates for the next submittal of this matrix against update WEC schedule.		Open 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
073			EICB (Carte)	3/12/2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the "Integration Phase V&V Report" was October 29, 2010.	Responder: Clark Date: 5/25/10 Verify schedule dates for the next submittal of this matrix against update WEC schedule.		Open 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
074			EICB (Carte)	3/12/2010 By letter dated March 12, 2010 TVA stated that the target submittal date for the "Final V&V Report" was November 30, 2010.	Responder: Clark Date: 5/25/10 Verify schedule dates for the next submittal of this matrix against update WEC schedule.		Open 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
075			EICB (Carte)	3/12/2010 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.	Responder: Clark Date: 5/25/10 Verify schedule dates for the next submittal of this matrix against update WEC schedule.		Open 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
076			EICB (Carte)	3/12/2010 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.	Responder: Clark Date: 5/25/10 Verify schedule dates for the next submittal of this matrix against update WEC schedule.		Open 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
077			B (C	3/12/2010	Responder: WEC Date: 5/25/10		Open	Open			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				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.	The availability dates for these documents are included in the revised WBN2 Common Q ISG-6 Compliance Matrix submitted in response to item 43. As stated in the March 12, 2010 letter (Reference 4), the dates in the matrix are the dates the documents will be available to TVA to prepare for submittal or being "Available for Audit". They do not reflect the dates the documents will be submitted to the NRC. Expected submittal date is two weeks after TVA receives the document. Note: There is a typo in the matrix in line item 33. The power supply entry date says TBD. Per Westinghouse letter WBT-D-2035 (Reference 12) this item is complete and the documents are available for audit at the Westinghouse Rockville office. The Licensing Technical Report now includes a SPM compliance matrix. Submit a revised response.		Open Regulations require that the NRC review be based on docketed material. Awaiting for document to be docketed by TVA.	TVA to provide requested information. TVA to provide date when information will be docketed.			Section 7.5.2
078			EICB (Garg)	4/26/2010 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. (Q1) Also, confirm whether this WCAP has been reviewed by NRC, if yes, provide reference and if not, then submit the WCAP to NRC. (Q2) Also provide the justification for this reference to WBN2. (Q3)	Responder: Clark Date: 5/25/10 (Q1) The cross reference information is corrected in FSAR Amendment 100 submitted to the NRC on TVA letter to the NRC dated August __, 2010 (Reference 2). (Q2) WCAP-13869 revision 1 was previously reviewed under WBN Unit 1 SER SSER 13 (Reference 8). Unit 2 references revision 2. A review to identify the differences and justify their acceptability will be performed by September 30, 2010 and submitted to the NRC no later than November 15, 2010. (Q3) Westinghouse confirmed the applicability of this WCAP to Watts Bar Unit 2 in letter WBT-D-1321, Final Response to WBT-TVA-0713 Unit 2 WCAP Reviews, dated December 2, 2009 (Reference 10).		Open Awaiting TVA response.	Open FSAR AMD 100 SSER 13 for unit 1 references rev. 1 of WCAP 13869. Rev. 2 is used for Unit 2. Identify all the differences between Rev.1 and Rev.2 and justify their acceptability.			
079			EICB (Garg)	4/26/2010 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.(Q1) Why the latest ISA standard endorsed by NRC has not been used? (Q2) Also reference 5 is a topical report for	Responder: Clark Date: 5/25/10 (Q1) WBN Unit 2 is licensed based on WBN Unit 1. The WBN Unit 1 licensing basis is ISA-DS-67.04-1982. Therefore this methodology is used for the same SSDs for WBN Unit 2. This maintains consistency in the licensing bases for both units.		Closed This item is closed as it will be reviewed under item 154. FSAR AMD 100	Closed			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				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. (Q3) 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. (Q4) and add reference to other documents if it is discussed in some other document. (Q5) Provide this document to the staff for review and approval. (Q6)	(Q2) Please refer to the response to Q1. (Q3) FSAR Reference 4 is the Eagle 21 Topical Report. FSAR Reference 5, WCAP-17044, Westinghouse Setpoint Methodology for Protection Systems Watts Bar Unit 2 submitted under TVA letter to the NRC dated February 12, 2010 (Reference 11) discusses the setpoint methodology used for Eagle 21 loops. (Q4) (Q4) FSAR Amendment 100 which was submitted on TVA letter to the NRC dated September 1, 2010 (Reference 2) incorporates as-found and as-left setpoint tolerance discussion into section 7.1.2.1.9, adds EEB-TI-28, Setpoint Methodology to the section 7.1 references and adds a reference to 7.1.2.1.9 to section 7.2.1.1.10. (Q5) Please refer to the response to Q4. (Q6) EEB-TI-28, Setpoint Methodology was submitted in TVA letter to the NRC dated May 13, 2010 (Reference 12).							
080			EICB (Singh)	4/26/2010 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.	Responder: WEC A revised note was included in the 7/30 letter along with justification for the note.		Open	Closed NRC review complete.			
081			EICB (Carte)	5/6/2010 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: (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)	Responder: Merten/WEC The codes and standards documents listed in Section 7 of 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 WBN Unit 2 Common Q PAMS is designed in accordance with the approved Common Q topical report and approved SER and the codes and standards on which the SER was based. Since the current versions referenced are not applicable to WBN Unit 2, there is no basis for a comparison review. Bechtel to develop a matrix and work with Westinghouse to provide justification.		Open ML101600092 Item No.1: There are three sets of regulatory criteria that relate to a Common Q application (e.g. WBN2 PAMS): (a) Common Q platform components – Common Q TR (b) Application Development Processes – Common Q SPM (c) Application Specific – current regulatory criteria The Common Q Topical Report and associated appendices primarily addressed (a) and (b). The Common Q SER states: '…Appendix 1, "Post Accident Monitoring Systems," provides the functional requirements	Open TVA to provide requested information. TVA to provide date when information will be docketed.			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				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.			and conceptual design approach for upgrading an existing PAMS based on Common Q components (page 58, Section 4.4.1.1, "Description")…On the basis of the above review, the staff concludes that Appendix 1 does not contain sufficient information to establish the generic acceptability of the proposed PAMS design (page 56, Section 4.4.1.3, "PAMS Evaluation")…' The NRC did not approve the proposed PAMS design. Section 6, "References," and Section 7, "Codes and Standards Applicable to the Common Q PAMS," of the PAMS Licensing Technical Report contain items that are not the current regulatory criteria. Please provide an explanation of how the WBN2 PAMS conforms with the application specific regulatory criteria applicable to the WBN2 PAMS design. For example IEEE Std. 603-1991 Clause 5.6.3, "Independence Between Safety Systems and Other Systems," and Clause 6.3, "Interaction Between the Sense and Command Features and Other Systems," contain application specific requirements that must be addressed by a PAMS system. Awaiting TVA Response.				
082			EICB (Carte)	5/6/2010 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	Responder: WEC Date: 6/18/10 These components can be found in the Summary Qualification Report Of Hardware Testing For Common Q Applications, 00000-ICE-37764, Rev 3 and		Open Regulations require that the NRC review be based on docketed material. Awaiting for document to be docketed by TVA.	Open Updated compliance matrix provided. Awaiting WEC submittal of			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				activities that address qualification of all changes specifically:	TWICE Qualification Status Report, WNAQR-00011-SSP Per Westinghouse letter WBT-D-2024, (Reference __) dated June 9, 2010, these documents are available for audit at the Westinghouse Rockville Office. TVA provided information by letter dated July 30, 2010 (ML102160349) - See Enclosure 1 Item No. 7. Revision 1 of the Licensing Technical Report provides additional detail on the platform specific to WBN2 and references to the evaluation documentation.		NNC 8/9/10: per telephone conversation on 8/5/10, it is not clear how Westinghouse Commercial Grade Dedication Plans and Reports for Digital I&C. Westinghouse agree to present to the NRC in a public meeting on August 17, 2010, and explanation of how their system addresses regulatory criteria for both commercial grade dedication and equipment qualification. NNC 8/25/10: In the August 17, 2010 public meeting Westinghouse stated that the CDI were the plans. The NRC requested that the plans and associated reports be docketed.	documents to TVA.			
083			EICB (Carte)	May 6, 2010 Please identify all FPGAs in the new or changed PAMS hardware.	Date: 6/18/10 Responder: WEC The FPGAs used in the Common Q PAMS AC160 module are listed in Westinghouse letter WBT-D-2166, (Attachment 5), which provides both the proprietary and non-proprietary information. Attachment 6 (provided by Reference 11) contains the affidavit for withholding for WBT-D-2166-P-Attachment (contained in Attachment 5).. Additionally, Westinghouse states in, Westinghouse Letter WBT-D-2170, (Reference 10) that their review of Flat Panel displays and PC Node Boxes concluded that they do not contain any FPGAs.		Closed Date: 5/6/2010 Responsibility: TVA	Closed			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
084			EICB (Carte)	May 6, 2010 Please provide: TVA Design Criteria WB-DC-30-7 Rev. 22, Post Accident Monitoring Instrumentation.	Date: 6/18/10 Responder: Clark Attachment 5 contains Design Criteria WB-DC-30-7 Rev. 22, Post Accident Monitoring Instrumentation.		Closed Date: 5/6/2010 Responsibility: TVA Document received	Closed			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
085			B (C	5/6/2010	Responder: WEC		Open	Open			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				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.	Is the WEC ISG4 evaluation inadequate? Operation of the MTP as a barrier device. MTP Fails as a barrier device. Describe what prevents a MTP failure from propagating to the AC160? Node loss on the bus? Bus loss? Revise the ISG4 section of the Licensing Technical Report (Rev. 2) to provide a more detailed description of the MTP as a barrier device.		A response will be provided by 10/31/10 NNC 8/11/10: Design information should be available now. By letter dated July 30, 2010 (ML102160349) TVA stated that the MTP was connected to a Red Hat Linux Server (see Enclosure 1, Item No. 14 part b.). It is presumed that this server is not safety-related. IEEE 603-1991 Clause 5.6.3(1) states, "Isolation devices used to affect a safety system boundary shall be classified as part of the safety system." Please describe how the MTP serves as the isolation device.	Need WEC to provide make and model information after FAT. NNC 8/25/10: Disagree with path forward input by TVA above. An explanation is about the design is needed.			Section 7.5.2
086			EICB (Carte)	5/6/2010 The PAMS Licensing Technical Report (WNA-LI-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.	Responder: WEC Date: 5/24/10 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 WBN Unit 2 Common Q PAMS is designed in accordance with the approved Common Q topical report and approved SER and the regulatory documents on which the SER was based. Since the current versions referenced are not applicable to WBN Unit 2, there is no basis for a comparison review. Rev 0 of the Licensing Technical Report references Rev. 1 of ISG4		Open The response does not address the request. This request was regarding guidance that did not exist at the time that the CQ topical report was reviewed. The WBN2 PAMS application must address current regulatory criteria.	Open TVA to provide requested information. TVA to provide date when information will be docketed.			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2
087			EICB (Singh)	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.	Date: 5/24/10 Responder: Slifer The rate meter is model RM-1000. The software is version 1.2		Closed Date: 5/6/2010 Responsibility: TVA	Closed			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2.
088			EICB (Singh)	May 6, 2010 Regarding the Sorrento RM-1000 Digital Radiation	Date: 5/24/10 Responder: Slifer		Closed Date: 5/6/2010	Closed			FSAR Section 7.5.1 Post Accident Monitoring Instrumentation - SE Section 7.5.2.

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				Processor: Please provide prior software V&V reports. The latest report only addresses Version 1.2.	See response to item 56		Responsibility: TVA				
089			EICB (Carte)	5/6/2010 What FSAR functions are implemented using Foxboro Intelligent Automation (IA)?	Responder: Clark The list of FSAR functions is listed in TVA letter dated March 12, 2010, Enclosure 1, item 12 FSAR Section 7.7.11 will add a discussion of the DCS. See item 4 for questions on failure modes and mesh network.		Open	Open NRC review			NNC: Docketed response states that the applicable FSAR Sections are: 5.6 - 7.2.2.3.2 - Garg 7.2.2.3.3 - Garg 7.2.2.3.4 - Garg 7.2.2.3.5 - Garg 7.2.3 - Garg 7.6.8 - 7.7.1.6 - 7.7.1.7 - 7.7.1.8 - 9.3.4.2.1.C - 10.4.7.2 -
090			EICB (Carte)	5/6/2010 What FSAR Systems are implemented using Foxboro Intelligent Automation (IA)?	Responder: Clark Date: 5/25/10 The list of FSAR functions is listed in TVA letter dated March 12, 2010, Enclosure 1, item 12 FSAR Section 7.7.11 will add a discussion of the DCS. See item 4 for questions on failure modes and mesh network.		Open	Open NRC review			
091	7.4	7.4	EICB (Darbali)	May 20, 2010 TVA to submit excerpts of EDCRs 52421, 52987, 52321, 52351 and 52601	Date: 5/25/10 Responder: Clark 1. Attachment 6 contains the EDCR 52421 excerpt 2. Attachment 7 contains the EDCR 52987 excerpt 3. EDCR 52321 is scheduled to be issued Oct 13, 2010. Submittal of EDCR 52321 excerpts is tracked by Responses to Licensee Open Items to be Resolved for SER Approval item 103 due October 31,2010. 4. EDCR 52351 is scheduled to be issued November 30, 2010. Submittal of EDCR 52351 excerpts is tracked by Responses to Licensee		Closed Two EDCRs have been submitted. TVA has agreed to submit the remaining EDCRs.	Closed Item is Closed and replaced by items 103, 104 and 118.			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					Open Items to be Resolved for SER Approval item 104 due December 15, 2010. 5. Attachment 8 contains the EDCR 52601 (RVLIS) excerpt. The RVLIS EDCR has been split into two EDCRs. The second EDCR is 55385. Submittal of EDCR 55385 excerpts is tracked by Responses to Licensee Open Items to be Resolved for SER Approval item 118 due November 15, 2010.						
092			DORL (Bailey)	5/20/2010 TVA to review Licensee Open Item list and determine which items are proprietary.	Responder: Hilmes Next review due 6/18/10		Open	Open Continuous review as items are added			
093			EICB (Garg)	May 20, 2010 TVA to submit a letter committing to include setpoint methodology discussion in the FSAR no later than amendment 100.	Date: 5/25/10 Responder: Knuettel Letter Sent 5/25/10		Closed	Closed			
094			EICB (Garg)	5/20/2010 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	Responder: Clark Date: 5/25/10 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.		Closed NRC staff will review.	Closed			
095	7.8.1, 7.8.4	XX	EICB (Darbali)	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.	Date: Responder: Q1: Monitoring of the reactor coolant system relief valve position is the same as Unit 1. Q2: The reactor trip on turbine trip is the same as Unit 1.		Closed Response is satisfactory. Item closed.	Closed NRC Review			
096	7.7.5	XX	EICB (Darbali)	5/20/2010 TVA to provide information on implementation of IEN 79-22 and how it is addressed in the FSAR	Responder: IEN 79-22 is not specifically listed or discussed in the WBN Unit 1 UFSAR or Unit 2 FSAR. IEN 79-22 is one of the precursors to 10CFR50.49 environmental qualification. The initial SQN and WBN Unit 1 response was developed prior to TVA implementing 10CFR50.49. As such, the discussion of safety-related actuations is no longer valid. In implementing 10CFR50.49, TVA upgraded susceptible safety-related devices located in harsh environments to fully qualified		Open Response provided. NRC staff to review response. See Follow up question 283.	Open This items will be closed upon the resolution of item 283.			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					devices. For WBN Unit 2, only fully qualified safety-related devices are installed in areas susceptible to a high energy line break. The non-safety-related device/systems within the scope of IEN 79-22 are: 1. Steam generator power operated relief valve control system 2. Pressurizer power operated relief valve control system 3. Main feedwater control system 4. Automatic rod control system. Failure of these systems/devices due to a high energy line break is fully addressed in Chapter 15, "Accident Analysis" of the WBN Unit 2 FSAR.						
097	7.4.2	7.4	EICB (Darbali)	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.	Date: Responder: The deviation to not have RCS cold leg temperature displayed in the Auxiliary Control Room was approved as part of the WBN Unit 1 initial license. WBN Unit 2 complies with the WBN Unit 1 Licensing bases and this deviation is applicable to Unit 2.		Closed Response is satisfactory. Item closed.	Closed			
098	7.4.2	7.4	EICB (Darbali)	May 25, 2010 Unit 1 SER Supplement 7, RCS Cold Leg Temperature instrumentation. How does Unit 2 address this change?	Date: Responder: Refer to the response to Item 13 11 above.		Closed Response is satisfactory. Item closed.	Closed			
099			DORL (Bailey)	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	Date: Responder: WEC		Closed	Closed			Closed to Item 129

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				System (PAMS) Licensing Technical Report LTR-RCPL-10-XX 5. Software Requirements Specification WNA-SD-00239-WBT, Rev. 1						
100			EICB (Carte)	5/20/2010 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	Responder: WEC The documents, and affidavits for withholding for the listed documents were submitted to the NRC on TVA letter to the NRC dated April 8, 2010.		Closed TVA has not yet docketed all items requested.	Closed			
101			DORL (Bailey)	4/12/2010 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-QR, 04508905-1 SP, 04508905-2SP, 04508905-3SP 4. Functional Testing Report 04507007-1TR	Responder: Slifer The documents, and affidavits for withholding for the listed documents were submitted to the NRC on TVA letter to the NRC dated July 15, 2010.		Open 	Open NRC review				TVA is working with the vendor to meet the 6/30 date, however there is the potential this will slip to 7/14.
102			EICB (Carte)	May 24, 2010 Provide a schedule for resolution of items 80, 82 and 83	Date: 5/24/10 Responder: WEC Item 80 – no later than July 23, 2010 Item 82 – no later than July 23, 2010 Item 83 – no later than July 23, 2010		Closed Date: Responsibility:	Closed			
103	7.4	7.4	EICB (Darbali)	5/27/2010 TVA to submit excerpts of EDCR 52321	Responder: Clark Date: 5/27/10		Open EDCR is scheduled for issue 10/13/10	Open Due 10/31/10			Submittal date is based on current EDCR scheduled issue date.
104	7.4	7.4	EICB (Darbali)	5/27/2010 TVA to submit excerpts of EDCR 52351	Responder: Clark Date: 5/27/10		Open EDCR is scheduled for issue 11/30/10	Open Due 12/15/10			Submittal date is based on current EDCR scheduled issue date.
105			EICB (Garg)	April 29, 2010 Provide As-Found/As-Left methodology procedure	Date: Responder: Langley		Closed Date: 5/27/10	Closed			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					Submitted copy of TI-28 May 14/2010.		Responsibility: NRC Replaced with new open item 176.				
106			EICB (Carte)	May 6, 2010 Confirm that the Unit 1 and Unit 2 CERPI systems utilize the same processor (AC110 or AC160).	Date: 5/25/10 Responder: Davies Westinghouse Unit 2 Drawing 6D31420, Watts Bar 2- CERPI AC160 Chassis Configuration, Rev. 2, shows the processors are model AC160, which are the same that are utilized for Unit 1, as shown on Westinghouse drawing 2D82995 Rev. 0, Watts Bar CERPI AC 160 Chassis Configuration.		Closed Date: Responsibility:	Closed			
107			EICB (Singh)	May 6, 2010 Describe any control functions associated with the RM-1000 radiation monitors.	Date: 5/28/10 Responder: Clark The RM-1000 radiation monitors do not provide any control functions.		Closed Requested information provided. NRC to review.	Closed See ML101940236, Encl 1, Item 29.			
108			EICB (Garg)	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	Date: 5/25/10 Responder: Webb/Hilmes This item is addressed as follows: **109.** FSAR Amendment 100 which was submitted on TVA letter to the NRC dated August __, 2010 incorporates as-found and as-left setpoint tolerance discussion into section 7.1.2.1.9, adds EEB-TI-28, Setpoint Methodology to the section 7.1 references and adds a reference to 7.1.2.1.9 to section 7.2.1.1.10. 2. TSTF-493, Rev. 4 Option A has been incorporated into the Unit 2 Tech Spec submittal dated February 2, 2010.		Closed This item is to be worked with item 51.	Closed This item is closed as it will be reviewed under item 154. FSAR AMD 100			
109. b			EICB (Carte)	5/6/2010 The reviewer was unable to identify the sections of the FSAR that correspond to the standard review plan sections7.9.	Responder: NA TVA Provided response		Open J. Wiebe accepted this action.	Open NRC Action			
109. a	7.8	XX	EICB (Darbali)	5/6/2010 The reviewer was unable to identify the sections of the FSAR that correspond to the standard review plan sections 7.8.	Responder: NA TVA Provided response		Open J. Wiebe accepted this action.	Open NRC Action			
110			(G	May 6, 2010	Date:		Closed	Closed			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				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.	Responder: Clark These items were docketed under ML073550386						
111			EICB (Carte)	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.	Date: 5/28/10 Responder: Clark The annunciator system is not described in the WBN Unit 1 UFSAR. As such it is not included in the WBN Unit 2 FSAR. With the exception of the ERFDS functions in section 7.5, the plant computer is not described in the WBN Unit 1 UFSAR. As such it is not included in the WBN Unit 2 FSAR.		Closed Date: Responsibility:	Closed			
112			EICB (Garg)	June 1, 2010 What are the differences between the Unit 1 and Unit 2 Eagle 21 Systems?	Date: Responder: Clark This information is included in TVA letter dated March 12, 2010, Enclosure 1, Item 10.		Closed	Closed			
113			EICB (Garg)	6/1/2010 Are the new model Eagle 21 power supplies installed in Unit 1?	Responder: Clark Yes. Attachment 9 provides a work order excerpt and unit difference form. Revised attachment provided on 7/30 letter.		Closed Attachment 9 does not show the vendor and model no. of the Power Supply.	Closed			
114	7.2	7.2	EICB (Garg)	6/1/2010 Provide the resolution of the Eagle 21 Rack 5 lockup on update issue.	Responder: WEC The following non-proprietary response was developed from proprietary Westinghouse letter WBT-D-2027 (Reference 11), which provided the resolution of this issue. Westinghouse approved this non-proprietary response via e-mail from A. Drake to M. Clark on June 15, 2010. As documented in WBT-D-1917, "Eagle-21 Rack 5 LCP Diagnostic Failures", (Reference 14), during the factory acceptance testing for the Unit 2 Eagle-21 System, Westinghouse noted an occasional diagnostic failure while performing the parameter update function on Rack 5. Subsequently, TVA provided to Westinghouse for testing and examination, a Loop Control Processor (LCP) board removed by TVA from Unit 1 Rack 5 for life cycle-based preventive		Open	Open The write-up shows that there was differences between Unit 1 and 2 but was not identified to NRC in earlier response. Are there any more surprises like this?			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					maintenance. TVA personnel familiar with Unit 1 had indicated they had not experienced problems when performing parameter updates on Unit 1 Rack 5. Based on Westinghouse examination and testing, a difference in hardware was identified between the Unit 1 LCP shipped to Westinghouse, the new Unit 2 Rack 5 LCP, and an older LCP (older than the Unit 1 LCP) from the Westinghouse Eagle 21 test bed. Installed on the Unit 1 LCP was a different version of an 80287 math coprocessor chip (80287 XL). This version of the 80287 had an improved specification for calculation speed. Use of this chip on both the Unit 2 LCP and the test bed LCP allowed proper performance of the LCP when making parameter updates using the Unit 1/Unit 2 Rack 5 software. Also, use of the slower 80287 on any of the three LCP boards caused failure in parameter update with the Unit 1/Unit 2 Rack 5 software. Through investigation of historical records, Westinghouse found that the 80287 XL chip had been evaluated and used by its former Process Control Division (now Emerson) for this application, but the current Westinghouse documentation had not been updated. This part has now been evaluated, and the Westinghouse documentation and drawing have been revised to allow use of the 80287 XL coprocessor. The 80287 XL coprocessor has been installed on the Unit 2 Rack 5 LCP, and the appropriate factory acceptance testing has been successfully conducted using this updated board. Additionally, the LCP boards in the balance of the Unit 2 racks have been updated with the 80287 XL coprocessor.						
115			EICB (Carte)	2/25/2010 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	Responder: Clark Response states that Eagle21 and the CQ PMAS MTP have communications links to non-safety-related systems.. The original design allowed printing from both the Operator Module (OM) and Maintenance and Test Panel (MTP) via the plant computer. This required both to be connected to the plant computer. Westinghouse did not perceive this as		Open The CQ PAMS SysRS (WNA-DS-01617-WBT Rev. 1 Figure 2..1-1) shows that the OM has a TCP interface to non-safety. Please provide a list of ALL digital communications paths to non-safety-related systems. NNC 8/12/10: The staff pointed	Open TVA to update response			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					an issue, because the standard Common Q PAMS design includes both the flat panel displays and individual control panel indicators. The Westinghouse Common Q team did not realize that WBN does not use the individual control panel indicators. As a result, the original design documents provided by Westinghouse included the connection from the OM to the plant computer. The TVA team did not realize that the Westinghouse design relied on the OM and MTP to be qualified isolation devices that protected the AC160 functions and individual control panel indicators from interference from the plant computer. It was not until a meeting was held with TVA, Westinghouse and Bechtel to discuss the design of the OM that the issues came to light. That was when Westinghouse understood that the OM was the PAMS display and WBN did not use individual control panel indicators and TVA/Bechtel understood that the OM was being credited as the "qualified isolation device". It became apparent at the meeting to both TVA/Bechtel and Westinghouse that the original design was not acceptable. The team then agreed to delete the OM connection to the plant computer.		out this inconsistency to TVA. The staff could consider PAMS Licensing Technical Report to be a correction if TVA specifically identified the inconsistency to the staff, or identified where the error in the SysRS, SRS, & SDS had already been identified. This appears to be a feature in the CQ TR appendix that was carried forward to WBN2 PAMS inappropriately				
116			EICB (Garg)	6/3/2010 The Eagle 21 boards originally had a conformal coating. However, the new boards do not. Provide the basis for deletion of the conformal coating.	Responder: WEC The response to this RAI was submitted in TVA letter to the NRC dated June 21, 2010. As previously stated the technical reason for the coating "was to ensure performance at high humidity, with the major concern being the effects of humidity on low level analog circuitry". Westinghouse letter (WBT-D-2036, TENNESSEE VALLEY AUTHORITY WATTS BAR NUCLEAR PLANT UNIT 2, Basis for Removal of Conformal Coating Requirement on Eagle 21 Boards (Reference 7) does not credit the conformal coating as addressing the tin whisker issue. As addressed in Resolution of Generic Safety Issues: Issue 200: Tin Whiskers (NUREG-0933, Main Report with Supplements 1–33), "CONCLUSION The low number of reported events associated		Close	Open How is the tin whisker issue is addressed. I think conformal coating was credited to protect against tin whisker issue.				Letter sent to Westinghouse requesting the basis information and documentation for submittal to the NRC.

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					with this issue, the lack of any increasing trend, the lack of any apparent decrease in reliability of systems or components due to tin whiskers, the existence of applicable regulatory requirements and programs (i.e., 10 CFR Part 21, the maintenance rule requirements, and the Reactor Oversight Program), and the issuance of Information Notice 2005-251878 to alert licensees collectively indicated that tin whiskers did not meet the requirements of NRC Management Directive 6.4. "Generic Issues Program," for further pursuit. Based on the considerations discussed above, RES recommended that the issue be returned to the originator to be evaluated for other possible options. As a result, the issue was DROPPED from further pursuit.1879" Based on the preceding NRC position no further discussion of the tin whisker issue is required.						
117	7.1	7.1	EICB (Garg)	6/3/2010 Does TVA use a single sided or double sided methodology for as-found and as-left instrument setpoint values. (RIS2006-7)	Responder: Webb/Powers Reactor Protection System (RPS) (comprised of Reactor Trip (RPS) and Engineered Safety Features Actuation System (ESFAS)) setpoint values are monitored by periodic performance of surveillance tests in accordance with Technical Specification requirements. TVA uses double-sided as-found and as-left tolerances for Reactor Trip and ESFAS trip setpoint surveillance tests as described in FSAR amendment 100.		Open	Open TVA needs to address that trip setpoint and allowable value uncertainties are not reduced by the reduction factor for the single sided reduction factor. TVA response not acceptable. TVA need to clarify if single sided methodology has been used in calculating trip setpoint and allowable value and if it is used then provide justifications.			
118	7.4	7.4	EICB (Darbali)	6/8/2010 TVA to submit excerpts from EDCR 55385	Responder: Clark		Open TVA has agreed to submit the EDCR by 11/15/10.	Open Due 11/15/10			Submittal date is based on current EDCR scheduled issue date. Note: The RVLIS EDCR has been split into two EDCRs. The first EDCR is 52601 (Open Item 91) The second EDCR is 55385.
119			B (S in	June 10, 2010	Date: Responder:		Closed	Closed			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				Submit the non-proprietary version of Sorrento/GA software V&V report version 1.1 04508005 and withholding affidavit	Provided 7/15/2010		Date: 07/29/10 Responsibility: NRC TVA provided the non-proprietary version of V&V report version 1.1 04508005 and the withholding affidavit via TVA letter dated July 15, 2010.				
120			EICB (Carte)	5/6/2010 In reviewing the Maintenance Test Panel (MTP) link to the plant computer, the reviewer noted that the MTP software is not purely one directional in that it does allow low level handshaking to support the communications protocol. M. Merten/S. Hilmes a. The reviewer stated that this was a potential concern and requested additional information on how the MTP was protected from feedback from the plant computer. b. The reviewer stated that in the Oconee review, it was found that the non-safety related data diode was easier to credit than a software barrier. It was suggested we look at changing our position to credit the data diode provided it provided a physical barrier to feedback. Need OWL Information SAH c. During this discussion, the reviewer asked if we had information from Westinghouse that demonstrated the ability of Common Q PAMs to withstand a data storm. A verbal response was that this was required by contract as part of the Factory Acceptance Test and would not be available until the FAT was completed. Need to docket the verbal response and provide a date the information will be available. Believe we stated this in the Tech Report. SAH	Responder: Hilmes/Merten/Costley TVA responded by letter dated July 30, 2010 (ML102160349) - See Enclosure 1 Item No. 14: Detailed discussion is provided including technical information on the data diode. See Item 85. TVA not crediting the data diode.		Closed NNC 8/9/10: By letter dated July 30, 2010 (ML102160349) - See Enclosure 1 Item No. 14 - a. TVA stated no new information was found in Westinghouse documentation and that this information would be addressed in the V&V reports, and that the final hardware drawing will be provided. Neither of these two documents will contain the information requested. Please provide a detailed description of the MTP hardware connections and the software that perform the communications. b. The information provided indicates that the MTP is connected directly to a non-safety-related Red Hat Linux Server which is then connected to the data diode devices. Please describe the secure development and operational environment of these Red Hat Linux Servers. c. The answer is not complete. A chattering node is one of the failure modes of an Ethernet link. The MTP is connected to a Linux server over an Ethernet link. What prevents this link from locking up the MTP by a data storm?	Closed			
121			B (C	5/6/2010	Responder: Webb/Webber		Open	Open			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				If not previously provided, provide the requested information in items a, b and c for changes to all platforms between Unit 1 and 2. (Specific request for information on Foxboro IA). D. Webb/H. Webber a. Describe the hardware differences between unit 1 and unit 2 b. Identify which systems have been transferred to the Foxboro Spec 200 system that utilize a different platform in Unit 1. c. Identify the functions (ensure all control functions are addressed) that have been transferred to the Foxboro Spec 200 system that utilize a different platform in Unit 1.	The information in the letter provides references to previous submittals and a cross reference for the Foxboro I/A system.			NRC Review			
122			EICB (Carte)	June 14, 2010 Provide a date for completing the next revision of the Common Q PAMS System Requirements Specification.	Date: Responder: WEC This is a duplicate of NRC RAI Matrix Item 50 and is considered closed.		Closed	Closed			
123	7.7.3	7.4.1, 9.3.4.2 .4	EICB (Darbali)	6/14/2010 Safety Evaluation(SE) Section 7.7.3 Volume Control Tank Level Control System 1. Confirm whether or not any Instrumentation & Control (I&C) systems or equipment have been changed in the Volume Control Tank Level Control System. 2. In the original Safety Evaluation(SE), NUREG-0847 (ML072060490), Section 7.7.3, the staff addressed a concern that was raised by Westinghouse regarding an adverse control and protection system interaction. (…a single random failure in the VCT level control system could cause the letdown flow to be diverted to the liquid holdup tank). Based on your responses to the staff's questions related to this concern, the staff considered the issue resolved. Confirm that your responses are applicable to Unit 2.	Responder: 1. The devices in the Volume Control Tank Level Control System have been replaced. The Volume Control Tank Level Indication and Control functions have been relocated to the Foxboro IA system. The transmitters and indicators have been replaced with 4-20mA technology and the transmitters have been changed to Rosemount. 2. Upscale failure of LT-62-129A: Flow is diverted to the holdup tank but makeup continues to maintain level and alarms alert the operator. Upscale failure of LT-62-130A: Unlike Unit 1, the makeup control system uses inputs from both LT-62-130A and LT-62-129A. This results in a more robust design that eliminates a single point of failure for LT-62-130A. If transmitter LT-62-130A fails >20mA, the system disregards the input and uses the LT-62-129A signal for control. If transmitter LT-62-130A is high but <20 mA, the deviation between the two causes an alarm, and the diverter valve loop and makeup control both use the last good value of the average. Once the level goes high or low, alarms on LT-62-129A alert the operator to take action to mitigate.		Closed Follow up question is to request a logic diagram 284.	Closed			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
124	7.7.5	XX	EICB (Darbali)	6/14/2010 SE Section 7.7.5 IE Information Notice 79-22 1. In the original SE, Section 7.7.5, the staff determined that Information Notice 79-22 was resolved based on your statement that the control and logic functions of the Watts Bar plant were identical to the Sequoyah plant, thus making the Sequoyah evaluation applicable to Watts Bar. Confirm that your statements regarding the control and logic functions are applicable to Unit 2's control and logic functions or describe any changes and why they are acceptable.	Responder: Duplicate of item 96		Closed	Closed			
125	7.7.8	7.7.1.12	EICB (Darbali)	6/14/2010 SE Section 7.7.8 AMSAC 1. Confirm whether or not any I&C systems or equipment have been changed in the AMSAC? Describe the changes, if any. 2. NUREG-0847, Supplement 14 (ML072060486), documents the staffs review of FSAR Amendment 81 that found that the AMSAC automatic initiation signal [to start the turbine-driven and motor-driven AFW pumps] was not added to the logic diagram for the AFW system shown in FSAR Figure 7.3-3, Sheet 2. The issue was resolved in Amendment 88. Confirm that this signal has been incorporated in the Unit 2 drawings.	Responder: 1. The AMSAC system was not previously installed in Unit 2. EDCR 52408 installs the system. Attachment 3 contains excerpts from the EDCR that describe the Unit 2 system and how it differs from the Unit 1 system. 2. EDCR 52408 incorporates the AMSAC system into the Unit 2 drawings.		Open Staff is reviewing response.	Open NRC review			
126	7.8	7.8	EICB (Darbali)	June 14, 2010 SE Section 7.8 NUREG-0737 Items 1. In the SER Cross Reference To FSAR table (06-25-09), section 7.8.5 'Confirm Existence of Anticipatory Reactor Trip Upon Turbine Trip (II.K.3.12)' has the following scope of change: Common Station Service Transformers (CSST) A and B, eight (8) vital inverters vs. four, fifth DG will be removed from FSAR, Double breaker, double breaker scheme of the new Watts Bar 500kV switchyard. Is any I&C system or component affected in the scope of this change?	Date: Responder: No I&C components or systems are affected by this change.		Closed	Closed			
127	7.2	7.2	EICB (Garg)	6/16/2010 Provide the status of the Eagle 21 Rack 2 RTD accuracy issue.	Responder: WEC/Clark The following non-proprietary response was developed from proprietary Westinghouse letter WBT-D-2034 (Reference 15), which provided the		Close	Open NRC to review.			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					details of this issue. Westinghouse approved this non-proprietary response via e-mail from A. Drake to M. Clark on June 16, 2010. During the Watts Bar Unit 2 Eagle 21 Factory Acceptance Test (FAT) of Rack 2 it was discovered that the narrow range Resistance Temperature Detector (RTD) temperature inputs were consistently reading about 0.2 °F higher than expected. Investigation revealed that these inputs are configured in the Loop Calculation Processor software as a shared RTD. This is incorrect. Rack 2 RTD's are not shared. Racks 6, 10 and 13 RTD's are. Configuration as a shared RTD input alters the equation used for the temperature calculation. Watts Bar Unit 1 uses identical software to Unit 2. Further investigation by Westinghouse showed this configuration error causes the Narrow Range Temperatures for only Division I to read 0.2 to 0.27 °F higher over the Narrow Range span of 510-650 °F. The 0.2 °F shift affects Thot and Tcold equally and thus will not affect the indication of Delta T. Tavg will indicate high by 0.2 °F which will decrease the Over temperature and Overpower set points; which is in the conservative direction.						
128	7.2	7.2	EICB (Garg)	6/18/2010 Submit the report on the final resolution of the Eagle 21 Rack 2 RTD input issue	Responder: WEC		Open	Open Staff will issue SE with this as an open item. Due 12/3/10			TVA Unit 1 has to address first and Unit 2 will follow Unit 1.
129			DORL (Bailey)	6/12/2010 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. Software Requirements Specification WNA-SD-00239-WBT, Rev. 1	Responder: WEC The documents, and affidavits for withholding for the listed documents were submitted to the NRC on TVA letter to the NRC dated July 14, 2010. Andy to Verify the documents have been submitted and then close this item.		Open	Open Due 7/16/10			
130			DORL (Bailey)	6/28/2010 TVA committed to revise in Amendment 100: table 4.3-1 to add ID and OD nomenclature to thimble guide tube dimensions .	Responder: Clark FSAR Amendment 100 submitted to the NRC on TVA letter to the NRC dated September 1, 2010 added the ID and OD nomenclature.		Open	Open FSAR AMD 100			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
131			DORL (Bailey)	6/28/2010 TVA committed to revise in Amendment 100: FSAR 3.10 references to eliminate (LATER) for document numbers.	Responder: Clark FSAR Amendment 100 submitted to the NRC on TVA letter to the NRC dated September 1, 2010 updated the reference document number information.		Open	Open FSAR AMD 100			
132			DORL (Bailey)	6/28/2010 TVA committed to revise in Amendment 100: FSAR 3.10 to correct differences between the list on page 3.10-4 and the numbering referenced by the text below the list.	Responder: Clark FSAR Amendment 100 submitted to the NRC on TVA letter to the NRC dated September 1, 2010 corrected the numbering in the text.		Open	Open FSAR AMD 100			
133			DORL (Bailey)	6/28/2010 TVA committed to revise in Amendment 100: FSAR 3.10 to remove references to IEEE 344-1987.	Responder: Clark FSAR Amendment 100 submitted to the NRC on TVA letter to the NRC dated September 1, 2010 removed the reference to IEEE 344-1987.		Open	Open FSAR AMD 100			
134			DORL (Bailey)	6/28/2010 TVA committed to revise in Amendment 100: FSAR Table 1.3-3 to reflect modifications to WBN2 .	Responder: Clark FSAR Amendment 100 submitted to the NRC on TVA letter to the NRC dated September 1 2010 updated the table to reflect the WBN2 modifications.		Open	Open FSAR AMD 100			
135	7.3.1	7.3.1	EICB (Darbali)	6/30/2010 TVA committed to add in Amendment 100 a reference to 7.3.1.1.1 in 6.2.5.2.b.	Responder: Clark FSAR Amendment 100 submitted to the NRC on TVA letter to the NRC dated Sept 1, 2010 added the reference.		Closed Amendment 100 received.	Closed			
136	7.3.2, 7.4	7.4, 5.6, 6.3.5	EICB (Darbali)	6/30/2010 TVA committed to replace in Amendment 100 the terms "service water" and "emergency raw cooling water" where they are used incorrectly with "Essential Raw Cooling Water" in sections 7.4, 6.2.1, Table 3.7-25, Table 9.3-3, Table 15.4-14, 1.9.2.7, 7.3.2.2.5 and 11.2.4.	Responder: Clark FSAR Amendment 100 submitted to the NRC on TVA letter to the NRC dated Sept 1, 2010 updated the "service water" and "emergency raw cooling water" nomenclature as required to read essential raw cooling water.		Closed Amendment 100 received.	Closed			
137			EICB (Carte)	6/17/2010 Several WBN2 PAMS documents contain a table titled, “Document Traceability & Compliance.” (a) Please explain the purpose of this table. (b) Please describe how this table is different than a reference list. (c) What does it mean for a document to be listed in this table?	Responder: WEC (a) The table is to show the document hierarchy (i.e., what documents are predecessors to the document in relationship to the design life cycle). (b) This table is showing a hierarchical relationship between documents. These documents are also in the reference list along with other documents that have no hierarchical relationship with the document. (c) This question is similar to (a). It is to identify the documents that are predecessors to this		Open Carte accepted this response 9/1	Open TVA to provide date when information will be docketed.			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					document in relationship to the design life cycle.						
138			EICB (Carte)	6/17/2010 By letter dated February 3, 2010, Westinghouse informed TVA that certain PAMS documentation has been completed. (a) The draft ISG6 states that a commercial grade dedication plan should be provided with an application for a Tier 2 review. By letter dated February 5, 2010, TVA stated that the commercial grade dedication plan was included in the Common Q Topical Report Section 11, "Commercial Grade Dedication Program." Section 11 includes a description of the Common Q Commercial Grade Dedication Program, and states: "A detailed review plan is developed for each Common Q hardware or software component that requires commercial grade dedication." Please provide the commercial grade dedication plans for each Common Q hardware or software component that has not been previously reviewed and approved by the NRC. (b) The draft ISG6 states that a commercial grade dedication report should be provided within 12 months of requested approval for a Tier 2 review. (i) Please provide 00000-ICE-37722 Rev. 0, "Commercial Grade Dedication Report for the QNX Operating System for Common Q Applications." (ii) Please provide WNA-CD-00018-GEN Rev. 3, "Commercial Dedication Report for QNX 4.25G for Common Q Applications."	**This item is used to track all Commercial Grade Dedication issues.** **This item will be updated with the results of the September 20 and 21 Commercial Grade Dedication and SDS RTM audit.**		Open	Open TVA to provide date when information will be docketed.			
139			EICB (Carte)	6/17/2010 The WBN2 PAMS System Requirements Specification (WBN2 PAMS SysRS) contains a table (see page iii) titled, "Document Traceability & Compliance," which states that the WBN2 PAMS SysRS was created to support no documents. Please explain.	Responder: WEC The table is to show the document hierarchy (i.e., what documents are predecessors to the document in relationship to the design life cycle). The table purpose is to provide references to internal Westinghouse documents and is not intended to reference TVA documents.		Open	Open TVA to provide date when information will be docketed.			WBN2 PAMS System Requirements Specification TVA docketed WNA-DS-01617-WBT Rev. 1, "RRAS Watts Bar 2 NSSS Completion Program I&C Projects Post Accident Monitoring System- System Requirements Specification," dated December 2009.
140			B (Cart	6/17/2010 The first requirement in the WBN2 PAMS SysRS (i.e.,	Responder: Clark WBN Unit 2 FSAR Amendment 100 Section		Open	Open TVA to provide			WBN2 PAMS System Requirements Specification

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				R2.2-1) states: "The PAMS shall be capable of operation during normal and abnormal environments and plant operating modes." The rational for this requirement is that it is necessary to meet Regulatory Guide (RG) 1.97. What document specifies which RG 1.97 variables are implemented in the Common Q based WBN2 PAMS?	7.5.1.8			date when information will be docketed.			TVA docketed WNA-DS-01617-WBT Rev. 1, "RRAS Watts Bar 2 NSSS Completion Program I&C Projects Post Accident Monitoring System- System Requirements Specification," dated December 2009.
141			EICB (Carte)	June 17, 2010 deleted	Date: Responder:		Closed	Closed			WBN2 PAMS System Requirements Specification TVA docketed WNA-DS-01617-WBT Rev. 1, "RRAS Watts Bar 2 NSSS Completion Program I&C Projects Post Accident Monitoring System- System Requirements Specification," dated December 2009.
142			EICB (Carte)	6/17/2010 The applicable regulatory guidance for reviewing the WBN2 PAMS SysRS would be IEEE 830 as endorsed by Regulatory Guide 1.172 and BTP 7-14 Section B.3.3.1, Requirements Activities – Software Requirements Specifications." IEEE 830-1994 Section 4.3.8, "Traceable," states: "A [requirements specification] is traceable of the origin of each of its requirements is clear…" 1. How did TVA ensure the traceability of each requirement in the WBN2 PAMS SysRS. 2. Explain the source(s) of the requirements present in the Post Accident Monitoring System's Software Requirements Specification. To clarify, many documents have requirements that are incorporated by reference into the SRS, but what served to direct the author to include those various documents in the SRS or, if the requirement is based on the System Requirements Specification, what directed the author to include the requirement there? 3. Clarify whether the unnumbered paragraphs in the Post Accident Monitoring System's Software Requirements Specification, such as in the section headings, or are all such sections simply considered to be informative? Does the same apply to documents referenced by	Responder: WEC **<u>This item is used to track all traceability issues with the Software Requirements Specification (SRS).</u>** At the September 15 public meeting in Rockville, the following actions were agreed to. These items address the traceability concerns with the Software Requirements Specification. 1. Westinghouse will perform completed a review of the Requirements Traceability Matrix(RT), using the issues identified at the 9/15 public meeting as a guide (documented below) and update the RTM as required. 2. The next issue of the IV&V report will include the Requirements phase review of the RTM and a partial review for the Design phase. 3. Westinghouse will add a comments column in the Requirements Traceability Matrix (RTM) to address items not in the SRS or SysRS. 4. IEEE 830 says you shouldn't have planning information in the SRS. Westinghouse has agreed to remove this information. 5. IEEE 830 says you shouldn't have process requirements in the SRS. Westinghouse has agreed to remove these requirements.		Open	Open TVA to provide date when information will be docketed.			WBN2 PAMS System Requirements Specification TVA docketed WNA-DS-01617-WBT Rev. 1, "RRAS Watts Bar 2 NSSS Completion Program I&C Projects Post Accident Monitoring System- System Requirements Specification," dated December 2009.

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				the SRS? Such as WCAP-16096-NP-A, Rev. 1A, "Software Program Manual for Common Q Systems," which is incorporated by reference in requirement R2.3-2 in the SRS. R2.3-2 [The PAMS software shall comply with the requirements and guidelines defined in WCAP-16096-NP-A, "Software Program Manual for Common Q Systems" (reference 5).] If any requirements are expressed in such unnumbered paragraph form instead of individually identified requirements, please list them, describe why they satisfy the fundamental requirement of unambiguity, and describe how they were verified. 4. Are there any sources of requirements in parallel with the Post Accident Monitoring System's Software Requirements Specification? Meaning does the SRS contain, explicitly or by reference, all the requirements that were used in the design phase for the application specific software, or do software design phase activities use requirements found in any other source or document? If so, what are these sources or documents? 5. References 12, 27, 29, and 31-44 in the Post Accident Monitoring System's Software Requirements Specification are various types of "…Reusable Software Element…". These references are used in the body of the SRS, for example:" R5.3.14-2 [The Addressable Constants CRC error signal shall be TRUE when any CAL CRC's respective ERROR terminal = TRUE (WNA-DS-00315-GEN, "Reusable Software Element Document CRC for Calibration Data" [Reference 12]).] They are also included via tables such as found in requirement R7.1.2-1 [The Watts Bar 2 PAMS shall use the application-specific type circuits and custom PC elements listed in Table 7.1-1.] Do the referenced reusable software element documents include requirements not explicitly stated in the SRS? If so what is their origin?	6. Westinghouse will perform and document an evaluation of the SRS to ensure compliance with Reg. Guide 1.172 and justify any deviations. 7. 25 issues identified by V&V where some requirements have not been included in the SDS (14) and SRS (11) at the revisions reviewed by V&V. Have these been addressed? Yes. The next revisions of the SDS and SRS address these issues. 8. Some hardware requirements are contained in the SRS instead of the System Design Specification (SDS). These will be removed from the SRS and incorporated into the next revision of the SDS. 9. RTM item R4.2-2 protection class software set to 0. Needs to be fixed internally write CAPs to revise the application restrictions document on AC160. 10. Westinghouse to improve the traceability of the tests that are performed with the function enable (FE) switch in the "ENABLE" position. 11. Westinghouse to revise documents to be consistent with referring to the FE switch in the "ENABLE" position 12. The flow of information is from the SysRS to the SDS (hardware) and SRS (software). Describe how the documents are used. Describe in 1.1 of the SysRS. Need a good write up of how the process works. 13. Westinghouse and TVA will develop a revised schedule for document submittals and provide it to the NRC no later than 9/30/10 14. TVA will update the Procurement Requisition Resolution Matrix and submit it to show how the Common Q PAMS design meets the contract requirements. 15. Westinghouse to add the Software Design Descriptions to the RTM 16. Westinghouse to clarify how requirements or						

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					documents are incorporated by reference into the Common Q PAMS requirements. 17. Westinghouse to review the use of "shall" outside of numbered paragraphs in requirements documents to ensure that all requirements are captured and clearly identified. 18. Westinghouse to resolve the following questions concerning SDDs a. Is the SDD a standalone document or will it incorporate the generic SDD by reference? b. What are the SDDs? c. PAMS is a delta document so how do we capture all the generic requirements for traceability. For Reusable Software Elements, Westinghouse to describe as qualified libraries by following the SPM and qualified using the Software Elements Test procedure under Appendix B program. Provide a summary of RSEDs generic WCAP. Westinghouse to determine if the WCAP was docketed under the AP1000 RSED concept is not in the SPM. WCAP-15927 AP-1000 does not discuss RCEDs. WCAP process was acceptable. RSEDs are listed in the SDD References.						
143			EICB (Carte)	6/17/2010 The WBN2 PAMS Software Requirements Specification (WBN2 PAMS SRS – ML101050202) contains a table (see page iii) titled, "Document Traceability & Compliance," which states that the WBN2 PAMS SRS was created to support the three documents identified (one of which is the WBN2 PAMS SysRS). Section 1.1, "Overview," of the WBN2 PAMS SRS states: "This document describes requirements for the major software components …" (a) Please list and describe each of the "major software components". Please include a description of any NRC review for each of these components. (b) Please list and describe each of the other software components. Please include a description of any NRC review for each of these components.	Responder: WEC Addressed in the 9/15 public meeting and 9/20 - 9/21 audit. A detailed explanation will be provided.		Open	Open TVA to provide date when information will be docketed.			WBN2 PAMS System Requirements Specification TVA docketed WNA-DS-01617-WBT Rev. 1, "RRAS Watts Bar 2 NSSS Completion Program I&C Projects Post Accident Monitoring System- System Requirements Specification," dated December 2009.

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				(c) What other documents contain the requirements for the other software components? The WBN2 PAMS System Design Specification (WBN2 PAMS SDS) contains a table (see page iii) titled, “Document Traceability & Compliance,” which states that the WBN2 PAMS SysRS was created to support the WBN2 PAMS SysRS. Section 1.1, “Purpose,” of the WBN2 PAMS SDS states: “The purpose of this document is to define the hardware design requirements …” (c) Do the WBN2 PAMS SRS and SDS, together, implement all of the requirements in the WBN2 PAMS SysRS? (d) Please briefly describe all of the documents that implement the WBN2 PAMS SysRS.							
144			EICB (Carte)	6/17/2010 The WBN2 PAMS Software Requirements Specification (WBN2 PAMS SRS) contains a table (see page iii) titled, “Document Traceability & Compliance,” which states that the WBN2 PAMS SRS was created to support the three documents identified (two of these documents have been provided on the docket). (a) Please describe the third document (i.e., NABU-DP-00014-GEN Revision 2, “Design Process for Common Q Safety Systems”). (b) Please describe the flow of information between these three documents. (c) Does the PAMS SRS implement the requirements in these three documents? (d) Please describe if and how these three documents are used in the development of the PAMS Software Design Description. (e) Do the WBN2 V&V activities include verification that the requirements of these three documents have been incorporated into the WBN2 PAMS SRS.	Responder: WEC (a) The purpose of NABU-DP-00014-GEN document is to define the process for system level design, software design and implementation, and hardware design and implementation for Common Q safety system development. This document supplements the Common Q SPM, WCAP-16096-NP-A. The scope of NABU-DP-00014-GEN includes the design and implementation processes for the application development. For a fuller description of the design process described in NABU-DP-00014-GEN please refer to the Design Process for AP1000 Common Q Safety Systems, WCAP-15927 on the AP1000 docket. Since this is a Westinghouse process document that is not specifically referenced in the SRS, it will be removed in the next revision of the document. (b) – Closed to items 142 and 145 (c) – Closed 142 (d) – Closed to Item 142 (e) WBN2 PAMS Software Requirements Specification (WNA-SD-00239-WBT, Rev. 1) refers to Document Traceability & Compliance table on page iii. This table has three entries; Design Process for Common Q Safety Systems (NABU-DP-00014-GEN, Rev. 2), RRAS Watts Bar		Open NRC Review and WEC to complete response. b-d to be addressed at public meeting and audit. Will require information to be docketed.	Open Responses to items a and e provided. Need response to b-d.			WBN2 PAMS Software Requirements Specification By letter dated April 8, 2010 (ML10101050203), TVA docketed WNA-SD-00239-WBT, Revision 1, “"RRAS Watts Bar 2 NSSS Completion Program I&C Projects, Software Requirements Specification for the Post Accident Monitoring System,” dated February 2010 (ML101050202).

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					2 NSSS Completion Program I&C Projects Post Accident Monitoring System – System Requirements Specification (WNA-DS-01617-WBT, Rev. 1), and RRAS Watts Bar 2 NSSS Completion Program I&C Projects Post Accident Monitoring System – System Design Specification (WNA-DS-01667-WBT, Rev. 1). IV&V performed a Requirements Traceability Assessment during which it reviewed Software Requirements Specification (WBN2 PAMS SRS, WNA-SD-00239-WBT, Rev. 1) against System Requirements Specification (WNA-DS-01617-WBT, Rev. 1) and System Design Specification (WNA-DS-01667-WBT, Rev. 1). Requirements within Software Requirements Specification that are referring to NABU-DP-00014-GEN, Rev 2, Design Process for Common Q Safety Systems, have also been reviewed for traceability and compliance. During IV&V's RTA effort the anomaly reports V&V-769 and V&V- 770 have been initiated and reported in the IV&V Phase Summary Report for the System Definition Phase, WNA-VR-00283-WBT, Rev. 0. IV&V has verified that the requirements in SRS are derived from the specified documents listed in the Document Traceability and Compliance Table of WBN2 PAMS SRS.						
145			EICB (Carte)	6/17/2010 The WBN2 PAMS System Design Specification (WBN2 PAMS SDS) contains a table (see page iii) titled, “Document Traceability & Compliance,” which states that the WBN2 PAMS SDS was created to support the WBN2 PAMS SysRS. (a) Does the WBN2 PAMS SDS implement all of the hardware requirements in the WBN2 PAMS SysRS? (b) Please briefly describe all of the documents that implement the hardware requirements of the WBN2 PAMS SysRS.	Responder: WEC **This item is used to track all traceability issues with the System Design Specification (SDS).** **At the September 15 public meeting in Rockville, the following actions were agreed to. These items partially address the traceability concerns with the System Design Specification. This item will be updated with the results of the September 20 and 21 Commercial Grade Dedication and SDS RTM audit.** 1. Westinghouse will perform completed a review of the Requirements Traceability Matrix(RT), using the issues identified at the 9/15 public meeting as a guide (documented below) and update the RTM as required. 2. Some hardware requirements are contained		Open	Open TVA to provide date when information will be docketed.			WBN2 PAMS System Design Specification TVA docketed WNA-DS-01667-WBT Rev. 1, “RRAS Watts Bar 2 NSSS Completion Program I&C Projects Post Accident Monitoring System- System Design Specification,” dated December 2009.

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					in the SRS instead of the System Design Specification (SDS). These will be removed from the SRS and incorporated into the next revision of the SDS. 3. 25 issues identified by V&V where some requirements have not been included in the SDS (14) and SRS (11) at the revisions reviewed by V&V. Have these been addressed? Yes. The next revisions of the SDS and SRS address these issues. 4. TVA will update the Procurement Requisition Resolution Matrix and submit it to show how the Common Q PAMS design meets the contract requirements. 5. The next issue of the IV&V report will include the Requirements phase review of the RTM and a partial review for the Design phase. 6. Westinghouse to provide the generic AC160 and flat panel specifications. 7. Westinghouse and TVA to develop a schedule of licensing document submittals that can be met by the project team. 8. The flow of information is from the SysRS to the SDS (hardware) and SRS (software). Describe how the documents are used. Describe in 1.1 of the SysRS. Need a good write up of how the process works.						
146			EICB (Carte)	6/17/2010 deleted	Responder:		Closed	Closed			PAMS System Requirements Specifications WBN2 PAMS documents reference generic PAMS documents, for example: WBN2 PAMS SysRS References: 00000-ICE-30156 Rev. 6, “System Requirements Specification for the Common Q Post Accident Monitoring System”, and 00000-ICE-30155, Rev. 9, “System Requirements Specification for the Common Q Generic Flat Panel Display”
147			EICB (Carte	6/17/2010 deleted	Responder:		Closed	Closed			PAMS System Requirements Specifications

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											WBN2 PAMS documents reference generic PAMS documents, for example: WBN2 PAMS SysRS References: 00000-ICE-30156 Rev. 6, "System Requirements Specification for the Common Q Post Accident Monitoring System", and 00000-ICE-30155, Rev. 9, "System Requirements Specification for the Common Q Generic Flat Panel Display"
148			EICB (Carte)	6/17/2010 deleted	Responder:		Closed	Closed			PAMS System Requirements Specifications WBN2 PAMS documents reference generic PAMS documents, for example: WBN2 PAMS SysRS References: 00000-ICE-30156 Rev. 6, "System Requirements Specification for the Common Q Post Accident Monitoring System", and 00000-ICE-30155, Rev. 9, "System Requirements Specification for the Common Q Generic Flat Panel Display"
149	7.2	7.2	EICB (Garg)	6/25/2010 FSAR Section 7.1.1.2(2), Overtemperature delta T and Overpressure delta T equations have been simplified and many values are removed from the FSAR. Provide the justification for this change.	Responder: Tindell In FSAR amendment 96 the equations were revised to agree with the Unit 1 UFSAR which is the basis document for the Unit 2 FSAR. This resulted in the equations being simplified and the removal of the values for the constants. The equations were revised to match those used in the Technical Specifications. The values for the constants are contained in the Technical Specifications and were removed as redundant. Additional changes were made in FSAR amendments 98 and 99 to correct typographical errors found during FSAR review.		Open In FSAR amendment 96, the values of the constants have been moved to TS or plant procedures. Need to document the basis for this change.	Open TVA to provide date when information will be docketed. TVA need to identify when Unit 1 UFSAR was revised with this information.			FSAR Section 7.2, Reactor Trip System
150	7.2	7.2	EICB (Garg)	6/25/2010 Many of the changes were based on the Westinghouse document N3-99-4003. Provide this document for staff's review so the staff can determine the basis for these changes.	Responder: Clark System description N3-99-4003, Reactor Protection System is contained in Attachment 3.		Open	Open TVA to provide date when information will be docketed.			FSAR Section 7.2, Reactor Trip System
151	7.2	7.2	EICB (Garg)	6/25/2010 Provide the EDCR 52378 and 54504 which discusses the basis for many changes to this FSAR section.	Responder: Clark EDCR 54504 has been voided and replaced with EDCR 52378 which is contained in Attachment 4 and EDCR 52671 is contained in Attachment 5.		Open	Open TVA to provide date when information will be			FSAR Section 7.2, Reactor Trip System

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								docketed.			
152	7.2	7.2	EICB (Garg)	6/25/2010 Deleted portion of FSAR section 7.2.3.3.4 and moved to FSAR section 7.2.1.1.5. However, the FSAR section 7.2.1.1.5 does not include the discussion of ambient temperature and also on the calibration of the sealed reference leg system. No justification was provided for deleting this discussion. Please explain the bases for deletion of this information.	Responder: Merten/Clark The text was revised to match the Unit 1 UFSAR. The Unit 1 text was modified in Amendment 1 by FSAR Change Package 1553 S00 which is contained in Attachment 30. The basis for the change in the change package is: 16 The update to Section 7.2.1.1.5 is taken from text in Section 7.2.2.3.4 with clarifications and editorial changes. The relocated discussion of the pressurizer water level instrumentation Is more appropriately included in this section than Section 7.2.2.3.4, which deals with control and protection system interaction. The changes to 7.2.1.1.5 are based on a general description of the Westinghouse pressurizer level design, channel independence, and actual installation attributes found on TVA physical drawings. Also, the hydrogen gas entrainment issue documented in NRC Information Bulletin No. 92-54, Level Instrumentation Inaccuracies Caused by Rapid Depressurization, is retained and clarified. Similar clarification is made to Reactor Protection System Description N3-9g.4003 Section 3.1.1.2(d). The original text in 7.2.2.3.4 provides some information that is too detailed and is not pertinent to the subject of discussion. It also includes a statement that the error effect on the level measurement during a blowdown accident would be about one inch. The basis for this value is not known; however, the worst case reference leg loss of fill error due to a rapid RCS depressurization event Is no more than 12 inches elevation head. This value is based on the relative elevation difference between the condensing chamber and the reference leg sensor bellows. The Westinghouse Owners Group response to this issue is found in RIMS # L44930216800. The channel error value discrepancy is documented in WBPER980417. The remaining text in 7.2.2.3.4 is revised to clarify the control and protection system interaction discussion.		Open	Open TVA to confirm if this description is the same as for Unit 1. If it is same as Unit 1 then why this was shown as change in redline version of FSAR Amendment 96. TVA to provide date when information will be docketed. When Unit 1 UFSAR was revised.			FSAR Section 7.2, Reactor Trip System
153	7.2	7.2	EICB (Garg)	6/25/2010 FSAR section 7.2.1.1.7 added the reference to FSAR section 10.4.4.3 for exception to P-12. However, FSAR section 10.4.4.3 states bypass condition is not displayed and it is not automatically removed when conditions for bypass are no longer met. Provide the	Responder: Craig/Webb EDC E50952-A added an alternate method of RCS cooldown using additional steam dump valves after entering Mode 4, by disabling the P-12 Interlock. Operators use additional condenser dump valves to aid in maintaining a cooldown rate		Open	Open TVA will send 50.59. TVA to provide date when			FSAR Section 7.2, Reactor Trip System

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				basis for this.	closer to the administrative limit established by operating procedure. Refer to Unit 1 UFSAR Amendment 3 Change Package 1676 S00 (Attachment 6) for the safety evaluation and basis for this change. The 50.59 for the change is included in the Change Package.			information will be docketed. TVA did not address why bypass condition is not displayed.			
154	7.2	7.2	EICB (Garg)	6/25/2010 FSAR section 7.2.1.1.10, setpoints: NRC staff has issued RIS 2006-17 to provide guidance to the industry regarding the instrument setpoint methodology which complies with 10 CFR 50.36 requirements. Provide the information on how the WBN2 setpoint methodology meets the guidance of RIS 2006-17 and include this discussion in this section. Also, by letter dated May 13, 2010, TVA provided Rev. 7 of EEB-TI-28 to the staff. The staff noted that section 4.3.3.6 of EEB-TI-28 discusses the correction for setpoints with a single side of interest. It should be noted that the staff has not approved this aspect of setpoint methodology for Unit 1. The staff finds this reduction in uncertainties is not justified unless it can be demonstrated that the 95/95 criteria is met. Therefore, either remove this reduction factor for single sided uncertainties or justify how you meet the 95/95 criteria given in RG 1.105.	Responder: Craig/Webb (Q1) Refer to the response to letter item 13, RAI Matrix Item 51. (Q2) EEB-TI-28's single sided methodology conforms with WBN's design basis commitment to ensure that 95% of the analyzed population is covered by the calculated tolerance limits as defined in NRC Reg Guide 1.105, Revision 2, 1986 that was in affect during WBN Unit 1 licensing. The single sided methodology is not used for any TSTF-493 setpoints that use TI-28 methodology.		Open	Open FSAR AMD 100. Since all the setpoint and allowable value for Unit 2 is calculated and added to TS, TVA needs to address the latest criteria and that include 95/95 criteria. Why the last sentence has been modified by adding TI-28. It was NRC's understanding that all setpoints have to meet TI-28			FSAR Section 7.2, Reactor Trip System
155	7.2	7.2	EICB (Garg)	June 25, 2010 Summary of FSAR change document section 7.2 states that sections 7.2.1.1.9 and 7.2.2.2(4) are changed to show that these activities will occur in future. However, no changes were made to the FSAR sections. Please explain.	Date: Responder: Stockton The change package summary were the changes recommended by Engineering. TVA Licensing is responsible for the actual submittal and elected not to incorporate these recommendations. The activities are complete and the text in Amendment 99 of the FSAR is correct.		Closed	Closed TVA to provide date when information will be docketed			FSAR Section 7.2, Reactor Trip System
156	7.2	7.2	EICB (Garg)	6/25/2010 FSAR section 7.2.2.1.1 states that dashed lines in Figure 15.1-1……designed to prevent exceeding 121% of power…….The value of 121% is changed from 118%. The justification for this change states that this was done to bring the text of this section in agreement with section 4.3.2.2.5, 4.4.2.2.6 and table 4.1-1. However, Table 4.1-1 and section 4.3.2.2.5 still show this value as 118%. Justify the change.	Responder: WEC Per Westinghouse letter WBT-D-2340, TENNESSEE VALLEY AUTHORITY WATTS BAR NUCLEAR PLANT UNIT 2 FSAR Markups Units I and 2 118% vs. 121 % and Correction to RAI Response SNPB 4.3.2-7, (Reference 17) the 118% value should be 121%. Depending on the use in the FSAR either 118% or 121% are the correct values. As a result of the question,		Open	Open TVA to provide date when information will be docketed			FSAR Section 7.2, Reactor Trip System Response on hold pending Westinghouse review.

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					Westinghouse reviewed all locations where either 118% or 121% are used and the context of use and provided a FSAR markup to reflect the correct value at the specific location. These changes will be incorporated in a future FSAR amendment.						
157	7.2	7.2	EICB (Garg)	6/25/2010 FSAR section 7.2.2.1.1, fifth paragraph was deleted except for the last sentence. The last sentence states that, "The P-8 interlock acts essentially as a high nuclear power reactor trip when operating in this condition." This sentence is confusing because the condition is not defined. Please clarify this discrepancy.	Responder: Tindell The condition is defined in the preceding discussion as operating with a reactor coolant pump out of service and core power less than 25%.		Open	Open TVA to provide date when information will be docketed			FSAR Section 7.2, Reactor Trip System
158	7.2	7.2	EICB (Garg)	6/25/2010 FSAR section 7.2.2.1.1, paragraph six was changed to state that the design meets the requirements of Criterion 23 of the 1971 GDC instead of the Criterion 21 of the GDC. The Criterion 21 is about protection system reliability and testability, while Criterion 23 is about protection system failure modes. Since this paragraph deals with the evaluation of design with respect to common-mode failure, the staff believes that Criterion 23 is the right reference for this paragraph. Please clarify.	Responder: Tindell FSAR Amendment 99 reflects the change to Criterion 23.		Open	Open TVA to provide date when information will be docketed			
159	7.2	7.2	EICB (Garg)	6/25/2010 FSAR section 7.2.2.1.2 discusses reactor coolant flow measurement by elbow taps. However, it further states that for Unit 2, precision calorimetric flow measurement methodology will be used. If elbow taps are not used for Unit 2, then why does this section discuss this methodology? It is the staff's understanding that TVA plans to use elbow taps methodology in the future for Unit 2. Please revise this section to describe the current plant design/methodology.	Responder: Craig For the purposes of measuring reactor coolant flow for Reactor Protection functions, elbow taps are used for both Unit 1 and 2. The discussion and equation are valid for establishing the nominal full power flow which is used to establish the Reactor Protection System low flow trip setpoint. However the method used to verify reactor coolant flow, as required by the Technical Specifications, is not the same. Unit 1 uses a simplified methodology based on elbow tap ΔP measurements correlated with precision calorimetric data over several cycles of operation as described in Reference 17, WCAP-16067, Rev 0, RCS Flow Measurement Using Elbow Tap Methodology at Watts Bar Unit 1. The plan is for Unit 2 to transition to this method after sufficient data is obtained. Pending this transaction, 7.2.2.1.2 will be revised as follows: From: "Nominal full power flow is established at the geginning of each fuel cycle by either elbow tap		Open	Open TVA to provide date when information will be docketed			FSAR Section 7.2, Reactor Trip System

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					methodology or, performance of the RCS calorimetric flow measurement, (For Unit 1 elbow tap methodology is implemented for RCS flow measurement (Reference [17]) and Unit 2 may implement elbow tap methodology at a future date) the results of which are used to normalize the RCS flow indicators. This provides a reference point for the low flow reactor trip setpoint, and also provides a relatively simple method for periodic verification of the thermal design flow assumed in the safety analysis, as required by the Technical Specifications. Accuracy and repeatability of the flow measurement instrumentation are considered in establishment of the low flow setpoint and the minimum required flow and are adequate for these functions. This is for Unit 1 only. For Unit 2, the precision calorimetric flow measurement methodology will be used." To: "Nominal full power flow is established at the beginning of each fuel cycle by either elbow tap methodology or, performance of the RCS calorimetric flow measurement. Unit 1 utilizes elbow tap methodology Reference [17]. Unit 2 utilizes the RCS calorimetric flow measurement. The results are used to normalize the RCS flow indicators and provide a reference point for the low flow reactor trip setpoint."						
160	7.2	7.2	EICB (Garg)	6/25/2010 FSAR section 7.2.2.2(7) deleted text which has references 12 and 14. These references are not included in the revised text. Provide the basis for the deletion of these references. Also, the revised text states that typically this requirement is satisfied by utilizing 2/4 logic for the trip function or by providing a diverse trip. Provide any exception to this and their basis for acceptability.	Responder: Tindell The text was revised to match the Unit 1 UFSAR. The Unit 1 text was modified in Amendment 1 by FSAR Change Package 1553 S00 which is contained in Attachment 30. The basis for the change in the change package is: 23. (page 7.2-24): Portions of the discussion of control and protection system interaction are revised to clarify the requirement. The discussion of how the SG low-low water level protective function and the control system Median Signal Selector satisfy this requirement is deleted since it Is redundant to the information provided In Section 7.2.2.3.5. Reactor Protection System Description N3-99-4003 is also revised to move and clarify the discussion of the requirements for control and protection system Interaction from Section 3.1.1.2 to Section 2.2.11, where the Issue is also discussed.		Open	Open TVA to provide date when information will be docketed			FSAR Section 7.2, Reactor Trip System

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161	7.2	7.2	EICB (Garg)	6/25/2010 FSAR section 7.2.2.3 states that changes to the control function description in this section are expected to be required after vendor design of the Unit 2 Foxboro IA design is complete. Provide the schedule for the completion of the design and when this information will be available to the staff for review and approval.	Responder: Clark FSAR Amendment 99 reflects the changes associated with the Foxboro I/A system design.		Open	Open TVA to provide date when information will be docketed			FSAR Section 7.2, Reactor Trip System
162	7.2	7.2	EICB (Garg)	6/25/2010 FSAR section 7.2.2.2(14) states that bypass of a protection channel during testing is indicated by an alarm in the control room. Explain how this meets RG 1.47.	Responder: Tindell The Bypassed and Inoperable Status Indication System (BISI) compliance with Reg. Guide 1.47 is described in detail in FSAR Section 7.5.2.2.		Open	Open TVA to provide date when information will be docketed			FSAR Section 7.2, Reactor Trip System
163			EICB (Garg)	June 25, 2010 deleted	Date: Responder:		Closed	Closed			FSAR Section 7.2, Reactor Trip System
164	7.2	7.2	EICB (Garg|Marcus)	6/25/2010 FSAR section 7.2.2.2(20) has been revised to include the plant computer as a means to provide information read out for all signals which can cause a reactor trip. Justify the use of the plant computer for this function. Include the discussion on the effect of plant computer failure on the system functions.	Responder: Perkins The primary purpose of the plant computer is to present plant process and equipment status information to the control room operators to assist them in the normal operations of the unit, and inform them of any abnormal conditions. The plant computer obtains real-time plant parameter information via Data Acquisition Systems(DAS)(multiplexers, etc.) by scanning preassigned analog, pulse, and contact sensors located throughout the plant. The computer is not defined as being primary safety-related and it is not required to meet the single failure criterion or be qualified to IEEE criteria for Class 1E equipment. The plant computer system acquires, processes, and displays all data to support the assessment capabilities of the Main Control Room (MCR). To help ensure that reactor trip and other information presented to the Operations staff is reliable: • The data undergoes several validation steps before being presented to the operators. When redundant sensors are used, the data received by the computer can be processed by software to determine if the quality of one or more points is questionable.		Open	Open TVA to provide date when information will be docketed			FSAR Section 7.2, Reactor Trip System

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					• Any software associated with the computer and the DAS must meet the quality requirements of plant procedure SPP-2.6, “Computer Software Control” which is based on requirements in NUREG/CR-4640, the Watts Bar Nuclear Quality Assurance Plan, and SS-E18.15.01 - “Software Requirements for Real-Time Data Acquisition and Control Computer Systems”, which complies with IEEE Std. 279-1971 “Criteria for Protection Systems for Nuclear Power Generating Stations”. The computer software is controlled by a Software Quality Assurance Plan. • One of the requirements in 10 CFR 50, Appendix A states that “Appropriate controls shall be provided to maintain variables monitored and systems within prescribed operating ranges.” Periodic maintenance and calibration will be performed on the computer and DAS. In addition, calibration procedures for instrumentation which is used for input to the computer include verification of the computer input signal at the DAS and as displayed on the display stations. • The software and associated hardware undergoes a detailed Factory Acceptance Test prior to installation in the plant. After installation in the plant, a Site Acceptance Test (SAT) will be conducted. The SAT will include several tests: computer accuracy, analog input accuracy, calculated value accuracy, computer performance, system response times, all input/output (from termination strip to display stations/printers), all data ports, and computer power supplies. • In order to minimize the possibility of bad sensor inputs to the Safety Parameter Display System (SPDS) and/or inaccurate SPDS display of sensor inputs, routine instrument loop calibration of sensors that provide input to the SPDS will include verification that the SPDS-displayed values are correct. WBN's instrument surveillance instructions will incorporate these verifications. Effect of plant computer failure on system functions The WBN Unit 2 is designed on the basis that it can still operate when the plant computer is inoperable. The computer is not required for safe						

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					shutdown of the plant during external design basis events such as tornadoes, floods, rain, and transportation accidents. Operators are trained to respond to accidents both with and without the computer information available. The control room instrumentation provides the operators with the information necessary for safe reactor operations under normal, transient, and accident conditions. The DAS is mechanically and electrically isolated from the safety systems to avoid degradation of the systems should the computer and/or DAS fail. The computer is not expected to perform any nuclear safety-related function, therefore, the computer need not be designed to meet nuclear safety-related Class 1E, single-failure criteria. The computer is not designed to safety system criteria and therefore is not to be used to perform functions essential to the health and safety of the public.						
165	7.2	7.2	EICB (Garg)	6/25/2010 FSAR section 7.2.2.3.2, last paragraph of this section has been deleted. The basis for this deletion is that discussion regarding the compliance with IEEE-279, 1971 and GDC 24 is covered in section 7.2.2.2. However, there is no reference to this section in 7.2.2.3.2 to direct the reader to 7.2.2.2. Please revise 7.2.2.2 accordingly.	Responder: Clark The reference to Section 7.2.2.2 for the general discussion for control and protection interactions is provided in Section 7.2.2.3. The reference in Section 7.2.2.3 is applicable to all Sub-Section paragraphs, including 7.2.2.3.2. An additional reference in this section is not necessary and would be redundant to the Section 7.2.2.3 reference.		Open	Open TVA to provide date when information will be docketed			FSAR Section 7.2, Reactor Trip System
166	7.2	7.2	EICB (Garg)	6/25/2010 Changes to FSAR section 7.2.2.2(20) are justified based on the statement that the integrated computer system is implemented through EDCR 52322. Provide a copy of EDCR 52322 for staff review.	Responder: Clark EDCR 52322 is contained in Attachment .		Open	Open TVA to provide date when information will be docketed			FSAR Section 7.2, Reactor Trip System
167	7.2	7.2	EICB (Garg)	6/25/2010 FSAR section 7.2.2.4, provide an analysis or reference to chapter 15 analysis which demonstrate that failure of rod stop during a rod withdrawal event will not affect the safety limit.	Responder: Clark Continuous rod withdrawal events are analyzed in FSAR sections 15.2.1 and 15.2.2. While the rod stops a mentioned, they are not credited in the analysis.		Open	Open TVA to provide date when information will be docketed			FSAR Section 7.2, Reactor Trip System
168	7.2	7.2	EICB (Garg)	6/25/2010 FSAR table 7.2-4, item 9 deleted loss of offsite power to station auxiliaries (station blackout) based on the fact that station blackout is not listed in AAPC events. Explain what are AAPC events and how it justifies deleting this accident from the list.	Responder: Clark This change is in accordance with the Unit 1 UFSAR. The change was made by FSAR Change Package 1553 S00 (Attachment 30). The justification for the change is: “38 (Table 7.2-4): This table lists the reactor trips		Open	Open TVA to provide date when information will be docketed			FSAR Section 7.2, Reactor Trip System

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					and the various accident analyses for which each trip could provide protection. The intent of the table is to demonstrate the diversity of and comprehensive protection provided by the reactor trip system against various postulated events and to correlate the trip functions with the analyses in which they may be utilized, either as a primary or secondary protective function. Chapter 15, along with the Accident Analysis Parameters Checklist, WB-OC-40-70, provides the accident analysis discussion and identifies the protection system functions which provide accident mitigation. The additions and deletions to the table are made for consistency with the safety analyses of record as reflected in the design and licensing basis and do not represent analysis changes or protection system changes. Therefore. they are considered to be non-significant as discussed at the beginning of this section. Neutron Monitoring System Description N3-85-4003 Table 2 is also revised for consistency with WB-DC-40-70."						
169			EICB (Garg)	6/18/2010 Describe the design changes which were made to Unit 1 by 10CFR50.59 process and which significantly affect the instrumentation and controls systems discussed in FSAR Chapter 7.	Responder: Clark This is a duplicate of items 2, 10, 11 and 44		Closed	Closed			
170			EICB (Garg)	6/17/2010 TVA needs to document that Arnold Magnetics power supplies have been used and environmentally qualified at Unit 1 and therefore meet the licensing basis for Unit 2. If these power supplies are not used and qualified in Unit 1, then TVA will have to discuss the qualification of these power supplies based on the guidance provided in RG 1.209 (Open Item # 2 of Eagle 21 audit.)	Responder: Clark This is a duplicate of item 113.		Closed	Closed			
171	7.2	7.2	EICB (Garg)	6/17/2010 An external unidirectional communications interface was installed between the Eagle 21 test subsystem and the plant process computer. TVA should confirm that testing has demonstrated that two way communication is impossible with the described configuration. (Open Item # 3 of Eagle 21 audit)	Responder: Craig This item requires further discussion. It has been deleted from the current letter.		Open	Open TVA to provide date when information will be docketed			
172			EICB (Garg)	6/17/2010 During a FAT diagnostic test, the Loop Calculation Processor (LCP) failed while performing a parameter update. TVA should identify the cause and fix for the problem encountered. (Open Item # 1 of Eagle 21	Responder: Craig This is a duplicate of the rack 5 update issue item 114.		Closed	Closed			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				audit)							
173	7.1	7.1	EICB (Garg)	6/17/2010 EEB-TI-28 discusses the correction for setpoints with a single side of interest. The staff finds this correction factor is not justified. TVA should justify this correction factor and demonstrate that, with this correction, factor 95/95 criteria identified in RG 1.105 is met.	Responder: Craig/Webb/Powers		Open	Open TVA to provide date when information will be docketed			
174			EICB (Garg)	6/28/2010 Placeholder: The staff has identified questions regarding unidirectional communications interface. The staff will keep this item open until TVA confirms testing has demonstrated that two way communication is impossible with the described configurations.	Responder: Hilmes/Craig Duplicate of 171		Closed	Closed			
175			EICB (Garg)	June 28, 2010 Placeholder: The staff has identified questions regarding diversity. The staff will keep this item open until TVA provides the related WCAP to the staff for its review and approval.	Responder: WCAP-13869 rev.2. is submitted in response to item		Closed In FSAR amendment 98, reference 6 added a new WCAP-13869 rev.2. Has this WCAP been reviewed by the staff. If not then provide the copy of WCAP for staff review.	Closed This item is covered under item 78. TVA to provide date when information will be docketed.			
176	7.1	7.1	EICB (Garg)	6/28/2010 Placeholder: The staff has identified questions regarding instrument setpoints. The staff will keep the instrument setpoint methodology issue open until TVA provides additional information regarding RIS 2006-17 and single sided correction factor for uncertainty determination.	Responder: Craig/Webb		Open	Open TVA to provide date when information will be docketed			
177	7.5.2	7.5.1	EICB (Marcus)	7/15/2010 FSAR Amendment 99 Section 7.5.1.2 states: "Type A Variables Those variables that provide primary information to the MCR operators to allow them to take preplanned manually controlled actions for which no automatic action is provided and that are required for safety systems to accomplish their safety functions for Chapter 15 design basis events. Primary information is information that is essential for the direct accomplishment of specified safety functions." Clarify whether Unit 2 has the same Type A variables as Unit 1.	Responder: Clark The type A variables are the same in Unit 1 and Unit 2. See calculation WBNOSG4047 Rev. 4 (Attachment)		Closed August 19, 2010 - TVA to submit calculation. Review of Unit 2 FSAR confirms Unit 1 and Unit 2 Type A variables are the same. Not necessary to docket WBNOSG4047.	Closed			
178	7.5.2	7.5.1	B (Mar	7/15/2010	Responder: Clark		Closed	Closed			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				Please provide WBN-OSG4-047, "PAM Type A Variable Determination."	See response to item 177 above.		August 19, 2010 - TVA to submit calculation. Review of Unit 2 FSAR confirms Unit 1 and Unit 2 Type A variables are the same. Not necessary to docket WBOSG4047.				
179			EICB (Carte)	7/15/2010 An emphasis is placed on traceability in System Requirements Specifications in the SRP, in the unmodified IEEE std 830-1993, and even more so given the modifications to the standard listed in Regulatory Guide 1.172, which breaks with typical NRC use of the word “should” regarding backwards traceability to say “Each identifiable requirement in an SRS must be traceable backwards to the system requirements and the design bases or regulatory requirements that is satisfies” Discuss how TVA has ensured that the re is traceability (and particularly backward traceability) for each requirement. If requirements are not traceable, please explain how the SRS complies with the regulations that underlie the SRP.	Responder: WEC Steve Clark to look at how to combine traceability items. Will be addressed to during the 9/15 meeting and 9/20 - 9/21 audit. Closed to Item 142.		Open	Closed TVA to provide date when information will be docketed			
180			EICB (Halverson)	7/15/2010 The SRP, BTP 7-14, Section B.3.3.1 states that Regulatory Guide 1.172 endorses, with a few noted exceptions, IEEE Std 830-1993. “IEEE Recommended Practices for Software Requirements Specifications.” Clarify whether the WBU2 Post Accident Monitoring System’s Software Requirements Specification adheres to IEEE std 830-1993 as modified by Regulatory Guide 1.172? If yes, please provide an evaluation that includes an identification and description of all differences proposed from the modified standard. Please describe how the alternatives provide an acceptable method of complying with those regulations that underlie the corresponding SRP acceptance criteria. If no then please provide an evaluation that includes an identification and description of all differences proposed from the acceptance criteria given in SRP ,	Responder: WEC Steve Clark to look at how to combine traceability items. Will be addressed to during the 9/15 meeting and 9/20 - 9/21 audit. Closed to Item 142.		Open	Closed TVA to provide date when information will be docketed			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				BTP 7-14, Section B.3.3.1. Please describe how the alternatives provide an acceptable method of complying with those regulations that underlie the corresponding SRP acceptance criteria.							
181			EICB (Halverson)	7/15/2010 An emphasis is placed on traceability in System Requirements Specifications in the SRP, in the unmodified IEEE std 830-1993, and even more so given the modifications to the standard listed in Regulatory Guide 1.172, which breaks with typical NRC use of the word “should” to say “Each identifiable requirement in an SRS must be traceable backwards to the system requirements and the design bases or regulatory requirements that is satisfies” Explain the source(s) of the requirements present in the Post Accident Monitoring System’s Software Requirements Specification. To clarify, many documents have requirements that are incorporated by reference into the SRS, but what served to direct the author to include those various documents in the SRS or, if the requirement is based on the System Requirements Specification, what directed the author to include the requirement there?	Responder: WEC Steve Clark to look at how to combine traceability items. Will be addressed to during the 9/15 meeting and 9/20 - 9/21 audit. Closed to Item 142.		Open	Closed TVA to provide date when information will be docketed			
182			EICB (Halverson)	7/15/2010 Characteristics that the SRP states that an Software Requirements Specifications should have include unambiguity, verifiability, and style, part of the latter is that “Each requirement should be uniquely and completely defined in a single location in the SRS.” Clarify whether the unnumbered paragraphs in the Post Accident Monitoring System’s Software Requirements Specification, such as in the section headings, or are all such sections simply considered to be informative? Does the same apply to documents referenced by the SRS? Such as WCAP-16096-NP-A, Rev. 1A, “Software Program Manual for Common Q Systems,” which is incorporated by reference in requirement R2.3-2 in the SRS. R2.3-2 [The PAMS software shall comply with the requirements and guidelines defined in WCAP-16096-NP-A, “Software Program Manual for Common Q Systems” (reference 5).] If any requirements are expressed in such	Responder: WEC Steve Clark to look at how to combine traceability items. Will be addressed to during the 9/15 meeting and 9/20 - 9/21 audit. Closed to Item 142.		Open	Closed TVA to provide date when information will be docketed			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				unnumbered paragraph form instead of individually identified requirements, please list them, describe why they satisfy the fundamental requirement of unambiguity, and describe how they were verified.							
183			EICB (Halverson)	7/15/2010 An emphasis is placed on traceability in System Requirements Specifications in the SRP, in the unmodified IEEE std 830-1993, and even more so given the modifications to the standard listed in Regulatory Guide 1.172, which breaks with typical NRC use of the word “should” to say “Each identifiable requirement in an SRS must be traceable backwards to the system requirements and the design bases or regulatory requirements that is satisfies” On page 1-2 of the Post Accident Monitoring System’s Software Requirements Specification in the background section, is the sentence “Those sections of the above references that require modification from the generic PAMS are defined in the document” referring purely to the changes from WNA-DS-01617-WBT “Post Accident Monitoring System-System Requirements Specification” or is it saying that there are additional changes beyond those and that the SRS defines them? If there are additional changes, what is their origin?	Responder: WEC The generic Software Requirements Specification applies except as modified by the WBN Unit 2 System Requirements Specification.		Open	Open October letter			
184			EICB (Halverson)	7/15/2010 The NRC considers that a System Requirements Specification is the complete set of requirements used for the design of the software, whether it is contained within one document or many. In order to evaluate an SRS against the guidance in the SRP the staff needs access to all the requirements. Are there any sources of requirements in parallel with the Post Accident Monitoring System’s Software Requirements Specification? Meaning does the SRS contain, explicitly or by reference, all the requirements that were used in the design phase for the application specific software, or do software design phase activities use requirements found in any other source or document? If so, what are these sources or documents?	Responder: WEC Steve Clark to look at how to combine traceability items. Will be addressed to during the 9/15 meeting and 9/20 - 9/21 audit. Closed to Item 142.		Open	Closed TVA to provide date when information will be docketed			
185			EICB (Halverson)	7/15/2010 An emphasis is placed on the traceability of requirements in Software Requirements Specifications in the SRP, in the unmodified IEEE std 830-1993, and	Responder: WEC Steve Clark to look at how to combine traceability items.		Open	Open TVA to provide date when information will be			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				even more so given the modifications to the standard listed in Regulatory Guide 1.172, which breaks with typical NRC use of the word “should” to say “Each identifiable requirement in an SRS must be traceable backwards to the system requirements and the design bases or regulatory requirements that is satisfies” Also the NRC considers that the SRS is the complete set of requirements used for the design of the software, whether it is contained within one document or many. In order to evaluate an SRS against the guidance in the SRP the staff needs access to all the requirements. References 12, 27, 29, and 31-44 in the Post Accident Monitoring System’s Software Requirements Specification are various types of “…Reusable Software Element…”. These references are used in the body of the SRS, for example:“ R5.3.14-2 [The Addressable Constants CRC error signal shall be TRUE when any CAL CRC's respective ERROR terminal = TRUE (WNA-DS-00315-GEN, "Reusable Software Element Document CRC for Calibration Data" [Reference 12]).] They are also included via tables such as found in requirement R7.1.2-1 [The Watts Bar 2 PAMS shall use the application-specific type circuits and custom PC elements listed in Table 7.1-1.] Do the referenced reusable software element documents include requirements not explicitly stated in the SRS? If so what is their origin?	Will be addressed to during the 9/15 meeting and 9/20 - 9/21 audit.			docketed.			
186	7.7.8	7.7.1.12	EICB (Darbali)	7/15/2010 Along with Amendment 96, TVA submitted a list of Bechtel changes for each section. Change number 45 addresses a change to section 7.7.1.12, AMSAC, however, the Justification column states “This change is not included. EDCR 52408 installs the AMSAC in Unit 2. It does not have a trouble alarms. The existing words better reflect the operation of the system.” Even thought this change was not included in Amendment 96, will it be included in a future amendment?	Responder: Perkins/Clark No. The previous wording reflected operation of the computer based AMSAC system. The change reflects the operation of the relay logic based system that replaced the original computer based system in Unit 1. Unit 2 is installing a similar relay logic based system, so the change to the Unit 1 wording is applicable to Unit 2. <u>EDCR 52408 Summary</u> A Purchase Order was issued to Nutherm International to provide a Unit 2 cabinet with the		Open Response is satisfactory. Issue date of Amendment 101 is not yet determined. Open Response is acceptable awaiting FSAR amendment submittal.	Open Once FSAR Amendment 101 is received, the item will be closed.			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				Also, please submit a summary of EDCR 52408.	same functions as the current Unit 1 AMSAC. EDCR 52408 will install the cabinet and route/install cabling to provide the necessary inputs/outputs for/from the AMSAC cabinet. In the Main Control Room, three cables will be installed for the AMSAC handswitch on 2-M-3 and "AMSAC NOT ARMED" and "AMSAC ACTUATED" annunciator windows. In the Turbine Building, two pressure transmitters will be installed in two local panels to sense turbine pressure. Cables will be routed to the transmitters to provide the signal and power. Four cables will be routed to a local panel to provide steam generator level signals. In the Control Building, three cables will be routed to separation relays which will provide the start signal for the Motor Driven Auxiliary Feedwater Pumps, Turbine Driven Auxiliary Feedwater Pump, and initiate a Turbine Trip. Additionally, a cable will be routed to Unit 2 ICS for 'AMSAC NOT ARMED" and "AMSAC ACTUATED" log points. This EDCR is intended to configure Unit 2 AMSAC like Unit 1 when possible.						
187			EICB (Carte)	7/20/2010 By letter dated June 18, 2010, TVA docketed responses to NRC requests for information. 1) Enclosure 1, Item No. 33 of the TVA letter dated June 18, 2010, did not identify any connection from the PAMS Operator Modules (OMs) to the plant computer and printers; however, Figure 2.1-1 of the PAMS System Requirements Specification (WNA-DS-01617-WBT Rev. 1 – ML101680578) shows a TCP connection from the OMs to the plant computer and printer. Please explain. 2) Please clarify whether any digital safety-related systems or components have a digital communications path to non-safety-related systems or with safety related systems in another division. If so, NRC staff will need these paths identified on the docket.	Responder: Clark 1) The original design was to allow printing from both the Operator Module (OM) and Maintenance and Test Panel (MTP) via the plant computer. This required both to be connected to the plant computer. Westinghouse did not perceive this as an issue, because the standard Common Q PAMS design includes both the flat panel displays and individual control panel indicators. The Westinghouse Common Q team did not realize that WBN does not use the individual control panel indicators. As a result, the original design documents provided by Westinghouse included the connection from the OM to the plant computer. The TVA team did not realize that the Westinghouse design relied on the OM and MTP to be qualified isolation devices that protected the		Open NNC 8/25/10: Why did TVA not catch this on the review of the PAMS SysRS or SRS? Does TVA check that the CQ PAMS system meets the requirements in its purchase specifications?	Open			Are these connections already docketed?

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					AC160 functions and individual control panel indicators from interference from the plant computer. It was not until a meeting was held to discuss the design of the OM that the issues came to light. That was when Westinghouse understood that the OM was the PAMS display and WBN did not use individual control panel indicators and TVA understood that the OM was being credited as the "qualified isolation device". It became apparent at the meeting to both TVA and Westinghouse that the original design was not acceptable. The team then agreed to delete the OM connection to the plant computer. 2) This is a duplicate of closed RAI Matrix Item 45.						
188			EICB (Carte)	7/20/2010 By letter dated June 30, 2010, TVA docketed, "Tennessee Valley Authority (TVA) Watts Bar Unit 2 (WBN2) – Post-Accident Monitoring System (PAMS) Licensing Technical Report," (Document Number WNA-LI-00058-WBT- P, Revision 0, June 2010) (Westinghouse Proprietary Class 2). 1) Figure 2.2-1 of the PAMS Licensing Topical Report does not show any connection between the Operators Modules and the plant computer or printer; however, Figure 2.1-1 of the PAMS System Requirements Specification (WNA-DS-01617-WBT Rev. 1 – ML101680578) shows a TCP connection from the OMs to the plant computer and printer. Please explain. 2) Section 5.3, "Response to individual criteria in DI&C-ISG-04," of the PAMS Licensing Topical Report does not address the TCP connection between the OM and non-safety components depicted in Figure 2.1-1 of the PAMS System Requirements Specification (WNA-DS-01617-WBT Rev. 1 – ML101680578). Please explain.	Responder: Clark 1) The original design was to allow printing from both the Operator Module (OM) and Maintenance and Test Panel (MTP) via the plant computer. This required both to be connected to the plant computer. Westinghouse did not perceive this as an issue, because the standard Common Q PAMS design includes both the flat panel displays and individual control panel indicators. The Westinghouse Common Q team did not realize that WBN does not use the individual control panel indicators. As a result, the original design documents provided by Westinghouse included the connection from the OM to the plant computer. The TVA team did not realize that the Westinghouse design relied on the OM and MTP to be qualified isolation devices that protected the AC160 functions and individual control panel indicators from interference from the plant computer. It was not until a meeting was held to discuss the design of the OM that the issues came to light. That was when Westinghouse understood that the OM was the PAMS display and WBN did not use individual control panel indicators and TVA understood that the OM was being credited as the "qualified isolation device". It became apparent at the meeting to both TVA and Westinghouse that the original design was not acceptable. The team then agreed to delete the OM connection to the plant computer. 2) This is a duplicate of closed RAI Matrix Item		Open NNC 08/25/10: See Open Item No. 187.	Open TVA to respond or provide proposed date of response.			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					45.						
189		7.6.7	EICB (Singh)	7/20/2010 FSAR Section 7.6.7States: “Conformance with Regulatory Guide 1.133, Revision 1 is discussed in Table 7.1-7.” FSAR Chapter 7 does not contain any such numbered table. Please explain.	Responder: Clark This is a typographical error. The correct reference is Table 7.1-1. The reference will be corrected in FSAR Amendment 100.		Closed NNC 8/25/10: Acceptable response.	Closed By FSAR Amendment 100, page 7.6-4.			
190	7.9		EICB (Singh)	7/20/2010 FSAR Table 7.1-1 states: “Regulatory Guide 1.133, May 1981 “Loose-Part Detection Program for the Primary System of Light–Water Cooled Reactors”, Revision 1 (See Note 12)…Note 12 Conforms except as noted below…Positi[o]ns C.3.a.(3) and C.5.c. recommend a channel calibration be performed at least once pe[r] 18 months. In lieu of this recommendation, the DMIMS will be calibrated at the frequency stated in subsection TSR 3.3.6.3 of TR 3.3.6 (Loose-Part Detection System).” 1) Clarify what frequency is specified in TSR 3.3.6.3. 2) Please explain why the stated calibration frequency is adequate for meeting regulatory requirements. 3) Please provide sufficient documentation for the NRC to independently evaluate the conformance claims stated in the FSAR.	Responder: Clark 1) TSR 3.3.6.3 specifies 18 months as the calibration frequency. 2) Per the Technical Requirements Manual (TRM) Bases 3.3.6 (Attachment 9) the surveillance requirements and frequency are provided in Regulatory Guide 1.133, "Loose-Part Detection Program for the Primary System of Light-Water-Cooled Reactors." 3) TRM section 3.3.6 and it’s bases are contained in Attachment 9.		Open	Open TVA to revise response.			
191	7.9		EICB (Carte)	7/20/2010 NUREG-0800 Chapter 7, Section 7.9, "Data Communication Systems" contains review criteria for data communication systems. The WBN2 FSAR did not include any description of data communications systems. 1) Please identify all data communications systems. 2) Please describe each data communications system identified above. 3) Please provide a regulatory evaluation of each data communications system against the applicable regulatory criteria.	Responder: Jimmie Perkins WBN Unit 2 is in compliance with the regulatory requirements for data communications systems as described in Attachment 34 (Data Communications Systems Description and Regulatory Compliance Analysis).		Open NNC 8/25/10: Information received, and read.	Open			
192	7.5.5	7.5.2	EICB (Marcus)	7/20/2010 The NRC Staff is using SRP (NUREG-0800) Chapter 7 Section 7.5, “Instrumentation Systems Important to Safety,” to review the WBU2 FSAR Section 7.5, “Instrumentation Systems Important to Safety.” The following requests are for information that the SRP directs the reviewers to evaluate. The role of the EICB Technical reviewer is to	Responder: Clark 1. At WBN Unit 1 and 2, there is a single computer system named the “Integrated Computer System” or ICS. That system is sometimes described as the “Plant Computer System”, the “Process Computer”, the Technical Support Center Data System (TSCDS) or the Emergency Response Facility Data System (ERFDS). At one time, the TSCDS and ERFDS		Open August 19, 2010 - NRC to review TVA response.	Open NRC to review response.			

Open Items to be Resolved for SER Approval

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				determine if there is reasonable assurance that the equipment will perform the required functions. The WBU2 FSAR, Section 7.5.2, "Plant Computer System," does not contain any description of the equipment that performs the functions described in the section. Enclosure 1 Item 3 of letter dated March 12, 2010, TVA stated that the "platform" of the "Process Computer" was, "Hewlett Packard RX2660 and Dell Poweredge R200 servers with RTP Corp 8707 I/O." In addition TVA provided (a) two pages of marketing literature by DELL on the Poweredge R200 Server, (b) the "HP Integrity rx2660 Server Unser Service Guide," and (c) the Integrated Computer System Network Configuration Connection Diagram (2-45W2697-1-1 dated 8/27/09). This provided information is not sufficient for evaluating whether the equipment will, with reasonable assurance, perform the functions described in the FSAR. 1) Is the "Plant Computer System" another name for the "Process Computer"? 2) Please provide an architectural description of the Plant Computer System. 3) Please describe the relationship between the Plant Computer System and the Integrated Computer System.	were separate computers on Unit 1 but their functions were all incorporated into the ICS when it was installed. 2. The Watts Nuclear Plant ICS is a non-safety related system, is designed as a single, large-scale nuclear plant computer system which integrates balance of plant (BOP) monitoring with extensive nuclear steam supply system (NSSS) application software into a comprehensive computer based tool for plant operations. The system is comprised of the following major components: • Remote multiplexers in the Computer Room, Auxiliary Instrument Room and 480V Board rooms. • Redundant Central Processing Units (CPUs) • Data Storage Devices • Man-Machine Interfaces (MMI) – Satellite Display Stations (SDS) terminals in the Main Control Room (MCR), Technical Support Center (TSC) and Computer Room. • Networking equipment including switches, firewalls and terminal servers • Printers • Data Links to other plant computer devices (serial and network)- These systems or devices include but are not limited to: o System Foxboro I/A Systems (unit 2 only) o Areva Beacon core monitoring systems o Multi-pen recorders o Landis & Gyr switchyard monitoring system o Computer Enhanced Rod Position Indication (CERPI) o Eagle 21 o Ronan Annunciator o Leading Edge Flow Meter (LEFM) o Bentley-Nevada vibration monitoring system o Inadequate Core Cooling Monitor (ICCM) (unit 1 only) o Common Q (unit 2 only) o WINCISE (unit 2) o Plant Engineering Data System (PEDS) In support of normal plant operations, each unit's ICS: • Scans and converts analog and digital plant process inputs to engineering units for displaying, alarming and reporting. • Receives analog and digital inputs as pre-						

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					processed values from other digital systems for displaying, alarming, archiving, and reporting. • Performs data validity checking. • Performs calculations to obtain parameters such as difference, flows, and rates. • Displays alarms when data point value exceeds predefined set points. • Displays alarms received from the digital Annunciator system. • Generates periodic station logs and pre-selected special logs. • Performs BOP and NSSS related calculations. • Provides graphical and digital trending displays of plant data. • Provides graphical P&ID type displays of plant data. In support of emergency plant operations each unit's ICS: • Provides plant emergency support with the Safety Parameter Display System (SPDS) functions based upon the Westinghouse Owner's Group CSF status trees and historical data collection, storage, and retrieval functions required to support NUREG-0737 and NUREG-0737, Supplement 1 category 1 variables (except for containment isolation). • Provides SPDS and Emergency Response Data System (ERDS) data to the Emergency Offsite Facilities via PEDS. • Provides BISI functions (not including operating and trip bypasses of RPS and ESFAS). • Provides continuous monitoring of RHR system performance when RHR is in use. ICS is not required to be safety-related and is not required to meet IEEE single-failure criteria for Class 1E equipment. 3. The Plant Computer System and the Integrated Computer System are the same system.						
193	7.5.5	7.5.2	EICB (Marcus)	7/20/2010 The WBU2 FSAR, Section 7.5.2, "Plant Computer System," contains three subsections, 7.5.2.1, "Safety Parameter Display System" 7.5.2.2, "Bypassed and Inoperable Status Indication System (BISI)" 7.5.2.3, "Technical Support Center and Nuclear Data Links"	Responder: Clark There is a single set of hardware that incorporates the functionality of Safety Parameter Display System (SPDS), Bypass and Inoperable Status Indication System (BISI) and the Technical Support Center (TSC). Also refer to the response to item 59 (RAI Matrix Item 193).		Open	Open TVA to respond or provide proposed date of response.			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				Are there three separate sets of hardware that implement these functions, or are these three functions that are implemented on a single set of hardware?	The function of the Nuclear Data Links or Emergency Response Data System (ERDS) is actually provided by the TVA Central Emergency Control Center (CECC) which acts as the Emergency Offsite Facility (EOF) for all of TVA's nuclear units. Plant data will be sent on a periodic basis from the ICS to the CECC via the Plant Engineering Data System (PEDS). That data is then available to be sent from the CECC to the NRC.						
194	7.5.5.1	7.5.2.1	EICB (Marcus)	7/20/2010 The WBU2 FSAR Section 7.5.2.1, "Safety Parameter Display System," contains a description of the Safety Parameter Display System. SRP Section 7.5, Subsection II, "Acceptance Criteria" states: Requirements applicable to the review of SPDS…10 CFR 50.55a(a)(1), "Quality Standards." Please provide a description of how SPDS meets this regulatory requirement.	Responder: Costley/Norman The principal purpose and function of the SPDS is to aid control room personnel during abnormal and emergency conditions in determining the safety status of the plant and in assessing if abnormal conditions require corrective action by the operators to avoid a degraded core. It also operates during normal operations, continuously displaying information from which the plant safety status can be readily and reliably accessed. To ensure quality, the design, testing, and inspection of the SPDS is controlled by qualified personnel and by using TVA procedure SPP-2.6, "Computer Software Control". The procedure details controls and processes required for the development, modification, and configuration management of computer software used to support the design, operation, modification, and maintenance of TVA's nuclear power plants consistent with the Nuclear Quality Assurance Plan. This ensures that the design and operation of the SPDS complies with the 10 CFR 50.55a(a)(1) quality standards requirements. The controls and processes outlined in the procedure provide assurance that the SPDS will perform its intended function correctly. The plant Integrated Computer System(ICS) provides the SPDS for WBN. Any changes to the SPDS software must be documented and controlled using a Software Service Request(per SPP-2.6) and must be implemented under the engineering design change process(Design Change Notice, DCN). Controls in SPP-2.6 guide the development and testing of the SPDS		Open	Open TVA to respond or provide proposed date of response.			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					changes. Other controls put in place by this procedure to further maintain quality standards are: • Changes to SPDS software from remote locations is prohibited. • The application custodian implements controls to prevent unauthorized changes to the software. • Changes are made in a non-production environment and validation testing takes place before the change is installed on the ICS. • Once validation testing begins, the source code is placed under configuration control. • When the modifications are installed on the ICS, an operability test is performed to demonstrate that the software is installed correctly and is functioning correctly in its operating environment. • All documentation related to the SPDS software changes are QA records. • The software source code is kept in a physically secure, environmentally controlled space to prevent inadvertent changes. • Cyber security considerations are also considered in the storage environment. The data goes through several validation steps before being presented to the operators. When redundant sensors are used, the data received by the computer can be processed by software to determine if the quality of one or more points is questionable.						
195	7.5.5.2	7.5.2.2	EICB (Marcus)	7/20/2010 Bypassed and Inoperable Status Indication (BISI) The WBU2 FSAR Section 7.5.2.2, “Bypassed and Inoperable Status Indication System (BISI),” contains a description of the Bypassed Inoperable Status Indication System (BISI). SRP Section 7.5, Subsection II, “Acceptance Criteria” states: Requirements applicable to bypassed and inoperable status indication …10 CFR 50.55a(a)(1), “Quality Standards.” Please provide a description of how BISI meets this regulatory requirement.	Responder: Costley/Norman The BISI system is a computer based system that provides automatic indication and annunciation of the abnormal status of each ESFAS actuated component of each redundant portion of a system that performs a safety-related function. To ensure quality, the design, testing, and inspection of the BISI system is controlled by qualified personnel and by using TVA procedure SPP-2.6, “Computer Software Control”. The procedure details controls and processes required for the development, modification, and configuration management of computer software used to support the design, operation, modification, and maintenance of TVA’s nuclear power plants consistent with the Nuclear Quality Assurance Plan.		Open	Open TVA to respond or provide proposed date of response.			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					This ensures that the design and operation of the BISI System complies with the 10 CFR 50.55a(a)(1) quality standards requirements. The controls and processes outlined in the procedure provide assurance that the BISI system will perform its intended function correctly. The plant Integrated Computer System(ICS) provides the BISI system for WBN. Any changes to the BISI software must be documented and controlled using a Software Service Request(per SPP-2.6) and must be implemented under the engineering design change process(Design Change Notice, DCN). Controls in SPP-2.6 guide the development and testing of the BISI changes. Other controls put in place by this procedure to further maintain quality standards are: • Changes to BISI software from remote locations is prohibited. • The application custodian implements controls to prevent unauthorized changes to the software. • Changes are made in a non-production environment and validation testing takes place before the change is installed on the ICS. • Once validation testing begins, the source code is placed under configuration control. • When the modifications are installed on the ICS, an operability test is performed to demonstrate that the software is installed correctly and is functioning correctly in its operating environment. • All documentation related to the BISI software changes are QA records. • The software source code is kept in a physically secure, environmentally controlled space to prevent inadvertent changes. • Cyber security considerations are also considered in the storage environment.						
196	7.5.5.2	7.5.2.2	EICB (Marcus)	7/20/2010 Bypassed and Inoperable Status Indication (BISI) The NRC staff is performing its review in accordance with LIC-110, Rev. 1, "Watts Bar Unit 2 License Application Review." LIC-110 directs the staff to review systems unique to Unit 2 in accordance with current staff guidance. Regulatory Guide (RG) 1.47 Revision 1, "Bypassed and Inoperable Status indication for Nuclear Power Plant Safety Systems," is the current regulatory guidance for BISI. Please provide a regulatory evaluation of BISI against the	Responder: Costley/Norman Section C of the Regulatory Guide lists the following six regulatory positions for guidance to satisfy the NRC requirements with respect to the bypassed and inoperable status indication(BISI) for nuclear power plant safety systems: 1. Administrative procedures should be supplemented by an indication system that automatically indicates, for each affected safety system or subsystem, the bypass or deliberately induced inoperability of a safety function and the		Open	Open TVA to respond or provide proposed date of response.			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				current RG.	systems actuated or controlled by the safety function. Provisions should also be made to allow the operations staff to confirm that a bypassed safety function has been properly returned to service. Response: The BISI system provides indication(displays and annunciation) that a functional path for each train of a safety system or support system has been rendered in a state which could cause inoperability. The BISI system monitors and provides system level alarms for these plant safety-related systems: • Main and Aux Feedwater • Safety Injection • Residual Heat Removal • Containment Spray • Emergency Gas Treatment • Essential Raw Cooling Water • Chemical and Volume Control • Ventilating • Component Cooling • Control Air(including Aux Control Air) • Standby Diesel Generator The system level displays/indicating lights indicate the status of each system's train functional path as well as the status of any support system that might put the system in an inoperable or bypassed condition. The BISI system software runs on the Integrated Computer System(ICS) and it provides the capability to monitor in real time the parameters required to provide a BISI system as described in the Reg Guide. The system level display or indicating lights indicate "NORMAL" status when a previously bypassed system returns to normal operational status. The Operations staff will determine the impact of each alarm on the process flow path indication during plant modes of operation. The final decision of system operability is left up to the Operations staff to determine per Technical Specifications. 2. The indicating system for BISI should also be activated automatically by the bypassing or the deliberately induced inoperability of any auxiliary						

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					or supporting system that effectively bypasses or renders inoperable a safety function and the systems actuated or controlled by the safety function. Response: The Integrated Computer System(ICS) obtains real-time plant parameter information system by continuously scanning pre-assigned analog, pulse, and contact sensors located throughout the plant to provide status information to the BISI system and automatically displays that information on the BISI terminals in the Main Control Room. Alarms are also initiated to gain the Operations staff's attention. 3. Annunciating functions for system failure and automatic actions based on the self-test or self-diagnostic capabilities of digital computer-based I&C safety systems should be consistent with Positions 1 and 2. Response: The data goes through several validation steps before being presented to the operators. When redundant sensors are used, the data received by the computer can be processed by software to determine if the quality of one or more points is questionable. 4. The bypass and inoperable status indication system should include a capability for ensuring its operable status during normal plant operation to the extent that the indicating and annunciating functions can be verified. Response: The BISI system is designed to operate during all normal plant modes of operations including startup, shutdown, standby, refueling, and power operation. The ICS is designed to provide a very high degree of reliability and the accuracy of the displayed data is not significantly less than the accuracy of comparable data displayed in the Main Control Room. 5. Bypass and inoperable status indicators should be arranged such that the operator can determine whether continued reactor operation is permissible. The control room of all affected units should receive an indication of the bypass of shared system safety functions.						

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					Response: A system level display via the BISI display or indicating lights is provided to the operators to indicate the status of the systems being monitored as well as any support systems. If an alarm condition exists, additional detailed information is provided to the operations staff so as to allow determination of the abnormal condition. The information provided will identify to the Operations staff the exact nature of the initiating condition for the abnormal alarm. Each BISI system point will allow the user to access a detailed system screen. These indicators and alarms will provide critical information to help the operations staff determine whether continued reactor operation is/is not permissible. As stated previously, the final decision of system operability/inoperability is left to the Operations staff to determine per Technical Specifications. 6. Bypass and inoperable status indicators should be designed and installed in a manner that precludes the possibility of adverse effects on plant safety systems. The indication system should not be used to perform functions that are essential to safety, unless it is designed in conformance with criteria established for safety systems. Response: The BISI system is not designed to safety system criteria and therefore is not to be used to perform functions essential to the health and safety of the public, nor are operator actions based solely on BISI indications. Appropriate electrical and physical isolation from safety-related equipment to the non-safety system is provided to meet the requirements identified in the FSAR. The ICS is independent of existing sensors and equipment in safety-related systems. Independence is achieved through qualified safety-related Class 1E isolators. The ICS is also isolated to preclude electrical or electronic interference with existing safety systems. Inputs and outputs are isolated from the plant inputs such that normal faults on the plant side of the loops will have no adverse impact on the ICS other than loss of the one circuit with the fault. The inputs/outputs meet the isolation						

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					requirements of Watts Bar Design Criteria WB-DC-30-4, Separation/Isolation, which defines the design requirements for electrical separation/isolation of the distribution equipment and wiring for Class 1E electrical systems and components in the plant.						
197			X	Open Item 197 was never issued.			Closed	Closed			
198	7.5.5.2	7.5.2.2	EICB (Marcus)	7/20/2010 SRP Section 7.5, Subsection III, "Review Procedures" states: Recommended review emphasis for BISI F. Scope of BISI indications - As a minimum, BISI should be provided for the following systems: - Reactor trip system (RTS) and engineered safety features actuation system (ESFAS) - See SRP Appendix 7.1-B subsection 4.13, "Indication of Bypasses," and SRP Appendix 7.1-C subsection 5.8.3, "Indication of Bypasses." - Interlocks for isolation of low-pressure systems from the reactor coolant system - See SRP BTP 7-1. - ECCS accumulator isolation valves - See SRP BTP 7-2. - Controls for changeover of residual heat removal from injection to recirculation mode - See SRP BTP 7-6. G. Conformance with Regulatory Guide 1.47, "Bypassed and Inoperable Status Indication for Nuclear Power Plant Safety Systems." H. Independence - See SRP Appendix 7.1-B subsection 4.7, "Control and Protection System Interaction," and SRP Appendix 7.1-C subsections 5.6, "Independence," and 6.3, "Interaction Between the Sense and Command Features and Other Systems." The indication system should be designed and installed in a manner that precludes the possibility of adverse effects on plant safety systems. Failure or bypass of a protective function should not be a credible consequence of failures occurring in the indication equipment, and the bypass indication should not reduce the required independence between redundant safety systems. I. Use of digital systems - See SRP Appendix 7.0-A and Appendix 7.1-D. Please provide a description of how BISI meets each item above, or provide appropriate justification for not doing so.	Responder: Costley/Norman F. The scope of the WBN BISI indications are based on engineering calculation WBPEVAR8807025 Rev. 7 (Attachment 10). This calculation has not been updated for Unit 2. The calculation does include Common and Unit 2 equipment required to support Unit 1 operation. G. Compliance to Regulatory Guide 1.47 is described in design criteria document WB-DC-30-29 Rev. 8, Integrated Computer System (submitted under TVA letter dated August 11, 2010 (Reference 1)) which is a design input to calculation WBPEVAR8807025 Rev. 7. H. Design criteria document WB-DC-30-29 Rev. 8, Integrated Computer System submitted under TVA letter dated August 11, 2010 (Reference 1)) section 3.4.1, BISI Design and Operation states: "The BISI shall not be designed to safety related system criteria and therefore is not to be used to perform functions essential to the health and safety of the public. Class 1E isolation is required, however, to maintain the independence of safety related equipment and systems." I. Development of the Bypassed and Inoperable Status Indication (BISI) application of the Integrated Computer System (ICS) is performed in accordance with NPG SPP 2.6, Computer Software Control, Rev. 12 (Attachment 35). The development process starts with classifying the application depending on how the output of the software will be used. BISI software is currently classified as category 'C' in accordance with . Appendix B which defines Category C as: Application Software Categories Category Description C Software and data which are an integral part of a quality-related but not safety-related plant system or component and are essential to the performance of that function.		Open	Open TVA to respond or provide proposed date of response.			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					Software, portions of software, and data essential to the implementation of quality-related programs listed in Section 5.1.B of the Nuclear Quality Assurance Plan, including software used to implement regulatory physical security requirements. Software and data which implements NQAP requirements but not specifically identified as an augmented quality-related program as defined in Section 5.1.B of the NQAP. Software, not associated with a specific plant system, which stores, maintains, controls, distributes or manages data which can be used without further verification in activities which affect safety- or quality- related plant structures, systems, and components. Software, portions of software, and data which are an integral part of a non safety-related, non-quality related plant system or component whose failure would significantly impact plant operations. Software used in the design of non quality-related, non safety-related plant structures, systems, and components Based on category C classification, SPP 2.6, Annex C defines the documentation that is required for the software.. For BISI, a Software Requirements Specification (SRS) based on the engineering calculation will be generated along with a Software Design Description. A Software Verification and Validation Report (SVVR) consisting of a Validation Test and results and an Operability Test and results will be prepared. User documentation for BISI will be incorporated into the overall ICS user documents. Future changes to BISI will be driven foremost by changes to the engineering calculation that defines the overall functionality of the system. Any changes to the engineering calculation will cause a Software Services Request (SSR) to be generated. Depending on the scope of the change, the various documents (SRS, SDD, SVVR and user documentation) will be updated or re-issued.						

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
199	7.5.5.3	7.5.2.3	EICB (Marcus)	7/20/2010 The WBU2 FSAR Section 7.5.2.3, "Technical Support Center and Nuclear Data Links," contains a description of the Technical Support Center and Nuclear Data Links. SRP Section 7.5, Subsection II, "Acceptance Criteria" states: Requirements applicable to the review of…ERF information systems, and ERDS information systems …10 CFR 50.55a(a)(1), "Quality Standards." Please provide a description of how the nuclear data links meets this regulatory requirement.	Responder: Costley/Norman The Technical Support Center is intended to be an accident mitigation support center and provides Satellite Display Stations (SDS) capable of displaying information on plant systems for Unit 1, Unit 2 or the Simulator. Stations in the TSC receive data from the plant Integrated Computer System (ICS) over the ICS network. Separate PCs receive data from the simulator computer over the WBN site network to support drills and training exercises. Those PCs can also access the Plant Engineering Data System (PEDS) as a backup to ICS. The TSC also has a separate computer that connects to the CECC to allow additional access to meteorological station. The ICS data is also transmitted from the PEDS server through the PEDS Firewall over the WBN Site Network to the CECC computers (Chattanooga). The CECC computers transmit the data over the TVA Corporate Network, through the TVA Firewall (provided by NRC), through the NRC Firewall to the NRC. Transmission of this data from the ICS and Meteorological Station over data link (High Speed Communications Link) to the CECC and NRC meet the requirements of NUREG-0696, Functional Criteria for Emergency Response Facilities and NUREG-1394, Emergency Response Data System Implementation.		Open	Open TVA to respond or provide proposed date of response.			Related SE Section 7.5.5.3
200			EICB (Carte)	7/21/2010 Amendment 99 of the Watts Bar Unit 2 FSAR Section 7.5, "Instrumentation Systems Important to Safety," does not include any description of instrumentation for normal operation; therefore, Section 7.5 of the FSAR does not support statements made in the SER Section 7.5; compare SER (ML072060490) Section 7.5.1 and FSAR Amendment 99 Section 7.5. Please identify where, in the docketed material, information exists to support the statements in the SER Section 7.5.1.	Responder: Clark The statement in SER Section 7.5.1 is supported by the following: I&C Systems for Normal Operation FSAR Section Eagle 21 7.2 Neutron Monitoring 7.2 Foxboro Spec 200 7.3 (List of other sections in attachment 34) Foxboro I/A 7.7.11 (new section will be added by amendment 101) (other sections have been previously provided) Plant Computer 7.5.2 Rod Control 7.7.1.2 CERPI 7.7.1.2 Control Rod Drive 7.7.1.1 Incore Neutron Monitoring 7.7.1.9 Lose Part Detection/Monitoring 7.6.7 Vibration Monitoring RCP 5.5.1.2		Open	Open NRC Review			Related to SE Section 7.5

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					Control Boards 7.1.1.10 RVLIS 7.5, 5.6						
201			EICB (Carte)	7/21/2010 Amendment 99, FSAR Section 7.7.1.1.1, "Reactor Control Input Signals (Unit 2 Only)," contains a description of functions performed uniquely for Unit 2. Please describe the equipment that performs this function (in sufficient detail to support a regulatory evaluation), and evaluate this equipment against the appropriate regulatory criteria.	Responder: Webb These functions are within the scope of the Foxboro I/A system. Section 7.7.11 will be added to the FSAR in amendment 101 to provide a discussion of the DCS.		Open	Open TVA to docket amendment 101.			Related to SE Section 7.7.1.1.1
202			EICB (Carte)	7/22/2010 The letter (ML0003740165) which transmitted the Safety Evaluation for the Common Q topical report to Westinghouse stated: "Should our criteria or regulations change so that our conclusions as to the acceptability of the report are invalidated, CE Nuclear Power and/or the applicant referencing the topical report will be expected to revise and resubmit their respective documentation, or submit justification for continued applicability of the topical report without revision of the respective documentation." Question No 81 identified many criteria changes; please revise the respective documentation or submit justification for continued applicability of the topical report.	Responder: WEC Revision 1 of the Licensing Technical Report will provide more detailed information on the changes to the platform. This revision is scheduled to be issued by Westinghouse no later than September 30, 2010 and will be submitted to the NRC within 2 weeks of receipt. Rev. 2 of the Licensing Technical Report will include the applicability of guidance. This item is currently not scheduled. A schedule date will be provided by Westinghouse no later than September 30, 2010 and the document will be submitted to the NRC within two weeks of receipt.		Open	Open TVA to respond or provide proposed date of response.			Relates to SE Section 7.5.2, PAMS
203	7.5.5	7.5.2	EICB (Marcus)	7/26/2010 By letter dated April 27, 2010 (ML101230248), TVA stated (Enclosure Item No.19): "The WBN Unit 2 Integrated Computer System(ICS) modification merges the ERFDS and plant computer into a single computer network." FSAR Section 7.5.2, "Plant Computer System," has three subsections: 7.5.2.1, "Safety Parameter Display System" 7.5.2.2, "Bypassed and Inoperable Status Indication System (BISI)" 7.5.2.3, "Technical Support Center and Nuclear Data Links" This arrangement implies that the each of these function are part of the plant computer, and not a separate sets of equipment. Please describe the equipment for each function and identify any equipment common to more than one function.	Responder: Clark The plant computer system is one set of hardware. The “Safety Parameter Display System”, “Bypassed and Inoperable Status Indication System (BISI)”, “Technical Support Center and Nuclear Data Links” are all functions of the Plant Computer System. Historically the Westinghouse P2500 Plant Process Computer and Emergency Response Facilities Data System (ERFDS) were individual systems but were merged together with the implementation of DCN 39911-A, implemented for WBN Unit 1 in December 1998, to become the Plant Integrated Computer System (ICS). A similar system is being installed for WBN Unit 2 based on the same software with more modern hardware. The ICS is composed of a number of pieces of hardware, all utilized as a system, to provide the functions listed in the FSAR sections 7.5.2.1, 7.5.2.2 and 7.5.2.3. This hardware includes but is not limited to Hewlett Packard (HP) servers (CPU), DELL servers (CPU), Fiber Optic Panels, Fiber Optic Converters, Switches, Firewalls,		Open	Open TVA to respond or provide proposed date of response.			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					Network Taps, Multiplexors (RTP), LCD displays and fiber optic and copper Ethernet cables. As all the applicable hardware make up the “system” it is all common to more than one function and there is no separate set of equipment for any of the functions referenced in FSAR Section 7.5.2.1 and 7.5.2.2. The Nuclear Data Link and EOF functions described in 7.5.2.3 are provided by the CECC in Chattanooga. In order for the CECC to have access to ICS data, both the PEDS and the data diode isolating the PEDS from the ICS must be operational. Meteorological data from the Environmental Data Station (EDS) is gathered by the Unit 1 ICS. That data is sent over to the unit 2 ICS via the inter-unit firewall.						
204	7.5.5	7.5.2	EICB (Marcus)	7/26/2010 By letter dated March 12, 2010 (ML101680577) TVA provided drawing No. 2-45W2697-1-1, "Integrated Computer System Network Configuration Connection Diagram," that depicts three "Data Diodes. Please provide a detailed description of the equipment, software, and configurations of each "Data Diode".	Responder: Costley/Norman 1. Three data diodes. 2. Two provide an interface between train A and B of Common Q. a. These are identical systems consisting of the following: i. Dual DELL R200 computers ii. Red Hat Enterprise Linux software that is locked down by CTI iii. 55 Mbs Owl cards iv. Fiber optic Ethernet interface to trained Maintenance test panel b. Software is configured to allow only specific traffic from the MTP to pass through to the ICS c. The secure side of the data diode will initiate the connection to the MTP, so there will be a bidirectional connection between the secure side of the data diode and the MTP. There will be no bidirectional data flow from the ICS to the MTP since the diode will block all incoming traffic from the ICS. 3. The third data diode is placed between the two ICS systems and the two PEDS computer systems. a. Hardware is identical to that used by TVA in other plants i. Dual HP DL360GS computers ii. Red Hat Enterprise Linux software that is locked down by CTI iii. 155 Mbs OWL cards iv. RJ45 Ethernet to PEDS network		Open	Open TVA to respond or provide proposed date of response.			Relates to SE Section 7.5.2, PAMS

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					b. Diode is configured to allow certain types of data to flow from the ICS network to the PEDS network. This includes but is not limited to the following: i. Once per second current values and qualities for all points ii. History data archived by the ICS iii. Data files c. The data diode does not allow any data to be transferred between the PEDS network and the ICS network.						
205			EICB (Garg)	7/26/2010 Regarding the Foxboro Spec 200 system installed at Unit 2: a- Is it similar to Unit 1? If not, identify the differences and evaluation of the acceptability of these differences. b- deleted c- For each system which is discussed in the FSAR and utilizes the Spec 200 system, please provide the instrument logic diagram, loop/block diagram with reference to where the system is discussed in the FSAR.	Responder: Clark As discussed at the August 3 and 4 meeting in Knoxville between TVA and the NRC, the Foxboro Spec 200 is not a system. The Foxboro Spec 200 analog hardware is used to replace the existing obsolete hardware with the same functions. There are no interconnections between the analog loops unless such interconnections existed prior to the replacement. This is strictly an analog to analog upgrade due to equipment obsolescence. The Foxboro hardware is installed in existing cabinets which require modifications to accept the Foxboro hardware racks. a- A listing of the replacements and differences was previously provided as Attachment 1 to TVA letter to the NRC dated June 18, 2010. Within Unit 1, only portions of the AFW controls were replaced. In Unit 2 all safety-related analog loops were replaced. The Foxboro Spec 200 is a fully qualified industry standard for replacement of obsolete analog instrument and control loop hardware. b- deleted c- c- The Foxboro Spec 200 hardware has not been installed. Therefore the revised drawings have not been issued. Based on this, EDCR excerpts for the logic diagrams and loop/logic drawings were provided as attachments to TVA letter to the NRC dated July 30, 2010. The cross reference between the functions upgraded as part of the Foxboro Spec 200 change is contained in Attachment 33.		Open	Open TVA to respond or provide proposed date of response.			Question B related to prior NRC approval of this system or 50.59 information. This question will be addressed in the August plant visit.
206	7.5.5	7.5.2	B (Mar	7/27/2010	Responder: Clark		Open	Open			Relates to SE Section: 7.5.5, Plant Computer

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				The NRC Requested a description of the plant computer and TVA provided: (1) Dell marketing literature for Dell Poweredge R200 Server, which can be found on the internet (http://www.dell.com/downloads/global/products/pedge/en/pe_R200_spec_sheet_new.pdf), and (2) HP Integrity rx2660 Server User Service guide (edition 6), which has not yet been found on the internet, but many other editions have been found. This information is not adequate for answering the question. (Note: TVA also provided a network configuration connection diagram, which is necessary but not sufficient.) Please provide a description of the plant computer: (1) Please include sufficient detail so that an evaluation can be made against the SRP acceptance criteria in SRP Section 7.7. (2) Please identify the equipment (hardware and software) that performs each function described in the FSAR.	(1) The "Plant Computer" is not just a computer but is a system and is designated the Integrated Computer System or ICS. The ICS is composed of multiple computer CPUs, LCD displays, RTP Multiplexer Assemblies, network fiber optic panels, fiber optic converters, Ethernet switches and network taps previously described in items 71, 81 and 82 above. For a detailed discussion of the ICS functions refer to design criteria document WB-DC-30-29 Rev. 8, Integrated Computer System submitted under TVA letter dated August __, 2010. (2) As previously discussed in item 82, there is no unique set of hardware for any specific function.			TVA to respond or provide proposed date of response.			
207			EICB (Carte)	July 27, 2010 deleted	Date: Responder:		Closed	Closed			
208	7.5.2	7.5.1	EICB (Marcus)	7/27/2010 By letter dated June 18, 2010 (ML101940236), TVA responded to an NRC request for additional information. Enclosure 1 Item No. 6 of this letter identified, for each PAM variable whether the variable was: (1) implemented identically to Unit 1 and reviewed by the NRC, (2) implemented identically to Unit 1 but modified under 10 CFR 50.59 after it was reviewed by the NRC, and (3) implemented in a manner that is unique to Unit 2. There were sixteen variables modified under 10 CFR 50.59; please describe the changes that were performed under 50.59.	Responder: Clark The notes provided with the table include the change to the variable under 10 CFR 50.59. For ease of review, the other note references have been deleted for these variables and only the note dealing with the Unit 1 change has been retained in the Notes column of the table excerpt. The applicable notes are highlighted in the notes list.		Open	Open TVA to respond or provide proposed date of response.			Relates to SE Section: 7.5.2, PAMS
209	7.5.2	7.5.1	EICB (Marcus)	7/27/2010 By letter dated June 18, 2010 (ML101940236), TVA responded to an NRC request for additional information. Enclosure 1 Item No. 6 of this letter identified, for each PAM variable whether the variable was: (1) implemented identically to Unit 1 and reviewed by the NRC, (2) implemented identically to Unit 1 but modified under 10 CFR 50.59 after it was	Responder: Clark The first eight variables in question are primary chemistry parameter. The parameters are the same for both units, but in Unit 1, the sample is obtained via the post accident sampling system, while in Unit 2 the sample is obtained using a grab sample via the normal sample system.		Open	Open TVA to respond or provide proposed date of response.			Relates to SE Section: 7.5.2, PAMS

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				reviewed by the NRC, and (3) implemented in a manner that is unique to Unit 2. There were nine variables that were identified as both Unique to Unit 2 and identical to what was reviewed and approved on Unit 1. Please explain.	The last variable was somewhat difficult to characterize. The method of detection and the hardware manufacturer is the same in both units. However, due to obsolescence some of the parts are different than what is installed in Unit 1. The differences are described in Note 21 of the original response.						
210	7.5.2	7.5.1	EICB (Marcus)	7/27/2010 By letter dated June 18, 2010 (ML101940236), TVA responded to an NRC request for additional information. Enclosure 1 Item No. 6 of this letter identified, for each PAM variable whether the variable was: (1) implemented identically to Unit 1 and reviewed by the NRC, (2) implemented identically to Unit 1 but modified under 10 CFR 50.59 after it was reviewed by the NRC, and (3) implemented in a manner that is unique to Unit 2. There were seven variables that were identified as both identical to Unit 1 and changed under 10 CFR 50.59. Please explain.	Responder: Clark The design basis for Unit 2 is to match Unit 1 as closely as possible. This includes incorporating changes made to Unit 1 after licensing under 10 CFR 50.59. The changes in question fall into this category and are described in the Notes for each variable in the original submittal.		Open	Open TVA to respond or provide proposed date of response.			Relates to SE Section: 7.5.2, PAMS
211			EICB (Carte)	7/27/2010 FSA Table 7.1-1 shows: "The extent to which the recommendations of the applicable NRC regulatory guides and IEEE standards are followed for the Class 1E instrumentation and control systems is shown below. The symbol (F) indicates full compliance. Those which are not fully implemented are discussed in the referenced sections of the FSAR and in the footnotes as indicated." Please describe how systems that are important to safety, but not 1E, comply with 10 CFR 50.55a(a)1: "Structures, systems, and components must be designed, fabricated, erected, constructed, tested, and inspected to quality standards commensurate with the importance of the safety function to be performed."	Responder: Clark The WBN 2 FSAR Section 7.5 defines the following systems as “important to safety” 1. Post Accident Monitoring including: a. Common Q Post Accident Monitoring System (Safety-Related) i. Reactor Vessel Level ii. Core Exit Thermocouples iii. Subcooling Margin Monitor b. Eagle 21 indications (Safety-Related) c. Foxboro Spec 200 indications (Safety-Related) d. Neutron Monitoring (Source and Intermediate Range) (Safety-Related) e. Radiation Monitors (Safety-Related) f. Unit 1 and Common shared indications (Safety-Related) g. Foxboro I/A indications (Non-Safety-Related) h. Radiation Monitors (Non-Safety-Related) i. CERPI (Non-Safety-Related) j. Integrated Computer System (Non-Safety-Related) k. Unit 1 and Common shared indications (Non-Safety-Related) Post Accident Monitoring Instrumentation Design Criteria, WB-DC-30-7, Rev. 22, Appendix A provides the minimum quality requirements for each Category (1, 2 or 3) of variable. By definition, no Category 1 variable can be non-		Open	Open TVA to respond or provide proposed date of response.			Relates to SE Sections: 7.5.5, Plant Computer 7.6.10, Loose Part Monitoring 7.7.1, Control System Description 7.7.2, Safety System Status Monitoring System 7.7.4, PZR & SG Overfill 7.9, Data Communications

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					safety-related. Therefore, non-safety-related variables and the source equipment are limited to category 2 or 3. Since some variables are designated as having more than 1 category, the requirements of the highest category apply. Additional design criteria information for specific systems is contained in: g. Foxboro I/A – Site-Specific Engineering Specification WBN Unit 2 NSSS and BOP Controls Upgrade Specification Rev. 1 (Attachment 23) h. CERPI – Rod Control System Description, N3-85-4003, Rev. 12 Section 2.2, Design Requirements i. Radiation Monitors – Design Criteria Document WB-DC-40-24, Radiation Monitoring – (Unit 1 / Unit 2), Rev. 21 j. Integrated Computer System – Design Criteria Document WB-DC-30-29 Plant Integrated Computer System (ICS), Rev. 8 (Submitted under TVA to NRC letter dated August __, 2010) 2. Plant Computer (Integrated Computer System) – See Item j above. The WBN 2 FSAR Section 7.6, defines the following non-safety-related systems as “other systems required for safety” 1. Foxboro I/A – While not specifically described, functions performed by the system are described in this section. The qualify requirements are described above. 2. Lose Part Monitoring System – Design Criteria Document WB-DC-30-31, Loose Parts Monitoring System, Rev. 4, provides the quality requirements for this system. A description of the distributed control system will be added as FSAR section 7.7.1.11 in FSAR Amendment 101. Installation is performed in accordance with the quality requirements of either the Bechtel or TVA work order processes based on the quality classification of the equipment being installed. Vendor testing is performed in accordance with procurement specification requirements which are based on the type and quality classification of the equipment. Preoperational testing is performed in accordance with Chapter 14 of the FSAR.						

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
212			EICB (Carte)	7/27/2010 By letter dated June 18, 2010 (ML101940236) TVA stated (Enclosure 1, Attachment 3, Item No. 3) that the PAMS system design specification and software requirements specification contain information to address the "Design Report on Computer Integrity, Test and Calibration..." The staff has reviewed these documents, and it is not clear how this is the case. (1) Please describe how the information provided demonstrates compliance with IEEE 603-1991 Clauses 5.5, 5.7, 5.10, & 6.5. (2) Please describe how the information provided demonstrates conformance with IEEE 7-4.3.2-2003 Clauses 5.5 & 57.	Responder: WEC Application specific requirements for testing. This cannot be addressed in a topical report. Evaluation of how the hardware meets the regulatory requirements. WEC to provide the information and determine where the information will be located.		Open	Open TVA to respond or provide proposed date of response.			Relates to SE Section 7.5.2
213			EICB (Carte)	7/27/2010 By letter dated June 18, 2010 (ML101940236) TVA stated (Enclosure 1, Attachment 3, Item No. 3) that the PAMS system design specification and software requirements specification contain information to address the "Theory of Operation Description." The staff has reviewed these documents, and it is not clear how this is the case. The docketed material does not appear to contain the design basis information that is required to evaluate compliance with the Clause of IEEE 603. (1) Please provide the design basis (as described in IEEE 604 Clause 4) of the Common Q PAMS. (2) Please provide a regulatory evaluation of how the PAMs complies with the applicable regulatory requirements for the theory of operation. For example: Regarding IEEE 603 Clause 5.8.4 (1) What are the manually controlled protective actions? (2) How do the documents identified demonstrate compliance with this clause?	Responder: WEC		Open Carte to review and revise this question.	Open TVA to respond or provide proposed date of response.			Relates to SE Section 7.5.2
214			EICB (Carte)	7/27/2010 By letter dated June 18, 2010 (ML101940236) TVA stated (Enclosure 1, Attachment 3, Item No. 10) that the approved Common Q Topical Report contains information to address the "Safety Analysis." The Common Q SPM however states that a Preliminary Hazards Analysis Report and the V&V reports document the software hazards analysis. Please Provide these documents.	Responder: WEC According to "The Software Program Manual for Common Q Systems," WCAP-16096-NP-1A, the Software Safety Plan only applies to Protection class software and PAMS is classified as Important-to-safety. Exhibit 4-1 of the SPM shows that PAMS is classified as Important-to-Safety		Open WEC References Common Q PAMS preliminary hazards analysis is referenced in the SRS. WEC to delete.	Open TVA to respond or provide proposed date of response.			
215			DORL (Bailey)	7/29/2010 By letter dated June 18, 2010, TVA provided a table showing the documents that had been completed and were available for staff review. In a conference call on	Responder: WEC Close this item		Open	Open TVA to respond or provide proposed date of response.			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				July 27, 2010, TVA agreed to submit the requested documents on the docket. Please provide the schedule for submitting the documents.							
216	7.5.5	7.5.2	EICB (Marcus)	7/29/2010 By letter dated March 12, 2010 (ML101680577), TVA stated that it would provide five documents to describe the Process computer: (1) EDCR 52322 Rev. A excerpts, (2) HP RX2660 Users Guide AB419-9002C-ed6, (3) Dell Poweredge R200 Server sheet November 2007, (4) RTP Corp 8707 I/O Brochure RTP 8707-02, 2004, and (5) Integrated Computer System Drawing.	Responder: Clark 1) EDCR 52322 is contained in Attachment 7. 5) The design change referred to is the addition of a data diode. This has not been incorporated into the drawing. Please see the response to letter item 88 (RAI Matrix Item 224).		Open	Open TVA to respond or provide proposed date of response.			
217			EICB (Garg)	7/6/2010 Provide copies excerpts of the EDCRs and DCNs that provide the block and logic diagrams for the Foxboro Spec 200 implementation.	Responder: Clark Attachment 7 contains excerpts of the following change documents: DCN 52376 Note: These changes are scheduled to be implemented after Unit 2 Fuel Load DCN 52641 NOTE: DCN 52376 and 52641 impact loops already in service for Unit 1 and as such are implemented under 10CFR50.59. EDCR 52343 EDCR 52427		Open	Open NRC Review			
218			EICB (Garg)	7/6/2010 Provide copies excerpts of the EDCRs and DCNs that provide the block and logic diagrams for the Foxboro Spec 200 implementation.	Responder: Clark The excerpt of work order WO 08-813412-000 provided with the June 18 letter did not contain the information showing that the new type (Arnold) power supplies had been installed in the Unit 1 Eagle 21 system. Please provide the necessary pages of the work order to verify the installation of Arnold power supplies in the Unit 1 Eagle 21 System.		Open Attachment 8 contains the required correct work order excerpt.	Open NRC Review			
219			EICB (Garg)	8/4/2010 Transmit copy of February 8, 2008 FSAR Red-Line for Unit 2 letter with attachments [CD].	Responder: TVA Licensing A copy was hand carried by Mr. W. Crouch and delivered to Stewart Bailey at the August 17 meeting at NRC headquarters.		Open Check what sent by Terry missing attachments.	Open			
220			EICB (Garg)	8/4/2010 For Safety Related SSPS, submit letter justifying delta between U1 [utilizing ARs] & U2 [utilizing ARs and MDRs]. [Requires TS change ???]	Responder: Ayala The Westinghouse ARLA latch attachment is obsolete. In order to provide a latching relay for Unit 2 Solid State Protection System (SSPS), a MDR latching relay must be used. MDR relays are currently in use and shown to be reliable as SSPS Slave Relays in other Westinghouse plants.		Open Are there any open issues? Docket plant specific responses to the individual.	Open TVA to respond or provide proposed date of response.			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					The Technical Specification (TS) Bases was updated in Amendment B to indicate acceptability of testing MDR ESFAS Slave relays on an 18-month interval based on the assessment done in WCAP-13878-P-A, Revision 2, “Reliability Assessment of Potter & Brumfield MDR Series Relays”. An initial Unit 2 ESFAS SSPS Slave Relay Service Life and Contact Load study similar to that done in Unit 1 has been completed to show that Unit 2 satisfies the conditions of WCAP-13877-P-A, Revision 2, “Reliability Assessment of Westinghouse Type AR Relays used as SSPS Slave Relays”, and WCAP-13878, Revision 2, “Reliability Assessment of Potter & Brumfield MDR Series Relays”. The Contact Load study also identifies locations in which MDR relays are not acceptable for use.						
221			EICB (Marcus)	8/4/2010 Submit EDCR Technical Evaluation for the source and intermediate range updated electronics for Unit 2	Responder: Trelease The EDCR 52421 Source and Intermediate Range, Scope and Intent, Unit Difference and Technical Evaluations are contained in Attachment **Error! Reference source not found.**.		Open	Open TVA to respond or provide proposed date of response.			
222			EICB (Garg)	8/4/2010 Submit updated list for Foxboro Spec 200 [replacement of Bailey and Robert-Shaw electronics	Responder: Clark The updated listing of Foxboro Spec 200 loop functions is contained in Attachment 33.		Open	Open			
223			EICB (Garg)	8/4/2010 Submit EDCR Technical Evaluation for Foxboro I/A replacing obsolete non-safety related Foxboro H-Line analog electronics with a digital CDS. [selected single point failures being addressed in design]	Responder: Clark Duplicate of item 233.		Closed	Closed			
224	7.5.5	7.5.2	EICB (Marcus)	8/4/2010 Mike Norman [TVA Computer Eng. Group] will check status of DCN/50.59 for Integrated Computer System upgrade that will install the data diode between the WBN PEDS and the Unit 1 and Unit 2 ICS.	Responder: Norman (TVA CEG) The Data diode to isolate the WBN Unit 1 and Unit 2 ICS computers from the WBN PEDS computers will be installed in PIC 56278 as part of DCN 54971. This DCN is scheduled for implementation in Spring 2011. This date was included in the Cyber Security Plan Implementation Schedules submitted to the NRC on July 23.		Open	Open TVA to respond or provide proposed date of response.			
225			EICB (Garg)	8/4/2010 Provide EDCR Technical Evaluation Justify/explain	Responder: Scansen The requested information is contained in the		Open	Open TVA to respond or			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				updated hardware [functionally equivalent to Unit 1] for the RCP and Turbine Generator vibration monitoring equipment.	Scope and Intent, Unit Difference and Technical Evaluations for EDCRs 52420 (Attachment 11) and 53559 (Attachment 12)			provide proposed date of response.			
226			EICB (Carte/Singh)	8/4/2010 Submit the Foxboro I/A segmentation analysis and ICS Design Criteria documents on an expedited separate letter. Provide a date when the Segmentation analysis will be revised based on discussions at the meeting.	Responder: TVA Licensing These documents were submitted under TVA letter dated August 11, 2010.		Closed NNC 8/25/10: Segmentation analysis has been received and read. Please describe why a failure or error will not propagate over the -peer-to-peer network, and cause more than one segment to fail.	Closed			See also Open Item Nos. 41 & 270.
227			EICB (Garg)	8/4/2010 Provide copies of 50.59s for the following Unit 1 changes a. CERPI (initial installation and 2009 upgrade) b. Vibration monitoring (RCP, TG and FW pumps to Bentley-Nevada 3300) c. Containment Sump Level Transmitter replacement d. Turbine Servo Control Valve Card replacement e. Pressurizer Heater deletion of Backup Heaters on for PZR High Level f. AMSAC g. Significant ESFAS changes	Responder: Clark A. CERPI, initial installation DCN 51072 and 2009 upgrade DCN 52957 (Attachment **Error! Reference source not found.**) B. Upgrade of RCP, TG and FW pumps vibration monitoring to Bentley-Nevada 3300, DCN 39242, DCN 39506, DCN 39548, and DCN 50750 (Attachment) C. Containment Sump Level Transmitter replacement, DCN 39608 (Attachment) D. Turbine Servo Control Valve Card replacement, DCN 38993 (Attachment) E. Pressurizer Heater deletion of Backup Heaters on for PZR High Level, DCN 51102 (Attachment) F. AMSAC DCN 50475 (Attachment) G. Significant ESFAS changes i. Relocate containment isolation valve function and relocate the 6.9KV Shutdown Boards Emergency Feeder Breaker Trip function from K626 and K602, respectively, to minimize disruption on plant operation. DCN 38238 (Attachment **Error! Reference source not found.**) ii. Revise OTΔT and OPΔT turbine runback setpoints, DCN 38842 (Attachment) iii. Install Integrated Computer System (ICS) Stages 4 and 5, DCN 50301 (Attachment)		Open	Open TVA to respond or provide proposed date of response.			
228			EICB (Carte/Singh)	8/4/2010 Submit rod control system description N3-85-4003	Responder: Clark The Rod Control System Description N3-85-4003 is contained in Attachment 21.		Open	Open TVA to respond or provide proposed date of response.			
229			(C	8/4/2010	Responder: Clark		Open	Open			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				Submit Annunciator system description/design criteria	Condition Status/Alarm Design Criteria Document WB-DC-30-21 is contained in Attachment 22.		NNC 8/25/10: Document not yet received.	TVA to respond or provide proposed date of response.			
230			EICB (Carte)	8/4/2010 Submit Foxboro I/A Procurement Specification excerpts that provide system description information	Responder: Webb The requested Foxboro I/A Procurement Specification is contained in Attachment 23.		Open NNC 8/25/10: Document not yet received.	Open TVA to respond or provide proposed date of response.			
231			EICB (Garg)	8/4/2010 Update FSAR Amendment 100 Section 7.1.1.2 markup based on discussion with Hukam Garg.	Responder: Clark FSAR section 7.1.1.2 is revised in FSAR Amendment 100 submitted to the NRC on TVA letter to the NRC dated September 1, 2010 includes the requested clarifications.		Close	Open FSAR AMD 100			
232			EICB (Singh)	8/4/2010 Submit EDCR Technical Evaluation for LPMS EDCR	Responder: Clark The EDCR 52418 Lose Part Monitoring Scope and Intent, Unit Difference and Technical Evaluations are contained in Attachment 24.		Open	Open TVA to respond or provide proposed date of response.			
233			EICB (Carte)	8/4/2010 Submit EDCR Technical Evaluation for Foxboro I/A EDCR	Responder: Clark Foxboro I/A EDCRs 52378 and 52671 Scope and Intent, Unit Difference and Technical Evaluations are contained in Attachment 25.		Open NNC 8/25/10: Documents received.	Open NRC to review documents.			
234			EICB (Carte)	8/4/2010 Bechtel to perform D3 analysis for Common Q PAMS which will be incorporated into Westinghouse Licensing Technical Report.	Responder: Duplicate of Item 64		Closed	Closed			
235			EICB (Garg)	8/4/2010 TVA to ensure Stewart Bailey is on cc: for all Chapter 7 RAI response letters.	Responder: TVA Licensing Stewart Bailey has been added to the standard response letter template used for Chapter 7 responses.		Closed	Closed			
236			EICB (Garg)	8/4/2010 Submit EDCR Technical Evaluation for Foxboro Spec 200 EDCRs	Responder: Clark Foxboro Spec 200 EDCRs 52343, 52427 and 52641, Scope and Intent, Unit Difference and Technical Evaluations are contained in Attachment 26.		Open	Open TVA to respond or provide proposed date of response.			
237			EICB (Carte)	8/4/2010 Submit EDCR Technical Evaluation for Annunciator EDCR	Responder: Clark The Annunciator EDCR 52315 Scope and Intent, Unit Difference and Technical Evaluations are contained in Attachment 27.		Open NNC 8/25/10: Documents not yet received.	Open TVA to respond or provide proposed date of response.			
238			EICB (Carte)	8/4/2010 Discuss with TVA adding a description of the Foxboro I/A system to chapter 7 of the FSAR.	Responder: Webb/Hilmes Duplicate of item 201		Closed	Closed			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
239			EICB (Carte)	8/4/2010 Plan a meeting with TVA the NRC and Westinghouse to review Common Q PAMS documentation.	Responder: Hilmes meeting held 8/17/10		Closed	Closed			
240			EICB (Garg)	8/4/2010 Submit EDCR Technical Evaluation for Vibration Monitoring EDCR(s)	Responder: Clark The Scope and Intent, Unit Difference and Technical Evaluations for EDCRs 53559 and 52420 are contained in Attachment 28.		Open	Open TVA to respond or provide proposed date of response.			
241			EICB (Singh)	8/4/2010 Review CERPI WCAPs for system description information to be submitted to the NRC.	Responder: Davies CERPI was designed after Westinghouse stopped using WCAPs. The document that provides the most detailed information is the CERPI System Requirements Specification WN-DS-00001-WBT Rev. 2. The proprietary version of this document and the affidavit for withholding are contained in Attachment 29.		Open	Open TVA to respond or provide proposed date of response. TVA to add the document number for Att 29.			
242			EICB (Garg)	8/4/2010 TVA to make firm decision on date of transfer (before or after initial startup) of Unit 2 loops in service for Unit 1 to new Foxboro Spec 200 hardware	Responder: Hilmes The Unit 2 loops in service for Unit that are scheduled to be transferred to the Foxboro Spec 200 hardware will be transferred prior to Unit 2 fuel load.		Open	Open TVA to respond or provide proposed date of response.			
243			EICB (Carte)	8/3/2010 Section 8.2.1 of the Common Q SPM (ML050350234) states that the System Requirements Specification (SysRS) includes the system design basis. Section 1.2, "System Scope," of the WBN2 PAM SysRS (ML101680578) includes a description of the PAMS design bases that does not meet the requirements of IEEE 603-199 Clause 4. Please provide a description of the PAMs design bases that conforms to the requirements of IEEE 603-1991 Clause 4.	Responder: WEC WEC to address at the 9/15 meeting Closed to Item 142		Open	Closed. TVA to respond or provide proposed date of response.			
244			EICB (Carte)	8/3/2010 Section 8.2.2 of the Common Q SPM (ML050350234) states that the Software Requirements Specification (SRS) shall be developed using IEEE 830 and RE 1.172. Clause 4.8, "Embedding project requirements in the SRS," of the IEEE 830 states that an SRS should address the software product, not the process of producing the software. In addition Section 4.3.2.1 of the SPM states "Any alternatives to the SPM processes or additional project specific information for the ...SCMP...shall be specified in the PQP. Contrary to these two statements in the SPM, the WBN2 PAMS SRS (ML101050202) contains many	Responder: WEC WEC agreed to remove process related items from all docs. Close to previous item and revise previous item to include all documents.		Open	Open TVA to respond or provide proposed date of response.			LIC-101 Rev. 3 Appendix B Section 4, "Safety Evaluation" states: "the information relied upon in the SE must be docketed correspondence." LIC-101 Rev. 3 states: "The safety analysis that supports the change requested should include technical information in sufficient detail to enable the NRC staff to make an independent assessment regarding the acceptability of the proposal in terms of regulatory requirements and the protection of public health

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				process related requirements, for example all seventeen requirements in Section 2.3.2, "Configuration Control," address process requirements for configuration control. Please explain how the above meets the intent of the approved SPM.							and safety."
245			EICB (Carte)	8/3/2010 Section 5.8 of the Common Q SPM (ML050350234) identifies the required test documentation for systems developed using the Common Q SPM. Please provide sufficient information for the NRC staff to independently assess whether the test plan for WBN2 PAMS, is as described in the SPM (e.g., Section 5.8.1).	Responder: WEC Relates to the commitment to provide the test plan and the SPM compliance matrix		Open	Open TVA to respond or provide proposed date of response.			LIC-101 Rev. 3 Appendix B Section 4, "Safety Evaluation" states: "the information relied upon in the SE must be docketed correspondence." LIC-101 Rev. 3 states: "The safety analysis that supports the change requested should include technical information in sufficient detail to enable the NRC staff to make an independent assessment regarding the acceptability of the proposal in terms of regulatory requirements and the protection of public health and safety."
246			EICB (Carte)	8/3/2010 Section 4.3.2.1, "Initiation Phase" of the Common Q SPM (ML050350234) requires that a Project Quality Plan (PQP) be developed. Many other section of the SPM identify that this PQP should contain information required by ISG6. Please provide the PQP. If "PQP" is not the name of the documentation produced, please describe the documentation produced and provide the information that the SPM states should be in the PQP.	Responder: WEC There is a PQP and SPM compliance matrix will be referenced in the Licensing Technical Report. WEC to identify the elements of the SPM in the compliance matrix		Open	Open TVA to respond or provide proposed date of response.			LIC-101 Rev. 3 Appendix B Section 4, "Safety Evaluation" states: "the information relied upon in the SE must be docketed correspondence." LIC-101 Rev. 3 states: "The safety analysis that supports the change requested should include technical information in sufficient detail to enable the NRC staff to make an independent assessment regarding the acceptability of the proposal in terms of regulatory requirements and the protection of public health and safety."
247			EICB (Carte)	8/8/2010 As part of the Common Q topical report development effort, Westinghouse developed the Software Program Manual for Common Q Systems (ML050350234) to address software planning documentation. The NRC reviewed the SPM and concluded: “the SPM specifies plans that will provide a quality software life cycle process, and that these plans commit to documentation of life cycle activities that will permit the staff or others to evaluate the quality of the design features upon which the safety determination will be	Responder: WEC The documents will be identified in Rev. 1 of the Licensing Technical Report in the compliance matrix. WEC to make the documents available ASAP in Rockville. May require later submittal.		Open	Open (TVA) TVA to respond or provide proposed date of response.			LIC-101 Rev. 3 Appendix B Section 4, "Safety Evaluation" states: "the information relied upon in the SE must be docketed correspondence." LIC-101 Rev. 3 states: "The safety analysis that supports the change requested should include technical information in sufficient detail to enable the NRC staff to make an independent assessment regarding

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				based. The staff will review the Implementation of the life cycle process and the software life cycle process design outputs for specific applications on a plant-specific basis." Please identify the implementation documentation produced as a result of following the SPM, and state what information will be docketed.							the acceptability of the proposal in terms of regulatory requirements and the protection of public health and safety."
248			EICB (Carte)	8/8/2010 As part of the Common Q topical report development effort, Westinghouse developed the Software Program Manual for Common Q Systems (ML050350234) to address software planning documentation. The NRC reviewed the SPM and concluded: "the SPM specifies plans that will provide a quality software life cycle process, and that these plans commit to documentation of life cycle activities that will permit the staff or others to evaluate the quality of the design features upon which the safety determination will be based. The staff will review the Implementation of the life cycle process and the software life cycle process design outputs for specific applications on a plant-specific basis." Please identify the design outputs produced as a result of following the SPM, and state when what information will be docketed.	Responder: WEC The documents will be identified in Rev. 1 of the Licensing Technical Report in the compliance matrix. WEC to make the documents available ASAP in Rockville. May require later submittal.		Open	Open TVA to respond or provide proposed date of response.			LIC-101 Rev. 3 Appendix B Section 4, "Safety Evaluation" states: "the information relied upon in the SE must be docketed correspondence." LIC-101 Rev. 3 states: "The safety analysis that supports the change requested should include technical information in sufficient detail to enable the NRC staff to make an independent assessment regarding the acceptability of the proposal in terms of regulatory requirements and the protection of public health and safety."
249			EICB (Carte)	8/8/2010 The SVVP in the SPM describes the V&V implementation tasks that are to be carried out. The acceptance criterion for software V&V implementation is that the tasks in the SVVP have been carried out in their entirety. Documentation should exist that shows that the V&V tasks have been successfully accomplished for each life cycle activity group. Please provide information that shows that the V&V tasks have been successfully accomplished for each life cycle activity group.	Responder: WEC Close to previous items to provide the V&V Reports.		Open	Open TVA to respond or provide proposed date of response.			LIC-101 Rev. 3 Appendix B Section 4, "Safety Evaluation" states: "the information relied upon in the SE must be docketed correspondence." LIC-101 Rev. 3 states: "The safety analysis that supports the change requested should include technical information in sufficient detail to enable the NRC staff to make an independent assessment regarding the acceptability of the proposal in terms of regulatory requirements and the protection of public health and safety."
250			EICB (Carte)	8/8/2010 The SPM describes the software and documents that will be created and placed under configuration control. The SCMP (e.g., SPM Section 6, "Software Configuration Management Plan") describes the implementation tasks that are to be carried out. The acceptance criterion for software CM implementation is that the tasks in the SCMP have been carried out in their entirety. Documentation should exist that shows that the configuration management tasks for that	Responder: WEC Westinghouse develops Software Release Reports/Records and a Configuration Management Release Report. Describe the documents and when they will be produced. Summarize guidance on how to produce these records, focus on project specific requirements in SPM etc.		Open	Open TVA to respond or provide proposed date of response.			LIC-101 Rev. 3 Appendix B Section 4, "Safety Evaluation" states: "the information relied upon in the SE must be docketed correspondence." LIC-101 Rev. 3 states: "The safety analysis that supports the change requested should include technical information in sufficient detail to enable the NRC staff to make an

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				activity group have been successfully accomplished. Please provide information that shows that the CM tasks have been successfully accomplished for each life cycle activity group.							independent assessment regarding the acceptability of the proposal in terms of regulatory requirements and the protection of public health and safety."
251			EICB (Carte)	8/8/2010 The SPM describes the software testing and documents that will be created. The SPM also describes the testing tasks that are to be carried out. The acceptance criterion for software test implementation is that the tasks in the SPM have been carried out in their entirety. Please provide information that shows that testing been successfully accomplished.	Responder: WEC Addressed by SPM Compliance matrix in Rev. 1 of the Licensing Technical Report. Norbert is looking for guidance on how to ask for less.		Open	Open TVA to respond or provide proposed date of response.			LIC-101 Rev. 3 Appendix B Section 4, "Safety Evaluation" states: "the information relied upon in the SE must be docketed correspondence." LIC-101 Rev. 3 states: "The safety analysis that supports the change requested should include technical information in sufficient detail to enable the NRC staff to make an independent assessment regarding the acceptability of the proposal in terms of regulatory requirements and the protection of public health and safety."
252			EICB (Carte)	8/8/2010 The SPM contain requirements for software requirements traceability analysis and associated documentation (see Section 5.4.5.3, “Requirements Traceability Analysis”). Please provide information that demonstrates that requirements traceability analysis has been successfully accomplished.	Responder: WEC Explain response to AP1000 audit report. RTM docketed NRC awaiting V&V evaluation of RTM.		Open Read ML091560352	Open TVA to respond or provide proposed date of response.			LIC-101 Rev. 3 Appendix B Section 4, "Safety Evaluation" states: "the information relied upon in the SE must be docketed correspondence." LIC-101 Rev. 3 states: "The safety analysis that supports the change requested should include technical information in sufficient detail to enable the NRC staff to make an independent assessment regarding the acceptability of the proposal in terms of regulatory requirements and the protection of public health and safety."
253			EICB (Carte)	8/8/2010 TVA provided information by letter dated July 30, 2010 (ML102160349) - See Enclosure 1 Item No. 8 - that some AC160 module contain FPGAs. For those modules that have not been previously approved, please provide information to address regulatory criteria for FPGAs.	Responder: Clark All AC160 modules used for the Common Q PAMS have been previously approved. The original response listed all FPGAs when the request was only for components that had not been previously approved.		Open	Open TVA to respond or provide proposed date of response.			Related to Open Item no. 83. 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" LIC-101 Rev. 3 Appendix B Section 4, "Safety Evaluation" states: "the information relied upon in the SE must be docketed correspondence."

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
254			EICB (Halverson)	8/10/2010 Please make the following available in Westinghouse's Rockville office. WNA-PD-00056-WBT, Rev 1 "Watts Bar Unit 2 NSSS Completion I&C Projects" As the indicated source of customer specific requirements for deliverables, as indicated in the project plan, this document may serve as one "end" of a thread audit, and may contain information relevant to evaluating the completeness of later requirements. 956080, Rev 1. "Cabinet mounted electronics – Inadequate core cool monitor (ICCM-86)" Believe this to be the source of the requirements or at least algorithms and justifications for RIVLIS. NABU-DP-00014-GEN, rev 2 "Design Process for Common Q Safety Systems". As it defines the scope of other documents we are reviewing, it may clarify what documents are expected to contain what information.	Responder: WEC Documents are available in the Rockville office per WEC letter WBT-D-2268 dated 8/16/10.		Open	Closed TVA to respond or provide proposed date of response.			
255			EICB (Halverson)	8/10/2010 Please make the following available in Westinghouse's Rockville office. The Reusable Software Elements Documents. These contain requirements for the software. WNA-DS-01564-GEN, Rev 1. ; WNA-DS-00315-GEN, Rev. 2 ; WNA-DS-01715-GEN, Rev 2 ; WNA-DS-01838-GEN, Rev. 3 ; WNA-DS-01839-GEN, Rev. 3 ; WNA-DS-01840-GEN, Rev 2. ; WNA-DS-01841, Rev 2. ; WNA-DS-01842-GEN Rev 2.; WNA-DS-01845-GEN Rev. 1. ; WNA-DS-01846-GEN Rev. 2 ; WNA-DS-01847-GEN Rev. 0 ; WNA-DS-01848 Rev. 1. ; WNA-DS-01849-GEN Rev. 2. ; WNA-DS-01994-GEN Rev. 0 ; WNA-DS-00306-GEN Rev. 5 ; WNA-DS-02065-GEN Rev. 2 ; WNA-DS-01505-GEN Rev. 0 Further documentation for application-specific type circuits and custom PC elements are indicated by the SRS to be in 00000-ICE-3238, Rev 5 ; 00000-ICE-30140, rev 4 and 00000-ICE-30152, Rev. 5	Responder: WEC Documents are available in the Rockville office per WEC letter WBT-D-2268 dated 8/16/10.		Open	Closed TVA to respond or provide proposed date of response.			
256			EICB (Halverson)	8/10/2010 Please make the following available in Westinghouse's Rockville office. The following are documents that contain requirements used in the SRS which we incorporated	Responder: WEC Documents are available in the Rockville office per WEC letter WBT-D-2268 dated 8/16/10.		Open	Closed TVA to respond or provide proposed date of response.			

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				by reference within that document. "Coding Standards and Guidelines for Common Q Systems," 00000-ICE-3889, Rev. 10, Westinghouse Electric Company LLC. "Application Restrictions for Generic Common Q Qualification," WNA-DS-01070-GEN, Rev. 3, Westinghouse Electric Company LLC. "System Requirements Specification for the Common Q Generic Flat Panel Display" 00000-ICE-30155, Rev. 9, Westinghouse Electric Company LLC. "Software Requirements Specification for the Common Q Generic Flat Panel Display Software," 00000-ICE-3239, Rev. 12, Westinghouse Electric Company LLC. "Common Q Software Configuration Management Guidelines," NABU-DP-00015-GEN, Rev. 2, Westinghouse Electric Company LLC, "Standard General Requirements for Cyber security," WNA-DS-01150-GEN, Rev. 0, Westinghouse Electric Company LLC,						
257			EICB (Halverson)	8/10/2010 Please make the following available in Westinghouse's Rockville office. The following are documents that contain requirements used in the SRS which we incorporated by reference within that document. "AC160 CPU Loading Restrictions," AN03007Sp, ABB Memo, ABB Process Automation Corporation, "Software Design Description for the Common Q Generic Flat-Panel Display Software," 00000-ICE-30157, Rev. 16, Westinghouse Electric Company LLC. "System Requirements Specification for the Common Q Post Accident Monitoring System," 0000-ICE-30156, Rev. 06, Westinghouse Electric Company LLC. "Software Requirements Specification for the Common Q Post Accident Monitoring System" 00000-ICE-3238, Rev. 5, Westinghouse Electric Company LLC. "Commercial Dedication Report for QNX 4.25G for Common Q Applications," WNA-CD-00018-GEN, Rev.	Responder: WEC WEC Reviewing to ensure all documents are available in Rockville office. WBT-D-2268, 8/16/2010 WEC still needs to make/confirm this document is available. WBT-D-2024, 6/9/2010 WBT-D-2024, 6/9/2010 WBT-D-2268, 8/16/2010		Open	Open TVA to respond or provide proposed date of response.			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				3, Westinghouse Electric Company LLC, "Generic Common Q Software Installation Procedure," WNA-IP-00152-GEN, Rev. 7, Westinghouse Electric Company LLC.	WBT-D-2268, 8/16/2010						
258			EICB (Halverson)	8/10/2010 Please make the following available in Westinghouse's Rockville office. The "IV&V Phase Summary Report", (WNA-VR-00283-WBT Rev . 0) indicated that the IV&V team had created some information that may facilitate the approval process. However the form the information may have taken was not indicated or referenced in the Phase Summary Report. Information requested for the Rockville office includes: -The excel spreadsheet described in section 2.2.2 that verifies all low level requirements have a basis in a higher one, and that all higher level requirements decompose into a lower level. -A review of the WBU2 SysRS, SDS, and SRS for clarity, completeness, correctness and compatibility -Comparison of the WBU2 SysRS, SDS, and SRS to "source level" documents -An evaluation, per section 2.2.3, of the baseline report -a second party peer review for the "source level" documents	Responder: WEC WEC Reviewing to ensure all documents are available in Rockville office.		Open	Open TVA to respond or provide proposed date of response.			
259			EICB (Halverson)	8/10/2010 Please make the following available in Westinghouse's Rockville office. As they may demonstrate that a number of issues raised by, or that will be raised by, the NRC staff are already being resolved by the vendor, we would like to have access to V&V-769 and V&V-770 in the Exception Reports (ER) database for common Q systems.	Responder: WEC Documents are available in the Rockville office per WEC letter WBT-D-2268 dated 8/16/10.		Open	Closed TVA to respond or provide proposed date of response.			
260			EICB (Halverson)	8/10/2010 Please make the following available in Westinghouse's Rockville office. The "Source level" documents for the requirements WBT-TVA-0070 "Safety Related Digital Logic Cards Circuitry and Related Instrument Racks Restrictions" WBT-D-0088 "Transmittal Westinghouse comments on TVA specification EDSR 52451"	Responder: WEC WEC Reviewing to ensure all documents are available in Rockville office. WBT-D-2268, 8/16/2010 WBT-D-2268, 8/16/2010		Open	Open TVA to respond or provide proposed date of response.			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				Contract Number 65717 Tennessee Valley Authority Watts Bar Nuclear Plant Unit 2 NSSS Completion Project" WEST-WBT-2008-25 "TVA Contract Word Authorization"	WBT-D-2268, 8/16/2010 Hilmes to determine if this document can be provided.						
261			EICB (Halverson)	8/10/2010 Please provide the Requirements Traceability Matrix for generic PAMS and/or any other RTMs applicable to WBN2 PAMS. Some requirements in the Software Requirements Specification are simply not present in the Watts Bar 2 PAMS specific RTM (WNA-VR-00279-WBT).	Responder: WEC WEC to make available in Rockville ASAP. May require later submittal per 9/15 meeting. Closed to Item 142		Open	Closed TVA to respond or provide proposed date of response.			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" LIC-101 Rev. 3 Appendix B Section 4, "Safety Evaluation" states: "the information relied upon in the SE must be docketed correspondence."
262			EICB (Halverson)	8/10/2010 In order to facilitate visits to the Rockville office, please make the following documents available at the Rockville office. Watts Bar 2 PAMS licensing technical report 00000-ICE-37722 Rev. 0 (ML003733136) Common Q Software Programming manual (ML050350234) Common Q topical report. (ML031830959)	Responder: WEC WEC Reviewing to ensure all documents are available in Rockville office. WBT-D-1526, 01/28/10; WBT-D-2268, 8/16/10		Open	Open TVA to respond or provide proposed date of response.			
263			EICB (Carte)	8/11/2010 Based on an examination of document available at the Westinghouse Rockville offices (i.e., NA 7.4, WEC 7.2, WEC 7.3, CDI-3803, & CDI-3722) a CDI appears to identify the verification activities for each critical characteristic. These activities appear to be documented on the associated dedication data sheets; therefore, it appears that the Westinghouse Commercial Grade Dedication Plan is called a CDI and the completed CDI data sheets are the commercial grade dedication Report. If so, please provide the CDI for each new (not previously approved) component and the associated completed dedication data sheets.	Responder: WEC Addressed in 9/20 - 9/21 audit. Combine with item 138 after audit.		Open	Open TVA to respond or provide proposed date of response.			
264			EICB (Carte)	8/11/2010 Please provide a copy of the commercial grade survey(s) applicable to each new (not previously approved) Common Q component.	Responder: WEC After the 9/20 - 9/21 audit. Combine with item 138 after audit.		Open	Open TVA to respond or provide proposed date of response.			
265			EICB (Cart	8/11/2010 Please provide:	Responder: WEC After the 9/20 - 9/21 audit.		Open	Open TVA to respond or			

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				WNA-CD-00018-GEN Rev. 3 00000-ICE-35444 Rev. 1	Combine with item 138 after audit.			provide proposed date of response.			
266			EICB (Carte)	8/11/2010 Please provide a high level description of the Foxboro IA equipment used at WBN2. This description should be more detailed than a brochure on the product line (or available on the web), and less detailed than a technical manual on each field replaceable unit. It is expected that such literature already exists.	Responder: Webb/Webber SER Level write-up. Steve Hilmes		Open	Open TVA to respond or provide proposed date of response.			
267			EICB (Carte)	8/11/2010 By letter dated June 18, 2010 (ML101940236) TVA stated that the software safety plan (SSP) was not applicable to PAMS applications (see Watts Bar 2 - Common Q PAMS ISG-6 Compliance matrix Item No. 10); however, reference No. 30 of the SRS (ML101050202) is: 00000-ICE-37727, Rev. 0, "Post Accident Monitoring System Software Preliminary Hazard Analysis for the Common Q PAMS Project." A Preliminary Hazard Analysis is required by the SSP. Please explain.	Responder: WEC References will be removed as appropriate.		Open	Open October Letter			
268			EICB (Carte)	8/19/2010 By letter dated March 12, 2010 (ML101680577), TVA stated that the application specific hardware and software architecture descriptions are addressed in the WBN2 PAMS System Design Specification (ML101680579, ML102040481, & ML102040482) and Software Requirements Specification (ML101050202, ML102040486, & ML1022040487). Neither of these documents contain a non-proprietary figure of the architecture that can be used in the SE. Please provide a non-proprietary figure of the architecture.	Responder: WEC Andy to see what can be done.		Open	Open TVA to respond or provide proposed date of response.			
269			DORL (Bailey)	8/20/2010 DORL to send the Eagle-21 Audit Report to TVA.	Responder: NRC		Open	Closed			
270			EICB (Carte)	8/23/2010 By letter dated June 18, 2009 (ML091560352) the NRC informed Westinghouse that WNA-PT-00058-GEN (see pdf page 7 of 25) did not adequately address the test plan criteria of the Software Program Manual (ML050350234); however, by letter dated June 18, 2010 (ML101940236) TVA/Westinghouse stated that WNA-PT-00058-GEN addressed the test plan criteria of the SPM (pdf page 59 of 194, Item No. 12).	Responder: Clark Close to items 41 and 245		Open	Closed			See also Open Item Nod. 41 & 245.

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No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				Please explain.							
271			EICB (Carte)	8/23/2010 By letter dated August 20, 2010 TVA docketed a Requirements Traceability Matrix for the Common Q PAMS (Requirements Phase).This document does not identify the source of each requirement. The Common Q PAMS System Requirements Specification (SysRS - ML101680578, ML102040483, & ML102040484) does not explicitly identify the origin of each requirement. The SRP acceptance criteria for requirements specifications is that the origin of the requirements is know. Please explain how to trace each requirement in the SysRS to its origin.	Responder: WEC 9/15 meeting and 9/20 audit Closed to Item 142		Open	Closed			
272	7.5.2	7.5.1	EICB (Marcus)	8/26/2010 In WBN2 FSAR Table 7.5-2, "Regulatory Guide 1.97 Variable List (Deviation and Justification for Deviations)," (WBNP-96) for Variable 19, "Containment Hydrogen Concentration," Deviation 2 (page 19 of 41), the variable number is listed as 15. The variable number should be listed as 19.	Responder: Clark		Open	Open			
273	7.5.2	7.5.1	EICB (Marcus)	8/26/2010 In WBN2 FSAR Table 7.5-2, "Regulatory Guide 1.97 Variable List (Deviation and Justification for Deviations)," (WBNP-96) for Variable 97g, "Reactor Coolant Sample Activity," Deviation 5 (page 21 of 41), the last two sentences of the Justification read, "TVA meets the intent of RG 1.97 recommended range by monitoring this variable using the gross activity analysis of primary coolant samples taken in the post accident sampling facility. Samples are obtained from the post accident sampling system in Unit 1 only." Please describe how the samples are obtained for Unit 2.	Responder: Clark Post accident samples will be obtained from the normal sample system.		Open	Open			
274. a	7.5.2	7.5.1	EICB (Marcus)	8/26/2010 In WBN2 FSAR Table 7.5-2, "Regulatory Guide 1.97 Variable List (Deviation and Justification for Deviations)," (WBNP-96) for Variable 82, "Steam Generator Level Wide Range," Deviation 10 (page 24 of 41), in the last sentence, of the Justification, SC should be SG.	Responder: Clark		Open	Open			
274. b			EICB (Singh)	8/26/2010 Loose Parts Monitoring System: TR 3.3 refers to section 4.4.6 of the FSAR for description of the loose parts monitoring system. However, this section of the	Responder: Clark		Open	Open (TVA)			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				FSAR is not available. TVA to check the reference and respond.							
275			EICB (Singh)	8/27/2010 Loose Parts Monitoring System: RG 1.133, sections C.1.a and C.1.c address sensor locations and channel separation respectively. TR 3.3, FSAR section 7.6.7 and the DMIMMS-DX System Description do not clearly explain the location or address channel separation per the guidance of RG 1.133. Please update the documents as needed.	Responder: Clark		Closed	Closed			
276	7.6	7.6	EICB (Garg)	8/27/2010 In order for the staff to review the effects of multi control systems failure, provide the summary of the analyses documenting the effect on the plant based on the following events: (1) loss of power to all control systems powered by a single power supply; (2) failure of each instrument sensor which provides signal to two or more control systems; (3) Break of any sensor impulse line which is used for sensors providing signals to two or more control systems; and (4) failure of digital system based on the common cause software failure affecting two or more control systems. For each of these events, confirm that the consequences of these events will not be outside chapter 15 analyses or beyond the capability of operators or safety systems.	Responder: Tindell		Open	Open			
277	7.6	7.6.3	EICB (Garg)	8/27/2010 NUREG 0847, "Safety evaluation report Related to the operation of Watts Bar Nuclear Plant, Units 1 and 2." has section 7.6.3 which discusses the, "Upper Head Injection Manual Control" system but has been removed from the FSAR. Please provide the information regarding when this system was removed, and the justification for the removal of the system and if the NRC staff has previously reviewed and accepted the removal of the system provide the reference to the staff's SE.	Responder: Clark		Open	Open			
278	7.6	7.6.6	EICB (Garg)	8/27/2010 For FSAR Section 7.6.6, provide the justification for adding valves FCV 63-8 and FCV 63-11, which require that power to be removed and will be administratively controlled prior to use of RHR system for plant cooldown. Provide the P & ID and block diagram showing the operation of these valves.	Responder: Clark		Open	Open			
279	7.6	7.6.6	B (G	8/27/2010	Responder: Clark		Open	Open			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				For FSAR Section 7.6.6, provide the justification for the addition of protective covers which operator has to remove before he can have access to control switch to operate two additional valves FCV62-98 and FCV62-99.							
280	7.6	7.6.6	EICB (Garg)	8/27/2010 For FSAR Section 7.6.6, provide the justification for the acceptability of removing FCV 63-5 from the list of valves which has operating instructions specifying the removal of power during specific modes of plant operation.	Responder: Clark		Open	Open			
281	7.6	7.6.8	EICB (Garg)	8/27/2010 For FSAR Section 7.6.8 in amendment 96, redline version has completely rewritten this section of the FSAR, however, the staff is not able to determine any changes made to the section. Explain what changes have been made to this FSAR Section.	Responder: Clark		Open	Open			
282	7.6	7.6.9	EICB (Garg)	8/27/2010 For FSAR Section 7.6.9 which discusses the switch over from injection to recirculation, and is a ESF system, the compliance with IEEE 279 has been removed from the FSAR. Justify this deletion.	Responder: Clark		Open	Open			
283	7.7.5	XX	EICB (Darbali)	8/27/2010 Follow-up to item 96 On Open Item 96, regarding the implementation of IEN 79-22, part of TVA's response was: The non-safety-related device/systems within the scope of IEN 79-22 are: 1. Steam generator power operated relief valve control system 2. Pressurizer power operated relief valve control system 3. Main feedwater control system 4. Automatic rod control system. Failure of these systems/devices due to a high energy line break is fully addressed in Chapter 15, "Accident Analysis" of the WBN Unit 2 FSAR. Please identify the sections of FSAR Chapter 15 that address the failures of these systems.	Responder: Clark		Open	Open			This item is a follow-up question to item 96.
284	7.7.3	7.4.1	EICB (Darbali)	8/27/2010 Follow-up to item 123	Responder: Troutman		Open	Open			This item is a follow-up question to item 123

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				Please provide a readable electrical logic diagram of the Volume Control Tank Level Control System.							
285	7.3	7.3	EICB (Darbali)	8/27/2010 Follow-up to item 22 Do the control loops meet the requirements of IEEE-279? If not are they isolated from the circuit which meets the requirements of 279.	Responder: Clark		Open	Open			This item is a follow-up question to item 22
286	7.7.3	9.3.4.2.4	EICB (Darbali)	8/27/2010 SE 7.7.3, Volume Control Tank Level Control System In FSAR section 9.3.4.2.4 a change was made to the last paragraph of the Volume Control Tank description (page 9.3-31 of the Amendment 97 redline), where the "low-low level alarm" was changed to "low level alarm". Please explain if this deletion was an editorial change to correct a typo.	Responder: Webber Low alarm is correct – the setpoint is above the low-low interlock that opens the isolation valve, mentioned earlier in the paragraph. Editorial change to correct a typo.		Open	Open October Letter			
287	7.7.8	7.7.1.12	EICB (Darbali)	8/27/2010 In Amendment 95 of FSAR section 7.3.2.3 'Further Considerations', the list of signals that would start the auxiliary feedwater motor driven and turbine driven pumps was moved to table 7.3-1 item 3, Auxiliary Feedwater. However, item (6) 'AMSAC' was not included in table 7.3-1. Please explain this omission or state your commitment to correct this in a future amendment.	The AMSAC start is not included based on Unit 1 UFSAR Change Package 1554S0 which states: **"20** (page 7.3-17. 18 and Table 7.3-1): The initiating signals for Auxiliary Feedwater (AFW) are moved from Section 7.3.2.3 to Table 7.3-1, which lists ESF instrumentation. A reference to the Table is added. This change also clarifies that the AFW pumps are started by tljp of both Turbine-Driven Main Feedwater (MFW) pumps rather than all MFW pumps as currently stated since trip of the Standby MFW pump does not initiate AFW. This is consistent with the description of the Auxiliary Feedwater System in Section 10.4.9. This change also deletes AMSAC from the list of AFW start signals. As described in Section 7.1.1.12, the AMSAC system is non-safety and provides a diverse means of initiating AFW and turbine trip under conditions indicative of an ATWS event. AMSAC was not designed as an Engineered Safety Feature and is not included in the ESFAS Technical Specification 3.3.2 for AFW start. Therefore, it does not belong in the Table which identifies ESF instrumentation. The change does not alter the AMSAC functions of AFW start and turbine trip. The Switchover from Injection to recirculation and the switchover initiating signals are also added to Table 7.3-1 since they are considered to be part of the ESFAS. The listing of switchover instrumentation is consistent with the description of the switchover		Open	Open October Letter			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
					function in Section 7.6.9. Also numbered the notes at the bottom of the Table."						
288	7.3		EICB (Garg)	9/2/2010 Can we add a section to chapter 7 giving a brief overview of the Foxboro Spec 200 in Section 7.3?	Responder: McNeil		Open	Open			
289			EICB (Singh)	9/2/2010 Provide an ISG4 diversity analysis for the containment high range accident monitors RM-1000.	Responder: Faulkner		Open	Open (TVA)			
290		7.7	EICB (Carte)	9/7/2010 The equation at the bottom of Amendment 99 page 7.7-3 is wrong. There are two ways that this equation is inconsistent with the text above it.	Responder: Clark		Open	Open			
291		7.7	EICB (Carte)	9/7/2010 The equation at the bottom of Amendment 100 page 7.7-3 is wrong. There are two ways that this equation is inconsistent with the text above it.	Responder: Clark		Open	Open			
292	7.2.5	7.2	EICB (Garg)	9/7/2010 FSAR Section 7.2, Steam Generator Reference Leg: By letter dated July 27, 1994, TVA had withdrawn its commitment on Unit 1 to insulate SG reference leg. TVA had provided an analysis to justify this action which was accepted by the staff. Confirm whether SG reference leg in Unit 2 are insulated and if not then confirm that the analysis which was submitted for Unit 1 is also applicable to Unit 2.			Open	Open			
293	7.7.4	7.2.2.3.5	EICB (Marcus)	9/8/2010 FSAR Amendment 100, Section 7.2.2.3.5 discusses Steam Generator Water Level and protection against low water level. However, this section does not discuss protection against Steam Generator overfill. Additionally, FSAR Section 7.2.2.3.4 discusses Pressurizer Water Level and provides minimal information concerning Pressurizer overfill. Please provide a discussion of protection against Pressurizer and Steam Generator overfill.			Open	Open			
294	7.3	7.3.1.1.1	EICB (Darbali)	9/9/2010 In Amendment 95 of FSAR section 7.3.1.1.1 'Function Initiation', item (13) was arranged into paragraph form			Open	Open			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
				from what used to be a listing of items (a), (b) and (c). The second bullet under item (c) was omitted in the new paragraph. *Initiates Phase B containment isolation of the following:* • *"Closure of the main steam isolation valves (MSIV) to limit reactor coolant system cooldown for breaks downstream of the MSIV's."* Please explain this omission or state your commitment to correct this in a future amendment.							
295	7.3	7.3.1.1.2	EICB (Darbali)	9/9/2010 In Amendment 95 of FSAR section 7.3.1.1.2 'Process Protection Circuitry', item (3), references to sections 7.6 and 7.7 were removed. Please explain the reason for removal.			Open	Open			
296	7.3	7.3.1.2.1	EICB (Darbali)	9/9/2010 In Amendment 95 of FSAR section 7.3.1.2.1 'Generating Station Conditions', the new paragraph was arranged from what used to be a listing of items (1.b), (1.c), and (2.b), leaving out items (1.a) and (2.a). Even if the paragraph contains the word 'include', the breaks in items (1.a) and (2.a) should be listed. Please explain this omission or state your commitment to correct this in a future amendment.			Open	Open			
297	7.3	7.3.1.2.2	EICB (Darbali)	9/9/2010 In Amendment 95 of FSAR section 7.3.1.2.2 'Generating Station Variables', the following sentence was erased: *Post accident monitoring requirements and variables are given in Tables 7.5-1 and 7.5-2.* Please explain the reason for removal.			Open	Open			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
298	7.3	XX	EICB (Darbali)	9/9/2010 IE Bulletin 80-06 calls for review of engineered safety features with the objective of ensuring that no device will change position solely because of the 'reset' action. In Supplement 3 of NUREG-0847, section 7.3.5, the staff approved the design modifications proposed by the applicant that would allow certain devices to remain unchanged upon an ESF reset. The staff also found acceptable the applicant's justification for some safety-related equipment that does not remain in its emergency mode after an ESF reset. Please confirm whether or not the equipment that was determined in NUREG-0847 and its supplements to remain unchanged upon an ESF reset will still remain unchanged in Unit 2.			Open	Open			
299			EICB (Carte)	Provide Common Q Software Requirements Specification Post Accident Monitoring System 00000-ICE-3238 Rev. 5	Attachment 41 contains the Common Q Software Requirements Specification Post Accident Monitoring System 00000-ICE-3238 Rev. 5 and the affidavit for withholding.		Open	Open			
300			EICB (Singh)	Need Radiation Monitoring System Description/Design Criteria Are detectors different than Unit 1. Describe any differences. Are there any commercially dedicated parts in the RM-1000? If so, how are they dedicated? Please confirm that digital communication ports available in RM-1000 are not used.			Open	Open			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
301			EICB (Singh)	TVA is requested to address the consequences of total loss of CERPI. In addition, address how the actions stipulated in the plant Technical Specifications will be taken when the CERPI system indications are lost. Information notice IN 2010-10 (ML100080281) addresses the need to consider software failures and the actions required to assure that the plant will stay within its licensing basis. Provide FMEA in support of your response. FSAR Table 7.7-1, Plant Control System Interlocks lists interlock C-11 to block automatic rod withdrawal when 1/1 Control Bank D rod position is above setpoint. This interlock capability would be lost in case of total loss of CERPI. How is the rod block assured for this event? How is automatic rod withdrawal affected in case of total loss of signals from the CERPI to the ICS? Is this interlock fail safe? FSAR chapter 15, Section 2.3.2.1states that the resolution of the rod position indicator channel is 5% of span (7.2 inches). The CERPI system accuracy specified in the CERPI System requirements Specification, WNDS-DS-00001_WBT, Rev. 2 is 12 steps or 5.19%. The specified system accuracy seems to be greater than the accuracy assumed in the FSAR Chapter 15. Please clarify this anomaly.							

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
302	7.5.2	7.5.1	EICB (Marcus)	Item 208 requested a description of the changes that were performed under 10 CFR 50.59 for 16 Unit 1 PAM variables that were identified in Enclosure 1 Item No.6 of the letter dated June 18, 2010 (ML101940236). Please identify the specific 10 CFR 50.59 documentation that applies to each of these 16 variables.			Open	Open			
303	7.5.2	7.5.1	EICB (Marcus)	Enclosure 1 Item 6 of the letter dated June 18, 2010 included a column to indicate the Unit 2 variable source for each PAM variable and also if the variable was unique to Unit 2. For each variable that was indicated as unique to Unit 2 and the Unit 2 variable source is (1) Foxboro Spec 200, (2) Common Q PAMS, or (3) Foxboro IA, identify the Unit 1 variable source.			Open	Open			
304	7.5.2	7.5.1	EICB (Marcus)	Enclosure 1 Item 6 of the letter dated June 18, 2010 indicated that the Unit 2 variable source for 14 PAM variables is Eagle 21. Please confirm that for each of these 14 variables the Unit 1 variable source is also the Eagle 21.			Open	Open			
305	7.5.2	7.5.1	EICB (Marcus)	Enclosure 1 Item 6 of the letter dated June 18, 2010 indicated that the Unit 2 variable source for 2 PAM variables is the Integrated Computer System. Please confirm that for these 2 variables the Unit 1 variable source was the Unit 1 plant computer system.			Open	Open			
306	7.1	7.1	EICB(Garg)	FSAR amendment 100, page 7.1-12 provides the definition of Allowable value which is not consistent with TSTF-493 as allowable value is the value beyond which instrument channel is declared inoperable.			Open	Open			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
307	7.1	7.1	EICB(Garg)	FSAR amendment 100, Section 7.1, page 7.1-12, definition of Acceptable as found tolerance is not in accordance with TSTF-493 as AAF is the limit beyond which the instrument channel is degraded but may be operable and its operability must be evaluated. Also it states that AAF is based on measurable instrument channel uncertainties, such as drift, expected during the surveillance interval. These wording should be revised to agree with the wording given in RIS2006-17 as these wordings are very vague. Also it states that RPS functions use double sided tolerance limits for the AAF. Since AAF is a band it will always be double sided and therefore, this clarification does not mean anything and it clouds the issue.			Open	Open			
308	7.1	7.1	EICB(Garg)	FSAR Amendment 100, Section 7.1, page 7.1-13, definition of Acceptable as left tolerance is not in accordance with TSTF-493 as it states that this may take calibration history into consideration. This is very vague and ambiguous. Also it states that RPS functions use double sided tolerance limits. Since ALF is a band it will always be double sided and therefore, this clarification does not mean anything and clouds the issue.							
309	7.1	7.1.2.1.9.1	EICB(Garg)	FSAR amendment 100, Page 7.1-14, Westinghouse setpoint methodology, states that AAF is the algebraic sum of of the ….. This is not acceptable. As algebraic sum is non conservative compared to the SRSS method and will mask the operability of the instrument channel and therefore, it is not acceptable to the staff. It also make the statement that ALT may take calibration history into consideration which is vague and ambiguous.			Open	Open			
310	7.1	7.1.2.1.9.2	EICB(Garg)	FSAR amendment 100, Page 7.1-14, TVA setpoint methodology, states that for AAF ….and other measurable uncertainties as appropriate (i.e., those present during calibration….) should be changed to present during normal operation…… Also on page 7.1-15 , states that ALT may take calibration history into consideration which is vague and ambiguous.			Open	Open			
311	7.1	7.1	EICB(Garg)	Both Westinghouse and TVA setpoint methodology do not have any discussion on single sided calculation. Please confirm that single sided calculation has not been used for all setpoints with TSTF-493 and provide a statement to that effect in the FSAR.			Open	Open			

Open Items to be Resolved for SER Approval

No.	SE Section	FSAR Section	NRC POC	Issue	TVA Response(s)	Prop Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Response Date	Comments
312		7.0	EICB(Garg)	By letter dated September 10,2010, TVA provided the summary evaluation of 50.59 reports which were related to FSAR Chapter 7.0. However, these evaluation only covers Amendments 0 thru 8. Provide all other evaluation which have been done since these amendments and which forms the basis for FSAR Chapter 7.0 systems.			Open	Open			