WBN2Public Resource

From: Poole, Justin
Sent: Tuesday, October 26, 2010 4:50 PM
To: Garg, Hukam; Carte, Norbert; Darbali, Samir; Marcus, Barry; Singh, Gursharan
Cc: WBN2HearingFile Resource
Subject: FW: 20101022 Open Items List Master TVA Update 10-25.docx
Attachments: 20101022 Open Items List Master TVA Update 10-25.docx

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From: Clark, Mark Steven [mailto:msclark0@tva.gov]
Sent: Monday, October 25, 2010 4:12 PM
To: Hilmes, Steven A; Crouch, William D; Wiebe, Joel; Poole, Justin
Cc: Knuettel, Edward Terry
Subject: 20101022 Open Items List Master TVA Update 10-25.docx

All:

Attached is the updated matrix for this Thursday's phone call.

Regards,

Steve

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Hearing Identifier: Watts_Bar_2_Operating_LA_Public
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Subject: FW: 20101022 Open Items List Master TVA Update 10-25.docx
Sent Date: 10/26/2010 4:49:33 PM
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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>
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MESSAGE	741	10/26/2010 4:49:38 PM
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Options
Priority: Standard
Return Notification: No
Reply Requested: No
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No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
001	All	All	EICB (All)	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	ML093230343, Item No. 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	All	All	EICB (All)	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	ML093230343, Item No. 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	All	All	EICB (All)	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	ML093230343, Item No. 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	All	All	EICB (All)	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 Foxboro I/A Segmentation Analysis Calculation DCSSEGMENT, Rev. 0 submitted on TVA letter dated August 11, 2010.		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 segmentation.) NNC 8/19/10: The justification for not performing and D3 analysis contained in the CQ	Open-NRC Review TVA to docket a D3 analysis for the Common Q PAMS. NNC 8/19/10: TVA segmentation analysis has been received - NRC to review.	ML093230343, Item No. 4	January 13, 2010 March 12, 2010 June 30, 2010 August 11, 2010 TVA Letter dated 10/5/10	**NNC 11/19/09:** LIC-110 Rev. 1 Section 6.2.2 states: "Design features and administrative programs that are unique to Unit 2 should then be reviewed in accordance with current staff positions….TVA will supply a description of the changes implemented at Unit 1 but have not been reviewed for Unit 2 by the NRC technical staff...TVA will also provide the applicable portion of the FSAR and the proposed TSs...In addition, the staff should review items that are identical for WBN Units 1 and 2 that have not previously been reviewed and approved by the NRC staff. These items are changes in the design and licensing basis for WBN Unit 1 that TVA has implemented

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					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 36 to letter dated 10/5/10 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 January 31, 2011. (c) Credible Mesh Network Failure Modes Attachment 42 to letter dated 10/5/10 contains the mesh network failure analysis. (d) Refer to the response to item (c) above.		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.				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)	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, 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.	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. TSTF-493, Rev. 4 Option A has been incorporated into the Unit 2 Tech Spec submittal dated February 2, 2010.	Y	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, Item No. 5	TVA Letter dated 2/5/10 TVA Letter dated3/12/10	
006			EICB (Garg)	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	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.	Y	Closed This item is reviewed in FSAR amendment 100 review. Date: 2/16/2010	Closed TVA to reference TI-28 for as found and as left value. Also provide the	ML093431118, Item No. 6	TVA Letter dated 2/5/10 TVA Letter dated 3/12/10 TVA Letter	**NNC:** WCAP-12096 Rev. 7 (ML073460281) is in ADAMS. **NNC:** WCAP-12096 Rev. 8 is the current revision for Unit 1. TVA to docket Rev. 8 and

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				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.	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 submitted under oath and affirmation. This letter fulfills the oath and affirmation requirements for the previous response.		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.	reference to FSAR Section 7.1 for the setpoint methodology. This is addressed in FSAR Amendment 100.		dated 7/30/10	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.
007	7.1.3.1		EICB (Garg)	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	Y	Closed 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	Closed Same as Item 6 above This is addressed in FSAR Amendment 100.	ML093431118, Item No. 7	TVA Letter dated 3/12/10 TVA Letter dated 7/30/10	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.

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					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.		revision of WCAP-12096 where there was a change in methodology. Work with Item 6 for WCAP-12906 issues.				
008	7.3		EICB (Garg)	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 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.	Y	Closed	Closed FSAR AMD 100. Closed as it will be covered under item 154	ML093431118, Item No. 8	TVA Letter dated 3/12/10	
009	7.3.2	5.6, 6.3.5	EICB (Darbali)	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, Item No. 9	3/12/10, ML101680598, Item 9	
010	7.3	7.3	EICB (Darbali)	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."	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).		Closed	Closed Replaced by OI 314	ML093431118, Item No. 10	3/12/10, ML101680598, Item 10	

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				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.							
011	7.3.2	5.6, 6.3.5	EICB (Darbali)	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 NUREG-0847 Supplement No. 2, Section 7.3.2, for Unit 1.	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	ML093431118, Item No. 11	ML101680598, Item 9	
012	7.4	7.4	EICB (Darbali)	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	ML093431118, Item No. 6	TVA Letter dated 3/12/10 TVA Letter dated 7/30/10 ML101680598, Item 9	
013	7.1.3.1		EICB (Garg)	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	Y	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.	ML093431118, Item No. 13	TVA Letter dated 3/12/10	TS have been docketed.
014	All	All	EICB (All)	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		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.	Closed	ML093560019, Item No. 1	TVA Letter dated 4/27/10	

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					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.		Response understood. Additional material will be requested separately to understand the systems described.				
015			EICB (Garg)	Verify that the refurbishment of the power range nuclear instrumentation drawers resulted in only like-for-like replacements.	Date: 4/27/10 Responder: TVA By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 2).	Y	Closed Date: 4/27/10 Responsibility: NRC (Garg) Response acceptable. Close	Closed	ML093560019, Item No. 2	TVA Letter dated 4/27/10	
016			EICB (Carte)	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	ML093560019, Item No. 3	TVA Letter dated 4/27/10	
017	7.3.1	7.3.1, 5.5.5, 5.6	EICB (Darbali)	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).		Closed	Closed	ML093560019, Item No. 4	TVA Letter dated 4/27/10 ML101230248, Item 4	
018			EICB (Garg)	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).	Y	Closed Date: 4/27/10 Responsibility: NRC (Garg) Acceptable. Close	Closed	ML093560019, Item No. 5	TVA Letter dated 4/27/10	
019			EICB (Garg)	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.	Y	Closed Date: 4/27/10	Closed NRC Review	ML093560019, Item No. 6	TVA Letter dated 4/27/10 TVA Letter dated 6/18/10	
020			EICB (Garg)	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).	Y	Closed Date: 4/27/10 Responsibility: NRC (EEEB) Garg to coordinate with Weibi to ensure EEEB takes responsibility for this one.	Closed	ML093560019, Item No. 7	TVA Letter dated 4/27/10	**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."
021		7.3	EICB (Garg)	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	Y	Closed The resolution of this item will be covered by OI#288 Date: 5/24/10	Closed	ML093560019, Item No. 8	TVA Letter dated 6/18/10	The resolution of this item will be covered by OI#288..

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					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		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. **Add a brief discussion of the Foxboro Spec 200 to the FSAR let Hukam know on Thursday which section we will add the discussion to.**				
022	7.3.2	5.6, 6.3.5	EICB (Darbali)	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 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.		Closed Date: 4/27/10 TVA should confirm if Woodward Governor is the only change. See Item 285 for follow up question. Response is included in letter dated 10/5/10.	Closed to open item 285	ML093560019, Item No. 9	TVA Letter dated 4/27/10 TVA Letter dated 10/5/10	

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					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. 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)	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).	Y	Closed Date: 12/22/09 Responsibility: NRC (EEEB) Garg to coordinate with Weibi	Closed	ML093560019, Item No. 10	TVA Letter dated 4/27/10	**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.

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
							to ensure EEEB takes responsibility for this one.				The scope of this review includes the design criteria and qualification testing methods and procedures for I&C equipment."
024			EICB (Carte)	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 to Open Item No. 43	ML093560019, Item No. 11	NA – Request for schedule information	**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	7.5.2	7.5.1	EICB (Singh)	For the containment radiation high radiation monitor, verify that the information provided by TVA is consistent with the information provided with the previously-approved license amendment request for the Duane Arnold plant or provide Phase 3 information.	Date: 4/27/10 By letter dated April 27, 2010 TVA responded to this request for information (Enclosure, Item No. 12).		Closed (See OI 300 for additional questions.)	Closed	ML093560019, Item No. 12	ML101230248, Item 12 4/27/2010	
026			EICB (Garg)	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).	Y	Closed Date: 12/22/09 Responsibility: NRC (EEEB) Garg to coordinate with Weibi to ensure EEEB takes responsibility for this one.	Closed	ML093560019, Item No. 13	TVA Letter dated 4/27/10	**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	7.7.1.4		EICB (Carte)	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	ML093560019, Item No. 14	TVA Letter dated 4/27/10	
028			EICB (Garg)	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).	Y	Closed Response is included in letter dated 10/5/10. Provide 50.59 evaluation. Response acceptable.	Closed Provide 50.59	ML093560019, Item No. 15	TVA Letter dated 10/5/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					The requested 50.59 is included in Attachment 1.						
029			EICB (Carte)	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	ML093560019, Item No. 16	TVA Letter dated 4/27/10	
030			EICB (Garg)	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.	Y	Closed Response is included in letter dated 10/5/10. Date: 4/27/10 Does not state if there are no other upgrade which contain imbedded digital processor. Revised response acceptable.	Closed	ML093560019, Item No. 17	TVA Letter dated 10/5/10	
031			EICB (Carte)	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	ML093560019, Item No. 18	TVA Letter dated 4/27/10	CERPI is non-safety related. Note: The issue of interlock with rod withdrawal system is addressed in open item 301. (Singh Sept22, 2010)
032			EICB (Carte)	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)	Closed	ML093560019, Item No. 19	TVA Letter dated 4/27/10	EICB will no longer consider cyber issues.
033			EICB (Carte)	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	ML093560019, Item No. 20	TVA Letter dated 4/27/10	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.	Y	Closed Awaiting NRC evaluation of response.	Closed	RAI not required.	TVA Letter dated 4/27/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
034.1			EICB (Garg/ Singh)	Chapter 7.1 – Introduction Reactor Coolant System Flow Rate Measurement Design Basis Analysis Parameters Loose Parts Monitoring		Y	Close	Close	RAI not required.		
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		Y	Close	Close	RAI not required.		
034.3	7.3	7.3	EICB (Darbali)	Chapter 7.3 – ESFAS Design Basis Analysis Parameters Alternate Method for Use of Condenser Steam Dump		Y	Closed	Closed to item 153	RAI not required.	N/A	
034.4	7.5.1.1	7.5.2	EICB (Marcus)	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 **This is closed by Norbert.**		Y	Closed	Closed to Item 192	RAI not required.	N/A	Closed RAI not required. For plant process computer see Items 192, 193, 194, 195, 196, 198, 199, 203, 204, 206, 216, and 224.
034.5	7.5.1.1 7.6.1	7.5.2 7.6.7	EICB (Marcus/Singh)	Chapter 7.6 - All Other Systems Required for Safety Plant Process Computer Replacement Loose Parts Monitoring System		Y	Closed	Closed to Item 192	RAI not required.	N/A	Closed RAI not required. For plant process computer see Items 192, 193, 194, 195, 196, 198, 199, 203, 204, 206, 216, and 224.
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)		Y	Closed	Closed to item 301 for alternate rod position indication.	RAI not required.		
035			EICB (Singh)	2/18/2010 Please provide a system description of the Digital Metal Impact Monitoring System that contains sufficient detail to support a review of this system using current staff positions.	Responder: Clark TVA Letter dated March 12, 2010 Enclosure 1, item 4 responded to this request for information. Attachment 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		Closed Response is included in letter dated 10/5/10. Description provide is not of sufficient detail to allow a regulatory determination. TVA to send the proprietary information for NRC review. At the 9-2 meeting G. Singh	Closed Att.2 to 10/5/2010 TVA letter provided the information.		TVA Letter dated 3/12/10 TVA Letter dated 10/5/10	LIC-110 Section 6.2.2 states: "Design features and administrative programs that are unique to Unit 2 should be reviewed in accordance with the current staff positions." Unit 2 FSAR Section 7.6.7, "Loose Part Monitoring (LPMS) system Description," describes a system design that is unique to Unit 2.

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					letter WBT-D-2281 dated August 17, 2010 (Reference)		stated the system description provided was acceptable and the proprietary information was not required at this time.				
036	7.5.2	7.5.1	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	ML093560019, Item No. 11		**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	7.5.1.1	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.	y	Closed Response is included in letter dated 10/5/10. August 19, 2010 - TVA to submit markup of FSAR Amendment 100. FSAR Amendment 100 states Plant computer system is non-safety related.	Closed 09/16/10	N/A	TVA Letter dated 10/5/10	FSAR Amendment 100 provides information FSAR Section 7.5, “Instrumentation System Important to Safety,” consists of two major subsections: 7.5.1, “Post Accident Monitoring Instrumentation (PAM),” and 7.5.2, “Plant Computer System.” Regulatory Guide 1.70, “Standard format and content of Safety Analysis Reports for Nuclear Power Plants,” Revision 3 dated November 1978 states (see Section 7.1.1): “List all instrumentation, control, and supporting systems that are safety-related including alarms, communication, and display instrumentation.” FSAR Section 7.1.1.2, “Safety-Related Display Instrumentation,” describes, in the first paragraph, the PAM system, and the second paragraph states: “All other safety-related instrumentation is discussed in Section 7.5.” Therefore, to be consistent with the preceding paragraph, the FSAR states that the plant computer system is safety related. Contrary to the FSAR the slides presented at the December 15, 2010 meeting indicate that the plant process computer is not safety-related. Therefore the docketed material is inconsistent and needs to be clarified.

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
											RAI not required
038	7.5.1.1	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.	Y	Closed Response is included in letter dated 10/5/10. August 19, 2010 - TVA to submit markup of FSAR Amendment 100. NRC confirmed FSAR Amendment 100 provides details on interfaces.	Closed NRC issue formal RAI.	ML102861885 Item No. 19	TVA Letter dated 10/5/10	The slides presented at the December 15, 2010 meeting (ML093520967) indicate that the plant process computer has been replaced. ML102861885 sent to DORL
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.	Y	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.	Y	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	7.5.2	7.5.1	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 Common Q Safety systems" (5) WNA-TP-00357-GEN Rev. 4, "Element Software Test Procedure"	Responder: WEC Items (1) and (2) were docketed by TVA letter dated April 8, 2010. **Item (3) will be addressed by Revision 2 of the Licensing Technical Report. Due 12/3/10** 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. **Due 12/7/10** Item (5) Procedures that are listed in the SPM compliance table in the Licensing Technical Report revision 1 supersede that test procedure WNA-TP-00357-GEN.**Due 10/22/10**		Open Response is included in letter dated 10/5/10. 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 process document does not address the test plan requirements of the SPM. Please provide a test plan that implements the requirements of the SPM.	Open-NRC Review Due 12/7/10 TVA to docket information indentified in ISG6.	ML093560019, Item No. 11	TVA Letter dated 6/18/10 TVA Letter dated 10/5/10	See also Open Item Nos. 226 & 270.
042	All	All	EICB (All)	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	Date: 5/25/10 Responder: Clark Attachment 2 provides a drawing cross reference list for FSAR Chapter 7 and electronic copies of		Closed Date: 2/25/2010 Responsibility: TVA	Closed	EICB RAI ML102910002 Item No. 1	TVA Letter dated 6/18/10	The drawing provided did not have the identification numbers as in the FSAR.

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				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. Please provide readable drawings	the fully legible current drawings previously submitted in full size hard copies.		TVA provided readable drawings.				
043	7.5.2	7.5.1	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. NRC then concluded that TVA should go through and provide a more complete and thorough compliance matrix.	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." It is TVA's understanding that this comment is focused on the fact that there are documents that NRC has requested that are currently listed as being available for audit at the Westinghouse offices. For those Common Q PAMS documents that are TVA deliverable documents from Westinghouse, TVA has agreed to provide those to NRC. Westinghouse documents that are not deliverable to TVA will be available for audit as stated above. Requirements Traceability Matrix issues will be tracked under NRC RAI Matrix Items 142 (Software Requirements Specification) and 145 (System Design Specification). Commercial Item Dedication issues will be tracked under NRC RAI Matrix Item 138. This item is considered closed.		Open Response is included in letter dated 10/5/10. 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 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.	Open-NRC Review	EICB RAI ML102910002 Item No. 2	TVA Letter dated 2/5/10 TVA Letter dated 5/12/10 TVA Letter dated 6/18/10 TVA Letter dated 10/5/10	**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.
044	7.5.2	7.5.1	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.	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	EICB RAI ML102910002 Item No. 3	TVA Letter dated 6/18/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				(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.							
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	EICB RAI ML102910002 Item No. 4	TVA Letter dated 7/30/10	
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	NA – Request for help finding information	NA	
047	7.5.2	7.5.1	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 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. **TVA Revised Response:** The difference in revisions of Reg. Guide 1.97 was not identified during the contract review process. Therefore Westinghouse designed the system to the Common Q standard design which		Closed TVA provided information by letter dated July 30, 2010 (ML102160349) - See Enclosure 1 Item No. 5. 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? The revised response was provided in TVA Letter to the NRC Dated 10/21/10.	Closed	EICB RAI ML102910002 Item No. 5	TVA Letter dated 7/30/10 TVA Letter dated 10/21/10 Enclosure 1 Item No. 1	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					is revision 3. When the design work was assigned to a new engineer, the difference in revisions was not identified as an issue. When the issue was identified by the NRC, it was entered into the TVA Corrective Action Process as WBPER233598 (Attachment 3)						
048	7.5.2	7.5.1	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	EICB RAI ML102910002 Item No. 6	TVA Letter dated 6/18/10	
049	7.5.2	7.5.1	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.		Closed Response is included in letter dated 10/5/10. This information must be on the docket.	Closed	EICB RAI ML102910002 Item No. 7	TVA Letter dated 6/18/10 TVA Letter dated 10/5/10	
050	7.5.2	7.5.1	EICB (Carte)	4/8/2010 How should the "shall" statements outside of the bracketed requirements in Common Q requirements documents 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 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		Open TVA response is inconsistent (e.g., WNA-DS-01667-WBT Rev. 1 page 1-1, Section 1.3.1 implies that "SysRS Section ###" has requirements. See also SDS4.4.2.1-1 on page 4-32). Is there a requirement on the	Open-TVA/WEC Due 12/31/10	EICB RAI ML102910002 Item No. 8	TVA Letter dated 6/18/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					revised by September 30, 2010 and submitted within two of receipt from Westinghouse. **TVA Revised Response** This item is resolved by submittal of the revised SysRS and SysDS (attachments 7 and 8 of TVA Letter to NRC dated 10/25/10).		shall referenced above?? Response is provided in letter dated 10/29/10.				
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.	Y	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	NA	NA	Review addressed by another Open Item,
052	7.5.2	7.5.1	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			
053	7.5.2	7.5.1	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			
054	7.5.2	7.5.1	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/Clark 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. 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		Open Revised response is included in letter dated 10/29/10. Design Criteria is WB-DC-40-54 is attached to this letter.	Open-TVA Due 10/14/10 Identify source of reference 3. TVA to identify when and by what letter number WB-DC-40-54 was submitted to NRC. If not previously submitted then please submit this		TVA Letter dated 6/18/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					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). **What is Reference 3?** **TVA Revised Response:** Reference 3 is TVA Design Criteria WB-DC-40-54, Environmental Qualification To 10CFR50.49, which provides the definition of mild and harsh environments. Attachment 13 contains WB-DC-40-54, Revision 4.			document.			
055	7.5.2	7.5.1	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/Clark 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. (Reference 3) **What is Reference 3?** **TVA Revised Response:**		Open Revised response is included in letter dated 10/29/10. Design Criteria is WB-DC-40-54 is attached to this letter.	Open-TVA Due 10/14/10 Identify source of reference 3.		TVA Letter dated 6/18/10 10/14/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					Reference 3 is TVA Design Criteria WB-DC-40-54, Environmental Qualification To 10CFR50.49, which provides the definition of mild and harsh environments. Attachment 13 contains WB-DC-40-54, Revision 4.						
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		TVA Letter dated 6/18/10	Sorrento Radiation Monitoring
057	7.5.2	7.5.1	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 Software Control. Approved changes to software/firmware are implemented utilizing the TVA work order process.		**Closed** Response is included in letter dated 10/5/10. 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	**Closed** Closed by 10/5/2010 TVA letter (Item 11 of letter).		TVA Letter dated 6/18/10 TVA Letter dated 10/5/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					(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	7.5.0	7.5	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		TVA Letter dated 6/18/10 ML101940236, Encl 1, Item 13	
059	7.5.2	7.5.1	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		TVA Letter dated 6/18/10	
060	7.5.2	7.5.1	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	NA	NA	Addressed by Open Item No. 47
061	7.5.2	7.5.1	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	NA	NA	Addressed by Open Item No. 48

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
062	7.5.2	7.5.1	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	NA	NA	Addressed by Open Item No. 49
063	7.5.2	7.5.1	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	NA	NA	Addressed by Open Item No. 50
064	7.5.2	7.5.1	EICB (Carte)	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 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		Open Response included in letter dated 10/5/10 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. **Included in Rev. 1 of the Licensing Technical Report.**	Open-NRC Review Due 10/22/10	NA	TVA Letter dated 10/5/10	No question was asked. Open item was opened to track comm8ittment made by applicant.

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					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	7.5.2	7.5.1	EICB (Carte)	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 to letter dated 10/5/10 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 Response is included in letter dated 10/5/10. **FMEA provided in 10/5 letter.**	Open-NRC Review	NA	TVA Letter dated 10/5/10	No question was asked. Open item was opened to track comm8ittment made by applicant.
066	7.5.2	7.5.1	EICB (Carte)	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).		**Closed** Response is included in letter dated 10/5/10. 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 provided.	**Closed**	NA	TVA Letter dated 6/18/10 TVA Letter dated 8/20/10 TVA Letter dated 9/2/10 TVA Letter dated 10/5/10	No question was asked. Open item was opened to track comm8ittment made by applicant.
067	7.5.2	7.5.1	EICB (Carte)	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 This item is addressed in Rev. 2 of the Licensing Technical Report	Open-TVA/WEC Due 12/3/10	NA	TVA Letter dated 6/18/10	No question was asked. Open item was opened to track comm8ittment made by applicant.
068	7.5.2	7.5.1	EICB (Carte)	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		Open This item is addressed in Rev. 2 of the Licensing Technical Report	Open-TVA/WEC Due 12/3/10	NA	TVA Letter dated 6/18/10	No question was asked. Open item was opened to track comm8ittment made by applicant.

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					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						
069	7.5.2	7.5.1	EICB (Carte)	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-TVA/WEC **Due 2/18/11**	NA		No question was asked. Open item was opened to track comm8ittment made by applicant.
070	7.5.2	7.5.1	EICB (Carte)	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.	Responder: WEC Date: 5/25/10 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. **TVA Revised Response:** TVA submitted WNA-VR- 00283-WBT, Rev 0 to NRC in letter dated August 20, 2010 (Reference 6). The next Independent Verification and Validation (IV&V) report will include the Design Phase Requirements Traceability Matrix. The Design Phase IV&V Report will be submitted to NRC by February 11, 2011.		Open Response is included in letter dated 10/5/10. 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.	Open-NRC Review **Due 12/21/10**	NA	TVA Letter dated 6/18/10 TVA Letter dated 8/20/10 TVA Letter dated 10/5/10	No question was asked. Open item was opened to track comm8ittment made by applicant.
071	7.5.2	7.5.1	EICB (Carte)	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: WEC Date: 5/25/10		Open Awaiting for document to be docketed by TVA.	Open-TVA/WEC Due 12/21/10	NA		No question was asked. Open item was opened to track comm8ittment made by applicant.
072	7.5.2	7.5.1	EICB (Carte)	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: WEC Date: 5/25/10		Open Awaiting for document to be docketed by TVA.	Open-TVA/WEC Due 12/21/10	NA		No question was asked. Open item was opened to track comm8ittment made by applicant.
073	7.5.2	7.5.1	B (C	By letter dated March 12, 2010 TVA stated that the target submittal date for the "Integration Phase V&V	Responder: WEC Date: 5/25/10		Open	Open-TVA/WEC	NA		No question was asked. Open item was opened to track

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				Report" was October 29, 2010.			Awaiting for document to be docketed by TVA.	Due 12/31/10			comm8ittment made by applicant.
074	7.5.2	7.5.1	EICB (Cart	By letter dated March 12, 2010 TVA stated that the target submittal date for the "Final V&V Report" was November 30, 2010.	Responder: WEC Date: 5/25/10		Open TVA to provide due date.	Open-TVA/WEC Due	NA		No question was asked. Open item was opened to track commitment made by applicant.
075	7.5.2	7.5.1	EICB (Carte)	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: WEC Date: 5/25/10		Open Awaiting for document to be docketed by TVA.	Open-TVA/WEC Due 11/24/20	NA		No question was asked. Open item was opened to track commitment made by applicant.
076	7.5.2	7.5.1	EICB (Carte)	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.		Closed Awaiting for document to be docketed by TVA.	Closed to OI 71 and 41(4)	NA		No question was asked. Open item was opened to track comm8ittment made by applicant.
077	7.5.2	7.5.1	EICB (Carte)	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.	Responder: WEC Date: 5/25/10 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.		Closed Open Regulations require that the NRC review be based on docketed material. Awaiting for document to be docketed by TVA.	Closed	NA	TVA Letter dated 6/18/10 10/22/10	No question was asked. Open item was opened to track comm8ittment made by applicant.
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	Y	Closed Response provided in letter dated 10/5/10 Awaiting TVA response.	Closed to OI323 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.		TVA Letter dated 10/5/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					(Reference 10).						
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 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)	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. (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).	Y	Closed Response provided in letter dated 10/5/10	Closed This item is closed as it will be reviewed under item 154. FSAR AMD 100		TVA Letter dated 10/5/10	
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.		Closed	Closed NRC review complete.		TVA Letter dated 7/30/10	
081	7.5.2	7.5.1	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	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:	Open-TVA/WEC Due 12/31/10 TVA to provide requested information.	EICB RAI ML102910002 Item No. 9	TVA Letter dated 6/18/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				(7) IEEE 279-1991 vs. 603-1991 (8) IEEE 323-1983 vs. -1974 (RG 1.89 Rev. 1 June 1984 endorses 323-1974) 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.			'…Appendix 1, "Post Accident Monitoring Systems," provides the functional requirements 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	7.5.2	7.5.1	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 activities that address qualification of all changes specifically:	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 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		Open Regulations require that the NRC review be based on docketed material. Awaiting for document to be docketed by TVA. NNC 8/9/10: per telephone conversation on 8/5/10, it is not clear how Westinghouse	Open-TVA/WEC **Revision 1, Due 10/22/10**	EICB RAI ML102910002 Item No. 10	TVA Letter dated 7/30/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					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.		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.				
083	7.5.2	7.5.1	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	EICB RAI ML102910002 Item No. 11	TVA Letter dated 7/30/10	
084	7.5.2	7.5.1	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	EICB RAI ML102910002 Item No. 12	TVA Letter dated 6/18/10	
085	7.5.2	7.5.1	EICB (Carte)	5/6/2010 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.	Responder: WEC 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.		Open 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	Open-TVA/WEC Due 11/24/10 **Hardware is in Rev. 1 of the Licensing Technical Report due 10/22.** NNC 8/25/10: Disagree with path forward input by TVA above. An explanation is about the design is needed.	EICB RAI ML102910002 Item No. 13		

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
							affect a safety system boundary shall be classified as part of the safety system." Please describe how the MTP serves as the isolation device.	**FAT test procedure to include data storm testing of the MTP interface due 11/24/10**			
086	7.5.2	7.5.1	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 **TVA to address with item OI 81.**	Open-TVA/WEC Due 12/31/10	EICB RAI ML102910002 Item No. 14	TVA Letter dated 6/18/10	
087	7.5.2	7.5.1	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		TVA Letter dated 6/18/10	
088	7.5.2	7.5.1	EICB (Singh)	May 6, 2010 Regarding the Sorrento RM-1000 Digital Radiation Processor: Please provide prior software V&V reports. The latest report only addresses Version 1.2.	Date: 5/24/10 Responder: Slifer See response to item 56		Closed Date: 5/6/2010 Responsibility: TVA	Closed		TVA Letter dated 6/18/10	
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.		Closed	Closed	EICB RAI ML102910002 Item No. 15	TVA Letter dated 3/12/10	**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		Closed	Closed	EICB RAI ML102910002 Item No. 16	TVA Letter dated 3/12/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					DCS. See item 4 for questions on failure modes and mesh network.						
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 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.	Y	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.		TVA Letter dated 6/18/10	
092			DORL (Poole)	5/20/2010 TVA to review Licensee Open Item list and determine which items are proprietary.	Responder: Hilmes This item will close when we are no longer using this document as a communications tool.		Open	Open-TVA 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	Y	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.	Y	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.	Y	Closed Response is satisfactory. Item Closed.	Closed		TVA Letter dated 7/30/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					Q2: The reactor trip on turbine trip is the same as Unit 1.						
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 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.	Y	Closed Response provided. NRC staff to review response. See Follow up question 283.	Closed OI 283		TVA Letter dated 7/30/10	
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.	Closed		TVA Letter dated 7/30/10	
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.	Y	Closed Response is satisfactory.	Closed		TVA Letter dated 7/30/10	
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		Close	Closed			Closed to Item 129

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. 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	NA		No question was asked. Open item was opened to track comm8ittment made by applicant.
101			DORL (Poole)	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 Due 10/14/10 **Confirm receipt.**			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	NA	TVA Letter dated 6/18/10	Request for schedule not information.
103	7.4	7.4	EICB (Darbali)	5/27/2010 TVA to submit excerpts of EDCR 52321	Responder: Ayala Date: 5/27/10 Attachment **1** contains the draft Scope and Intent, Unit Difference and Technical Evaluation. The final documents will be submitted within two weeks of when the EDCR is issued.	Y	Open Response is included in letter dated 10/29/10	Open-TVA 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: Merten Date: 5/27/10 Attachment **2** contains the draft Scope and Intent, Unit Difference and Technical Evaluation. The final documents will be submitted within two weeks of when the EDCR is issued.	Y	Open Response is included in letter dated 10/29/10	Open-TVA Due 10/31/10			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 Submitted copy of TI-28 May 14/2010.	Y	Closed Date: 5/27/10 Responsibility: NRC Replaced with new open item	Closed			

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
							176.				
106			EICB (Singh)	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		TVA Letter dated 6/18/10	
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.		TVA Letter dated 6/18/10	
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.	Y	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		Closed J. Wiebe accepted this action.	Closed NRC Action	NA	NA	Duplicate of another open Item.
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	Y	Closed J. Wiebe accepted this action.	Closed NRC Action			
110			EICB (Garg)	May 6, 2010 The reviewer was unable to locate the Eagle 21 WCAPs 12374 and 12375 for review within the NRC records. We agreed to provide the ADAMS numbers for the submittal.	Date: Responder: Clark These items were docketed under ML073550386	Y	Closed	Closed			
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.		Closed Date: Responsibility:	Closed	NA	TVA Letter dated 6/18/10	Request to help find, not a request for information.

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					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.						
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.	Y	Close	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.	Y	Closed Attachment 9 does not show the vendor and model no. of the Power Supply.	Closed		TVA Letter dated 6/18/10	
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 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	Y	Open TVA to provide justification that there are no more surprises. Revised response is included in letter dated 10/29/10	Open-TVA Due 10/31/10 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?		TVA Letter dated 6/18/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					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. **TVA Revised Response:** The Eagle 21 system is installed and the Site Acceptance Test has been completed. To the best of TVA's knowledge there are no unknown issues with the system.						
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 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		Closed Response provided in letter dated 10/5/10 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 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	Closed	EICB RAI ML102910002 Item No. 17	TVA Letter dated 6/18/10 TVA Letter dated 10/5/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					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.						
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 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.	Y	Closed Response provided in letter dated 10/5/10	Closed How is the tin whisker issue is addressed. I think conformal coating was credited to protect against tin whisker issue.		TVA Letter dated 10/5/10	Letter sent to Westinghouse requesting the basis information and documentation for submittal to the NRC.
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: Hilmes 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.	N	Open Revised response is included in letter dated 10/29/10	Open-TVA Due 10/31/10 TVA needs to address that trip setpoint and allowable value uncertainties are not reduced by the reduction			

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					TVA Revised Response: For TSTF-493 parameters WBN Unit 2 uses only double sided correction factors. Attachment 3 contains the revised FSAR section 7.1.2.1.9 that will be included in FSAR Amendment 102 that reflects this change.			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: Merten Attachment 4 contains the draft Scope and Intent, Unit Difference and Technical Evaluation. The final documents will be submitted within two weeks of when the EDCR is issued.	Y	Open Response is included in letter dated 10/29/10	Open-TVA Due 10/31/10			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			EICB (Singh)	June 10, 2010 Submit the non-proprietary version of Sorrento/GA software V&V report version 1.1 04508005 and withholding affidavit	Date: Responder: Provided 7/15/2010		Closed 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.	Closed		TVA Letter dated 7/30/10	
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.	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	Closed	EICB RAI ML102910002 Item No. 18	TVA Letter dated 7/30/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				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			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?				
121			EICB (Carte)	5/6/2010 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.	Responder: Webb/Webber The information in the letter provides references to previous submittals and a cross reference for the Foxboro I/A system.		Closed	Closed		TVA Letter dated 7/30/10	
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	NA - Request for schedule not technical information.	NA	
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.	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.	Y	Closed Follow up question is to request a logic diagram 284.	Closed	ML101720589, RAIs 21 and 22, 6/25/10	TVA Letter dated 7/30/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				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.	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.						
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	Y	Closed	Closed	ML101720589, Item No. 23, 6/25/10	TVA Letter dated 7/30/10	
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.	Y	Closed	Closed	ML101720589, Item No.s 24 and 25, 6/25/10	TVA Letter dated 7/30/10	
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	Date: Responder: No I&C components or systems are affected by this change.	Y	Closed	Closed	ML101720589, Item No. 26, 6/25/10	TVA Letter dated 7/30/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				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?							
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 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.	Y	Closed	Closed		TVA Letter dated 6/18/10	
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 Drake /TVA Craig The Unit 1/Unit 2 Eagle 21 configuration has a sufficient number of spare Narrow Range and Wide Range RTD inputs available on the installed ERI-01 and ERI-02 boards to wire these spare inputs to the active channels. The spare input will provide the parallel resistance to resolve the problem. The Wide Range (WR) RTD inputs provide the same input impedance as the Narrow Range (NR) RTD inputs. Jumpers will be installed at the Eagle 21 termination frame to provide a parallel connection from each existing NR RTD input to an existing spare input, thus simulating the hardware connection for shared RTDs. Therefore, as configured, the Rack 2 Loop Calculation Processor (LCP) would provide the correct temperature calculation for the NR RTDs.	N	Open Response is included in letter dated 10/29/10	Open-TVA **Due 10/31/10**			TVA Unit 1 has to address first and Unit 2 will follow Unit 1.

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
129			DORL (Poole)	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.		Open Response provided in letter dated 10/5/10	Open-NRC Review Confirmation by 10/14/108	NA	TVA Letter dated 10/5/10	
130			DORL (Poole)	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 Response provided in letter dated 10/5/10	Open-NRC Review Confirmation by 10/14/10		TVA Letter dated 10/5/10	
131			DORL (Poole)	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 Response provided in letter dated 10/5/10	Open-NRC Review Confirmation by 10/14/10		TVA Letter dated 10/5/10	
132			DORL (Poole)	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 Response provided in letter dated 10/5/10	Open-NRC Review Confirmation by 10/14/10		TVA Letter dated 10/5/10	
133			DORL (Poole)	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 Response provided in letter dated 10/5/10	Open-NRC Review Confirmation by 10/14/10		TVA Letter dated 10/5/10	
134			DORL (Poole)	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 Response provided in letter dated 10/5/10	Open-NRC Review Confirmation by 10/14/10		TVA Letter dated 10/5/10	
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.	Y	Closed Response provided in letter dated 10/5/10 Amendment 100 received.	Closed		TVA Letter dated 10/5/10	
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.	Y	Closed Response provided in letter dated 10/5/10 Amendment 100 received.	Closed		TVA Letter dated 10/5/10	
137			B (C	Several WBN2 PAMS documents contain a table titled, “Document Traceability & Compliance.”	Responder: WEC		Closed	Closed	ML101650255, Item No. 1	TVA Letter dated 10/5/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				(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?	(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 document in relationship to the design life cycle.		Response provided in letter dated 10/5/10 Carte accepted this response 9/1				
138			EICB (Carte)	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."	Responder: WEC **This item is used to track all Commercial Grade Dedication issues.**		Open	Open-TVA/WEC **To be addressed by Rev. 2 of the Licensing Technical Report due 12/3.** **Due 12/3/10**	ML101650255, Item No. 2		
139			EICB (Carte)	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.		Closed Response provided in letter dated 10/5/10	Closed	ML101650255, Item No. 3	TVA Letter dated 10/5/10	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			C	The first requirement in the WBN2 PAMS SysRS (i.e.,	Responder: Clark		Open	Open-TVA	ML101650255,		WBN2 PAMS System

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				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?	WBN Unit 2 FSAR Amendment 100 Section 7.5.1.8			Due 10/22/10	Item No. 4		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.
141			EICB (Carte)	Deleted by DORL	Date: Responder:		Closed	Closed	ML101650255, Item No. 5		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)	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 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).]	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. 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		Open	Open-TVA/WEC **To be addressed by Revision of the RTM, SRS, SysRS, and SysDS.** **Due 12/31/10**.	ML101650255, Item No. 6		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.

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				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?	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 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?						

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					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)	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. (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.	Responder: WEC Addressed in the 9/15 public meeting and 9/20 - 9/21 audit. A detailed explanation will be provided.		Open	Open-TVA/WEC **To be addressed by Revision of the RTM, SRS, SysRS, and SysDS.** **Due 12/31/10**.	ML101650255, Item No. 7		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.
144			EICB (Carte)	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	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		Open Response provided in letter dated 10/5/10	Open-NRC Review Responses to items a and e	ML101650255, Item No. 8	TVA Letter dated 10/5/10	WBN2 PAMS Software Requirements Specification By letter dated April 8, 2010 (ML10101050203), TVA

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				(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.	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 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.		NRC Review and WEC to complete response. b-d to be addressed at public meeting and audit. Will require information to be docketed.	provided. Need response to b-d.	ML101650255, Item No. 6		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).
145			B (Cart	The WBN2 PAMS System Design Specification (WBN2 PAMS SDS) contains a table (see page iii) titled, “Document Traceability & Compliance,” which	Responder: WEC **<u>This item is used to track all traceability</u>**		Open	Open-TVA/WEC **To be addressed**	ML101650255, Item No. 9		WBN2 PAMS System Design Specification

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				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.	**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 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.			**by Revision of the RTM, SRS, SysRS, and SysDS.** **Due 12/31/10**.			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.
146			EICB (Carte)	6/17/2010 Deleted by DORL	Responder:		Closed	Closed	ML101650255, Item No. 10		PAMS System Requirements Specifications WBN2 PAMS documents reference generic PAMS documents, for example: WBN2

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
											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 by DORL	Responder:		Closed	Closed	ML101650255, Item No. 11		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”
148			EICB (Carte)	6/17/2010 Deleted by DORL	Responder:		Closed	Closed	ML101650255, Item No. 12		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)	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. **TVA Revised Response:** This change was incorporated in the Unit 1 FSAR	Y	Close Response provided in letter dated 10/5/10 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. Response is acceptable.	Close TVA to provide date when information will be docketed. TVA need to identify when Unit 1 UFSAR was revised with this information.	ML101720589, Item No. 1	TVA Letter dated 10/5/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					in Amendment 0 as part of FSAR change package 1473.						
150	7.2	7.2	EICB (Garg)	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.	Y	Close Response provided in letter dated 10/5/10	Close	ML101720589, Item No. 2	TVA Letter dated 10/5/10	
151	7.2	7.2	EICB (Garg)	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.		Close Response provided in letter dated 10/5/10	Close	ML101720589, Item No 3	TVA Letter dated 10/5/10	
152	7.2	7.2	EICB (Garg)	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. **TVA Revised Response:**	Y	Open	Open-TVA Due 10/22/10 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.	ML101720589, Item No. 4	TVA Letter dated 10/5/10	

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					This change was incorporated in the Unit 1 UFSAR in Amendment 1.						
153	7.2	7.2	EICB (Garg)	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 basis for this.	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 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. The process is controlled by the procedures used to shutdown the plant. The procedure initiates the bypass by lifting a wire at a relay and then ensures that it is restored prior to starting the plant. GO-6 Unit Shutdown From Hot Standby To Cold Shutdown, Appendix F prescribes the steps required to bypass and restore the P-12 interlock. GO-6 Appendix F, step 3.0[6] says "PLACE Caution Order on 1-HS-1-103A, 1-HS-1-103B, AND 1-PIC-1-33 indicating that P-12 interlock is disabled." This provides indication to the operators that the P-12 interlock is bypassed. GO-6 Appendix F, step 4.0[1] says "**WHEN** steam dumps no longer affect plant cooldown **OR** plant heatup is desired, **THEN ENSURE** MIG re-enables P-12 Interlock USING Section 6.0 of this Appendix, LANDING LEADS TO RE-ENABLE P-12 INTERLOCK." GO-6 Appendix F, step 4.0[2] states "**REMOVE** Caution Order on 1-HS-1-103A, 1-HS-1-103B, **AND** 1-PIC-1-33 indicating that P-12 interlock is disabled.	Y	Open Response provided in letter dated 10/21/10	Open-NRC Review Due 10/22/10 TVA will send 50.59. TVA to provide date when information will be docketed. TVA did not address why bypass condition is not displayed. **NRC Review 10/21/10**	ML101720589, Item No. 5	TVA Letter dated 10/21/10 Enclosure 1 Item No. 2	
154	7.2	7.2	EICB (Garg)	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. **TVA Revised Response:** (Q1) WBN 2 implementation of TSTF-493,	N	Open Response is not acceptable. A revised response will be submitted in the letter dated 10/29/10.	Open-TVA Due 10/31/10 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	ML101720589, Item No. 6 and ML102861885 Item No. 8	TVA Letter dated 10/5/10	ML102861885 sent to DORL

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					Rev. 4, Option A includes addition of a discussion of the WBN setpoint methodology in FSAR section 7.1.2.1.9. (Q2) EEB-TI-28's single-sided methodology conforms to 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, which was in effect during WBN Unit 1 licensing. Single-sided multipliers are not used for any TSTF-493 setpoints. There are some areas where a 95% confidence level could not be achieved. Some examples would be harsh environment instrumentation where only 2 or 3 devices were tested in the 10CFR50.49 program. In these situations, the Confidence is referred to as "high.".			adding TI-28. It was NRC's understanding that all setpoints have to meet TI-28			
155	7.2	7.2	EICB (Garg)	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.	Y	Closed	Closed TVA to provide date when information will be docketed	ML101720589, Item No. 7		
156	7.2	7.2	EICB (Garg)	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, 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.	N	Open Response is included in letter dated 10/5/10	Open-NRC Review TVA to Docket FSAR Amendment 101.	ML101720589, Item No. 8	TVA Letter dated 10/5/10	Response on hold pending Westinghouse review.
157	7.2	7.2	EICB (Garg)	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%.	Y	Open Response provided in letter dated 10/5/10 Response Acceptable	Open-NRC Review	ML101720589, Item No. 9	TVA Letter dated 10/5/10	
158	7.2	7.2	EICB (Garg)	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	Responder: Tindell FSAR Amendment 99 reflects the change to	Y	Closed Response provided in letter	Closed	ML101720589, Item No. 10	TVA Letter dated 10/5/10	

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				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.	Criterion 23.		dated 10/5/10				
159	7.2	7.2	EICB (Garg)	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 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	Y	Open Response provided in letter dated 10/5/10 Response Acceptable	Open-NRC Review Due 10/31	ML101720589, Item No. 11	TVA Letter dated 10/5/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					indicators and provide a reference point for the low flow reactor trip setpoint."						
160	7.2	7.2	EICB (Garg)	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.	Y	Open Response provided in letter dated 10/5/10	Open-NRC Review 10/21	ML101720589, Item No. 12	TVA Letter dated 10/5/10	
161	7.2	7.2	EICB (Garg)	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.	Y	Closed Response provided in letter dated 10/5/10	Closed	ML101720589, Item No. 13	TVA Letter dated 10/5/10	
162	7.2	7.2	EICB (Garg)	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.	Y	Closed Response provided in letter dated 10/5/10	Closed	ML101720589, Item No. 14	TVA Letter dated 10/5/10	
163	7.2	7.2	B (G	Deleted by DORL	Date: Responder:	Y	Closed	Closed	ML101720589, Item No. 15		
164	7.2 7.5.1.1	7.2	EICB (Garg|Marcus)	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	Y	Closed Response provided in letter dated 10/5/10 TVA letter dated 10/5/10 Response 44 provided information.	Closed NRC to issue formal RAI to TVA	ML101720589, Item No. 16 and ML102861885 Item No. 8	TVA Letter dated 10/5/10	Item No. 8 sent to DORL

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					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. • 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						

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					inoperable. The computer is not required for safe 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)	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.	Y	Closed Response provided in letter dated 10/5/10	Closed	ML101720589, Item No. 17	TVA Letter dated 10/5/10	
166	7.2	7.2	EICB (Garg)	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 .	Y	Closed Response provided in letter dated 10/5/10	Closed	ML101720589, Item No. 18	TVA Letter dated 10/5/10	
167	7.2	7.2	EICB (Garg)	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.	Y	Open Response provided in letter dated 10/5/10	Open-NRC Review 10/21	ML101720589, Item No. 19	TVA Letter dated 10/5/10	
168	7.2	7.2	EICB (Garg)	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 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	Y	Open Response provided in letter dated 10/5/10	Open - NRC Review 10/21	ML101720589, Item No. 20	TVA Letter dated 10/5/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					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	Y	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.	Y	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 The external Eagle 21 unidirectional communications interface will be tested prior to WBN Unit 2 fuel load	N	Open Response provided in letter dated 10/21/10	Open-NRC Review		TVA Letter dated 10/21/10 Enclosure 1 Item No. 3	
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 audit)	Responder: Craig This is a duplicate of the rack 5 update issue item 114.	Y	Closed	Closed			
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 Please see the revised response to letter item 3 (I&C Matrix Item 154) question (Q1).	Y	Closed	Closed to OI 154 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.	Responder: Hilmes/Craig Duplicate of 171	Y	Closed	Closed			

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				The staff will keep this item open until TVA confirms testing has demonstrated that two way communication is impossible with the described configurations.							
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	Y	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 Setpoint methodology questions are addressed in the revised response to letter item 3 (I&C Matrix Item 154).	Y	Closed	Closed to OI 154 TVA to provide date when information will be docketed			
177	7.5.2.1	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)	Y	Closed Response provided in letter dated 10/5/10 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 09/16/10	N/A	TVA Letter dated 10/5/10	RAI not required
178	7.5.2.1	7.5.1	EICB (Marcus)	7/15/2010 Please provide WBN-OSG4-047, "PAM Type A Variable Determination."	Responder: Clark See response to item 177 above.	Y	Closed Response provided in letter dated 10/5/10 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.	Closed 09/16/10	N/A	TVA Letter dated 10/5/10	RAI not required
179			EICB (Carte)	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	Responder: WEC Steve Clark to look at how to combine traceability items.		Closed	Closed	ML101650255, Item No. 6		

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				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 there 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.	Was addressed to during the 9/15 meeting and 9/20 - 9/21 audit. Closed to Item 142.						
180			EICB (Carte)	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 , 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.	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.		Closed	Closed TVA to provide date when information will be docketed	ML101650255, Item No. 6		
181			EICB (Carte)	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.		Closed	Closed	ML101650255, Item No. 6		
182			EICB (Carte)	Characteristics that the SRP states that a Software Requirements Specifications should have include unambiguity, verifiability, and style, part of the latter is	Responder: WEC Steve Clark to look at how to combine traceability		Closed	Closed	ML101650255, Item No. 6		

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				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”.] 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.	items. Will be addressed to during the 9/15 meeting and 9/20 - 9/21 audit. Closed to Item 142.						
183			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” 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 Response provided in letter dated 10/21/10	Open-NRC Review response acceptable NRC to issue RAI		TVA Letter dated 10/21/10 Enclosure 1 Item No. 4	
184			EICB (Carte)	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.	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.		Closed	Closed	ML101650255, Item No. 6		

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				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?							
185			EICB (Carte)	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 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?	Responder: WEC Steve Clark to look at how to combine traceability items. Was addressed to during the 9/15 meeting and 9/20 - 9/21 audit.		Open	Open-TVA/WEC Due 10/22/10			

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
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? Also, please submit a summary of EDCR 52408.	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. EDCR 52408 Summary A Purchase Order was issued to Nutherm International to provide a Unit 2 cabinet with the 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. **TVA Revised Response:** No further changes to the FSAR associated with AMSAC are planned.	Y	Open Response included in letter dated 10/29/10 Response is satisfactory. Issue date of Amendment 101 is not yet determined. **Follow-up NRC Request:** **TVA to state that no further FSAR changes are planned.**	Open-TVA Due Date 10/31/10		TVA Letter dated 10/5/10	
187			EICB (Carte)	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.	Responder: Merten 1) Please refer to the revised response to letter dated 10/5/10 Item 18 (RAI Matrix item 115). 2) This is a duplicate of closed RAI Matrix Item 45.		Open Response provided in letter dated 10/5/10 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	Open-NRC Review Revise Response Due 12/31	ML101970033, Item No. 1 & 2	TVA Letter dated 10/5/10	Are these connections already docketed?

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				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.			specifications?				
188			EICB (Carte)	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 45.		Closed Response provided in letter dated 10/5/10 NNC 08/25/10: See Open Item No. 187.	Closed to Open Item 187	ML101970033, Item No. 3 & 4	TVA Letter dated 10/5/10	
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 Response provided in letter dated 10/5/10 NNC 8/25/10: Acceptable response.	Closed By FSAR Amendment 100, page 7.6-4.		TVA Letter dated 10/5/10	
190	7.9		EICB (Singh)	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)."	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-		Closed Response provided in letter dated 10/5/10	Closed to Open Item 331. TVA letter of 10/5/2010, Item 55 provided the response. FSAR conformance		TVA Letter dated 10/5/10	Closed to OI-331.

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				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.	Cooled Reactors." 3) TRM section 3.3.6 and it's bases are contained in Attachment 9 to the 10/5/10 response letter.			claims open items addressed in OI No. 331 .			
191	7.9		EICB (Carte)	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).		Closed Response provided in letter dated 10/5/10 NNC 8/25/10: Information received, and read.	Closed	ML10197016, Item Nos. 1-3	TVA Letter dated 10/5/10	
192	7.5.1.1	7.5.2	EICB (Marcus)	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 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.	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 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:	Y	Closed Response provided in letter dated 10/5/10 August 19, 2010 - NRC to review TVA response. TVA letter dated10/5/10 Response 57 provided information.	Closed NRC to issue formal RAI to TVA.	Item No. 1 sent to DORL 7/20/2010 ML102010034. ML102861885 Item No. 1	TVA Letter dated 10/5/10	ML1028618855 sent to DORL.

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					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-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						

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					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	7.5.1.1	7.5.2	EICB (Marcus)	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" 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?	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). 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.	Y	Closed Response provided in letter dated 10/5/10 TVA letter dated 10/5/10 Responses 58 and 67 provided information.	Closed NRC to issue formal RAI to TVA.	Item No. 2 sent to DORL 7/20/2010 ML102010034 ML102861885 Item No. 2	TVA Letter dated 10/5/10	ML1028618855 sent to DORL.
194	7.5.1.1.1	7.5.2.1	EICB (Marcus)	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)	Y	Closed Response provided in letter dated 10/5/10 TVA letter dated 10/5/10 Response 59 provided information.	Closed NRC to issue formal RAI to TVA.	Item No. 3 sent to DORL 7/20/2010 ML102010034 ML102861885 Item No. 3	TVA Letter dated 10/5/10	ML1028618855 sent to DORL.

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					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 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	7.5.1.1.2	7.5.2.2	EICB (Marcus)	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.	Y	Closed Response provided in letter dated 10/5/10 TVA letter dated 10/5/10 Response 60 provided information.	Closed NRC to issue formal RAI to TVA.	Item No. 4 sent to DORL 7/20/2010 ML102010034 ML102861885 Item No. 4	TVA Letter dated 10/5/10	ML1028618855 sent to DORL.

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. 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	7.5.1.1.2	7.5.2.2	EICB (Marcus)	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 current RG.	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 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	Y	Closed Response provided in letter dated 10/5/10 TVA letter dated 10/5/10 Response 61 provided information.	Closed NRC to issue formal RAI to TVA	Item No. 5 sent to DORL 7/20/2010 ML102010034 ML102861885 Item No. 5	TVA Letter dated 10/5/10	ML1028618855 sent to DORL.

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					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 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.						

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					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. 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						

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					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 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	7.5.1.1.2	7.5.2.2	EICB (Marcus)	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	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	Y	Closed Response provided in letter dated 10/5/10 TVA letter dated 10/5/10 Response 62 and Attachments 10 and 35 provided information.	Closed NRC to issue formal RAI to TVA	Item No. 6 sent to DORL 7/20/2010 ML102010034 ML102861885 Item No. 6	TVA Letter dated 10/5/10	ML1028618855 sent to DORL.

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				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.	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. 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						

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					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.						
199	7.5.1. 1.3	7.5.2. 3	EICB (Marcus)	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.	Y	Closed Response provided in letter dated 10/5/10 TVA letter dated 10/5/10 Response 63 provided information.	Closed NRC to issue formal RAI to TVA	Item No. 7 sent to DORL 7/20/2010 ML102010034 ML102861885 Item No. 7	TVA Letter dated 10/5/10	Related SE Section 7.5.5.3 ML1028618855 sent to DORL.
200	7.2 7.3 7.5 7.7		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	•	Open Response provided in letter dated 10/5/10	Open-NRC Review TVA to provide Amendment 101 NRC Review		TVA Letter dated 10/5/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					• 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 • Control Boards 7.1.1.10 • RVLIS 7.5, 5.6 •						
201	7.7.1.1.1	7.7.11	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 Response provided in letter dated 10/5/10	Open-NRC Review TVA to docket amendment 101.		TVA Letter dated 10/5/10	
202	7.5.2		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. Rev. 2 of the Licensing Technical Report will include the applicability of guidance.		Open Response provided in letter dated 10/5/10	Open-NRC Review Licensing Technical Report R2 Due 12/3		TVA Letter dated 10/5/10	
203	7.5.1.1	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, Network Taps, Multiplexors (RTP), LCD displays	Y	Closed Response provided in letter dated 10/5/10 TVA letter dated 10/5/10 Response 67 provided information.	Closed NRC to issue formal RAI to TVA	ML102861885 Item No. 9	TVA Letter dated 10/5/10	ML102861885 sent to DORL

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					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	7.5.1.1	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 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	Y	Closed Response provided in letter dated 10/5/10 10/5/10 TVA letter Response 68 provided information. Response is acceptable.	Closed NRC to issue formal RAI to TVA	ML102861885 Item No. 10	TVA Letter dated 10/5/10	ML102861885 sent to DORL

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					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.	N	Open Response provided in letter dated 10/5/10	Open-NRC Review TVA to respond or provide proposed date of response. 10/14		TVA Letter dated 10/5/10	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	7.5.1.1	7.5.2	EICB (Marcus)	7/27/2010 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	Responder: Clark (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 11, 2010. (2) As previously discussed in item 82, there is no unique set of hardware for any specific function.	Y	Closed Response provided in letter dated 10/5/10 WB-DC-30-29 Rev. 8 is Enclosure 1 of TVA letter dated August 11, 2010 (ML102240382 letter and ML102240383 Enclosure 1). 10/5/10 TVA letter Response 70 provided information. Response is acceptable	Closed NRC to issue formal RAI to TVA	ML102861885 Item No. 11	TVA Letter dated 10/5/10	ML102861885 sent to DORL

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				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.							
207			EICB (Carte	July 27, 2010 Deleted by DORL	Date: Responder:		Closed	Closed			
208	7.5.2.1	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.	Y	Closed Response provided in letter dated 10/5/10 10/5/10 TVA letter Response 71 provided information. .	Closed NRC to issue formal RAI to TVA	ML102861885 Item No. 12	TVA Letter dated 10/5/10	ML102861885 sent to DORL See Item 302 which requests more detailed information on this topic
209	7.5.2.1	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 nine variables that were identified as both Unique to Unit 2 and identical to what was reviewed and approved on Unit 1. Please explain.	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. 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.	Y	Closed Response provided in letter dated 10/5/10 !0 /5/10 TVA letter Response 72 provided information.	Closed NRC to issue formal RAI to TVA	ML102861885 Item No. 13	TVA Letter dated 10/5/10	ML102861885 sent to DORL
210	7.5.2.1	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.	Y	Closed 10/5/10 TVA letter Response 73 provided information. Response provided in letter dated 10/5/10	Closed NRC to issue formal RAI to TVA	ML102861885 Item No. 14	TVA Letter dated 10/5/10	ML102861885 sent to DORL See Item 302 which requests more detailed information on this topic
211	7.5.1.1 7.5.2 7.6.1		EICB (Carte)	7/27/2010 FSA Table 7.1-1 shows: "The extent to which the recommendations of the applicable NRC regulatory	Responder: Clark The WBN 2 FSAR Section 7.5 defines the following systems as “important to safety”		Open Response included in letter dated 10/5/10	Open-NRC Review TVA to Docket		TVA Letter dated 10/5/10	Relates to SE Sections: 7.5.5, Plant Computer 7.6.10, Loose Part Monitoring 7.7.1, Control System

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
	7.7.1 7.7.2 7.7.4 7.9			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."	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-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			Amendment 101			Description 7.7.2, Safety System Status Monitoring System 7.7.4, PZR & SG Overfill 7.9, Data Communications

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					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.						
212	7.5.2		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/WEC Due 12/31/10			
213	7.5.2		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 Conformance with IEEE 603 is documented in the revised Common Q PAMS Licensing Technical Report and the Common Q PAMS System Design Specification. Attachment 1 contains the proprietary version of Westinghouse document "Tennessee Valley Authority (TVA), Watts Bar Unit 2 (WBN2), Post-Accident Monitoring System (PAMS), Licensing Technical Report, Revision 1, WNA-LI-00058-WBT-P, Dated October 2010" Attachment 8 contains the proprietary version of Westinghouse document "Nuclear Automation Watts Bar 2 NSSS Completion Program I&C Projects Post Accident Monitoring System – System Design Specification", WNA-DS-01667-WBT, Rev. 2 dated September 2010.		Open Response is included in letter dated 10/25/10 NNC to review and revise this question after LTR R1is received.	Open-TVA/WEC Due 12/31/10 .			
214			EICB (Carte)	7/27/2010 By letter dated June 18, 2010 (ML101940236) TVA	Responder: WEC According to "The Software Program Manual for		Open Response provided in letter	Open-NRC Review		TVA Letter dated 10/5/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				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.	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		dated 10/5/10 WEC References Common Q PAMS preliminary hazards analysis is referenced in the SRS. WEC to delete.	Due 10/22/10			
215			DORL (Poole)	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 July 27, 2010, TVA agreed to submit the requested documents on the docket. Please provide the schedule for submitting the documents.	Responder: WEC Close this item		Closed	Closed			
216	7.5.1.1	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).	Y	Closed Response provided in letter dated 10/5/10 10/5/10 TVA letter Response 76 and Attachment 7 provided information.	Closed. **NRC to issue formal RAI to TVA.**	ML102861885 Item No. 15	TVA Letter dated 10/5/10	ML102861885 sent to DORL
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	Y	Close	Close		TVA Letter dated 7/30/10	
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.	Y	Closed Attachment 8 contains the required correct work order excerpt.	Closed		TVA Letter dated 7/30/10	
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. **TVA Revised Response:**	Y	Closed Check what sent by Terry missing attachments.	Closed			

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					Attachment 6 contains the redline FSAR with attachments.						
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. 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.	Y	Closed Response provided in letter dated 10/5/10 Are there any open issues? Docket plant specific responses to the individual.	Closed TVA to respond or provide proposed date of response.		TVA Letter dated 10/5/10	
221	7.7.1.2	7.7.1.3	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 31 to 10/5 letter.	Y	Closed Response provided in letter dated 10/5/10 10/5/10 TVA letter Response 78 and Attachment 31 provided information.	Closed **NRC to issue formal RAI to TVA.**	ML102861885 Item No. 16	TVA Letter dated 10/5/10	ML102861885 sent to DORL
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.	Y	Close Response provided in letter dated 10/5/10	Close		TVA Letter dated 10/5/10	
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.	Y	Closed	Closed			
224	7.5.1.1	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	Y	Closed Response provided in letter dated 10/5/10 10/5/10 TVA letter Response 80 provided information.	**Closed** **NRC to issue formal RAI to TVA.**	ML102861885 Item No. 17	TVA Letter dated 10/5/10	ML102861885 sent to DORL

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					Implementation Schedules submitted to the NRC on July 23.						
225			EICB (Garg)	8/4/2010 Provide EDCR Technical Evaluation Justify/explain updated hardware [functionally equivalent to Unit 1] for the RCP and Turbine Generator vibration monitoring equipment.	Responder: Scansen The requested information is contained in the Scope and Intent, Unit Difference and Technical Evaluations for EDCRs 52420 (Attachment 11) and 53559 (Attachment 12)	Y	Close Response provided in letter dated 10/5/10	Close		TVA Letter dated 10/5/10	
226			EICB (Carte)	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	NA – Information requested under another open item.	TVA Letter dated 8/11/10	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 Upgrade of RCP, TG and FW pumps vibration monitoring to Bentley-Nevada 3300, DCN 39242, DCN 39506, DCN 39548, and DCN 50750 (Attachment) B. Containment Sump Level Transmitter replacement, DCN 39608 (Attachment) C. Turbine Servo Control Valve Card replacement, DCN 38993 (Attachment) D. Pressurizer Heater deletion of Backup Heaters on for PZR High Level, DCN 51102 (Attachment) E. AMSAC DCN 50475 (Attachment) F. 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) ii. Revise OTΔT and OPΔT turbine runback setpoints, DCN 38842 (Attachment) iii. Install Integrated Computer System (ICS) Stages 4 and 5, DCN 50301 (Attachment)	Y	Close Response provided in letter dated 10/5/10	Close		TVA Letter dated 10/5/10	
228			EICB (Carte)	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.		Closed Response provided in letter dated 10/5/10	Closed		TVA Letter dated 10/5/10	
229			EICB (Carte)	8/4/2010 Submit Annunciator system description/design criteria	Responder: Clark Condition Status/Alarm Design Criteria Document WB-DC-30-21 is contained in Attachment 22.		Closed Response provided in letter dated 10/5/10	Closed		TVA Letter dated 10/5/10	
230			(C	8/4/2010	Responder: Webb		Closed	Closed		TVA Letter	

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				Submit Foxboro I/A Procurement Specification excerpts that provide system description information	The requested Foxboro I/A Procurement Specification is contained in Attachment 23.		Response provided in letter dated 10/5/10			dated 10/5/10	
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.	Y	Closed Response provided in letter dated 10/5/10	Closed FSAR AMD 100		TVA Letter dated 10/5/10	
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 to 10/5 letter.		Closed	Closed TVA provided information in Att. 24 of 10/5 letter.		TVA Letter dated 10/5/10	
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 to the 10/5 letter.		Closed Response provided in letter dated 10/5/10	Closed		TVA Letter dated 10/5/10	
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	NA – Duplicate Item	NA	
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.	Y	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 to 10/5 letter.	Y	Close Response provided in letter dated 10/5/10	Close		TVA Letter dated 10/5/10	
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 to 10/5 letter.		Closed Response provided in letter dated 10/5/10	Closed		TVA Letter dated 10/5/10	
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	NA – Duplicate Item	NA	
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	NA – Meeting request	NA	
240			B (G	8/4/2010	Responder: Clark	Y	Close	Close		TVA Letter dated 10/5/10	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				Submit EDCR Technical Evaluation for Vibration Monitoring EDCR(s)	The Scope and Intent, Unit Difference and Technical Evaluations for EDCRs 53559 and 52420 are contained in Attachment 28 of 10/5 letter.		Response provided in letter dated 10/5/10				
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.		Closed Response provided in letter dated 10/5/10	Closed TVA provided information in Att. 29 of 10/5 letter.		TVA Letter dated 10/5/10	
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.	Y	Close Response provided in letter dated 10/5/10	Close		TVA Letter dated 10/5/10	
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		Closed	Closed. TVA to respond or provide proposed date of response.	ML101650255, Item No. 6		
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 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.	Responder: WEC The process related requirements have been removed from revision 2 of the Software Requirements Specification (SRS). Attachment 3 of letter dated 10/25/10 contains the proprietary version of Westinghouse document "Nuclear Automation, Watts Bar 2 NSSS Completion Program, I&C Projects, Software Requirements Specification for the Post Accident Monitoring System", WNA-SD-00239-WBT, Revision 2, Dated September 2010.		Open Response is provided in letter dated 10/25/10.	Open-TVA/WEC Due 10/22/10			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."
245			B (C	8/3/2010	Responder: WEC		Open	Open-TVA/WEC			LIC-101 Rev. 3 Appendix B Section 4, "Safety Evaluation"

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				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).	Relates to the commitment to provide the test plan and the SPM compliance matrix			Due 12/7/10			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 As agreed ISG6 does not apply to the Common Q PAMS platform. The information required to address this question concerning the PQP and SPM has been added to compliance matrix in revision 1 of the Licensing Technical Report. Attachment 1 of letter dated 10/25/10 contains the proprietary version of Westinghouse document "Tennessee Valley Authority (TVA), Watts Bar Unit 2 (WBN2), Post-Accident Monitoring System (PAMS), Licensing Technical Report, Revision 1, WNA-LI-00058-WBT-P, Dated October 2010"		Open Response is provided in letter dated 10/25/10	Open-TVA/WEC Due 10/22/10			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 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.	Responder: WEC The implementation documents required by the SPM are identified in the compliance matrix in revision 1 of the Licensing Technical Report. Attachment 1 of letter dated 10/25/10 contains the proprietary version of Westinghouse document "Tennessee Valley Authority (TVA), Watts Bar Unit 2 (WBN2), Post-Accident Monitoring System (PAMS), Licensing Technical Report, Revision 1, WNA-LI-00058-WBT-P, Dated October 2010"		Open Response is provided in letter dated 10/25/10	Open-TVA/WEC Due 10/22/10.			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."
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	Responder: WEC The documents are identified in the compliance matrix in revision 1 of the Licensing Technical Report Attachment 1 of the letter dated 10/25/10 contains the proprietary version of Westinghouse		Open Response is provided in letter dated 10/25/10	Open-TVA/WEC Due 10/22/10.			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

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				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.	document "Tennessee Valley Authority (TVA), Watts Bar Unit 2 (WBN2), Post-Accident Monitoring System (PAMS), Licensing Technical Report, Revision 1, WNA-LI-00058-WBT-P, Dated October 2010"						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.		Closed	Closed			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 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.	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/WEC Due 10/22/10			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."
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 The software testing performed and documents created are addressed by the SPM Compliance matrix contained in Revision 1 of the Licensing Technical Report. Attachment 1 of the letter dated 10/25/10 contains the Proprietary version of Westinghouse's document titled: "Tennessee Valley Authority (TVA), Watts Bar Unit 2 (WBN2), Post-Accident Monitoring System (PAMS), Licensing Technical Report, Revision 1, WNA-LI-00058-WBT-P, Dated October 2010"		Open Response is provided in letter dated 10/25/10	Open-TVA/WEC Due 10/22/10.			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

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
											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/WEC RTM Revision due 12/31 **Check on this Hilmes**			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.		Closed Response provided in letter dated 10/5/10	Closed TVA to respond or provide proposed date of response.		TVA Letter dated 10/5/10	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."
254			EICB (Carte)	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 for review in the Westinghouse Rockville office per WEC letter WBT-D-2268, NRC Access to Common Q Documents at the Westinghouse Rockville Office, dated 8/16/10 (Reference 2).		Closed Response provided in letter dated 10/21/10	Closed	NA - Request to make documents available for audit.	TVA Letter dated 10/21/10 Enclosure 1 Item No. 5	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
255			EICB (Carte)	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 for review in the Westinghouse Rockville office per WEC letter WBT-D-2268, NRC Access to Common Q Documents at the Westinghouse Rockville Office, dated 8/16/10 (Reference 2).		Closed Response provided in letter dated 10/21/10	Closed	NA - Request to make documents available for audit.	TVA Letter dated 10/21/10 Enclosure 1 Item No. 6	
256			EICB (Carte)	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. "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,	Responder: WEC Documents are available for review in the Westinghouse Rockville office per WEC letter WBT-D-2268, NRC Access to Common Q Documents at the Westinghouse Rockville Office, dated 8/16/10 (Reference 2).		Closed Response provided in letter dated 10/21/10	Closed	NA - Request to make documents available for audit.	TVA Letter dated 10/21/10 Enclosure 1 Item No. 7	
257			EICB (Carte)	8/10/2010 Please make the following available in Westinghouse's Rockville office. The following are documents that contain requirements	Responder: WEC WEC Reviewing to ensure all documents are available in Rockville office.		Closed	Closed	NA - Request to make documents available for audit.	NA	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				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. 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 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 WBT-D-2268, 8/16/2010					
258			EICB (Carte)	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.		Closed	Closed	NA - Request to make documents available for audit.	NA	
259			EICB (Carte)	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	Responder: WEC Documents are available for review in the Westinghouse Rockville office per WEC letter WBT-D-2268, NRC Access to Common Q Documents at the Westinghouse Rockville Office, dated 8/16/10 (Reference 2).		Closed Response provided in letter dated 10/21/10	Closed	NA - Request to make documents available for audit.	TVA Letter dated 10/21/10 Enclosure 1 Item No. 8	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				V&V-769 and V&V-770 in the Exception Reports (ER) database for common Q systems.							
260			EICB (Carte)	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” Contract Number 65717 Tennessee Valley Authority Watts Bar Nuclear Plant Unit 2 NSSS Completion Project” WEST-WBT-2008-25 “TVA Contract Word Authorization”	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 WBT-D-2268, 8/16/2010 Hilmes to determine if this document can be provided.		Closed	Closed	NA - Request to make documents available for audit.	NA	
261			EICB (Carte)	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		Closed	Closed	ML101650255, Item No. 6	TVA Letter dated 8/20/10 TVA Letter dated 9/2/10	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 (Carte)	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		Closed	Closed	NA - Request to make documents available for audit.	NA	
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.		Closed	Closed	ML101650255, Item No. 2		
264			EICB (Carte)	8/11/2010	Responder: WEC		Closed	Closed	ML101650255,		

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				Please provide a copy of the commercial grade survey(s) applicable to each new (not previously approved) Common Q component.	After the 9/20 - 9/21 audit. Combine with item 138 after audit.				Item No. 2		
265			EICB (Carte)	8/11/2010 Please provide: WNA-CD-00018-GEN Rev. 3 00000-ICE-35444 Rev. 1	Responder: WEC After the 9/20 - 9/21 audit. Combine with item 138 after audit.		Closed	Closed	ML101650255, Item No. 2		
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 FSAR section 7.7.1.11 will be added in Amendment 101. In discussions with the NRC reviewer on October 4, 2010 it was agreed that the new FSAR section along with previously submitted documents should be sufficient to address this request. The NRC reviewer will notify TVA if additional documentation is required.		Open Response provided in letter dated 10/21/10	Open-NRC Review TVA to Docket Amendment 101.		TVA Letter dated 10/21/10 Enclosure 1 Item No. 9	
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 This is addressed in the Licensing Technical Report, Revision 1, WNA-LI-00058-WBT-P. Attachment 1 of the letter dated 10/25/10 contains the Proprietary version of Westinghouse's document titled: "Tennessee Valley Authority (TVA), Watts Bar Unit 2 (WBN2), Post-Accident Monitoring System (PAMS), Licensing Technical Report, Revision 1, WNA-LI-00058-WBT-P, Dated October 2010"		Open Response provided in letter dated 10/25/10	Open-TVA/WEC Due 10/22/10			
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/WEC Due 12/31/10 HILMES Check on This			
269			DORL (Poo	8/20/2010 DORL to send the Eagle-21 Audit Report to TVA.	Responder: NRC		Open	OPEN-NRC Action			
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	Responder: Clark Close to items 41 and 245		Closed	Closed			See also Open Item Nod. 41 & 245.

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				criteria of the SPM (pdf page 59 of 194, Item No. 12). 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		Closed	Closed	ML101650255, Item No. 6		
272	7.5.2.1	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 The variable number will be changed to 19 in FSAR Amendment 101 as shown below: Table 7.5-2 **DEVIATION 2** **VARIABLE (~~15~~19)** Containment Hydrogen Concentration	Y	Closed Response provided in letter dated 10/21/10	Closed NRC to issue formal RAI to TVA. TVA formal response due 10/31/10	ML102861885 Item No. 19	TVA Letter dated 10/21/10 Enclosure 1 Item No. 10	ML102861885 sent to DORL
273	7.5.2.1	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.	Y	Closed Response provided in letter dated 10/5/10 10/5/10 TVA letter Response 95 provided information.	Closed NRC to issue formal RAI to TVA	ML102861885 Item No. 18	TVA Letter dated 10/5/10	ML102861885 sent to DORL
274.a	7.5.2.1	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 The SC in the last sentence will be changed to SG in FSAR Amendment 101 as shown below: SG wide range level indication is utilized as a diverse variable to auxiliary feedwater (AFW) flow for gross indication of flow to the SGs. The WBN AFW monitors are Types A1 and D2. WBN's position is that since ~~SC~~ SG wide range level is only used as a backup to redundant AFW flow monitors, it does not require redundancy	Y	Closed Response provided in letter dated 10/21/10	Closed NRC to issue formal RAI to TVA. TVA formal response due 10/31/10	ML102861885 Item No. 21	TVA Letter dated 10/21/10 Enclosure 1 Item No. 11	ML102861885 sent to DORL
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	Responder: Clark The reference will be changed to FSAR section 7.6.7 Loose Part Monitoring System (LPMS)		Open Response provided in letter dated 10/21/10	Open-NRC Review Due 10/31/10		TVA Letter dated 10/21/10 Enclosure 1 Item No. 12	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				parts monitoring system. However, this section of the FSAR is not available. TVA to check the reference and respond.	System Description in next revision of the Technical Requirements Manual as shown below: 1. Watts Bar FSAR, Section 7.6.7, "Lose Part Monitoring System." (Note: Bechtel I&C to submit TRM change package to TVA Licensing.)						
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: Webb The NRC reviewer confirmed this question applies to non-safety systems. (1) The DCS segmentation analysis addressed the power supply arrangement for the NSSS/BOP control systems implemented with Foxboro I/A. (2) Signals shared by more than one control system are addressed in the DCS segmentation analysis. (3) Where feasible, the unit 2 design includes separate sense lines for redundant transmitters, eliminating a single point of failure which is present in unit 1. In those applications where separate sense lines are not practicable, failure of a single sense line would be bounded by the failure of a single transmitter and would have the same effect as for unit 1. (4) Limiting DCS failures were addressed in the segmentation analysis, supplemented by Fault Handling in the I/A Series System, Revision 1, submitted on TVA letter to NRC dated October 5, 2010, Attachment 42.	N	Open Response provided in letter dated 10/21/10	Open-NRC Review TVA to Docket in 10/20 letter TVA to provide justification for non-safety system other than DCS. The statement that failure of sense line where more than one transmitter is connected would be bounded by the failure of a single transmitter does not make sense.		TVA Letter dated 10/21/10 Enclosure 1 Item No. 13	
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 Removal of the Upper Head Injection System was reviewed as part of the WBN Unit 1 original and was reviewed by the staff in SER Supplement 6: **1.7 Summary of Outstanding Issues - PAGE 1-3 "Supplement 6"** (22) Removal of upper head injection system Opened (SSER 6) 6.3.1 (TAC 77195)		Open Response is included in letter dated 10/29/10	Open-TVA Due 10/31			
278	7.6	7.6.6	EICB (Garg)	8/27/2010	Responder: Trelease		Open	Open-NRC		TVA Letter	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				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.	UFSAR section 7.6.6 does not identify control valves FCV-63-8 and -11 as part of a list of valves that are required to have their motive power removed during specific operating modes. The Unit 1 General operating instructions GO-1 and GO-6 (which will be used as a guideline for unit 2) provide administrative instructions to remove power and restore power to these valves in mode 3. Also, U1 Emergency operating procedures (e.g ES-1.3) do not address the restoration of power to the valves as part of post LOCA Mitigation activities. Attachment 8 contains the control and logic diagrams, along with the applicable design changes to verify that the control schemes are similar to unit 1.		Response provided in letter dated 10/21/10	Review TVA to Docket in 10/20 letter		dated 10/21/10 Enclosure 1 Item No. 14	
279	7.6	7.6.6	EICB (Garg)	8/27/2010 For FSAR Section 7.6.6, provide the justification for the exception to install 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.	Responder: Mather The FSAR change to include the valves as exceptions to the use of protective covers was made to match Unit 1 UFSAR change Pkg. No. 1547 Safety Assessment Item 8. The change package identified FCV-62-98 and 99 as exceptions to the use of protective covers. This change was based on WBPER980417 which removed the power from the valves and had them locked open. TVA will incorporate the same changes in Unit 2 as Unit 1. The Unit 1 changes are described in References 3 and 4.	N	Open Response provided in letter dated 10/21/10	Open-NRC Review TVA to docket in 10/20 letter		TVA Letter dated 10/21/10 Enclosure 1 Item No. 15	
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: Trelease Historical DCN 38661 removes the requirement that power be removed from FCV-63-5 during normal operations, and notes that the valve does not have a shunt breaker to allow MCR position indication with power removed. The Unit 2 system description has been updated to reflect the Unit 1 change to the system description, and the update of section 7.6.6 to remove the requirement of FCV-63-5 from the list of valves which has operating instructions specifying the removal of power during normal operations. This is supported by the failure modes and effects analysis for the safety injection system calculation EMP-SNM-043029 (which has been revised to be applicable to Unit 2), as well as the Unit 2 FSAR Table 6.3-8 both which state that spurious closure of FCV-63-5 is not credible. Spurious closure of FCV-63-5 is not credible because the MCR hand switch is provided with a protective cover to prevent operator error. In addition, the hand switch is wired with contacts on both sides of the motor contactor to prevent a single failure within the switch gear from spuriously closing the valve. These features eliminate the need to remove power from FCV-63-5.	N	Open Response is acceptable. Response provided in letter dated 10/21/10	Open-NRC Review TVA to issue by 10/20		TVA Letter dated 10/21/10 Enclosure 1 Item No. 16	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					Attachment 10 contains the documentation associated with this response.						
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: Webb Attachment 5 contains the FSAR markup showing what was changed.	N	Open Response provided in letter dated 10/29/10	Open-TVA Tva to docket in 10/31 letter			
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: Trelease The re-write for section 7.6.9 was to provide a more concise description of the instrumentation and controls. The section was too wordy, and several topics were duplicated in section 7.3. Wording is now more closely aligned to system description. Compliance with IEEE 279 is not intended to be removed, merely the reference to the standard in that particular section. A statement is added that 'The automatic switchover of the RHR pumps from the injection to the recirculation Mode is part of the Engineered Safety Features Actuation System (ESFAS) discussed in chapter 7.3.' Chapter 7.3 includes a reference to IEEE Standard 279-1979. The reference in 7.6.9 was therefore considered unnecessary, and therefore removed. Attachment 9 contains FSAR excerpts required to support this response.	N	Open Response is acceptable Response provided in letter dated 10/21/10	Open-NRC Review TVA to issue by 10/20		TVA Letter dated 10/21/10 Enclosure 1 Item No. 17	
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 1. Steam generator power operated relief valve control system The potential scenario for this event is addressed in 15.2.13, Accidental Depressurization of the Main Steam System. 2. Pressurizer power operated relief valve control system The potential scenario for this event is depressurization of the reactor coolant system due to a relief valve failing open. This is addressed in 15.2.12, Accidental Depressurization of the Reactor Coolant System and 15.3.1, Loss Of Reactor Coolant From Small Ruptured Pipes Or From Cracks In Large Pipes Which Actuate The Emergency Core Cooling System. 3. Main feedwater control system The potential scenarios for this event are:		Open Response is included in letter dated 10/29/10	Open-TVA Due 10/31/10			This item is a follow-up question to item 96.

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					a. A loss of feedwater due a feedwater isolation valve failing closed. This is addressed in 15.2.8, Loss of Normal Feedwater. b. A feedwater regulating valve failing open. This is addressed in 15.2.10, Excessive heat removal due to feedwater system malfunctions. 4. Automatic rod control system The potential scenarios are uncontrolled rod withdrawal events that are addressed in 15.2.1, Uncontrolled Rod Cluster Control Assembly Bank Withdrawal From A Subcritical Condition, 15.2.2, Uncontrolled Rod Cluster Control Assembly Bank Withdrawal At Power, and 15.2.3, Rod Cluster Control Assembly Misalignment.						
284	7.7.3	7.4.1	EICB (Darbali)	8/27/2010 Follow-up to item 123 Please provide a readable electrical logic diagram of the Volume Control Tank Level Control System.	Responder: Webber Attachment 2 to the 10/20 letter contains the electrical logic diagrams and required Drawing Change Authorizations (DRAs).	Y	Open Response provided in letter dated 10/21/10	Open-NRC Review Due 10/31/10		TVA Letter dated 10/21/10 Enclosure 1 Item No. 18	This item is a follow-up question to item 123
285	7.3.3	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: McNeil The Foxboro SPEC 200 components are physically arranged in the racks to meet the requirements of IEEE-279 and Watts Bar Design Criteria WB-DC-30-4, Separation/Isolation. Foxboro (Invensys) uses two IE analog modules to isolate IE to Non-IE signals. These are Contact Output Isolator (Model Number 2A0-L2C-R Relay Output) and Voltage-to-Current Converter (Model Number 2A0-VAI), both of which have the Input and Output signals isolated.	Y	Open Response is included in letter dated 10/29/10	Open-TVA Due 10/31/10			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.	Y	Open Response is satisfactory. Response provided in letter dated 10/21/10	Open-NRC Review Due 10/31/10		TVA Letter dated 10/21/10 Enclosure 1 Item No. 19	
287	7.3	7.3-1	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	**Responder: Elton** Unit 2 FSAR Section 7.3 addresses Engineered Safety Features (ESF) Actuation System. AMSAC is non-safety, and thus non-ESF. Therefore, it was correct to not include AMSAC when the initiating signals were relocated from	Y	Open Response included in next TVA Licensing Formal RAI Response Letter.	Open-TVA Due 10/31/10	ML102390538, Item No. 1, 9/10/10		

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				included in table 7.3-1. Please explain this omission or state your commitment to correct this in a future amendment.	Unit 2 FSAR Section 7.3.2.3 to Table 7.3-1.						
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 The following new section will be added to the WBN Unit 2 FSAR as part of Amendment 102: **7.3.1.1.3 Analog Instrumentation** The miscellaneous safety-related analog process control and indication loops are a set of discrete analog modules that have been tested and qualified for use in safety related systems. The various components have been qualified to IEEE Standard 323-1983 (R-1996) "IEEE Standard for Qualifying Class IE Equipment for Nuclear Power Generating Stations", IEEE Standard 344-1987 (R-1993) "IEEE Standard Recommended Practices for Seismic Qualification of Class IE Equipment for Nuclear Power Generating Stations", and IEEE Standard 384-1984 (R-1992) "IEEE Standard Criteria for Independence of Class IE Equipment and Circuits". The modules are arranged in instrument loops to provide the safety function as described in the TVA licensing basis for the Emergency Gas Treatment, Auxiliary Feedwater, and Safety-Related Balance of Plant systems. Seismic qualification of the analog modules and racks is addressed in FSAR Section 3.10. The components are physically arranged in the racks to meet the requirements of IEEE-279 and Watts Bar Design Criteria WB-DC-30-4, Separation/Isolation. Two IE analog modules are used to isolate IE to Non-IE signals. These are the Contact Output Isolator and Voltage-to-Current Converter, both of which have the Input and Output signals isolated.	N	Open Response is included in letter dated 10/29/10 **TVA committed to adding a description of the Foxboro Spec 200 hardware at the 10/12 NRC Public Meeting.**	Open-TVA Due 10/31/10			
289			EICB (Singh)	9/2/2010 Provide an ISG 2 diversity analysis for the containment high range accident monitors RM-1000.	Responder: Faulkner There are 4 Containment High Range Radiation Monitors (HRRMs) for WBN2, a pair in upper containment and a pair in lower containment. Each pair completely meets the requirements for safety related equipment including separation, independence, electrical isolation, seismic qualification, quality requirements, etc. Each monitor channel is a standalone instrument loop with traditional individual panel readout. They are not a part of a Highly Integrated Control Room (HICR) and there is no diversity question relating to the HRRMs and any HICR infrastructure. Therefore, the response to this RAI will address the functional uses of the HRRMs and the		Open Response provided in letter dated 10/21/10	Open-NRC Review Staff has the following comments on the proposed TVA response: Please explain any actions or functions that may be based on alarms or indications in case		TVA Letter dated 10/21/10 Enclosure 1 Item No. 20	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					alternate and diverse instrumentation that could be used for those functions should a common mode software issue render both trains of HRRMs non-functional. The Containment HRRMs have no automatic actuation function. They only provide indication as required by RG 1.97R2. They are used at WBN for 2 functions. They are used by the operators in Emergency Operating Instructions (EOI) as one of the indications of abnormal containment conditions indicative of a Loss of Coolant Accident (LOCA) after a Reactor Trip and Safety Injection and they are used in Emergency Plan Implementing Procedures (EPIP) to assist with event classification for events which involve fuel cladding degradation. In the EOI procedures, there are several diverse indications of containment conditions that are used to detect a LOCA and they are Containment Pressure, Containment Temperature, and Containment Sump Level. All of these instrument channels are diverse to the HRRMs in that they do not share a software platform or any integrated information or control system features. The HRRMs functional through individual, self contained, microprocessor based instrument loops. Containment Pressure and Sump Level indications are provided through Eagle 21 equipment which is completely diverse from the HRRMs. Containment Temperature is provided through Foxboro Spec 200 instrument channels which are completely diverse from the HRRMs. All of these readouts are through traditional panel meters and are not part of any HICR infrastructure. In the EPIPs, the HRRMs are used to indicate loss of fuel clad barrier and the potential loss of a containment barrier. Potential fuel clad damage can also be determined from samples taken from the Reactor Coolant System and from Incore Thermocouple readings. RCS sampling does not rely on plant instrumentation systems and the Incore Thermocouple System uses a Common Q software platform which is diverse from the HRRMs. The accessibility required to obtain post accident samples of RCS has been demonstrated to be a viable post accident action at WBN. Should all 4 channels of HRRMs fail upscale, Annunciator Response Instructions would be followed and they call for evacuation of containment, sampling of RCS, checking other non-accident Radiation Monitors, notification of Radiological Control personnel to investigate, potential transition to Abnormal Operating procedures for management of potential			of total loss of all HHRMs. Please confirm that the location for obtaining the RCS sample is accessible after an accident. Please note that staff intended to use ISG2 and not ISG4 for citing the need to address diversity. ISG4 is an inadvertent error and it has been corrected to ISG2. Otherwise, the response is acceptable. **Due 10/31/10**			

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					radioactive material release, and evaluation under the Emergency Plan Implementing Procedures for event classification. All of these actions are conservative actions. Should all 4 channels of the HRRMs fail downscale, the operators would turn to diverse indications as noted above before taking any further action. Therefore, there are diverse methods and equipment sets that can be used for any functions provided by the HRRMs should both channels become nonfunctional.						
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 This item is a duplicate of item 291.		Closed	Closed	NA	NA	This item is a duplicate of item 291.
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 The errors in the terms within the equation for total rod speed error [T_E] will be corrected in FSAR Amendment 101 as shown below: $$T_E = T_{ref}\frac{1}{(1+t_2 s)} - T_{avg}\frac{(1+t_3 s)}{(1+t_4 s)(1+t_5 s)} + \left[(Q_{tu} - Q_n)\frac{t_1 s}{(1+t_1 s)}K_1 K_2\right]$$		Open Response provided in letter dated 10/21/10	Open - NRC Review response acceptable TVA to docket updated FSAR		TVA Letter dated 10/21/10 Enclosure 1 Item No. 21	
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.	Responder: Craig The SG level transmitter reference legs are not insulated on Unit 1 and will not be insulated on Unit 2. The analysis provided for Unit 1 is also applicable to Unit 2. FSAR Section 7.2.1.1.2 (5) indicates that the Low-Low steam generator water level trip protects the reactor from loss of heat sink in the event of a loss of feedwater to one or more steam generators or a major feedwater line rupture <u>outside</u> containment. For a feedwater line rupture <u>inside</u> containment the TVA analysis credits the high containment pressure Safety Injection signal. FSAR Section 15.4.2.2 has been revised accordingly. Reference: 1. Watts Bar Unit 1 SER NUREG-0847, Supplement 14. 2. Westinghouse WCAP 13462, Revision 2	N	Open Response provided in letter dated 10/21/10	Open-NRC Review Due 10/31/10		TVA Letter dated 10/21/10 Enclosure 1 Item No. 22	
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	Responder: Craig <u>Steam Generator Overfill</u> FSAR Section 7.2 discusses reactor trip	Y	Open Response is acceptable	Open-TVA NRC to issue formal RAI to	ML102861885 Item No. 22	TBD	ML102861885 sent to DORL

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				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.	functions. Section 7.2.2.3.5 describes the Low-Low steam generator level reactor trip. The steam generator High-High level interlock (P-14) protects against steam generator overfill by initiating feedwater isolation and a turbine trip. Reactor trip occurs indirectly as a result of the turbine trip if power is above 50%, the P-9 interlock. This function is identified as ESFAS interlock P-14 in FSAR Section 7.3, Table 7.3-3. The High-High level interlock is also discussed in FSAR Section 10.4.7.3. Section 15.2.10 analyzes the feedwater malfunction event which causes one or more feedwater control valves to fail to the fully open position. <u>Pressurizer Overfill</u> The High pressurizer water level reactor trip protects against pressurizer overfill. This trip is described in FSAR Section 7.2.1.1.2 (3). Section 7.2.2.3.4 discusses specific control and protection interactions related to pressurizer level control. The high water level trip setpoint provides sufficient margin such that the undesirable condition of discharging liquid coolant through the safety valves is avoided. Pressurizer level is modeled in various Chapter 15 events to ensure that critical protection functions will function as required.		Response is included in letter dated 10/29/10	TVA. TVA formal response due 10/31/10			
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 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.	Responder: Elton The information provided in Unit 2 FSAR Section 7.3.1.1 is not meant to describe the specific function of each item in detail; the descriptions provided are a summary listing. The omitted information provided information beyond the level of detail provided for the other items in this section. The level of detail contained in item (13) of Unit 2 FSAR Section 7.3.1.1 is consistent with that contained in item 13. of Unit 1 UFSAR Section 7.3.1.1.	Y	Open Response included in next TVA Licensing Formal RAI Response Letter.	Open-TVA Due 10/31/10	ML102390538, Item No. 2, 9/10/10		
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.	Responder: Elton The level of detail is sufficient for this section without the two removed references to other Sections. The level of detail contained in item (3) of Unit 2 FSAR Section 7.3.1.1.2 is consistent with that contained in item 3. of Unit 1 UFSAR Section 7.3.1.1.2.	Y	Open Response included in next TVA Licensing Formal RAI Response Letter.	Open-TVA Due 10/31/10	ML102390538, Item No. 3, 9/10/10		

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
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.	Responder: Elton The information provided in Unit 2 FSAR Section 7.3.1.2.1 is not meant to provide detailed information describing what each condition includes. Deletion of the breaks described in Items (1.a) and (2.a) is justified because they are encompassed by the operating conditions primary system breaks and secondary system breaks, respectively. The level of detail contained in Unit 2 FSAR Section 7.3.1.2.1 is consistent with that contained in Unit 1 UFSAR Section 7.3.1.2.1.	Y	Open Response included in next TVA Licensing Formal RAI Response Letter.	Open-TVA Due 10/31/10	ML102390538, Item No. 4, 9/10/10		
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.	Responder: Elton Unit 2 FSAR Section 7.3 addresses Engineered Safety Features (ESF) Actuation System. Post accident monitoring is not an ESF; thus, a reference to it is not required in 7.3.1.2.2.	Y	Open Response included in next TVA Licensing Formal RAI Response Letter.	Open-TVA Due 10/31/10	ML102390538, Item No. 5, 9/10/10		
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.	Responder: Clark A review of the schematic diagrams for the WBN Unit 2 valves listed in SER 3 found the following: (1) For feedwater isolation valves (FCV-3-33, FCV-3-47, FCV-3-87, and FCV-3-100), feedwater check valve bypass valves (FCV-3-185, FCV-3-186, FCV-3-187, and FCV-3-188), and upper tap main feedwater isolation valves (FCV 3-236, FCV-3-239, FCV-3-242, and FCV-3-245), the Unit 2 equivalent reset switch and a relay have been added for each steam generator loop. When the engineered safety feature (ESF) signal is reset, the individual valve will not change state until both the loop and the ESF train reset switches have been reset. (2) For steam generator blowdown isolation valves (FCV-43-54D, FCV-43-56D, FCV-43-59D, FCV-43-63D, FCV-43-55, FCV-43-58, FCV-43-61, and FCV-43-64), the ESF signal is sealed in by means of a seal in relay. The individual valve will not change state until a hand switch in the sample room is used to reopen the individual valve. (3) For residual heat removal heat exchanger outlet flow control valves (FCV-74-16 and FCV-74-28), the ESF signal is sealed in by the limit switch. The Unit 2 equivalent reset switch has been added at the control room	Y	Open Response included in next TVA Licensing Formal RAI Response Letter.	Open-TVA Due 10/31/10	ML102390538, Item No. 6, 9/10/10		

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					control board. When the ESF signal is reset, the individual valve will not change state until the individual reset switch has been reset.						
299			EICB (Carte)	Provide Common Q Software Requirements Specification Post Accident Monitoring System 00000-ICE-3238 Rev. 5	Attachment 41 of the 10/5 letter contains the Common Q Software Requirements Specification Post Accident Monitoring System 00000-ICE-3238 Rev. 5 and the affidavit for withholding.		Closed Response provided in letter dated 10/5/10	Closed		TVA Letter dated 10/5/10	
300			EICB (Singh)	Need Radiation Monitoring System Description/Design Criteria Are detectors different from 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.	Responder: Temples/Mather (1) The Radiation Monitoring Design Criteria Document, WB-DC-40-24, Revision 21 is contained in Attachment 5 to letter dated October 31, 2010. (2) Attachment 7 contains the General Atomics detector differences report. (3) For safety-related applications, General Atomics Electronic Systems, Inc. supplies the RM-1000 module assembly as a Basic Component. This assembly does contain component parts that are Safety-Related Commercial Grade Items (SRCGI). Because these SRCGI components are assembled into the delivered Basic Component, they are dedicated to the assembly by virtue of the acceptance test of the full RM-1000 assembly. (4) The digital communications ports on the safety-related RM-1000 radiation monitors are not used.		Open Response is included in letter dated 10/29/10	Open-TVA Due 10/31/10			
301			EICB (Singh)	TVA is requested to address the consequences of software common cause failure including all potential resulting failures (i.e. total loss of CERPI, system fail as-is). 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	**Responder: WEC/Davies/Clark** (1) A total loss of CERPI puts the plant into LCO 3.0.3 which states: When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in: a. MODE 3 within 7 hours; b. MODE 4 within 13 hours; and c. MODE 5 within 37 hours. Exceptions to this Specification are stated in the individual Specifications. Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the		Open Response is included in letter dated 10/29/10	Open-TVA Due 10/31/10			

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				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.	actions required by LCO 3.0.3 is not required. (2) See the response to Question 1. (3) There is no FMEA for the CERPI system, nor is one required to respond to questions 1 and 2. (4) Control Bank D Automatic Rod Withdrawal Limit would be assured by Operations and control circuitry by the following 2 methods: **a.** A simultaneous failure of all indications of the Rod Position Indication System places the plant in LCO 3.0.3 since it would prevent compliance with actions in LCO 3.1.8. **b.** CERPI cabinet relays A-KX-18 and B-KX-18 are the PLC controlled components of Rod Withdrawal Limit. The relays are "active low" requiring power to activate the contacts in the control circuit as shown on attached. Total loss of CERPI will open the contacts and block Automatic Rod Withdrawal. Additionally, Annunciator window 64F will annunciate to show "C-11 BANK D AUTO WITHDRAWAL BLOCKED". (5) The CERPI Maintenance and Test Panels are used to set the Rod Withdrawal Limit with output signal to ICS as a parallel path. As stated above, the relays are the controlling functions and loss of signal to ICS will not affect the capability of the control circuit to disable the Automatic Rod Withdrawal function. The C-11 interlock is fail safe with regards to loss of power. (6) RAI RESPONSE: The cycle-specific analyses for the static rod misalignment assume full misalignment of an individual rod from the bank position indicator(s). Such a misalignment exceeds that which is possible during plant operations when accounting for the most adverse combination of the rod deviation alarm and uncertainty of the rod position indicator (both 12 steps). For consistency of parameter (and units) with the deviation alarm and position indicator uncertainty, the WBN Unit 2 FSAR Chapter 15, Section 2.3.1 will be revised in Amendment 102 to read: "The resolution of the rod position indicator channel is ± 12 steps. Deviation of any RCCA from its group by twice this distance						

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					(24 steps) will not cause power distributions worse than the design limits. The deviation alarm alerts the operator to rod deviation with respect to group demand position in excess of 12 steps. If the rod deviation alarm is not operable, the operator is required to take action as required by the Technical Specifications." This change is consistent with FSAR section 4.3.2.2.5, Limiting Power Distributions Page 4.3-13 which states the maximum deviation assumed is 12 steps.						
302	7.5.2.1	7.5.1	EICB (Marcus)	09/17/2010 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.	Responder: Tindell Attachment 8 contains the requested 50.59 evaluations and the variable table cross referencing the variable to the appropriate DCN. There are two changes to the original table. Variable 9, RCS Pressurizer Level and 10, RCS Pressure Wide Range have been changed from 50.59 Y to N. The original response showed these variables as changed under 10 CFR 50.59. The response was based on the plan to replace all paper recorders in Unit 1. The assumption was that these recorders would be replaced prior to Unit 2 startup. While this may still occur, the recorders have not been replaced at this time.	N	Open Response is included in letter dated 10/29/10	Open-TVA NRC to issue formal RAI to TVA TVA formal response due 10/31/10	ML102861885 Item No. 23	TBD	ML102861885 sent to DORL
303	7.5.2.1	7.5.1	EICB (Marcus)	09/17/2010 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.	Responder: Tindell Attachment 9 contains the cross reference between the Unit 2 and Unit 1 variable sources for the unique WBN Unit 2 variables within the scope of the Foxboro Spec 200, Common Q PAMS and Foxboro I/A changes.	N	Open Response is included in letter dated 10/29/10	Open-TVA NRC to issue formal RAI to TVA TVA formal response due 10/31/10	ML102861885 Item No. 24	TBD	ML102861885 sent to DORL
304	7.5.2.1	7.5.1	EICB (Marcus)	09/17/2010 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.	Responder: Tindell The source for the Unit 1 variables is the Eagle 21 System.	N	Open Response is included in letter dated 10/29/10	Open-TVA NRC to issue formal RAI to TVA TVA formal response due 10/31/10	ML102861885 Item No. 25	TBD	ML102861885 sent to DORL
305	7.5.2.1	7.5.1	EICB (Marcus)	09/17/2010 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.	Responder: Tindell The source for the Unit 1 variables is the Integrated Computer System.	N	Open Response is included in letter dated 10/29/10	Open-TVA NRC to issue formal RAI to TVA TVA formal response due 10/31/10	ML102861885 Item No. 26	TBD	ML102861885 sent to DORL
306	7.1	7.1	EICB (Gar	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	Responder: Hilmes The FSAR Allowable Value definition will be	N	Open Response is included in letter	Open-TVA Due 10/31/10			

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				which instrument channel is declared inoperable.	revised to be consistent with the TSTF-493 in FSAR Amendment 102. Attachment **3** contains the revised FSAR section 7.1.2.1.9 that will be included in FSAR Amendment 102 that reflects this change.		dated 10/29/10				
307	7.1	7.1	EICB (Garg)	(1) 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. (2) 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. (3) 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.	Responder: Hilmes (1) The Acceptable As Found (AAF) definition will be revised to be consistent with TSTF-493 in FSAR Amendment 102. Attachment 3 contains the revised FSAR section 7.1.2.1.9 that will be included in FSAR Amendment 102 that reflects this change. (2) Additional detail on the AAF methodology was provided in sections 7.1.2.1.9.1, Westinghouse Setpoint Methodology, and 7.1.2.1.9.2, TVA Setpoint Methodology. These sections will be revised to clarify the AAF calculations in FSAR Amendment 102. Attachment 3 contains the revised FSAR section 7.1.2.1.9 that will be included in FSAR Amendment 102 that reflects this change. (3) The statement about double sided limits addresses a TSTF requirement that the AAF tolerance consider errors in both the conservative and non-conservative directions and ensures that an as-found value which exceeds these limits, even in the conservative direction (away from the safety limit), will be evaluated. Attachment 3 contains the revised FSAR section 7.1.2.1.9 that will be included in FSAR Amendment 102 that reflects this change.	N	Open Response is included in letter dated 10/29/10	Open-TVA Due 10/31/10			
308	7.1	7.1	EICB (Garg)	(1) 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. (2) 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.	Responder: Hilmes (1) The statement about using calibration history to determine the Acceptable As Left (AAL) will be deleted in FSAR Amendment 102. Attachment 3 contains the revised FSAR section 7.1.2.1.9 that will be included in FSAR Amendment 102 that reflects this change. (2) See response to letter item 27 (NRC Matrix Item 307).	N	Open Response is included in letter dated 10/29/10	Open-TVA Due 10/31/10			
309	7.1	7.1.2.1.9.1	EICB (Garg)	(1) FSAR amendment 100, Page 7.1-14, Westinghouse setpoint methodology, states that AAF is the algebraic sum 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. (2) It also make the statement that ALT may take calibration history into consideration which is vague and ambiguous.	Responder: Hilmes (1) The AAF calculation for Westinghouse setpoint methodology calculations will be revised to SRSS method. (2) Please refer to the response to letter item 28 (NRC Matrix Item 308).	N	Open Response is included in letter dated 10/29/10	Open-TVA Due 10/31/10			
310	7.1	7.1.2.1.9.2	B (G	(1) FSAR amendment 100, Page 7.1-14, TVA setpoint methodology, states that for AAF ….and other	Responder: Hilmes	N	Open	Open-TVA			

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				measurable uncertainties as appropriate (i.e., those present during calibration….) should be changed to present during normal operation…… (2) Also on page 7.1-15, states that ALT may take calibration history into consideration which is vague and ambiguous.	(1) The statement will be revised to say those present during the surveillance interval in FSAR Amendment 102. Attachment 3 contains the revised FSAR section 7.1.2.1.9 that will be included in FSAR Amendment 102 that reflects this change. (2) The statement about using calibration history to determine the AAL will be deleted in FSAR Amendment 102. Attachment 3 contains the revised FSAR section 7.1.2.1.9 that will be included in FSAR Amendment 102 that reflects this change.		Response is included in letter dated 10/29/10	Due 10/31/10			
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.	Responder: Hilmes A statement that single-sided corrections are not used for TSTF-493 setpoints will be included in FSAR Amendment 102. Attachment 3 contains the revised FSAR section 7.1.2.1.9 that will be included in FSAR Amendment 102 that reflects this change.	N	Open Response is included in letter dated 10/29/10	Open-TVA Due 10/31/10			
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.	Responder: Stockton Amendment 8 is the current version of Unit 1 UFSAR.	N	Open Response provided in letter dated 10/21/10	Open-NRC Review Due 10/31/10		TVA Letter dated 10/21/10 Enclosure 1 Item No. 23	
313	7.7.8	7.7.1.12	EICB (Darbali)	EDCR 52408 (installation of AMSAC in Unit 2) states that Design Criteria WB-DC-40-57 needs to be modified to reflect AMSAC in Unit 2. 1. Has WB-DC-40-57 been completed for Unit 2? If so, please submit. 2. If WB-DC-40-57 has not been completed for Unit 2, please give an estimated date of completion and submittal. 3. Please submit WB-DC-40-57 for Unit 1 and identify any changes to the Unit 2 version.	Responder: Ayala (1) The review of WB-DC-40-57 for Unit 2 applicability has been completed and included in Revision 4 of the document. (2) There are 17 open Watts Bar Nuclear Plant Unit 2 Startup Integration Task Equipment List (WITEL) punch list items associated with Revision 4 that require resolution. A list of the punch list items is contained in Attachment 10. (3) Attachment 10 contains TVA design criteria WB-DC-40-57, Revision 4, Anticipated Transients Without Scram Mitigation System Actuation Circuitry (AMSAC)ontained in Attachment ?? of the 10/31 letter	Y	Open Response is included in letter dated 10/29/10	Open-TVA Due 10/31/10			
314	7.3	7.3	EICB (Darbali)	The following 50.59 changes were listed in the March 12 RAI response letter (item 10) but were not included in the September 9 submittal of 50.59 safety evaluations. Please submit the 50.59 safety evaluations for the following changes: • **DCN 38842** (Revise OTΔT and OPΔT turbine runback setpoints) • **DCN 50991** (Install Test Points)	Responder: Stockton Attachment 7 contains the requested safety evaluations.	Y	Open Response provided in letter dated 10/21/10	Open-NRC Review Due 10/31/10		TVA Letter dated 10/21/10 Enclosure 1 Item No. 24	Related to OI 10

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				• **DCN 51124** (Eliminate spurious ICS alarms associated with the SSPS							
315	7.5.3	7.5.3	EICB (Garg)	IE Bulletin 79-27 required that emergency operating procedures to be used by control room operators to attain safe shutdown upon loss of any Class IE or non Class IE bus are adequate. WBN1 has performed the review and documented their conclusion. Confirm that WBN2 emergency procedures are adequate to achieve safe shutdown in the event of loss of any Class IE or non-Class IE bus.	Responder: S. Smith (TVA Operations) While the WBN Unit 2 Emergency Operating Procedures (EOPs) have not been written, they will be written the same as the Unit 1 EOPs. WBN Unit 1 personnel will perform validations to ensure that WBN Unit 2 EOPs will perform the required actions. The WBN Unit 2 EOPs will be written and validated prior to Unit 2 fuel load.	N	Open Response provided in letter dated 10/21/10	Open-NRC Review Due 10/31/10		TVA Letter dated 10/21/10 Enclosure 1 Item No. 25	
316	7.5.2.3	7.5	EICB (Singh)	TVA has provided various documents in support of RM-1000 high range monitors for WBN2. Please clarify the following: RM-1000 v1.1 Software Verification Report 04508006 (Sequoyah) RM-1000 v1.2 Software Verification Report 04508006 (Sequoyah) RM-1000 System Verification Test Results (Sequoyah) These documents were prepared for the Sequoyah plant. IS the version provided applicable to WBN2? Please confirm and explain if these documents are applicable to WBN 2 as provided or with differences?	Responder: Temples/Mather The Sequoyah RM-1000 v1.1 Software Verification Report 04508006 and RM-1000 v1.2 Software Verification Report 04508006 are applicable to WBN Unit 2. The RM-1000 System Verification Test Results report is not applicable to WBN Unit 2. This document was for the non-safety related software and was superseded by the 04508006 v1.1 and v1.2 reports for the safety-related software.		Open Response provided in letter dated 10/21/10	Open-NRC Review Due 10/31/10		TVA Letter dated 10/21/10 Enclosure 1 Item No. 26	
317	7.5.2.3	7.5	EICB (Singh)	TVA has provided a proprietary and a non-proprietary version of Technical Manual for RM-1000 Digital Radiation Processor under ML101680582 and ML101680587). (i) Are these documents applicable to WBN2 as provided (October 2003 version). (ii) Why is DCN38993-A attached at the back of the proprietary version? It is for WBN1 Turbine Governor Control Valve. (iii) This document does not state the requirements for RM-1000 units. Please provide a document that states the requirements for the RM-1000 radiation monitors for WBN2.	Responder: Temples i. These documents are applicable to WBN Unit 2. ii. This was an error in document preparation that occurred when attachments were assembled for a previous letter. iii. The Technical Manual is not intended to include equipment requirements. Requirements would be found in the applicable TVA Specifications for the contract. Attachment 11 contains the Material Requisition Specification Revisions 1 and 4 which contain the requested information.		Open Response is included in letter dated 10/29/10 **(iii) Staff is looking for high level requirements for RM-1000 monitors. Pl. provide appropriate documents**.	Open-TVA Due 10/31/10			
318	7.5.2.3	7.5	EICB (Singh)	TVA has provided the following documents for RM-1000 equipment qualification: (i) Qualification Test Report for RM-1000 Processor Module and Current-To-Frequency Converter 04508905-QR (January 2001) (ii) Qualification Test Report Supplement, RM-1000 Upgrades 04508905-1SP (June 2006) (iii) Qualification Test Report Supplement, RM-1000 Upgrades 04508905-2SP (June 2008) (iv) Qualification Test Report Supplement, RM-1000 Upgrades 04508905-3SP (May 2008) Please clarify whether all of these are fully applicable to WBN2 or are they applicable with exceptions? If with exceptions, then please clarify what those are.	Responder: Temples (i) Applicable to WBN Unit 2. 04508905-1QR is applicable only in regards to the RM-1000, with the exception of re-qualification of certain RM-1000 equipment differences covered in the -1SP report. The Current-to-Frequency (I-F) converter module qualifications in the base report and the -1SP report are not applicable to the RM-1000s, and will be used later as references in the WBN Unit 2 specific qualification reports. (ii) Applicable to WBN Unit 2. (iii) Not applicable to WBN Unit 2 (iv) Not applicable to WBN Unit 2		Open **Note check 04508905-1QR or QR. Staff version is QR only.** Response is included in letter dated 10/29/10	Open-TVA Due 10/31/10			

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				Supplement 3 was issued one month prior to supplement 2. Please explain the reason for the same.	The 04508905-3SP report was prepared for another TVA plant, as a monitor system-level report, where the system included equipment mostly based on the base report equipment items. These two -2SP and -3SP supplement reports were essentially worked concurrently, but the -2SP document review/release process resulted in the release time difference.						
319	7.5.2.3	7.5	EICB (Singh)	TVA provided System Verification Test Results 04507007-1TR (July 1999) for Sequoyah to support test verification. However, the document states (page v) that it is not applicable for high range monitors with an action noted for fixing a problem with the high range RM-1000 monitors on page vi. TVA to respond to the following clarifications: Has the anomaly noted on page vi been resolved for the high range monitors? Provide the high range verification document for WBN2.	Responder: Temples See TVA letter to the NRC dated October 21, 2010, item 26 (RAI Matrix Item 316) for non-applicability of 04507007-1TR. The recorded anomaly was later resolved through the verification of software version 1.2, reported in RM-1000 v1.2 Software Verification Report 04508006. The high range verification documents are the Sequoyah RM-1000 v1.1 Software Verification Report 04508006 and RM-1000 v1.2 Software Verification Report 04508006.		Open Response is included in letter dated 10/29/10	Open-TVA Due 10/31/10			
320				Per Westinghouse letter WBT-D-2340, TENNESSEE VALLEY AUTHORITY WATTS BAR NUCLEAR PLANT UNIT 2 FSAR Markups Units 1 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% is the correct value. As a result of the question, 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 FSAR Amendment 101	Responder: Clark This item is not required It was entered as a tracking commitment from the 10/5 letter to issue FSAR Amendment 101 which includes the described change. Amendment 101 will be issued no later than 10/29.		Closed	Closed			
321				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 FSAR 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 transition, 7.2.2.1.2 will be revised to read as follows: “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	Responder: Clark This item is not required It was entered as a tracking commitment from the 10/5 letter to issue FSAR Amendment 101 which includes the described change. Amendment 101 will be issued no later than 10/29.		Closed	Closed			

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				to normalize the RCS flow indicators and provide a reference point for the low flow reactor trip setpoint." This change will be incorporated in FSAR Amendment 101							
322		7.7.1.11	EICB (Marcus)	Section 7.7.1.11 will be added to FSAR Amendment 101 to provide a discussion of the Distributed Control System	Responder: Clark This item is not required It was entered as a tracking commitment from the 10/5 letter to issue FSAR Amendment 101 which includes the described change. Amendment 101 will be issued no later than 10/29.		Closed	Closed			
323				WCAP-13869 revision 1 was previously reviewed under WBN Unit 1 SER SSER 13 (Reference 8). Unit 2 references revision 2. An analysis of the differences and their acceptability will be submitted to the NRC by November 15, 2010	Responder: Craig WCAP 13869 was revised to address feedline breaks occurring inside containment. Revision 2 was a result of the TVA decision to not insulate the Steam Generator level transmitter reference legs (Reference TVA response to NRC RAI 15.4.2.2 Q4). Attachment 12 contains the WCAP 13869 Revision 2 Change Analysis.		Open Response is included in letter dated 10/29/10	Open-TVA Due 10/31/10			
324				Per the NRC reviewer, the BISI calculation is not required to be submitted.			Closed	Closed			
325				The Unit 2 loops in service for Unit 1 that are scheduled to be transferred to the Foxboro Spec 200 hardware will be transferred prior to Unit 2 fuel load	Responder: TVA Startup Olson		Open	Open-TVA Due prior to fuel load			
326				TVA uses double-sided methodology for as-found and as-left Reactor Trip and ESFAS instrument setpoint values. The FSAR will be revised in a future amendment to reflect this methodology	Responder: Webb Attachment 3 contains the revised FSAR section 7.1.2.1.9 that will be included in FSAR Amendment 102 that reflects this change.		Open October 22, 2010 Response is included in letter dated 10/29/10	Open-TVA Due 10/31/10			
327				Attachment 36 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 by January 31, 2011.	Responder: Webber Non-Prop drawings are available for submittal.		Open	Open-TVA Due 1/31/11			
328	7.5.2.3	7.5	EICB (Singh)	Provide the model number for the four containment high range area monitors, RM-1000 and identify how the software V&V and qualification documents apply to them. If there is no specific model number then how is it ensured that the correct radiation monitor is received at the site and subsequently installed?	Responder: Temples The RM-1000 monitors are uniquely identified by serial numbers which are assigned when the equipment is assembled.		Open Response is included in letter dated 10/29/10	Open-TVA Due 10/31/10			
329	7.6.1	7.6.7	EICB (Singh)	Section 7.6.7 of the FSAR (Amendment 100) states that, "The DMIMS-DX™ audio and visual alarm capability will remain functional after an Operating Basis Earthquake (OBE). All of the DMIMS-DX™ components are qualified for structural integrity during a Safe Shutdown Earthquake (SSE) and will not mechanically impact any safety-related equipment." TVA to clarify the seismic qualification of the loose parts monitoring system and include the appropriate information in Table 3.10 (or another suitable section)	Responder: Clark The FSAR Section 3.10 title is SEISMIC DESIGN OF CATEGORY I INSTRUMENTATION AND ELECTRICAL EQUIPMENT. Since the Loose Part Monitoring System is not a Category 1 system, it is not included in the scope of 3.10. FSAR Section 7.6.7 provides the information the seismic design of the system which is consistent with the requirements of TVA Design Criteria, WB-DC-30-31, LOOSE PARTS MONITORING SYSTEM.		Open Response is included in letter dated 10/29/10	Open-TVA Due 10/31/10			

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				of the FSAR.							
330	7.3	7.3	EICB (Darbali)	Related to Item 298 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 list for Unit 1 and Unit 2 the safety-related equipment that does not remain in its emergency mode after an ESF reset.**	Responder: TBD	N	Open	Open-TVA Due TBD			
331	7.6.1	7.6.7	EICB (Singh)	As a follow up of OI 190, Staff has reviewed the proprietary version of the DMIMS-DX system description to verify the conformance claims in the FSAR. Staff has noted the following insufficiencies and discrepancies between the FSAR and the proprietary version of the system description for loose parts monitoring system provided by TVA. 1) FSAR, Amendment 100, page 7.6-5 states, "During baseline testing, the reactor vessel and steam generator are impacted three feet from each sensor with a force of 0.5 ft-lb. Loose parts detection is accomplished at a frequency of 1 kHz to 20 kHz, where background signals from the RCS are acceptable. Spurious alarming from control rod stepping is prevented by a module that detects CRDM motion commands and automatically inhibits alarms during control rod stepping. The online sensitivity of the DMIMS-DX™ is such that the system will detect a loose part that weighs from 0.25 to 30 lb and impacts with a kinetic energy of 0.5 ft-lb on the inside surface of the RCS pressure boundary within 3 ft of a sensor." The source of this information is not cited nor is it described in the system description. TVA to provide the source of the information and update the system description as needed. 2) Regulatory Guide (RG) 1.133, rev.1, regulatory position C.1.g states that, "*Operability for Seismic and Environmental Conditions.* Components of the loose-part detection system within containment should be designed and installed to perform their function following all seismic events that do not require plant shutdown, i.e., up to and including the Operating Basis Earthquake (OBE). Recording	Responder: Harless/Clark		Open	Open - TVA			Follow-up of OI-190.

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				equipment need not function without maintenance following the specified seismic event provided the audio or visual alarm capability remains functional. The system should also be shown to be adequate by analysis, test, or combined analysis and test for the normal operating radiation, vibration, temperature, and humidity environment. FSAR, Amendment 100, page 7.6-5 states, "The DMIMS-DX™ audio and visual alarm capability will remain functional after an Operating Basis Earthquake (OBE). All of the DMIMS-DX™ components are qualified for structural integrity during a Safe Shutdown Earthquake (SSE) and will not mechanically impact any safety-related equipment." Paragraphs 4.c and 4.d of the system description are not consistent with the seismic qualifications described in the FSAR. TVA to provide the source of the information contained in the FSAR and update the system description as needed. 3) The system description clearly describes the "In-containment equipment" and "DIMMS-DX Cabinet equipment. The FSAR should be updated to reflect the equipment locations for clarification purposes. 4) The information regarding frequency ranges of the sensors is included on page 7.6-6 of Amendment 100 of the FSAR but the system description does not contain this information. Please provide the source of this information and update the system description to reflect the appropriate information. 5) Please provide information as to how the in-containment components are qualified for vibration as addressed in regulatory position C.1.g of RG 1.133.						