

WBN2Public Resource

From: Poole, Justin
Sent: Tuesday, December 14, 2010 2:40 PM
To: Darbali, Samir; Garg, Hukam; Carte, Norbert; Marcus, Barry; Singh, Gursharan; Stattel, Richard
Cc: WBN2HearingFile Resource
Subject: FW: Updated RAI Matrix
Attachments: 20101203 Open Item List MasterTVA Update 12-14-10r2.docx

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From: Clark, Mark Steven [<mailto:msclark0@tva.gov>]
Sent: Tuesday, December 14, 2010 2:14 PM
To: Crouch, William D; Hilmes, Steven A
Cc: Poole, Justin
Subject: Updated RAI Matrix

Bill:

Attached is the updated RAI Matrix.

Regards,

Steve

Steve Clark
Bechtel Power Corp.
Control Systems
Watts Bar 2 Completion Project
Phone: 423.365.1664
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Hearing Identifier: Watts_Bar_2_Operating_LA_Public
Email Number: 225

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Subject: FW: Updated RAI Matrix
Sent Date: 12/14/2010 2:39:54 PM
Received Date: 12/14/2010 2:40:02 PM
From: Poole, Justin

Created By: Justin.Poole@nrc.gov

Recipients:

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

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MESSAGE	617	12/14/2010 2:40:02 PM
20101203 Open Item List MasterTVA Update 12-14-10r2.docx		416601

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	☞	The Watts Bar Nuclear Plant FSAR red-line for Unit 2 (Agency	12/15/2009 Presentation Slides	1. Y	Closed	Closed	EICB RAI	3/12/2010	NNC 11/19/09: The FSAR contains
002	All	All	☞	Are there I&C components and systems that have changed to a	12/15/2009 Presentation Slides	2. Y	Closed	Closed	EICB RAI	3/12/2010	NNC 11/19/09: The FSAR contains
003	All	All	☞	Because a digital I&C platform can be configured and programmed	12/15/2009 Presentation Slides	3. Y	Closed	Closed	EICB RAI	3/12/2010	NNC 11/19/09: The FSAR contains
004	All	All	☞	Please identify the information that will be submitted for each	Responder: Webb 1/13/10 Public Meeting	4. Y	Closed	Closed	EICB RAI	January 13, 2010	NNC 11/19/09: LIC-110 Rev. 1 Section
005	7.1.3.1		☞	By letter date February 28, 2008 (Agencywide Documents Access	Responder: Craig/Webb	5. Y	Closed	Closed	EICB RAI	TVA Letter dated	
006			☞	Amendment 95 of the FSAR, Chapter 7.3, shows that change 7.3-	By letter dated February 5, 2010: TVA provided the Unit 2	6. Y	Closed	Closed	EICB RAI	TVA Letter dated	NNC: WCAP-12096 Rev. 7
007	7.1.3.1		☞	The setpoint methodology has been reviewed and approved by the	TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 7	7. Y	Closed	Closed	EICB RAI	TVA Letter dated	TVA to provide Rev. 8 of the Unit 1
008	7.3		☞	There are several staff positions that provide guidance on setpoint	TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 8	8. Y	Closed	Closed	EICB RAI	TVA Letter dated	
009	7.3.2	5.6,	☞	Change 7.3-2, identified in Watts Bar Nuclear Plant FSAR red-line	TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 9	9. Y	Closed	Closed	EICB RAI	3/12/10,	
010	7.3	7.3	☞	The original SER on Watts Bar (NUREG-0847) documents that the	TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 10	10. Y	Closed	Closed	EICB RAI	3/12/10,	
011	7.3.2	5.6,	☞	NUREG-0847 Supplement No. 2 Section 7.3.2 includes an	TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 11	11. Y	Closed	Closed	EICB RAI	ML101680598,	
012	7.4	7.4	☞	The original SER on Watts Bar (NUREG-0847) documents that the	TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 12	12. Y	Closed	Closed	EICB RAI	TVA Letter dated	
013	7.1.3.1		☞	Chapter 7 and Chapter 16 of Amendment 95 to the FSAR do not	TVA Letter Dated March 12, 2010 (Enclosure 1, Item No. 13	13. Y	Closed	Closed	EICB RAI	TVA Letter dated	TS have been docketed.
014	All	All	☞	Provide the justification for any hardware and software changes	Date: 4/27/10	14. Y	Closed	Closed	NRC Meeting	TVA Letter dated	
015			☞	Verify that the refurbishment of the power range nuclear	Date: 4/27/10	15. Y	Closed	Closed	NRC Meeting	TVA Letter dated	
016			☞	Identify the precedents in license amendment requests (LARs), if	Date: 4/27/10	16. Y	Closed	Closed	NRC Meeting	TVA Letter dated	
017	7.3.1	7.3.1,	☞	Identify precedents in LARs, if any, for the solid state protection	Date: 4/27/10	17. Y	Closed	Closed	NRC Meeting	TVA Letter dated	
018			☞	Identify any changes made to any instrumentation and control	Date: 4/27/10	18. Y	Closed	Closed	NRC Meeting	TVA Letter dated	
019			☞	Verify that the containment purge isolation radiation monitor is the	Date: 4/27/10	19. Y	Closed	Closed	NRC Meeting	TVA Letter dated	
020			☞	Provide environmental qualification information pursuant to Section	Date: 4/27/10	20. Y	Closed	Closed	NRC Meeting	TVA Letter dated	NNC 4/30/10: SRP Section 7.0 states:
021		7.3	☞	For the Foxboro Spec 200 platform, identify any changes in	Date: 5/25/10	21. Y	Closed	Closed	NRC Meeting	TVA Letter dated	The resolution of this item will be
022	7.3.2	5.6,	☞	Verify the auxiliary feedwater control refurbishment results in a	Date: 4/27/10	22. Y	Closed	Closed	NRC Meeting	TVA Letter dated	
023			☞	Provide environmental qualification (10 CFR 50.49) information for	Date: 4/27/10	23. Y	Closed	Closed	NRC Meeting	TVA Letter dated	NNC 4/30/10: SRP Section 7.0 states:
024			☞	Provide a schedule by the January 13, 2010, meeting for providing	During the January 13, 2010 meeting, TVA presented a	24. Y	Closed	Closed	NRC Meeting	N/A – Request for	NNC 4/30/10: Carte to address
025	7.5.2	7.5.1	☞	For the containment radiation high radiation monitor, verify that the	Date: 4/27/10	25. Y	Closed	Closed	NRC Meeting	ML101230248,	
026			☞	Provide environmental qualification (10 CFR 50.49) information for	Date: 4/27/10	26. Y	Closed	Closed	NRC Meeting	TVA Letter dated	NNC 4/30/10: SRP Section 7.0 states:
027	7.7.1.4		☞	For Foxboro I/A provide information regarding safety/non-safety-	Date: 4/27/10	27. Y	Closed	Closed	NRC Meeting	TVA Letter dated	
028			☞	For the turbine control AEH system, verify that the refurbishment	Responder: Mark Scansen	28. Y	Closed	Closed	NRC Meeting	TVA Letter dated	
029			☞	For the rod control system, verify that the refurbishment results in a	Date: 4/27/10	29. Y	Closed	Closed	NRC Meeting	TVA Letter dated	
030			☞	Regarding the refurbishment of I&C equipment, identify any	Responder: Clark	30. Y	Closed	Closed	NRC Meeting	TVA Letter dated	
031			☞	For the rod position indication system (CERPI), provide information	Date: 4/27/10	31. Y	Closed	Closed	NRC Meeting	TVA Letter dated	CERPI is non-safety related.
032			☞	For the process computer, need to consider cyber security issues	Date: 4/27/10	32. Y	Closed	Closed	NRC Meeting	TVA Letter dated	EICB will no longer consider cyber
033			☞	For the loose parts monitoring system, provide information	Date: 4/27/10	33. Y	Closed	Closed	NRC Meeting	TVA Letter dated	The loose parts monitoring system is
034			☞	2/4/2010	Responder: TVA	34. Y	Closed	Closed	N/A	TVA Letter dated	
034.1			☞	Chapter 7.1 – Introduction		35. Y	Close	Closed	N/A	N/A	
034.2			☞	Chapter 7.2 - Reactor Trip System		36. Y	Close	Closed	N/A	N/A	
034.3	7.3	7.3	☞	Chapter 7.3 – ESFAS		37. Y	Closed	Closed	N/A	N/A	
034.4	7.5.1.1	7.5.2	☞	Chapter 7.5 - Instrumentation Systems Important to Safety		38. Y	Closed	Closed	N/A	N/A	Closed
034.5	7.5.1.1	7.5.2	☞	Chapter 7.6 - All Other Systems Required for Safety		39. Y	Closed	Closed	N/A	N/A	Closed
034.6			☞	Chapter 7.7 Control Systems		40. Y	Closed	Closed	N/A	N/A	
035			☞	2/18/2010	Responder: Clark	41. Y	Closed	Closed	RAI No. 1	TVA Letter dated	LIC-110 Section 6.2.2 states: "Design
036	7.5.2	7.5.1	☞	February 18, 2010	Date: 5/25/10	42. Y	Closed	Closed	NRC Meeting		NNC: Unit 2 FSAR Section 7.5.1, "Post
037	7.5.1.1	7.5.2	☞	2/18/2010	Responder: Clark Date: 5/25/10	43. Y	Closed	Closed	N/A	TVA Letter dated	FSAR Amendment 100 provides

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
038	7.5.1.1	7.5.2	(C)	2/18/2010	Responder: Clark Date: 5/25/10	44. Y	Closed	Closed	EICB RAI	TVA Letter dated	The slides presented at the December
039			(C)	January 13, 2010	Responder: Clark Date: 5/25/10	45. Y	Closed	Closed	EICB RAI	FSAR amendment	The equation for the calculation of the
040			(C)	January 13, 2010	Responder: Clark Date: 5/25/10	46. Y	Closed	Closed	EICB RAI EICB RAI	FSAR amendment	The equation for the calculation of the
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 For Item 3, Attachment 19 contains the Westinghouse document "Post-Accident Monitoring System (PAMS) Licensing Technical Report," WNA-LI-00058-WBT, Revision 2, dated December 2010. Attachment 20 contains the Westinghouse Application for Withholding for the "Post-Accident Monitoring System (PAMS) Licensing Technical Report," WNA-LI-00058-WBT, Revision 2, dated December 2010. For Item 4, Attachment 9 contains the Westinghouse document "Nuclear Automation Watts Bar 2 NSSS Completion Program I&C Projects, Post Accident Monitoring System Test Plan," WNA-PT-00138-WBT, Revision 0, dated November 2010. Attachment 10 contains the Westinghouse Application for Withholding for the WNA-PT-00138-WBT, Revision 0 "Nuclear Automation Watts Bar 2 NSSS Completion Program I&C Projects, Post Accident Monitoring System Test Plan," WNA-PT-00138-WBT, Revision 0, dated November 17, 2010.	1. N	Open Final Response included in letter dated 12/3/10 Partial 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: (3) 12/3/10 (4) 12/10/10 TVA to docket information indentified in ISG6.	NRC Meeting Summary NRC Meeting Summary 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	(C)	February 25, 2010: Telecom	Date: 5/25/10	47. Y	Closed	Closed	EICB RAI	TVA Letter dated	The drawing provided did not have the
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.	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."	2. N	Open Revised response included in letter dated 12/22/10. 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 routes to review that the NRC can	Open-TVA/WEC Due 12/1/10	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. NNC 11/23/10: WNA-LI-00058-WT-P Rev. 1 Section 7 does not include the RSED documents, and it should. Table 6-1 Item No. 15 should also include the RSED RTMs.

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
				<p>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 not specifically address this PAMS system at Watts Bar Unit 2.</p> <p>NRC then concluded that TVA should go through and provide a more complete and thorough compliance matrix.</p>	<p>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.</p> <p>WNA-LI-00058-WT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" submitted in TVA Letter to NRC dated December 3, 2010, "Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Information Requests," (Reference 1) contains the following changes to address the NRC requests:</p> <p>(1) While RSEDs are not specifically mentioned, Section 7 has been revised to be applicable to both hardware and software which includes the RSEDs.</p> <p>(2) Table 6-1 item 15 reference added for WNA-VR-00280-WBT (RESD)</p>		<p>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.</p>				
044	7.5.2	7.5.1	U	February 25, 2010	Date: 5/25/10	48. Y	Closed	Closed	EICB RAI	TVA Letter dated	
045			U	February 25, 2010	Date: 5/25/10	49. Y	Closed	Closed	EICB RAI	TVA Letter dated	
046			U	February 25, 2010	Date: 5/25/10	50. Y	Closed	Closed	N/A – Request for	N/A	
047	7.5.2	7.5.1	U	4/8/2010	Responder: WEC/Hilmes Date: 5/25/10	51. Y	Closed	Closed	EICB RAI	TVA Letter dated	
048	7.5.2	7.5.1	U	April 8, 2010	Date: 5/25/10	52. Y	Closed	Closed	EICB RAI	TVA Letter dated	
049	7.5.2	7.5.1	U	4/8/2010	Responder: WEC Date: 5/25/10	53. Y	Closed	Closed	EICB RAI	TVA Letter dated	
050	7.5.2	7.5.1	EICB (Carte)	<p>4/8/2010</p> <p>How should the "shall" statements outside of the bracketed requirements in Common Q requirements documents be interpreted?</p>	<p>Responder: WEC Date: 5/25/10</p> <p>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.</p> <p>The System Requirements Specification will be revised by September 30, 2010 and submitted within two of receipt from Westinghouse.</p> <p>TVA Revised Response</p> <p>Shall statements within the scope of the System Requirements Specification (SysRS) and System Design Specification (SysDS) were reviewed by Westinghouse. The statements were either relocated to the numbered requirements section or the wording was changed to identify that it was not a requirement. This item is resolved by submittal of revision 2 of the SysRS and the SysDS (attachments 7 and 8 of TVA Letter to NRC dated 10/25/10).</p>	1. N	<p>Open</p> <p>Revised response included in letter dated 12/22/10.</p> <p>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).</p> <p>Is there a requirement on the shall referenced above??</p> <p>Response is provided in letter dated 10/29/10.</p> <p>TVA Revised Response in TVA Letter dated 10/29/10 Enclosure 1 Item No. 1 is Acceptable</p>	<p>Open-TVA/WEC</p> <p>Due 12/22/10</p> <p>Discuss at 11/22 phone call.</p> <p>This will be corrected in the Revision 3 document due to TVA 12/10/10</p>	EICB RAI ML102910002 Item No. 8	<p>TVA Letter dated 6/18/10</p> <p>TVA Letter dated 10/29/10 Enclosure 1 Item No. 1</p>	<p>NNC 11/18/10: SysRS Rev. 2 contains several "Reference 8", however, Reference 8 has been deleted.</p>

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					<p>TVA Response to Follow-up NRC Request:</p> <p>This item is corrected in the revision 3 requirements documents.</p> <p>Attachment Error! Reference source not found. contains the proprietary version of WNA-DS-01617-WBT-P, Revision 3, "Post Accident Monitoring System- System Requirements Specification," dated November 2010. Attachment 2 contains the non-proprietary version of WNA-DS-01617-WBT-P, Revision 3, "Post Accident Monitoring System - System Requirements Specification," dated December 2010. Attachment 3 contains the "Application for Withholding Proprietary Information from Public Disclosure, WNA-DS-01617-WBT-P, Revision 3, "Nuclear Automation Watts Bar 2 NSSS Completion Program I&C Projects, Post Accident Monitoring System - System Requirements Specification" (Proprietary)"</p> <p>Attachment 4 contains the proprietary version of WNA-DS-01667-WBT-P, Revision 3, "Post Accident Monitoring System – System Design Specification," dated November 2010. Attachment 5 contains the non-proprietary version of WNA-DS-01667-WBT-P, Revision 3, "Post Accident Monitoring System – System Design Specification," dated December 2010. Attachment 6 contains the "Application for Withholding Proprietary Information from Public Disclosure, WNA-DS-01667-WBT-P, Revision 3, "Nuclear Automation Watts Bar 2 NSSS Completion Program I&C Projects Post Accident Monitoring System - System Design Specification" (Proprietary)"</p> <p>Attachment 7 contains the proprietary version of WNA-SD-00239-WBT-P, Revision 3, "Software Requirements Specification for the Post Accident Monitoring System," dated November 2010. Attachment 8 contains the non-proprietary version of WNA-SD-00239-WBT-P, Revision 3, "Software Requirements Specification for the Post Accident Monitoring System," dated December 2010. Attachment 9 contains the "Application for Withholding Proprietary Information from Public Disclosure, WNA-SD-00239-WBT-P, Revision 3, "Nuclear Automation Watts Bar 2 NSSS Completion Program I&C Projects, Software Requirements Specification for the Post Accident Monitoring System" (Proprietary)"</p>		<p>NNC 11/18/10: Revised Response is not a statement of fact. SysRS Rev. 2 (i.e., WNA-DS-01617-WBT Rev. 2) contains many "shalls" that are not within numbered requirements sections, for example: (1) Page 2-1, Section 2.3.1 – See guidance statement (2) Page 2-10, top of page 1 – See guidance statement</p>				
051			—C	April 15, 2010	Date: 5/25/10	54. Y	Closed	Closed	N/A	N/A	Review addressed by another Open
052	7.5.2	7.5.1	—S	April 19, 2010	Date: 5/25/10	55. Y	Closed	Closed	RAI No. 12		
053	7.5.2	7.5.1	—S	April 19, 2010	Date: 5/25/10	56. Y	Closed	Closed	RAI No. 13		
054	7.5.2	7.5.1	—S	4/19/2010	Responder: Slifer/Clark Date: 5/25/10	57. Y	Closed	Closed	RAI No. 14	TVA Letter dated	
055	7.5.2	7.5.1	—S	4/19/2010	Responder: Slifer/Clark Date: 5/25/10	58. Y	Closed	Closed	RAI No. 15	TVA Letter dated	
056			—S	April 19, 2010	Date: 5/25/10	59. Y	Closed	Closed	RAI No. 16	TVA Letter dated	Sorrento Radiation Monitoring
057	7.5.2	7.5.1	—S	4/19/2010	Responder: TVA I&C Staff Date: 5/25/10	60. Y	Closed	Closed	RAI No. 17	TVA Letter dated	
058	7.5.0	7.5	—S	April 19, 2010	Date: 5/25/10	61. Y	Closed	Closed	RAI No. 18	TVA Letter dated	
059	7.5.2	7.5.1	—S	April 19, 2010	Date:	62. Y	Closed	Closed	RAI No. 19	TVA Letter dated	
060	7.5.2	7.5.1	—C	April 19, 2010	Date: 5/25/10	63. Y	Closed	Closed	N/A	N/A	Addressed by Open Item No. 47

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
061	7.5.2	7.5.1	— 0	April 19, 2010	Date: 5/25/10	64. Y	Closed	Closed	N/A	N/A	Addressed by Open Item No. 48
062	7.5.2	7.5.1	— 0	April 19, 2010	Date: 5/25/10	65. Y	Closed	Closed	N/A	N/A	Addressed by Open Item No. 49
063	7.5.2	7.5.1	— 0	April 19, 2010	Date: 5/25/10	66. Y	Closed	Closed	N/A	N/A	Addressed by Open Item No. 50
064	7.5.2	7.5.1	— 0	By letter dated March 12, 2010 TVA stated that the target submittal	Responder: Webb Date: 4/8/2010	67. Y	Closed	Closed	N/A - No question	TVA Letter dated	
065	7.5.2	7.5.1	— 0	By letter dated March 12, 2010 TVA stated that the target submittal	Responder: WEC Date: 5/25/10	68. Y	Closed	Closed	N/A - No question	TVA Letter dated	
066	7.5.2	7.5.1	— 0	By letter dated March 12, 2010 TVA stated that the target submittal	Responder: WEC Date: 5/25/10	69. Y	Closed	Closed	N/A - No question	TVA Letter dated	
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 TVA Response to Follow-up NRC Request: WNA-LI-00058-WT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" submitted in TVA Letter to NRC dated December 3, 2010, "Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Information Requests," (Reference 1) contains the following change to address the NRC request: Section 7, "Commercial Grade Dedication Process," has been revised to describe the general commercial grade dedication process for both hardware and software and uses a description of the AI687 dedication process as an example of how the process is applied.	2. N	Open Response included in letter dated 12/22/10. This item is addressed in Rev. 2 of the Licensing Technical Report	Open-TVA/WEC Due 12/3/10	N/A - No question was asked. Item was opened to track commitment made by applicant.	TVA Letter dated 6/18/10	
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 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	3. N	Open Response included in letter dated 12/22/10. This item is addressed in Rev. 2 of the Licensing Technical Report	Open-TVA/WEC Due 12/3/10	N/A - No question was asked. Item was opened to track commitment made by applicant.	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
					<p>Westinghouse Rockville office.</p> <p>To be addressed during 9/20-9/21 audit</p> <p>TVA Response to Follow-up NRC Request:</p> <p>For the commercial grade dedication process, please see the response to Request for Additional Information (RAI) item 3 in the 12/22 letter, NRC Matrix Item 067.</p> <p>The component level EQ/Seismic summary reports for the hardware listed above are available for review/audit as described below:</p> <p>(1) AI687, AI688, the following documents were submitted on TVA Letter to NRC Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Information Requests, dated October 26, 2010 (Reference 6):</p> <ul style="list-style-type: none"> a. “Common Q PAMS Comparison of Tested Conditions for the AI687 and AI688 Common Q Modules and Supporting Components to the Watts Bar Unit 2 (WBT) Requirements” (EQ-EV-62-WBT, Revision 0), dated September 10, 2010 b. “Environmental and Seismic Test Report, Analog Input (AI)687 & AI688 Modules for use in Common Q PAMS” (EQLR-171, Revision 0), dated September 10, 2010 c. “Dynamic Similarity Analysis for the Watts Bar Unit 2 Post Accident Monitoring System (PAMS),” CN-EQT-10-44, Revision 0, dated September 28, 2010 <p>(2) Upgraded PC node box – Per Westinghouse letter WBT-D-2024, “NRC Access to Common Q Documents at the Westinghouse Rockville Office” dated June 9, 2010 (Reference 7), the following documents are available for audit at the Westinghouse Rockville office:</p> <ul style="list-style-type: none"> a. “Next Generation PC Node Box Commercial Dedication Instruction,” CDI-3722, Revision 7 b. “PC Node Box Flat Panel Display System Components Qualification Summary” LTR-EQ-10-50 <p>(3) Flat panel displays – Per Westinghouse letter WBT-D-2024, “NRC Access to Common Q Documents at the Westinghouse Rockville Office” dated June 9, 2010 (Reference 7), the following documents are available for audit at the Westinghouse Rockville office:</p> <ul style="list-style-type: none"> a. “Next Generation Flat Panel Display (FPD) Commercial Dedication Instruction” CDI-3803, Revision 8 b. “PC Node Box Flat Panel Display System Components Qualification Summary” LTR-EQ-10-50 <p>(4) Power supplies – Per Westinghouse letter WBT-D-2035 “NRC Access to Common Q Documents at the Westinghouse Rockville Office” dated June 11, 2010 (Reference 8), the following documents are available for audit at the Westinghouse Rockville office:</p> <ul style="list-style-type: none"> a. “Commercial Dedication Instruction,” CDI- 4057, Revision 4 						

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
					<p>b. "Electromagnetic Compatibility Test Plan and Procedure for Quint Power Supplies and Safety System Line Filter", EQ-TP-1 05-GEN, Revision 0</p> <p>c. "Seismic Qualification Test Procedure For Common Q Power Supplies, Quint Power Supplies, Line Filter Assemblies, and South Texas Units 3 & 4 Circuit Breakers," EQ-TP-114-GEN, Revision 0</p> <p>d. "Environmental Qualification Test Procedure For Common Q Power Supplies, Quint Power Supplies, and Line Filter Assemblies," EQ-TP-117-GEN, Revision 0</p>						
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	4. N	Open Awaiting for document to be docketed by TVA.	Open-TVA/WEC Due 2/18/11	N/A - No question was asked. Item was opened to track commitment made by applicant.	N/A	
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.	<p>Responder: WEC Date: 5/25/10</p> <p>Per Westinghouse letter WBT-D-1961, this document is available for audit at the Westinghouse Rockville office.</p> <p>WNA-VR- 00283-WBT, Rev 0 was submitted on TVA letter to the NRC dated August 20, 2010.</p> <p>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.</p> <p>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.</p> <p>Attachment 14 contains the Westinghouse document "Nuclear Automation Watts Bar Unit 2 NSSS Completion Program I&C Projects, IV&V Summary Report for the Post Accident Monitoring System," WNA-VR-00283-WBT, Revision 1, dated November 2010. Attachment 15 contains the Westinghouse Application for Withholding for the WNA-VR-00283-WBT, Revision 1, "Nuclear Automation Watts Bar Unit 2 NSSS Completion Program I&C Projects, IV&V Summary Report for the Post Accident Monitoring System," dated November 8, 2010.</p> <p>NOTE: Due to document sequencing, this IV&V Phase Summary Report references a previous version of the contract compliance matrix. Refer to the Licensing Technical Report Revision 2 (Attachment 19) for the current contract compliance matrix.</p>	3. N	Open Final Response included in letter dated 12/3/10 Partial 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. NNC 11/23/10: The requirements Phase SVVR provided by TVA on 8/20/10, is not complete. This report should address the RTM, which it did not. TVA/WEC agreed to address the concept phase RTM in the next revision.	Open-NRC Review Due 12/17/10	N/A - No question was asked. Item was opened to track commitment made by applicant.	TVA Letter dated 6/18/10 TVA Letter dated 8/20/10 TVA Letter dated 10/5/10	NNC 11/23/10: The dues date in this open item does not agree with the due dated in Open Item No. 71.

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
071	7.5.2	7.5.1	EICB (Carte)	By letter dated March 12, 2010 TVA stated that the target submittal date for Revision 2 of the IV&V Report covering the Design and Implementation phases was July 30, 2010.	Responder: WEC Date: 5/25/10 Attachment 16 contains the Westinghouse document "IV&V Summary Report for the Post Accident Monitoring System," WNA-VR-00283-WBT, Revision 2, dated November 2010. Attachment 17 contains the Westinghouse Application for withholding for the "IV&V Summary Report for the Post Accident Monitoring System," WNA-VR-00283-WBT, Revision 2, dated November 2010. NOTE: Due to document sequencing, this IV&V Phase Summary Report references a previous version of the contract compliance matrix. Refer to the Licensing Technical Report Revision 2 (Attachment 19) for the current contract compliance matrix.	4. N	Open Response included in letter dated 12/3/10 Awaiting for document to be docketed by TVA.	Open-NRC Review Due 12/10/10	N/A - No question was asked. Item was opened to track commitment made by applicant.	N/A	NNC 11/23/10: The dues date in this open item does not agree with the due date in Open Item No. 70.
072	7.5.2	7.5.1	C	By letter dated March 12, 2010 TVA stated that the target submittal	Responder: WEC Date: 5/25/10	70. Y	Closed	Closed	N/A - No question	N/A	
073	7.5.2	7.5.1	EICB (Carte)	By letter dated March 12, 2010 TVA stated that the target submittal date for Revision 3 of the IV&V Report covering the Integration phase was October 29, 2010.	Responder: WEC Date: 5/25/10 "IV&V Summary Report for the Post Accident Monitoring System," WNA-VR-00283-WBT, Revision 3, covers the Integration phase. Attachment 10 contains the proprietary version of "IV&V Summary Report for the Post Accident Monitoring System," WNA-VR-00283-WBT, Revision 3, dated December 2010. Attachment 11 contains the "Application For Withholding Proprietary Information From Public Disclosure WNA-VR-00283-WBT, Revision 3, "Nuclear Automation Watts Bar 2 NSSS Completion Program I&C Projects, IV & V Summary Report for the Post Accident Monitoring System" (Proprietary), dated December 10, 2010."	5. N	Open Response included in letter dated 12/22/10 Awaiting for document to be docketed by TVA.	Open-TVA/WEC Due 12/22/10	N/A - No question was asked. Item was opened to track commitment made by applicant.	N/A	
074	7.5.2	7.5.1	EICB (Carte)	By letter dated March 12, 2010 TVA stated that the target submittal date for the Post FAT IV&V Phase Summary Report was November 30, 2010.	Responder: WEC Date: 5/25/10	6. N	Open TVA to provide due date.	Open-TVA/WEC Due 2/21/11	N/A - No question was asked. Item was opened to track commitment made by applicant.	N/A	
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 Attachment 12 contains the Westinghouse document "Nuclear Automation Watts Bar Unit 2 NSSS Completion Program I&C Projects, Post Accident Monitoring System Channel Integration Test/Factory Acceptance Test," WNA-TP-02988-WBT, Revision 0, dated November 2010. Attachment 13 contains the Westinghouse Application for Withholding for WNA-TP-02988-WBT, Revision 0, "Nuclear Automation Watts Bar Unit 2 NSSS Completion Program I&C Projects, Post Accident Monitoring System Channel Integration Test/Factory Acceptance Test," dated November 2010.	5. N	Open Response included in letter dated 12/3/10 Awaiting for document to be docketed by TVA.	Open-NRC Review Due 12/3/10	N/A - No question was asked. Item was opened to track commitment made by applicant.	N/A	
076	7.5.2	7.5.1	C	By letter dated March 12, 2010 TVA stated that the target submittal	Responder: Clark Date: 5/25/10	71. Y	Closed	Closed	N/A - No question	N/A	
077	7.5.2	7.5.1	C	By letter dated March 12, 2010 TVA stated that the target submittal	Responder: WEC Date: 5/25/10	72. Y	Closed	Closed	N/A - No question	TVA Letter dated	
078			C	4/26/2010	Responder: Clark Date: 5/25/10	73. Y	Closed	Closed	EICB RAI	TVA Letter dated	
079			C	4/26/2010	Responder: Clark Date: 5/25/10	74. Y	Closed	Closed	EICB RAI	TVA Letter dated	Reviewed under Item 154
080			S	4/26/2010	Responder: WEC	75. Y	Closed	Closed	RAI No. 2	TVA Letter dated	

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
081	7.5.2	7.5.1	EICB (Carte)	<p>5/6/2010</p> <p>The PAMS Licensing Technical Report (WNA-LI-00058-WBT Rev. 0, Dated April 2010), in Section 7, lists codes and standards applicable to the Common Q PAMS. This list contains references to old revisions of several regulatory documents, for example:</p> <ul style="list-style-type: none"> (1) RG 1.29 - September 1978 vs. March 2007 (2) RG 1.53 - June 1973 vs. November 2003 <ul style="list-style-type: none"> (a) IEEE 379-1994 vs. -2000 (3) RG 1.75 - September 1975 vs. February 2005 <ul style="list-style-type: none"> (a) IEEE 384-1992 vs. -1992 (4) RG 1.100 - June 1988 vs. September 2009 <ul style="list-style-type: none"> (a) IEEE 344-1987 vs. -2004 (5) RG 1.152 - January 1996 vs. January 2006 <ul style="list-style-type: none"> (a) IEEE 7-4.33.2-1993 vs. -2003 (6) RG 1.168 - September 1997 vs. February 2004 <ul style="list-style-type: none"> (a) IEEE 1012-1986 vs. -1998 (b) IEEE 1028-1988 vs. -1997 (7) IEEE 279-1991 vs. 603-1991 (8) IEEE 323-1983 vs. -1974 (RG 1.89 Rev. 1 June 1984 endorses 323-1974) <p>However, LIC-110, "Watts Bar Unit 2 License Application Review," states: "Design features and administrative programs that are unique to Unit 2 should then be reviewed in accordance with the current staff positions." Please identify all differences between the versions referenced and the current staff positions. Please provide a justification for the acceptability PAMS with respect to these differences.</p>	<p>Responder: Merten/WEC</p> <p>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.</p> <p>Bechtel to develop a matrix and work with Westinghouse to provide justification.</p>	7. N	<p>Open</p> <p>ML101600092 Item No.1: There are three sets of regulatory criteria that relate to a Common Q application (e.g. WBN2 PAMS):</p> <ul style="list-style-type: none"> (a) Common Q platform components – Common Q TR (b) Application Development Processes – Common Q SPM (c) Application Specific – current regulatory criteria <p>The Common Q Topical Report and associated appendices primarily addressed (a) and (b). The Common Q SER states:</p> <p>'...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")...'</p> <p>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.</p> <p>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</p>	<p>Open-TVA/WEC</p> <p>Due 12/22/10</p> <p>TVA to provide requested information.</p>	<p>EICB RAI ML102910002 Item No. 9</p>	<p>TVA Letter dated 6/18/10</p>	

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
							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: 2.c - CI527 AF100 Peripheral Component Interconnect (PCI) interface card 3. - Common Q TC514 AF100 Fiber Optic Modems (Evolutionary Product Maintenance/Improvements) 4.a - PM646A Processor Module 4.b - CI631 AF100 Communication Interface Module 4.e - DO620 Digital Output Card Please provide sufficient detail regarding the changes for the NRC to independently evaluate the acceptability of the changes.	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 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. TVA Response to Follow-up NRC Request: Please see the response to Request for Additional Information (RAI) item 3 in letter dated 12/22/10, NRC Matrix Item 067.	8. N	Open Revised response included in letter dated 12/22/10 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 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. NNC 11/18/10: During the September 20-21, 2010 audit, TVA agreed to put a description of the commercial grade dedication program and implementation in Rev. 2 of the CQ PAMS LTR.	Open-TVA/WEC Due 12/3/10 Commercial Grade Dedication to be addressed in LTR Rev. 2,	EICB RAI ML102910002 Item No. 10	TVA Letter dated 7/30/10	NNC 11/18/10: See also Open Item No. 41, Item No. 3.
083	7.5.2	7.5.1	CO	May 6, 2010	Date: 6/18/10	76. Y	Closed	Closed	EICB RAI	TVA Letter dated	
084	7.5.2	7.5.1	CO	May 6, 2010	Date: 6/18/10	77. Y	Closed	Closed	EICB RAI	TVA Letter dated	
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	9. N	Open Revised response included in letter dated 12/22/10 A response will be provided by 10/31/10 NNC 8/11/10: Design information should be available now. By letter dated July 30,	Open-TVA/WEC Due 12/3/10 Hardware is in Rev. 1 of the Licensing Technical Report due 10/22. NNC 8/25/10: Disagree with path	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
					(Rev. 2) to provide a more detailed description of the MTP as a barrier device. TVA Response to Follow-up NRC Request: WNA-LI-00058-WT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" submitted in TVA Letter to NRC dated December 3, 2010, "Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Information Requests," (Reference Error! Reference source not found.) contains the following changes to address the NRC requests: Section 2.2, "System Description" page 2-3 provides a description of the MTP Fiber-Optic (FO) data link to the plant computer. Section 2.2.1.4, "Hardware" has been expanded to include a table detailing all hardware changes that have occurred since the initial submittal. Section 2.2.2, "Software" has been expanded to include a table detailing all software changes that have occurred since the initial submittal.		2010 (ML102160349) TVA stated that the MTP was connected to a Red Hat Linux Server (see Enclosure 1, Item No. 14 part b.). It is presumed that this server is not safety-related. IEEE 603-1991 Clause 5.6.3(1) states, "Isolation devices used to affect a safety system boundary shall be classified as part of the safety system." Please describe how the MTP serves as the isolation device.	forward input by TVA above. An explanation is about the design is needed. FAT test procedure to include data storm testing of the MTP interface NNC 11/18/10: WEC response states that CQ PAMS LTR Rev. 2 will contain relevant information.			
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	10. N	Open TVA to address with item OI 81.	Open-TVA/WEC Due 12/22/10	EICB RAI ML102910002 Item No. 14	TVA Letter dated 6/18/10	
087	7.5.2	7.5.1	CS	May 6, 2010	Date: 5/24/10	78. Y	Closed	Closed	RAI No. 20	TVA Letter dated	
088	7.5.2	7.5.1	CS	May 6, 2010	Date: 5/24/10	79. Y	Closed	Closed	RAI No. 21	TVA Letter dated	
089			CS	5/6/2010	Responder: Clark	80. Y	Closed	Closed	EICB RAI	TVA Letter dated	NNC: Docketed response states that
090			CS	5/6/2010	Responder: Clark Date: 5/25/10	81. Y	Closed	Closed	EICB RAI	TVA Letter dated	
091	7.4	7.4	DA	May 20, 2010	Date: 5/25/10	82. Y	Closed	Closed	EICB RAI No.1	TVA Letter dated	
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.	1. Y	Open	Open-TVA Due: SER Issue			Continuous review as items are added
093			CS	May 20, 2010	Date: 5/25/10	83. Y	Closed	Closed	N/A	N/A	Will be reviewed under item 154
094			CS	5/20/2010	Responder: Clark Date: 5/25/10	84. Y	Closed	Closed	N/A	N/A	Information was found in FSAR
095	7.8.1,	XX	DA	May 20, 2010	Date:	85. Y	Closed	Closed	EICB RAI No. 2	TVA Letter dated	
096	7.7.5	XX	DA	5/20/2010	Responder:	86. Y	Closed	Closed	EICB RAI No.3	TVA Letter dated	
097	7.4.2	7.4	DA	May 20, 2010	Date:	87. Y	Closed	Closed	EICB RAI No.4	TVA Letter dated	
098	7.4.2	7.4	DA	May 25, 2010	Date:	88. Y	Closed	Closed	EICB RAI No.5	TVA Letter dated	
099			BA	April 12, 2010	Date:	89. Y	Closed	Closed			Closed to Item 129
100			CS	5/20/2010	Responder: WEC	90. Y	Closed	Closed	N/A - No question	N/A	

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
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.	6. Y	Open Documents provided in letter dated 07/15/10	Open-NRC Review Due 10/14/10 Confirm receipt.	N/A		TVA is working with the vendor to meet the 6/30 date, however there is the potential this will slip to 7/14.
102			U	May 24, 2010	Date: 5/24/10	91. Y	Closed	Closed	N/A	TVA Letter dated	Request for schedule not information.
103	7.4	7.4	D a	5/27/2010	Responder: Ayala Date: 5/27/10	92. Y	Closed	Closed	EICB RAI No.1	TVA Letter dated	Submittal date is based on current
104	7.4	7.4	D a	5/27/2010	Responder: Merten Date: 5/27/10	93. Y	Closed	Closed	EICB RAI No.1	TVA Letter dated	Submittal date is based on current
105			U	April 29, 2010	Date:	94. Y	Closed	Closed	N/A	N/A	Will be reviewed under item 154.
106			S	May 6, 2010	Date: 5/25/10	95. Y	Closed	Closed	RAI No. 9	TVA Letter dated	
107			S	May 6, 2010	Date: 5/28/10	96. Y	Closed	Closed	RAI No. 22	TVA Letter dated	
108			U	May 6, 2010	Date: 5/25/10	97. Y	Closed	Closed	N/A	N/A	Will be reviewed under OI#154
109.b			U	5/6/2010	Responder: N/A	98. Y	Closed	Closed	N/A	N/A	Duplicate of another open Item.
109.a	7.8	XX	D a	5/6/2010	Responder: N/A	99. Y	Closed	Closed	N/A	N/A	
110			U	May 6, 2010	Date:	100. Y	Closed	Closed	N/A	N/A	Information was found.
111			U	May 6, 2010	Date: 5/28/10	101. Y	Closed	Closed	N/A	TVA Letter dated	Request to help find, not a request for
112			U	June 1, 2010	Date:	102. Y	Closed	Closed	N/A	N/A	Information was received
113			U	6/1/2010	Responder: Clark	103. Y	Closed	Closed	EICB RAI	TVA Letter dated	
114	7.2	7.2	U	6/1/2010	Responder: WEC	104. Y	Close	Closed	EICB RAI	TVA Letter dated	
115			U	2/25/2010	Responder: Clark	105. Y	Closed	Closed	EICB RAI	TVA Letter dated	
116			U	6/3/2010	Responder: WEC	106. Y	Closed	Closed	EICB RAI	TVA Letter dated	Letter sent to Westinghouse requesting
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. 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.	1. Y	Open Revised response is included in letter dated 10/29/10	Open-TVA/A102 Pending FSAR Amendment 102 submittal Due 12/17/10 TVA needs to address that trip setpoint and allowable value uncertainties are not reduced by the reduction factor for the single sided reduction factor. TVA response not acceptable. TVA need to clarify if single sided methodology has been used in calculating trip setpoint and allowable value and if it is used then provide justifications.	EICB RAI ML102910008 Item#21	TVA Letter dated 10/29/10 Enclosure 1 Item No. 7	
118	7.4	7.4	D a	6/8/2010	Responder: Merten	107. Y	Closed	Closed	EICB RAI No.1	TVA Letter dated	Submittal date is based on current

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119			CS	June 10, 2010	Date:	108. Y	Closed	Closed	RAI No. 23	TVA Letter dated	
120			CO	5/6/2010	Responder: Hilmes/Merten/Costley	109. Y	Closed	Closed	EICB RAI	TVA Letter dated	
121			CO	5/6/2010	Responder: Webb/Webber	110. Y	Closed	Closed	EICB RAI	TVA Letter dated	
122			CO	June 14, 2010	Date:	111. Y	Closed	Closed	N/A - Request for	N/A	
123	7.7.3	7.4.1,	DE	6/14/2010	Responder:	112. Y	Closed	Closed	ML101720589,	TVA Letter dated	
124	7.7.5	XX	DE	6/14/2010	Responder:	113. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	
125	7.7.8	7.7.1.12	DE	6/14/2010	Responder:	114. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	
126	7.8	7.8	DE	June 14, 2010	Date:	115. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	
127	7.2	7.2	CU	6/16/2010	Responder: WEC/Clark	116. Y	Closed	Closed	EICB RAI	TVA Letter dated	
128	7.2	7.2	CU	6/18/2010	Responder: WEC Drake /TVA Craig	117. Y	Closed	Closed	EICB RAI	TVA Letter dated	Track through SE open item
129			PR	6/12/2010	Responder: WEC	118. Y	Closed	Closed	N/A	TVA Letter dated	
130			PR	6/28/2010	Responder: Clark	119. Y	Closed	Closed	N/A	TVA Letter dated	
131			PR	6/28/2010	Responder: Clark	120. Y	Closed	Closed	N/A	TVA Letter dated	
132			PR	6/28/2010	Responder: Clark	121. Y	Closed	Closed	N/A	TVA Letter dated	
133			PR	6/28/2010	Responder: Clark	122. Y	Closed	Closed		TVA Letter dated	
134			PR	6/28/2010	Responder: Clark	123. Y	Closed	Closed		TVA Letter dated	
135	7.3.1	7.3.1	DE	6/30/2010	Responder: Clark	124. Y	Closed	Closed	RAI not necessary	TVA Letter dated	
136	7.3.2,	7.4, 5.6,	DE	6/30/2010	Responder: Clark	125. Y	Closed	Closed	RAI not necessary	TVA Letter dated	
137			CO	Several WBN2 PAMS documents contain a table titled, "Document	Responder: WEC	126. Y	Closed	Closed	ML101650255, Item	TVA Letter dated	
138			EICB (Carte)	<p>By letter dated February 3, 2010, Westinghouse informed TVA that certain PAMS documentation has been completed.</p> <p>(a) The draft ISG6 states that a commercial grade dedication plan should be provided with an application for a Tier 2 review.</p> <p>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."</p> <p>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.</p> <p>(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.</p> <p>(i) Please provide 00000-ICE-37722 Rev. 0, "Commercial Grade Dedication Report for the QNX Operating System for Common Q Applications."</p> <p>(ii) Please provide WNA-CD-00018-GEN Rev. 3, "Commercial Dedication Report for QNX 4.25G for Common Q Applications."</p>	<p>Responder: WEC</p> <p>This item is used to track all Commercial Grade Dedication issues.</p> <p>a. WNA-LI-00058-WT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" submitted in TVA Letter to NRC dated December 3, 2010, "Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Information Requests," (Reference 1) contains the following changes to address the NRC request:</p> <p>Section 7, "Commercial Grade Dedication Process" has been revised to describe the general commercial grade dedication process for both hardware and software and uses a description of the AI687 dedication process as an example of how the process is applied.</p> <p>As listed in Table 6-3. "Westinghouse Watts Bar 2 Common Q PAMS Documents at Westinghouse Rockville Office, the following commercial grade dedication documents are available for NRC audit at the Westinghouse Rockville office:</p> <p>b. It is TVA's understanding that the submittal of the documents listed in (b.i) and (b.ii) is no longer required. Rather, it was agreed, that the inclusion of a description of the commercial grade dedication process in revision 2 of the Post-Accident Monitoring System (PAMS) Licensing Technical Report, WNA-LI-00058-WT-P, would be sufficient to address this request.</p>	11. N	<p>Open</p> <p>Revised response included in letter dated 12/22/10</p> <p>TVA agreed to include a description of the generic Westinghouse hardware commercial grade dedication process in the PAMS licensing technical report. (see ML102920031 Item No 1)</p> <p>TVA agreed to include (in the PAMS licensing technical report) an evaluation of WBN2 critical characteristics for commercial Westinghouse hardware components against the generic critical characteristics. (see ML102920031 Item No 2)</p> <p>TVA agreed to include a description of the generic Westinghouse software commercial grade dedication process in the PAMS licensing technical report. (see ML102920031 Item No 3)</p> <p>TVA agreed to include (in the PAMS licensing technical report)</p>	<p>Open-TVA/WEC</p> <p>Due 12/3/10</p> <p>To be addressed by Rev. 2 of the Licensing Technical Report.</p>	ML101650255, Item No. 2		

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							an evaluation of WBN2 critical characteristics for commercial software components against the generic critical characteristics. (see ML102920031 Item No 4)				
139			C	The WBN2 PAMS System Requirements Specification (WBN2	Responder: WEC	127. Y	Closed	Closed	ML101650255, Item	TVA Letter dated	WBN2 PAMS System Requirements
140			EICB (Carte)	The first requirement in the WBN2 PAMS SysRS (i.e., R2.2-1) states: "The PAMS shall be capable of operation during normal and abnormal environments and plant operating modes." The rationale 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?	Responder: Clark WBN Unit 2 FSAR Amendment 100 Section 7.5.1.8, "Post Accident Monitoring System (PAMS)" specifies the Reg. Guide 1.97 variables implemented in the Common Q based WBN Unit 2 PAMS TVA Response to Follow-up NRC Request: WNA-LI-00058-WT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" was submitted on TVA Letter to NRC Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Information Requests, dated December 3, 2010 (Reference 1). Revision 2 contains the following change to address this request: Section 11, "TVA Contract Compliance Matrix" has been added. Specifically the items of concern are addressed by Requirements 7 through 19 (pages 11-1 and 11-2).	12. N	Open Revised response included in letter dated 12/22/10 NNC 11/3/10: The origin of the requirements in the SysRS are not clearly document. Rev. 1 of the Common Q PAMS Licensing Technical Report contains an open item that will be addressed in Rev. 2; this open item is to include "TVA's enhanced contract compliance matrix". It is expected that this matrix will address this open item.	Open-TVA/WEC Due 12/3/10 TVA to docket PAMS Licensing Technical Report Rev. 2.	ML101650255, Item No. 4	TVA Letter dated 10/29/10 Enclosure 1 Item No. 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.
141			C	Deleted by DORL	Date:	128. Y	Closed	Closed	ML101650255, Item		WBN2 PAMS System Requirements
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	Responder: WEC This item is used to track all traceability issues with the Software Requirements Specification (SRS). 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.	13. N	Open TVA/Westinghouse agreed to include the V&V evaluation of their reusable software element development process in the V&V design phase summary report. This evaluation would include an evaluation against the development process requirements. This evaluation would also include an evaluation of how the WBN2 specific requirements were addressed by the reusable software elements. (see ML102920031 Item No 5)	Open-TVA/WEC Due 12/22/10 To be addressed by Revision of the RTM, SRS, SysRS, and SysDS.	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.

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				<p>requirements and guidelines defined in WCAP-16096-NP-A, "Software Program Manual for Common Q Systems" (reference 5).]</p> <p>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.</p> <p>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?</p> <p>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...".</p> <p>These references are used in the body of the SRS, for example:"</p> <p>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]).]</p> <p>They are also included via tables such as found in requirement R7.1.2-1</p> <p>[The Watts Bar 2 PAMS shall use the application-specific type circuits and custom PC elements listed in Table 7.1-1.]</p> <p>Do the referenced reusable software element documents include requirements not explicitly stated in the SRS? If so what is their origin?</p>	<p>6. Westinghouse will perform and document an evaluation of the SRS to ensure compliance with Reg. Guide 1.172 and justify any deviations.</p> <p>7. 25 issues identified by V&V where some requirements have not been included in the SDS (14) and SRS (11) at the revisions reviewed by V&V. Have these been addressed? Yes. The next revisions of the SDS and SRS address these issues.</p> <p>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.</p> <p>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.</p> <p>10. Westinghouse to improve the traceability of the tests that are performed with the function enable (FE) switch in the "ENABLE" position.</p> <p>11. Westinghouse to revise documents to be consistent with referring to the FE switch in the "ENABLE" position</p> <p>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.</p> <p>13. Westinghouse and TVA will develop a revised schedule for document submittals and provide it to the NRC no later than 9/30/10</p> <p>14. TVA will update the Procurement Requisition Resolution Matrix and submit it to show how the Common Q PAMS design meets the contract requirements.</p> <p>15. Westinghouse to add the Software Design Descriptions to the RTM</p> <p>16. Westinghouse to clarify how requirements or documents are incorporated by reference into the Common Q PAMS requirements.</p> <p>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.</p> <p>18. Westinghouse to resolve the following questions concerning SDDs</p> <p>a. Is the SDD a standalone document or will it incorporate the generic SDD by reference?</p> <p>b. What are the SDDs?</p>						

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					<p>c. PAMS is a delta document so how do we capture all the generic requirements for traceability.</p> <p>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.</p>								
143			EICB (Carte)	<p>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 ..."</p> <p>(a) Please list and describe each of the "major software components". Please include a description of any NRC review for each of these components.</p> <p>(b) Please list and describe each of the other software components. Please include a description of any NRC review for each of these components.</p> <p>(c) What other documents contain the requirements for the other software components?</p> <p>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 ..."</p> <p>(c) Do the WBN2 PAMS SRS and SDS, together, implement all of the requirements in the WBN2 PAMS SysRS?</p> <p>(e) Please briefly describe all of the documents that implement the WBN2 PAMS SysRS.</p>	<p>Responder: WEC</p> <p>Addressed in the 9/15 public meeting and 9/20 - 9/21 audit. A detailed explanation will be provided.</p> <p>TVA Response:</p> <p>(a) and (b) The requested information is provided in the following documents:</p> <ul style="list-style-type: none"> i. WNA-LI-00058-WT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report," Table 6-1, "Document Requirements" which lists the software documentation requirements for the Common Q PAMS and section 11 "TVA Contract Compliance Matrix" submitted in TVA Letter to NRC, dated December 3, 2010 "Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Information Requests" ii. WNA-DS-01617-WBT-P, Revision 3, "Post Accident Monitoring System- System Requirements Specification," dated December 2010 (Attachment 1). iii. WNA-SD-00239-WBT-P, Revision 3, "Software Requirements Specification for the Post Accident Monitoring System," dated December 2010 (Attachment 7) iv. WNA-VR-00279-WBT, Requirements Traceability Matrix (available for NRC audit at the Westinghouse Rockville office <p>To the best of TVA's knowledge, no prior NRC review of the software components has been performed.</p> <p>(c) WNA-VR-00280-WBT, Requirements Traceability Matrix (RSED) (available for NRC audit at the Westinghouse Rockville office</p> <p>(d) Need WEC to respond</p>	14. N	Open	Open-TVA/WEC	ML101650255, Item No. 7	Due 12/22/10	To be addressed by Revision of the RTM, SRS, SysRS, and SysDS.	WBN2 PAMS System Requirements Specification	TVA docketed WNA-DS-01617-WBT Rev. 1, "RRAS Watts Bar 2 NSSS Completion Program I&C Projects Post Accident Monitoring System- System Requirements Specification," dated December 2009.

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					<p>(e) The requested information is contained in:</p> <ul style="list-style-type: none"> i. WNA-LI-00058-WT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report," Tables 6-1 through 6-3 submitted in TVA Letter to NRC, dated December 3, 2010 "Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Information Requests" ii. WNA-DS-01617-WBT-P, Revision 3, "Post Accident Monitoring System- System Requirements Specification," dated November 2010 (Attachment Error! Reference source not found.) iii. WNA-DS-01667-WBT-P, Revision 3, "Post Accident Monitoring System – System Design Specification," dated November 2010 (Attachment 4) iv. WNA-SD-00239-WBT-P, Revision 3, "Software Requirements Specification for the Post Accident Monitoring System," dated November 2010 (Attachment 7) 						
144			EICB (Carte)	<p>The WBN2 PAMS Software Requirements Specification (WBN2 PAMS SRS) contains a table (see page iii) titled, "Document Traceability & Compliance," which states that the WBN2 PAMS SRS was created to support the three documents identified (two of these documents have been provided on the docket).</p> <p>(a) Please describe the third document (i.e., NABU-DP-00014-GEN Revision 2, "Design Process for Common Q Safety Systems").</p> <p>(b) Please describe the flow of information between these three documents.</p> <p>(c) Does the PAMS SRS implement the requirements in these three documents?</p> <p>(d) Please describe if and how these three documents are used in the development of the PAMS Software Design Description.</p> <p>(e) Do the WBN2 V&V activities include verification that the requirements of these three documents have been incorporated into the WBN2 PAMS SRS.</p>	<p>Responder: WEC</p> <p>(a) The purpose of NABU-DP-00014-GEN document is to define the process for system level design, software design and implementation, and hardware design and implementation for Common Q safety system development. This document supplements the Common Q SPM, WCAP-16096-NP-A. The scope of NABU-DP-00014-GEN includes the design and implementation processes for the application development. For a fuller description of the design process described in NABU-DP-00014-GEN please refer to the Design Process for AP1000 Common Q Safety Systems, WCAP-15927 on the AP1000 docket. Since this is a Westinghouse process document that is not specifically referenced in the SRS, it will be removed in the next revision of the document.</p> <p>(b) – Closed to items 142 and 145</p> <p>(c) – Closed 142</p> <p>(d) – Closed to Item 142</p> <p>(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</p>	15. N	<p>Open</p> <p>Revised response included in letter dated 12/22/10</p> <p>Response provided in letter dated 10/5/10</p> <p>NRC Review and WEC to complete response.</p> <p>b-d to be addressed at public meeting and audit. Will require information to be docketed.</p>	<p>Open-TVA/WEC</p> <p>Due 12/3/10</p> <p>Responses to items a and e provided.</p> <p>NNC 11/18/10:</p> <p>(1) Items b-d closed to other Open Item nos.</p> <p>(2) The point of these questions was to understand how the origin of the requirements in the requirements specifications were documented. TVA stated that the origin of the requirements would be demonstrated in Rev. 2 of the CQ PAMS LTR.</p>	ML101650255, Item No. 8	TVA Letter dated 10/5/10	<p>WBN2 PAMS Software Requirements Specification</p> <p>By letter dated April 8, 2010 (ML10101050203), TVA docketed WNA-SD-00239-WBT, Revision 1, "RRAS Watts Bar 2 NSSS Completion Program I&C Projects, Software Requirements Specification for the Post Accident Monitoring System," dated February 2010 (ML101050202).</p>

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
					<p>Monitoring System – System Design Specification (WNA-DS-01667-WBT, Rev. 1).</p> <p>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.</p> <p>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.</p> <p>TVA Response to Follow-up NRC Request:</p> <p>(1) Item (a) in the original list, NABU-DP-00014-GEN Revision 2, "Design Process for Common Q Safety Systems," is available for NRC audit at the Westinghouse Rockville office.</p> <p>(2) WNA-LI-00058-WT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" submitted in TVA Letter to NRC dated December 3, 2010, "Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Information Requests," (Reference 1) contains the following change to address the NRC request:</p> <p>Section 11, "TVA Contract Compliance Matrix" showing the origin of the requirements was added.</p>						
145			EICB (Carte)	<p>The WBN2 PAMS System Design Specification (WBN2 PAMS SDS) contains a table (see page iii) titled, "Document Traceability & Compliance," which states that the WBN2 PAMS SDS was created to support the WBN2 PAMS SysRS.</p> <p>(a) Does the WBN2 PAMS SDS implement all of the hardware requirements in the WBN2 PAMS SysRS?</p> <p>(b) Please briefly describe all of the documents that implement the hardware requirements of the WBN2 PAMS SysRS.</p> <p><u>This item is used to track all traceability issues with the System Design Specification (SDS).</u></p> <p><u>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.</u></p>	<p>Responder: WEC</p> <p>(1) The review and update of the RTM is complete. If requested by the NRC reviewer, the revised RTM will be made available for audit at the Westinghouse office in Rockville.</p> <p>(2) Hardware requirements were moved from the SRS to the SDS.</p> <p>(3) The missing requirements identified by V&V for the SDS and SRS have been incorporated.</p> <p>(4) Section 11 "TVA Contract Compliance Matrix" was added to the Licensing Technical Report Revision 2.</p> <p>(5) Revision 1 of the IV&V report, submitted on TVA to NRC letter "Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Information Requests," dated December 3, 2010 includes the Requirements phase review.</p> <p>(6) Per Westinghouse letter WBT-D-2268 "NRC Access to Common Q Documents at the Westinghouse Rockville Office" dated August 16, 2010 (Reference) "System</p>	16. N	<p>Open</p> <p>Response included in letter dated 12/22/10</p> <p>During the September 20-21, 2010 audit at Westinghouse, it was acknowledged that TVA/Westinghouse had previously (in September 15, 2010 public meeting) stated:</p> <p>TVA would provide the RSED RTM. (see ML102920031 Item No 6)</p> <p>TVA would revise and resubmit the PAMS RTM to address all types of issues identified in the public meeting. (see</p>	<p>Open-TVA/WEC</p> <p>Due 12/22/10</p> <p>To be addressed by Revision of the RTM, SRS, SysRS, and SysDS.</p>	ML101650255, Item No. 9		<p>WBN2 PAMS System Design Specification</p> <p>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.</p>

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				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.	Requirements Specification for the Common Q Generic Flat Panel Display," 00000-ICE-30155, Revision 9 is available for audit at the Westinghouse Rockville office. WEC to identify AC160 document (7) A schedule was developed and is reviewed weekly by Westinghouse and TVA project management. (8) The flow of documentation information was provided to the NRC inspector during the Common Q PAMS audit. If a description of the flow of documentation information in a project document is required, it will be added to a future revision of the Licensing Technical Report.		ML102920031 Item No 7) TVA would revise and resubmit the Software Verification and Validation phase summary report for the requirements phase to document the completion of the requirements phase review. (see ML102920031 Item No 8)				
146			—	6/17/2010	Responder:	129. Y	Closed	Closed	ML101650255, Item		PAMS System Requirements
147			—	6/17/2010	Responder:	130. Y	Closed	Closed	ML101650255, Item		PAMS System Requirements
148			—	6/17/2010	Responder:	131. Y	Closed	Closed	ML101650255, Item		PAMS System Requirements
149	7.2	7.2	—	FSAR Section 7.1.1.2(2), Overtemperature delta T and	Responder: Tindell	132. Y	Close	Closed	ML101720589, Item	TVA Letter dated	
150	7.2	7.2	—	Many of the changes were based on the Westinghouse document	Responder: Clark	133. Y	Close	Closed	ML101720589, Item	TVA Letter dated	
151	7.2	7.2	—	Provide the EDCR 52378 and 54504 which discusses the basis for	Responder: Clark	134. Y	Close	Closed	ML101720589, Item	TVA Letter dated	
152	7.2	7.2	—	Deleted portion of FSAR section 7.2.3.3.4 and moved to FSAR	Responder: Merten/Clark	135. Y	Close	Closed	ML101720589, Item	TVA Letter dated	
153	7.2	7.2	—	FSAR section 7.2.1.1.7 added the reference to FSAR section	Responder: Craig/Webb	136. Y	Close	Closed	ML101720589, Item	TVA Letter dated	
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	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.	2. Y	Open	Open-TVA/A102	ML101720589, Item No. 6 and EICB RAI ML102861885 Item No. 8	TVA Letter dated 10/5/10 TVA Letter dated 10/29/10 Enclosure 1 Item No. 13	EICB RAI ML102861885 sent to DORL

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				uncertainties or justify how you meet the 95/95 criteria given in RG 1.105.	<p><u>TVA Revised Response:</u></p> <p>In order to respond to other NRC comments on the setpoint methodology discussion in FSAR Amendment 100, TVA reviewed the previous response to this RAI. This resulted in a complete rewrite of the responses to this question as shown below. As a result, the response does not specifically address the NRC Follow-up Request. However, the overall responses to all of the NRC RAIs on setpoint methodology addresses this item.</p> <p>(Q1) WBN 2 implementation of TSTF-493, Rev. 4, Option A includes addition of a discussion of the WBN setpoint methodology in FSAR section 7.1.2.1.9.</p> <p>(Q2) Electrical Engineering Branch (EEB) Technical Instruction (TI) 28, Setpoint Calculations, 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.</p> <p>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."</p>			needs to address the latest criteria and that include 95/95 criteria. Why the last sentence has been modified by adding TI-28. It was NRC's understanding that all setpoints have to meet TI-28				
155	7.2	7.2	CG	Summary of FSAR change document section 7.2 states that	Date:	137. Y	Closed	Closed	ML101720589, Item			
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.	<p>Responder: WEC</p> <p>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% 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.</p> <p><u>TVA Response to Follow-up NRC Request:</u></p> <p>The following response was provided by Westinghouse letter Westinghouse letter WBT-D-2690 "Follow Up -NRC Request on 118% and 121 % FSAR Power Levels", dated December 6, 2010 (Reference 2).</p> <p>A review of the markups provided by Westinghouse (Reference 5) and the current Unit 2 FSAR shows that in the context of the Power Range High Neutron Flux, High Setting, the value of 118% is correct. In the context of the peak core</p>	17. N	Open	<p>Open-TVA/WEC</p> <p>Revised response included in letter dated 12/22/10.</p> <p>Response is included in letter dated 10/5/10</p>	<p>Due 12/22/10</p> <p>Amendment 101 Submitted 10/29/10.</p> <p>TVA needs to justify why some places 121% is used and other places 118% is used . What does 121% or 118% means.</p>	ML101720589, Item No. 8	TVA Letter dated 10/5/10	Response on hold pending Westinghouse review.

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					power during certain transients to confirm the fuel melt criterion, the value of 121% is correct. A detailed discussion of peak core power during transients is contained in FSAR Chapter 4.3.2.2.5, "Limiting Power Distributions."						
157	7.2	7.2	U	FSAR section 7.2.2.1.1, fifth paragraph was deleted except for the	Responder: Tindell	138. Y	Close	Closed	ML101720589, Item	TVA Letter dated	
158	7.2	7.2	U	FSAR section 7.2.2.1.1, paragraph six was changed to state that	Responder: Tindell	139. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	
159	7.2	7.2	U	FSAR section 7.2.2.1.2 discusses reactor coolant flow	Responder: Craig	140. Y	Close	Closed	ML101720589, Item	TVA Letter dated	
160	7.2	7.2	U	FSAR section 7.2.2.2(7) deleted text which has references 12 and	Responder: Tindell	141. Y	Close	Closed	ML101720589, Item	TVA Letter dated	
161	7.2	7.2	U	FSAR section 7.2.2.3 states that changes to the control function	Responder: Clark	142. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	
162	7.2	7.2	U	FSAR section 7.2.2.2(14) states that bypass of a protection	Responder: Tindell	143. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	
163	7.2	7.2	U	Deleted by DORL	Date:	144. Y	Closed	Closed	ML101720589, Item		
164	7.2	7.2	U	FSAR section 7.2.2.2(20) has been revised to include the plant	Responder: Perkins	145. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	Item No. 8 sent to DORL
165	7.2	7.2	U	FSAR section 7.2.2.3.2, last paragraph of this section has been	Responder: Clark	146. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	
166	7.2	7.2	U	Changes to FSAR section 7.2.2.2(20) are justified based on the	Responder: Clark	147. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	
167	7.2	7.2	U	FSAR section 7.2.2.4, provide an analysis or reference to chapter	Responder: Clark	148. Y	Close	Closed	ML101720589, Item	TVA Letter dated	
168	7.2	7.2	U	FSAR table 7.2-4, item 9 deleted loss of offsite power to station	Responder: Clark	149. Y	Close	Closed	ML101720589, Item	TVA Letter dated	
169			U	6/18/2010	Responder: Clark	150. Y	Closed	Closed			
170			U	6/17/2010	Responder: Clark	151. Y	Closed	Closed			
171	7.2	7.2	U	6/17/2010	Responder: Craig	152. Y	Closed	Closed	EICB RAI	TVA Letter dated	Closed to SE Open Item
172			U	6/17/2010	Responder: Craig	153. Y	Closed	Closed	EICB RAI		
173	7.1	7.1	U	6/17/2010	Responder: Craig/Webb/Powers	154. Y	Closed	Closed	EICB RAI		
174			U	6/28/2010	Responder: Hilmes/Craig	155. Y	Closed	Closed	EICB RAI		
175			U	June 28, 2010	Responder:	156. Y	Closed	Closed	EICB RAI		
176	7.1	7.1	U	6/28/2010	Responder: Craig/Webb	157. Y	Closed	Closed	EICB RAI		
177	7.5.2.1	7.5.1	U	7/15/2010	Responder: Clark	158. Y	Closed	Closed	N/A	TVA Letter dated	RAI not required
178	7.5.2.1	7.5.1	U	7/15/2010	Responder: Clark	159. Y	Closed	Closed	N/A	TVA Letter dated	RAI not required
179			U	An emphasis is placed on traceability in System Requirements	Responder: WEC	160. Y	Closed	Closed	N/A – Closed to	NA	
180			U	The SRP, BTP 7-14, Section B.3.3.1 states that Regulatory Guide	Responder: WEC	161. Y	Closed	Closed	N/A – Closed to	NA	
181			U	An emphasis is placed on traceability in System Requirements	Responder: WEC	162. Y	Closed	Closed	N/A – Closed to	NA	
182			U	Characteristics that the SRP states that a Software Requirements	Responder: WEC	163. Y	Closed	Closed	N/A – Closed to	NA	
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?	Responder: WEC The generic Software Requirements Specification applies except as modified by the WBN Unit 2 System Requirements Specification. TVA Response to Follow-up NRC Request: Please see the response to RAI item 14 in letter dated 12/22/10, NRC Matrix Item 144.	18. Y	Open	Open-TVA/WEC Due 12/3/10 NNC 11/18/10: The point behind this open item was that TVA must demonstrate that the origin of each requirement in the WEC requirements specification is known and documented. TVA stated that this information would be in CQ PAMS LTR Rev. 2.	EICB RAI ML102980066 Item No. 9	TVA Letter dated 10/21/10 Enclosure 1 Item No. 4	

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 there are additional changes, what is their origin?							
184			0	7/15/2010	Responder: WEC	164. Y	Closed	Closed	N/A – Closed to	N/A	
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 it 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. TVA Response to Follow-up NRC Request: (1) Please see the response to Item 14 in this letter (NRC Matrix Item 144). (2) There is no RTM for development of the individual reusable software elements. As listed in item 15 of Table 6-1 “Document Requirements” of WNA-LI-00058-WT-P, Revision 2, “Post-Accident Monitoring System (PAMS) Licensing Technical Report” submitted in TVA Letter to NRC, dated December 3, 2010 “Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Information Requests” a RTM for implementation of the RSEDs (WNA-VR-00280-WBT) for the WBN Unit 2 Common Q PAMS has been developed. This document is available for NRC audit at the Westinghouse Rockville office.	19. N	Open Response included in letter dated 12/22/10.	Open-TVA/WEC Due (1) 12/3/10 (2) 12/22/10 NNC 11/18/10: (1)The point behind this open item was that TVA must demonstrate that the origin of each requirement in the WEC requirements specification is known and documented. TVA stated that this information would be in CQ PAMS LTR Rev. 2. (2) TVA also said it would provide a RTM for the RSED	EICB RAI ML102980066 Item No. 17		
186	7.7.8	7.7.1.12	0	7/15/2010	Responder: Perkins/Clark	165. Y	Closed	Closed	EICB RAI No.6	TVA Letter dated	
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. 2) Please clarify whether any digital safety-related systems or components have a digital communications path to non-safety-related systems or with safety related systems in another division. If so, NRC staff will need these paths identified on the docket.	Responder: 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. TVA Response to Follow-up NRC Request: A review of the following documents determined that the connection between the OM and the plant computer has been revised to show a connection to a printer instead of the plant computer: 1. WNA-DS-01617-WBT-P, Revision 2, “Post Accident Monitoring System - System Requirements	20. N	Open Revised response included in letter dated 12/22/10. Partial 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 specifications?	Open-TVA/WEC Due 12/22/10 Revise Response	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
					<p>Specification", dated August 2010</p> <p>2. WNA-DS-01667-WBT-P, Revision 2, "Post Accident Monitoring System – System Design Specification," dated September 2010</p> <p>3. WNA-LI-00058-WT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" dated December 2010</p> <p>Review of the newly released Common Q PAMS documents listed below confirmed they correctly show a connection from the OM to a printer and not the plant computer. None of the other newly released documents contain a figure of the Common Q PAMS system showing the connection from the OM. The exception is WCAP-17351 which was created to allow a non-proprietary version of a generic Common Q document to be submitted on the docket and was not intended to reflect the WBN Unit 2 configuration.</p> <p>(1) "Post Accident Monitoring System Channel Integration Test/Factory Acceptance Test," WNA-TP-02988-WBT, Revision 0, dated November 2010</p> <p>(2) "Failure Modes and Effects Analysis (FMEA) for the Post Accident Monitoring System," WNA-AR-00180-WBT-P, Revision 0, dated October 2010</p>						
188			U	By letter dated June 30, 2010, TVA docketed, "Tennessee Valley	Responder: Clark	166. Y	Closed	Closed	ML101970033, Item	TVA Letter dated	
189		7.6.7	S	7/20/2010	Responder: Clark	167. Y	Closed	Closed	RAI No. 3	TVA Letter dated	
190	7.9		S	FSAR Table 7.1-1 states: "Regulatory Guide 1.133, May 1981	Responder: Clark	168. Y	Closed	Closed	RAI No. 4	TVA Letter dated	Closed to OI-331.
191	7.9		U	NUREG-0800 Chapter 7, Section 7.9, "Data Communication	Responder: Jimmie Perkins	169. Y	Closed	Closed	ML10197016, Item	TVA Letter dated	
192	7.5.1.1	7.5.2	N	The NRC Staff is using SRP (NUREG-0800) Chapter 7 Section	Responder: Clark	170. Y	Closed	Closed	Item No. 1 sent to	TVA Letter dated	EICB RAI ML1028618855 sent to
193	7.5.1.1	7.5.2	N	The WBU2 FSAR, Section 7.5.2, "Plant Computer System,"	Responder: Clark	171. Y	Closed	Closed	Item No. 2 sent to	TVA Letter dated	EICB RAI ML1028618855 sent to
194	7.5.1.1	7.5.2.1	N	The WBU2 FSAR Section 7.5.2.1, "Safety Parameter Display	Responder: Costley/Norman	172. Y	Closed	Closed	Item No. 3 sent to	TVA Letter dated	EICB RAI ML1028618855 sent to
195	7.5.1.1	7.5.2.2	N	Bypassed and Inoperable Status Indication (BISI)	Responder: Costley/Norman	173. Y	Closed	Closed	Item No. 4 sent to	TVA Letter dated	EICB RAI ML1028618855 sent to
196	7.5.1.1	7.5.2.2	N	Bypassed and Inoperable Status Indication (BISI)	Responder: Costley/Norman	174. Y	Closed	Closed	Item No. 5 sent to	TVA Letter dated	EICB RAI ML1028618855 sent to
197			X	Open Item 197 was never issued.		175. Y	Closed	Closed			
198	7.5.1.1	7.5.2.2	N	SRP Section 7.5, Subsection III, "Review Procedures" states:	Responder: Costley/Norman	176. Y	Closed	Closed	Item No. 6 sent to	TVA Letter dated	EICB RAI ML1028618855 sent to
199	7.5.1.1	7.5.2.3	N	The WBU2 FSAR Section 7.5.2.3, "Technical Support Center and	Responder: Costley/Norman	177. Y	Closed	Closed	Item No. 7 sent to	TVA Letter dated	Related SE Section 7.5.5.3 EICB RAI
200	7.2			7/21/2010	Responder: Clark	178. Y	Closed	Closed	EICB RAI	TVA Letter dated	
201	7.7.1.1	7.7.11	U	7/21/2010	Responder: Webb	179. Y	Closed	Closed	EICB RAI	TVA Letter dated	
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.	<p>Responder: WEC</p> <p>Revision 1 of the Licensing Technical Report will provide more detailed information on the changes to the platform.</p> <p>Rev. 2 of the Licensing Technical Report will include the applicability of guidance.</p>	21. N	Open	Open-TVA/WEC Due 12/3/10 Licensing Technical Report R2	EICB RAI ML102980066 Item No. 4	TVA Letter dated 10/5/10	
203	7.5.1.1	7.5.2	N	7/26/2010	Responder: Clark	180. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI 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
204	7.5.1.1	7.5.2	~ N G	7/26/2010	Responder: Costley/Norman	181. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
205			~ G	7/26/2010	Responder: Clark	182. Y	Closed	Closed	EICB RAI	TVA Letter dated	Question B related to prior NRC
206	7.5.1.1	7.5.2	~ N G	7/27/2010	Responder: Clark	183. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
207			~ O	July 27, 2010	Date:	184. Y	Closed	Closed			
208	7.5.2.1	7.5.1	~ N G	7/27/2010	Responder: Clark	185. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
209	7.5.2.1	7.5.1	~ N G	7/27/2010	Responder: Clark	186. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
210	7.5.2.1	7.5.1	~ N G	7/27/2010	Responder: Clark	187. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
211	7.5.1.1		~ O	7/27/2010	Responder: Clark	188. Y	Closed	Closed	EICB RAI	TVA Letter dated	Relates to SE Sections:
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. Attachment 13 contains a detailed response to the individual sections of IEEE 603-1991 and IEEE 7-4.3.2 that demonstrates how the hardware complies with the IEEE standards.	22. N	Open Response included in letter dated 12/22/10.	Open-TVA/WEC Due 12/22/10 To be addressed by WBN2 specific test plan	EICB RAI ML102980066 Item No. 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.	7. N	Open Response is included in letter dated 10/25/10 NNC to review and revise this question after LTR R2 is received.	Open-NRC Review Due 12/31/10.	EICB RAI ML102980066 Item No. 18		
214			~ O	7/27/2010	Responder: WEC	189. Y	Closed	Closed	EICB RAI	TVA Letter dated	
215			~ P	7/29/2010	Responder: WEC	190. Y	Closed	Closed			
216	7.5.1.1	7.5.2	~ N G	7/29/2010	Responder: Clark	191. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
217			~ G	7/6/2010	Responder: Clark	192. Y	Close	Closed	EICB RAI	TVA Letter dated	
218			~ G	7/6/2010	Responder: Clark	193. Y	Closed	Closed	EICB RAI	TVA Letter dated	
219			~ G	8/4/2010	Responder: TVA Licensing	194. Y	Closed	Closed	EICB RAI		
220			~ G	8/4/2010	Responder: Ayala	195. Y	Closed	Closed	EICB RAI	TVA Letter dated	
221	7.7.1.2	7.7.1.3	~ N G	8/4/2010	Responder: Trelease	196. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
222			~ G	8/4/2010	Responder: Clark	197. Y	Close	Closed	EICB RAI	TVA Letter dated	
223			~ G	8/4/2010	Responder: Clark	198. Y	Closed	Closed	EICB RAI		
224	7.5.1.1	7.5.2	~ N G	8/4/2010	Responder: Norman (TVA CEG)	199. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI 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
225			UG	8/4/2010	Responder: Scansen	200. Y	Close	Closed	EICB RAI	TVA Letter dated	
226			UG	8/4/2010	Responder: TVA Licensing	201. Y	Closed	Closed	N/A – Information	TVA Letter dated	See also Open Item Nos. 41 & 270.
227			UG	8/4/2010	Responder: Clark	202. Y	Close	Closed	EICB RAI	TVA Letter dated	
228			UG	8/4/2010	Responder: Clark	203. Y	Closed	Closed	EICB RAI	TVA Letter dated	
229			UG	8/4/2010	Responder: Clark	204. Y	Closed	Closed	EICB RAI	TVA Letter dated	
230			UG	8/4/2010	Responder: Webb	205. Y	Closed	Closed	EICB RAI	TVA Letter dated	
231			UG	8/4/2010	Responder: Clark	206. Y	Closed	Closed	EICB RAI	TVA Letter dated	
232			US	8/4/2010	Responder: Clark	207. Y	Closed	Closed	RAI No. 5	TVA Letter dated	
233			UG	8/4/2010	Responder: Clark	208. Y	Closed	Closed	EICB RAI	TVA Letter dated	
234			UG	8/4/2010	Responder:	209. Y	Closed	Closed	N/A – Duplicate	N/A	
235			UG	8/4/2010	Responder: TVA Licensing	210. Y	Closed	Closed	N/A	N/A	
236			UG	8/4/2010	Responder: Clark	211. Y	Close	Closed	EICB RAI	TVA Letter dated	
237			UG	8/4/2010	Responder: Clark	212. Y	Closed	Closed	EICB RAI	TVA Letter dated	
238			UG	8/4/2010	Responder: Webb/Hilmes	213. Y	Closed	Closed	N/A – Duplicate	N/A	
239			UG	8/4/2010	Responder: Hilmes	214. Y	Closed	Closed	N/A – Meeting	N/A	
240			UG	8/4/2010	Responder: Clark	215. Y	Close	Closed	MI102910008	TVA Letter dated	
241			US	8/4/2010	Responder: Davies	216. Y	Closed	Closed	RAI No. 10	TVA Letter dated	
242			UG	8/4/2010	Responder: Hilmes	217. Y	Close	Closed	EICB RAI	TVA Letter dated	
243			UG	8/3/2010	Responder: WEC	218. Y	Closed	Closed	N/A – Closed to	N/A	
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. TVA Response to Follow-up NRC Request: Process related requirements have been deleted from the SRS and SysRS in revision 3. Attachment 1 contains WNA-DS-01617-WBT-P, Revision 3, "Post Accident Monitoring System- System Requirements Specification", dated December 2010. Attachment 2 contains WNA-DS-01617-WBT-P, Revision 3, "Post Accident Monitoring System - System Requirements Specification", dated December 2010. Attachment 3 contains the "Application for Withholding Proprietary Information from Public Disclosure WNA-DS-01617-WBT-P, Rev. 3." Attachment 7 contains WNA-SD-00239-WBT-P, Revision 3, "Software Requirements Specification for the Post Accident Monitoring System," dated December 2010. Attachment 8 contains WWNA-SD-00239-WBT-P, Revision 3, "Software Requirements Specification for the Post Accident Monitoring System," dated December 2010. Attachment 9 contains the	23. N	Open Revised response is included in letter dated 12/22/10 Response is provided in letter dated 10/25/10. NNC 11/18/10: SysRS Rev. 2 also contains process requirements that are more appropriately incorporated into process documentation.	Open-TVA/WEC Due 12/22/10	EICB RAI ML102980066 Item No. 14	Response is provided in letter dated 10/25/10.	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."

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
					"Application for Withholding Proprietary Information from Public Disclosure WNA-SD-00239-WBT-P, Rev. 3."						
245			EICB (Carte)	8/3/2010 Section 5.8 of the Common Q SPM (ML050350234) identifies the required test documentation for systems developed using the Common Q SPM. Please provide sufficient information for the NRC staff to independently assess whether the test plan for WBN2 PAMS, is as described in the SPM (e.g., Section 5.8.1).	Responder: WEC Relates to the commitment to provide the test plan and the SPM compliance matrix Attachment 9 contains the Westinghouse document "Post Accident Monitoring System Test Plan," WNA-PT-00138-WBT, Revision 0, dated November 2010. Attachment 10 contains the Westinghouse Application for Withholding for the "Post Accident Monitoring System Test Plan," WNA-PT-00138-WBT, Revision 0, dated November 2010.	8. N	Open Response included in letter dated 12/3/10	Open-NRC Review Due 12/22/10	EICB RAI ML102980066 Item No. 119		LIC-101 Rev. 3 Appendix B Section 4, "Safety Evaluation" states: "the information relied upon in the SE must be docketed correspondence." LIC-101 Rev. 3 states: "The safety analysis that supports the change requested should include technical information in sufficient detail to enable the NRC staff to make an independent assessment regarding the acceptability of the proposal in terms of regulatory requirements and the protection of public health and safety."
246			EICB (Carte)	8/3/2010 Section 4.3.2.1, "Initiation Phase" of the Common Q SPM (ML050350234) requires that a Project Quality Plan (PQP) be developed. Many other section of the SPM identify that this PQP should contain information required by ISG6. Please provide the PQP. If "PQP" is not the name of the documentation produced, please describe the documentation produced and provide the information that the SPM states should be in the PQP.	Responder: WEC 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"	9. N	Open Response is provided in letter dated 10/25/10 NNC 11/18/10: PQP has not been provided and CQ PAMS LTR Rev. 1 does not contain comparable information.	Open-NRC Review Due 10/22/10 NNC 11/18/10: NRC to go to WEC Rockville Offices and look at PQP to decide if it must docketed.	EICB RAI ML102980066 Item No. 15	Response is provided in letter dated 10/25/10	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			(C)	8/8/2010	Responder: WEC	219. Y	Closed	Closed	EICB RAI	Response is	LIC-101 Rev. 3 Appendix B Section 4,
248			(C)	8/8/2010	Responder: WEC	220. Y	Closed	Closed		Response is	LIC-101 Rev. 3 Appendix B Section 4,
249			(C)	8/8/2010	Responder: WEC	221. Y	Closed	Closed			LIC-101 Rev. 3 Appendix B Section 4,
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. TVA Response to Follow-up NRC Request: The following documentation shows that the configuration management tasks for that activity group have been successfully accomplished. 1. WNA-LI-00058-WT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" submitted in TVA Letter to NRC dated December 3, 2010, "Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Information Requests," (Reference 1) contains the following changes to address the NRC requests: a. Section 2.2.1 Hardware/Software Change Process	24. N	Open Revised response included in letter dated 12/22/10 Response included in letter dated 10/25/10.	Open-TVA/WEC Due 12/22/10 10/25/10 is a partial response. Still waiting on Software Test Plan and all other testing documentation.			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."

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
					<p>has been added to describe the process of how changes are evaluated.</p> <p>b. Section 2.2.2, "Software" has been expanded to include a table detailing evolutionary software changes that have occurred since the initial submittal and the change evaluation of the life cycle.</p> <p>2. "Nuclear Automation Watts Bar 2 NSSS Completion Program I&C Projects, Post Accident Monitoring System Test Plan," (Proprietary), WNA-PT-00138-WBT, Revision 0, dated November 2010 submitted in TVA Letter to NRC, dated December 3, 2010 "Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Information Requests," (Reference 1.</p>						
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.	<p>Responder: WEC</p> <p>The software testing performed and documents created are addressed by the SPM Compliance matrix contained in Revision 1 of the Licensing Technical Report.</p> <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"</p> <p>TVA Response to Follow-up NRC Request:</p> <p>Please see the response to RAI item 23 in letter dated 12/22/10, NRC Matrix Item 250.</p>	25. N	Open Revised response included in letter dated 12/22/10 Partial response is provided in letter dated 10/25/10	Open-TVA/WEC Due 12/22/10. 10/25/10 is a partial response. Still waiting on Software Test Plan and all other testing documentation.			<p>LIC-101 Rev. 3 Appendix B Section 4, "Safety Evaluation" states: "the information relied upon in the SE must be docketed correspondence."</p> <p>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."</p>
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.	<p>Responder: WEC</p> <p>Explain response to AP1000 audit report. RTM docketed NRC awaiting V&V evaluation of RTM.</p> <p>Software requirements traceability analysis is described in the following documents:</p> <p>1. WNA-LI-00058-WT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" submitted in TVA Letter to NRC dated December 3, 2010, "Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Information Requests," (Reference 1) contains the following change to address the NRC request:</p> <p>Section 11, "TVA Contract Compliance Matrix" has been added.</p> <p>2. The Independent Verification & Validation (IV&V) report covering the Concept and Definition phases ("Nuclear Automation Watts Bar Unit 2 NSSS Completion Program I&C Projects, IV&V Summary Report for the Post Accident Monitoring System," (Proprietary), WNA-VR-00283-WBT, Revision 1, dated November 2010)</p>	26. N	Open Response included in letter dated 12/22/10 Read ML091560352	Open-TVA/WEC Due 12/22/10 Check on this Hilmes			<p>LIC-101 Rev. 3 Appendix B Section 4, "Safety Evaluation" states: "the information relied upon in the SE must be docketed correspondence."</p> <p>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."</p>

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	
					<p>was submitted on TVA Letter to NRC Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Information Requests, dated December 3, 2010 (Reference 1).</p> <p>3. The Independent Verification & Validation (IV&V) report covering the Design and Implementation phases ("Nuclear Automation Watts Bar Unit 2 NSSS Completion Program I&C Projects, IV&V Summary Report for the Post Accident Monitoring System," (Proprietary), WNA-VR-00283-WBT, Revision 2, dated November 2010) was submitted on TVA Letter to NRC Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Information Requests, dated December 3, 2010 (Reference 1).</p> <p>4. The integration phase is covered in Attachment 10 "IV&V Summary Report for the Post Accident Monitoring System," WNA-VR-00283-WBT, Revision 3, dated December 2010. Attachment 11 contains the "Application For Withholding Proprietary Information From Public Disclosure WNA-VR-00283- WBT-P, Revision 3, "IV & V Summary Report for the Post Accident Monitoring System" (Proprietary)," dated December 2010.</p>							
253			— 0	8/8/2010	Responder: Clark	222. Y	Closed	Closed		TVA Letter dated	Related to Open Item no. 83.	
254			— 0	8/10/2010	Responder: WEC	223. Y	Closed	Closed	N/A - Request to	TVA Letter dated		
255			— 0	8/10/2010	Responder: WEC	224. Y	Closed	Closed	N/A - Request to	TVA Letter dated		
256			— 0	8/10/2010	Responder: WEC	225. Y	Closed	Closed	N/A - Request to	TVA Letter dated		
257			— 0	8/10/2010	Responder: WEC	226. Y	Closed	Closed	N/A - Request to	N/A		
258			— 0	8/10/2010	Responder: WEC	227. Y	Closed	Closed	N/A - Request to	N/A		
259			— 0	8/10/2010	Responder: WEC	228. Y	Closed	Closed	N/A - Request to	TVA Letter dated		
260			— 0	8/10/2010	Responder: WEC	229. Y	Closed	Closed	N/A - Request to	N/A		
261			— 0	8/10/2010	Responder: WEC	230. Y	Closed	Closed	N/A – Closed to	TVA Letter dated	LIC-110 Rev. 1 Section 6.2.2 states:	
262			— 0	8/10/2010	Responder: WEC	231. Y	Closed	Closed	N/A - Request to	N/A		
263			— 0	8/11/2010	Responder: WEC	232. Y	Closed	Closed	ML101650255, Item			
264			— 0	8/11/2010	Responder: WEC	233. Y	Closed	Closed	ML101650255, Item			
265			— 0	8/11/2010	Responder: WEC	234. Y	Closed	Closed	ML101650255, Item			
266			— 0	8/11/2010	Responder: Webb/Webber	235. Y	Closed	Closed		TVA Letter dated		
267			— 0	8/11/2010	Responder: WEC	236. Y	Closed	Closed				
268			EICB (Carte)	8/19/2010	<p>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).</p> <p>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.</p>	<p>11/18/10 Warren Odess-Gillett took action to discuss with Design Engineering to generate a non-prop figure</p> <p>Attachment 18 contains the non-proprietary version of the Westinghouse document "Watts Bar 2 Common Q PAMS Block Diagram."</p>	10. N	Open	Open-NRC Review			

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
269			— P	8/20/2010	Responder: NRC	237. Y	Closed	Closed	N/A	N/A	
270			— C	8/23/2010	Responder: Clark	238. Y	Closed	Closed			See also Open Item Nod. 41 & 245.
271			— C	8/23/2010	Responder: WEC	239. Y	Closed	Closed	N/A – Closed to	NA	
272	7.5.2.1	7.5.1	— M S	8/26/2010	Responder: Clark	240. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
273	7.5.2.1	7.5.1	— M S	8/26/2010	Responder: Clark	241. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
274.a	7.5.2.1	7.5.1	— M S	8/26/2010	Responder: Clark	242. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
274.b			— S	8/26/2010	Responder: Stockton	243. Y	Closed	Closed	RAI No. 6	TVA Letter dated	
275			— S	8/27/2010	Responder: Clark	244. Y	Closed	Closed	Not Required	N/A	
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. The Distributed Control System (DCS) implemented using Foxboro I/A hardware, replaces most of the non-safety related control systems for WBN Unit 2. The other non-safety-related control systems within the scope of this question are: a. Rod Control - Failures of this system are addressed in FSAR Chapter 15. b. Main Turbine Electro-Hydraulic Control System The following provides the requested summaries for the four events listed: (1) The (DCS) segmentation analysis submitted on TVA letter to NRC dated August 11, 2010, Enclosure 2 (Reference 7) demonstrates that the loss of any single power source does not result in a loss of any DCS function. The other systems within the scope of this question are configured in the same manner as Unit 1, with redundant power sources such that the failure of a single power source does not cause a loss of function. (2) Signals shared by more than one control function within the DCS are addressed in the DCS segmentation analysis submitted on TVA letter to NRC dated August 11, 2010, Enclosure 2 (Reference 7) which demonstrates that the loss of a single signal does not cause a failure of any critical control function. The impact of a loss of signal to the other systems within the scope of this question is bounded by the loss of that signal to the individual system and has the same effect as for Unit 1. (3) Where feasible, the Unit 2 design includes separate sense lines for redundant transmitters, thereby eliminating multiple single point failures which are present in Unit 1. A review of the transmitter sense line database was performed to identify multiple sensors on a single sense line that had control functions (transmitters and switches). Attachment 9 provides the results of the review and an analysis of the functions	1. Y	Open Revised response provided in letter dated 12/22/10 Response provided in letter dated 10/21/10 Revised response provided in letter dated 11/24/10 Response Acceptable. 11/17/10 TVA changed the response in the latest writeup. The scope of the question applies to all non safety related control systems and is not limited to just three system listed by the TVA. TVA could use to envelope other control systems by Unit 1 analysis if they applies to Unit 2 systems also.	Open-TVA/Bechtel Due 11/24/10 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 needs to make a statement that all non-safety control systems have been evaluated against these criteria and have determined that their failure does not have consequences which will put the plant outside chapter 15 analyses.	EICB RAI ML102910008 Item#60	TVA Letter dated 10/21/10 Enclosure 1 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
					<p>impacted by a sense line failure.</p> <p>There are no transmitters on shared sense lines, such that a sense line failure would impact any combination of the DCS, Rod Control or Main Turbine Electro-Hydraulic Control Systems.</p> <p>(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 (Reference 1). The other systems within the scope of this question are analog and therefore this question is not applicable.</p> <p>All non-safety control systems have been evaluated against these criteria and TVA has determined that their failure does not have consequences which will put the plant outside chapter 15 analyses.</p> <p>TVA Response to Follow-up NRC Request:</p> <p>All non-safety related control systems were reviewed in the context of this question. The review found that failures of non-safety related control systems based on the scenarios in this RAI, do not have consequences which will put the plant outside the Chapter 15 analyses.</p>						
277	7.6	7.6.3	U	8/27/2010	Responder: Clark	245. Y	Close	Closed	EICB RAI	TVA Letter dated	
278	7.6	7.6.6	U	8/27/2010	Responder: Trelease	246. Y	Close	Closed	EICB RAI	TVA Letter dated	
279	7.6	7.6.6	U	8/27/2010	Responder: Mather	247. Y	Close	Closed	EICB RAI	TVA Letter dated	
280	7.6	7.6.6	U	8/27/2010	Responder: Trelease	248. Y	Closed	Closed	EICB RAI	TVA Letter dated	
281	7.6	7.6.8	U	8/27/2010	Responder: Webb	249. Y	Closed	Closed	EICB RAI	TVA Letter dated	
282	7.6	7.6.9	U	8/27/2010	Responder: Trelease	250. Y	Close	Closed	EICB RAI	TVA Letter dated	
283	7.7.5	XX	U	8/27/2010	Responder: Clark	251. Y	Closed	Closed	EICB RAI No.13	TVA Letter dated	This item is a follow-up question to item
284	7.7.3	7.4.1	U	8/27/2010	Responder: Webber	252. Y	Closed	Closed	EICB RAI No.14	TVA Letter dated	This item is a follow-up question to item
285	7.3.3	7.3	U	8/27/2010	Responder: McNeil	253. Y	Closed	Closed	EICB RAI No.15	TVA Letter dated	This item is a follow-up question to item
286	7.7.3	9.3.4.2.	U	8/27/2010	Responder: Webber	254. Y	Closed	Closed	EICB RAI No.16	TVA Letter dated	
287	7.3	7.3-1	U	8/27/2010	Responder: Elton	255. Y	Closed	Closed	ML102390538, Item	Response	
288	7.3		U	9/2/2010	Responder: McNeil	256. Y	Closed	Closed	EICB RAI		
289			U	9/2/2010	Responder: Faulkner	257. Y	Closed	Closed	RAI No. 24	TVA Letter dated	
290		7.7	U	9/7/2010	Responder: Clark	258. Y	Closed	Closed	N/A	N/A	This item is a duplicate of item 291.
291		7.7	U	9/7/2010	Responder: Clark	259. Y	Closed	Closed		TVA Letter dated	
292	7.2.5	7.2	U	9/7/2010	Responder: Craig	260. Y	Closed	Closed	EICB RAI	TVA Letter dated	
293	7.7.4	7.2.2.3.	U	9/8/2010	Responder: Craig	261. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
294	7.3	7.3.1.1.	U	9/9/2010	Responder: Elton	262. Y	Closed	Closed	ML102390538, Item	Response	
295	7.3	7.3.1.1.	U	9/9/2010	Responder: Elton	263. Y	Closed	Closed	ML102390538, Item	Response	
296	7.3	7.3.1.2.	U	9/9/2010	Responder: Elton	264. Y	Closed	Closed	ML102390538, Item	Response	
297	7.3	7.3.1.2.	U	9/9/2010	Responder: Elton	265. Y	Closed	Closed	ML102390538, Item	Response	
298	7.3	XX	U	9/9/2010	Responder: Clark	266. Y	Closed	Closed	ML102390538, Item	Response	
299			U	Provide Common Q Software Requirements Specification Post	Attachment 41 of the 10/5 letter contains the Common Q	267. Y	Closed	Closed		TVA Letter dated	

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
300			EICB (Singh)	<p>Need Radiation Monitoring System Description/Design Criteria</p> <p>Are detectors different from Unit 1. Describe any differences.</p> <p>Are there any commercially dedicated parts in the RM-1000? If so, how are they dedicated?</p> <p>Please confirm that digital communication ports available in RM-1000 are not used.</p>	<p>Responder: Temples/Mather</p> <p>(1) The Radiation Monitoring Design Criteria Document, WB-DC-40-24, Revision 21 is contained in Attachment 6 to letter dated October 31, 2010.</p> <p>(2) Attachment 7 contains the General Atomics detector differences report. The containment high range radiation monitors are loops 271-274.</p> <p>(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. Safety-related commercial grade items are dedicated in accordance with General Atomics approved 10 CFR 50 Appendix B program.</p> <p>(4) The digital communications ports on the safety-related RM-1000 radiation monitors are not used.</p> <p>TVA Response to Follow-up NRC Request:</p> <p>General Atomics Electronics Systems, Inc. is an approved 10 CFR 50 Appendix B supplier. They have a commercial grade dedication program.</p>	11. Y	<p>Open</p> <p>Response is included in letter dated 10/29/10</p> <p>Revised response Included in letter dated 11/24/10</p>	<p>Open-NRC Review</p> <p>Due 11/24/10</p> <p>TVA to address the following comments:</p> <p>(1) Is it Att. 5 or Att. 6?</p> <p>(2) Pl. confirm that HRRMs are loops 271-274.</p> <p>(3) TVA to clarify that GA has a commercial dedication program in place and that GA is an approved 10CFR50, App. B supplier. App B does not address commercial grade dedication .</p> <p>Revised response is acceptable. Please submit response.</p> <p>(4) Response acceptable.</p>	<p>RAI No. 25 ML102980005 10/26/2010</p>	<p>TVA Letter dated 10/29/10 Enclosure 1 Item No. 20</p>	
301			EICB (Singh)	<p>1.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).</p> <p>2. 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.</p> <p>3. Provide FMEA in support of your response.</p> <p>4. 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?</p> <p>5. How is automatic rod withdrawal affected in case of total loss of signals from the CERPI to the ICS? Is this interlock fail safe?</p> <p>6.FSAR chapter 15, Section 2.3.2.1states that the resolution of the rod position indicator channel is 5% of span (7.2 inches). The CERPI system accuracy specified in the CERPI System requirements Specification, WNDS-DS-00001_WBT, Rev. 2 is 12</p>	<p>Responder: WEC/Davies/Clark</p> <p>TVA Partial Response:</p> <p>For all accidents analyzed in WBN Unit 2 FSAR, Chapter 15, no credit is taken for the rod position indication system. For all continuous rod withdrawal accidents analyzed in WBN Unit 2 FSAR, Chapter 15, no credit is taken for any rod stop/block.</p> <p>(1) Technical Specification 3.1.8, Rod Position Indication, does not have an action for total loss of indication; therefore, a total loss of CERPI puts the plant into LCO 3.0.3 which states:</p> <p>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:</p> <p>MODE 3 within 7 hours; MODE 4 within 13 hours; and MODE 5 within 37 hours.</p>	27. N	<p>Open</p> <p>Revised response included in letter dated 12/22/10.</p> <p>Revised response included in letter dated 11/24/10.</p> <p>Partial response in 10/29 letter.</p>	<p>Open-TVA/WEC</p> <p>Due 12/22/10</p> <p>1) Please address how fail-as-is is detected i.e. alarms, rod position deviation alarms, etc.</p> <p>2) Response acceptable.</p> <p>3) Response acceptable.</p> <p>4) a. Response acceptable. b. Pl. address failure mode on fail-as-is.</p> <p>5) Response acceptable. 6) Response acceptable.</p> <p>TVA to address</p>	<p>RAI No. 11 ML102980005 10/26/2010</p>	<p>TVA Letter dated 10/29/10 Enclosure 1 Item No. 21</p>	

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
				<p>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.</p>	<p>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 actions required by LCO 3.0.3 is not required.</p> <p>(2) CERPI common mode software failure</p> <p>Description of the CERPI systems installed at Watts Bar (Unit 1 & 2):</p> <p>Each Programmable Logic Controller (PLC), Maintenance Test Panel (MTP), and Operators Module (OM) is isolated within its own Train, A or B. Rod position information is provided to the OMs in the main control room via redundant data links. Each train (PLC, MTP, and OM) is electrically isolated from the other train.</p> <p>Communications within a CERPI train (PLC, MTP, and OM) are continuously monitored. If communication is interrupted, this condition is annunciated to the operator in the control room. The MTP and OM display screens have rotating cursors in the upper right-hand corner of the display to indicate that the system is operating.</p> <p>History of CERPI:</p> <p>The basic PLC software associated with the CERPI system has been in use for over ten years. The first plant to utilize the CERPI PLC software was Beaver Valley. In 2003, the CERPI software was deployed with interfaces to the Common Q MTP and OM interfaces within the systems for Surry Units 1 & 2, and Watts Bar Unit 1. In 2009, the Watts Bar Unit 1 CERPI system was modified to allow for two independent trains of CERPI. The Watts Bar Unit 2 CERPI system is based on the Unit 1 design. Only the detectors and the detector interface boards are not redundant within the Watts Bar CERPI systems.</p> <p>CERPI Software Failure Analysis</p> <p>With regard to the CERPI system software:</p> <ul style="list-style-type: none"> • The software used on PLC-A is identical to that used on PLC-B. • The software used on MTP-A is identical to that used on MTP-B • The software used on OM-A is identical to that used on OM-B. <p>A common cause failure affecting the software of one CERPI train would affect the other train as well. Common cause problems associated with the CERPI software were mitigated by the Westinghouse software development process, factory acceptance testing, and</p>			<p>common cause failure as stated under response item 2.</p> <p>Please explain how various alarms will continue to annunciate on software lockup? Need better explanation to understand the rationale behind the response.</p>			

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
					<p>site acceptance testing. There is no "fail as-is" scenario. Any failure of a hardware/software component (resulting in processor lock-up) would be immediately annunciated (Main Control Room alarm). A loss of communication to the MTP, or OM would be annunciated, and the data values on the flat panel display would be displayed in magenta (indicating failure). A hardware/software failure in the PLC (resulting in processor lock-up) would result in an annunciator because of the watchdog alarm circuit associated with the PLC processor module.</p> <p>A total loss of CERPI indication (e.g., loss of both AC power sources to the rod position cabinets) is possible, but this condition would be immediately annunciated. A complete loss of CERPI indication would lead to entering Technical Specification LCO 3.0.3. A more likely scenario would be loss of a single train of CERPI due to a hardware failure; in which case, there are no technical specification conditions to enter because a single train is capable of providing all rod indications needed for control.</p> <p>(3) There is no FMEA for the CERPI system.</p> <p>(4) Control Bank D Automatic Rod Withdrawal Limit would be assured by Operations and control circuitry by the following 2 methods:</p> <ul style="list-style-type: none"> 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. 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." <p>(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.</p> <p>(6) 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</p>						

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					<p>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:</p> <p>“The resolution of the rod position indicator channel is ± 12 steps. Deviation of any RCCA from its group by twice this distance (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.”</p> <p>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.</p> <p>TVA Response to Follow-up NRC Request:</p> <p>The following response is based on the response in Westinghouse letter WBT-D-2722 “Response To Question On CERPI RAI #301” dated December 6, 2010 (Reference 4).</p> <p>TVA believes the question is related to the statement found in the response submitted on TVA Letter to NRC Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Information Requests, dated November 24, 2010, (Reference 9) “Any failure of a hardware/software component (resulting in processor lock-up) would be immediately annunciated (Main Control Room alarm)”</p> <p>The CERPI system will not annunciate various system alarms if the software is in a lockup condition. However, the system will annunciate an alarm based on the PLC watchdog relay dropping out because the software has “locked up” the processor. So, even if the PLC locks up, an alarm is generated to alert the operators in the Main Control Room (MCR).</p> <p>All of the CERPI system alarms (that connect to the plant annunciator system) are wired to specific alarm relays within the CERPI system. With the exception of the watchdog alarm relay, the alarm relay coils are actuated by the PLC Digital Output Module. The plant annunciator wiring connects to either the Normally Open (NO) or the Normally Closed (NC) contacts of the associated alarm relay. The watchdog relay is configured such that when a timeout condition occurs (the PLC locks up), the watchdog relay de-energizes, and a CERPI System Trouble alarm is annunciated in the MCR.</p>							
302	7.5.2.1	7.5.1	~ ≥ ☞	09/17/2010	Responder: Tindell	268. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL	
303	7.5.2.1	7.5.1	~ ≥ ☞	09/17/2010	Responder: Tindell	269. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL	
304	7.5.2.1	7.5.1	~ ≥ ☞	09/17/2010	Responder: Tindell	270. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL	
305	7.5.2.1	7.5.1	~ ≥ ☞	09/17/2010	Responder: Tindell	271. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI 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
306	7.1	7.1	EICB (Garg)	FSAR amendment 100, page 7.1-12 provides the definition of Allowable value which is not consistent with TSTF-493 as allowable value is the value beyond which instrument channel is declared inoperable.	Responder: Hilmes The FSAR Allowable Value definition will be 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.	3. Y	Open Response is included in letter dated 10/29/10	Open-TVA/A102 Due 12/17/10 Pending FSAR Amendment 102 submittal	EICB RAI ML102910008 Item#69	TVA Letter dated 10/29/10 Enclosure 1 Item No. 26	
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.	4. Y	Open Response is included in letter dated 10/29/10	Open-TVA/A102 Due 12/17/10 Pending FSAR Amendment 102 submittal	EICB RAI ML102910008 Item#70	TVA Letter dated 10/29/10 Enclosure 1 Item No. 27	
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).	5. Y	Open Response is included in letter dated 10/29/10	Open-TVA/A102 Due 12/17/10 Pending FSAR Amendment 102 submittal	EICB RAI ML102910008 Item#71	TVA Letter dated 10/29/10 Enclosure 1 Item No. 28	
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 in TI-28 for TSTF-493 will be revised to use the Square Root Sum of the Squares (SRSS) method. (2) AAF definition will be revised to be consistent with TSTF-493 as discussed with the NRC Staff, in FSAR Amendment 102. Attachment 3 contains the revised FSAR Amendment 102 Change Markup that reflects this change.	6. Y	Open Response is included in letter dated 10/29/10	Open-TVA/A102 Due 12/17/10 Pending FSAR Amendment 102 submittal	EICB RAI ML102910008 Item#72	TVA Letter dated 10/29/10 Enclosure 1 Item No. 29	
310	7.1	7.1.2.1.9.2	EICB (Garg)	(1) FSAR amendment 100, Page 7.1-14, TVA setpoint methodology, states that for AAFand other measurable uncertainties as appropriate (i.e., those present during	Responder: Hilmes TVA Response:	7. Y	Open Response is included in letter	Open-TVA/A102 Due 12/17/10	EICB RAI ML102910008 Item#73	TVA Letter dated 10/29/10 Enclosure 1 Item	

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
				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.	<p>(1) The AAF definition will be revised in FSAR Amendment 102 to read:</p> <p>“A tolerance band on either side of the NTSP which defines the limits of acceptable instrument performance, beyond which the channel may be considered degraded and must be evaluated for operability prior to returning it to service. Channels which exceed the AAF will be entered into the Corrective Action Program for further evaluation and trending. The Acceptable As Found tolerance is the SRSS combination of drift, maintenance and test equipment (M&TE) accuracy and readability, and calibration/reference accuracy. Other uncertainties may be included in the AAF if applicable.”</p> <p>This revision eliminates the concern regarding uncertainties. Attachment 3 contained in the October 29, 2010 letter provided the revised FSAR Section 7.1.2.1.9 that will be included in FSAR Amendment 102 that reflects this change.</p> <p>(2) The AAL definition will be revised in FSAR Amendment 102 to read:</p> <p>“A tolerance band on either side of the NTSP within which an instrument or instrument loop is left after calibration or setpoint verification. The Acceptable As Left tolerance is equal to or less than the SRSS combination of reference accuracy, M&TE accuracy and M&TE readability. Other uncertainties may be included in the AAL if applicable.”</p> <p>This revision eliminates the concern regarding calibration history. Attachment 3 contained in the October 29, 2010 letter provided the revised FSAR Section 7.1.2.1.9 that will be included in FSAR Amendment 102 that reflects this change.</p>		dated 10/29/10	Pending FSAR Amendment 102 submittal		No. 30	
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.	<p>Responder: Hilmes</p> <p>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.</p>	8. Y	Open Response is included in letter dated 10/29/10	Open-TVA/A102 Due 12/17/10 Pending FSAR Amendment 102 submittal	EICB RAI ML102910008 Item#74	TVA Letter dated 10/29/10 Enclosure 1 Item No. 31	
312		7.0	(S)	By letter dated September 10,2010, TVA provided the summary	Responder: Stockton	272. Y	Close	Closed	EICB RAI	TVA Letter dated	
313	7.7.8	7.7.1.12	(S)	EDCR 52408 (installation of AMSAC in Unit 2) states that Design	Responder: Ayala	273. Y	Closed	Closed	EICB RAI No.18	TVA Letter dated	
314	7.3	7.3	(S)	The following 50.59 changes were listed in the March 12 RAI	Responder: Stockton	274. Y	Closed	Closed	EICB RAI No. 19	TVA Letter dated	Related to OI 10
315	7.5.3	7.5.3	(S)	IE Bulletin 79-27 required that emergency operating procedures to	Responder: S. Smith (TVA Operations)	275. Y	Close	Closed	EICB RAI	TVA Letter dated	
316	7.5.2.3	7.5	(S)	TVA has provided various documents in support of RM-1000 high	Responder: Temples/Mather	276. Y	Closed	Closed	RAI No. 26		
317	7.5.2.3	7.5	(S)	TVA has provided a proprietary and a non-proprietary version of	Responder: Temples	277. Y	Closed	Closed	RAI No. 27	TVA Letter dated	
318	7.5.2.3	7.5	EICB (Singh)	TVA has provided the following documents for RM-1000 equipment qualification:	<p>Responder: Temples</p> <p>(i) Applicable to WBN Unit 2. 04508905-1QR is</p>	1. N	Open Revised response is included in	Open-TVA/GA Due 12/22/10	RAI No. 28 ML102980005 10/26/2010	TVA Letter dated 10/29/10 Enclosure 1 Item	

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
				(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. Supplement 3 was issued one month prior to supplement 2. Please explain the reason for the same.	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 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. TVA Response to Follow-up NRC Request: (1) 04508905-QR and -1SP are applicable to the RM-1000. 04508905-1SP is not applicable to the current to frequency (I to F) converter. Based on a further review by General Atomics, the 04508905-QR and -2SP reports are applicable to the current to frequency (I to F) converter used for the WBN Unit 2 monitors (2) This is addressed by response to RAI Question 336 in TVA to NRC letter dated November 24, 2010 (Reference 9) (3) This is addressed by response to RAI Question 337 in TVA to NRC letter dated November 24, 2010 (Reference 9) (4) Responder: P. Berner GAESI (5) To expedite the commitment to submit the documents, a formal review was not performed when the documents were received. The documents are in formal review by the Bechtel Civil group. (6) At the time the decision was made to not perform a formal review, it was believed that the documents had already been reviewed for Browns Ferry and there was little risk in delaying the formal review. It was later found that only the 04508905-QR and -1SP documents had been reviewed.		letter dated 12/22/10. Note check 04508905-1QR or QR. Staff version is QR only. Response is included in letter dated 10/29/10	Response update required. It is clear that 04508903-2SP and -3SP are not applicable. The response for applicability of 04508905-QR and -1SP to RM-1000 and IF converter is not clear. Check page numbers of Appendix F (missing/duplicate pages). Check applicability of Appendix C to RM1000 instead of RM2300? See items 336 and 337. All equipment qualification reports including supplements 2SP and 3SP have been reviewed as vendor drawings for WBN-2. Please explain the reason for applicability of one report and not the other. Further all TVA/Bechtel reviews seems to be dispositioned as Code 4, "Review not required. Work may proceed." The applicable reports should have been reviewed prior to dispositioning them. Please explain the apparent lack of review of WBN-2 applicable documents. Was appropriate review guidance used?		No. 34	
319	7.5.2.3	7.5	—	TVA provided System Verification Test Results 04507007-1TR	Responder: Temples	278. Y	Closed	Closed	RAI No. 29	TVA Letter dated	
320			—	Per Westinghouse letter WBT-D-2340, TENNESSEE VALLEY	Responder: Clark	279. Y	Closed	Closed	N/A	N/A	Duplicate of item 156
321			—	For the purposes of measuring reactor coolant flow for Reactor	Responder: Clark	280. Y	Closed	Closed	N/A	N/A	Duplicate of OI# 157
322		7.7.1.11	—	Section 7.7.1.11 will be added to FSAR Amendment 101 to provide	Responder: Clark	281. 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
323			EICB(Garg)	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: Hilmes/Unit 1 Attachment 12 contains the WCAP 13869 Revision 1 to Revision 2 Change Analysis.	1. Y	Open Response is included in letter dated 10/29/10 The staff is confused with the response since both units have reference leg not insulated Rev 2 should apply to Unit 1 also and there should be no difference between Unit 1 and 2	Open-TVA Unit 1 Due: 12/22/10		TVA Letter dated 10/29/10 Enclosure 1 Item No. 36	
324			(N)	Per the NRC reviewer, the BIS1 calculation is not required to be		282. Y	Closed	Closed			
325			(C)	The Unit 2 loops in service for Unit 1 that are scheduled to be	Responder: TVA Startup Olson	283. Y	Closed	Closed			Closed to open item ?
326			EICB(Garg)	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.	9. Y	Open October 22, 2010 Response is included in letter dated 10/29/10	Open-TVA/A102 Due 12/17/10 Pending FSAR Amendment 102 submittal		TVA Letter dated 10/29/10 Enclosure 1 Item No. 37	
327			DORL (Poole)	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 In accordance with correspondence from Foxboro, there is no proprietary information contained in the 08F802403-SC-2001 drawings. Based on this, no affidavit for withholding is required. Attachment 1 contains versions of the drawings with the proprietary information block removed.	12. Y	Open Response Included in letter dated 11/24/10	Open-NRC Review Due 11/24/10			
328	7.5.2.3	7.5	(S)	Provide the model number for the four containment high range	Responder: Temples	284. Y	Closed	Closed	RAI No. 30	TVA Letter dated	
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) of the FSAR.	Responder: Clark The title of FSAR Section 3.10 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, "Loose Parts Monitoring System (LPMS) System Description," identifies basic system seismic design criteria which are consistent with the requirements of TVA Design Criteria, WB-DC-30-31, Loose Parts Monitoring System. As identified in FSAR Table 7.1-1, Watts Bar Nuclear Plant NRC Regulatory Guide Conformance, the system conforms to Reg. Guide 1.133 as modified by Note 12. Reg. Guide 1.133 identifies the seismic requirements and Note 12 does not contain any exception to the Regulatory Guide seismic requirements. The Westinghouse LPMS seismic report, EQ-QR-33-WBT, Revision 0, Seismic Evaluation of the Digital Metal Impact Monitoring System (DMIMS-DX™) for Watts Bar Unit 2, will be added as Reference 7 to FSAR section 7.6 in amendment 102.	10. N	Open Response is included in letter dated 10/29/10	Open-TVA/A102 Due 12/17/10 Pending FSAR Amendment 102 submittal. TVA to confirm that the equipment has been seismically qualified as required and that TVA reviewed and found the report acceptable. TVA response does not list the seismic test document and its acceptance by TVA. FSAR should reference the test document as the source document for tracking conformance.	RAI No. 1 ML102980005 10/26/2010	TVA Letter dated 10/29/10 Enclosure 1 Item No. 39	
330	7.3	7.3	(D)	Related to Item 298	Responder: Hilmes/Faulkner	285. Y	Closed	Closed	EICB RAI No.20	Item 7, TVA letter	
331	7.6.1	7.6.7	(S)	As a follow up of OI 190, Staff has reviewed the proprietary version	Responder: WEC/Harless/Clark	28. N	Open	Open-TVA/WEC	RAI No. 8	TVA Letter dated	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
				<p>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.</p> <p>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.</p> <p>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."</p> <p>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.</p> <p>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 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.</p> <p>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.</p> <p>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.</p> <p>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</p>	<p>TVA Partial Response:</p> <p>1) The source of the information is the DMIMS-DXTM Operations and Maintenance Manual, TS3176, Revision 0, dated August 2010. Attachment 14 contains the revised system description, "Westinghouse DIMMS-DX™ Loose Part Detection System Description," Revision 1. The Westinghouse DIMMS-DX™ Loose Part Detection System Description," Revision 1 will be added as Reference 9 to section 7.6 in FSAR Amendment 102.</p> <p>2) The source of the information is the DMIMS-DXTM seismic qualification report, Westinghouse report EQ-QR-33-WBT, Revision 0, Seismic Evaluation of the Digital Metal Impact Monitoring System (DMIMS-DXTM) for Watts Bar Unit 2. Attachment 14 contains the revised system description, "Westinghouse DIMMS-DXTM Loose Part Detection System Description," Revision 1.</p> <p>3) The entries for the following items in FSAR Section 7.6.7 will be modified in Amendment 102 as shown in Attachment 3 for draft revision to WBN Unit 2 FSAR Section 7.6.7, "Loose Part Monitoring System (LPMS) System Description."</p> <p>Sensors (In Containment) Softline Cable (In Containment) Preamplifier (In Containment)</p> <p>Attachment 3 contains the FSAR Amendment 102 Change Markups that reflect these changes.</p> <p>4) The source of the information is Westinghouse Letter WBT-D-2580, Tennessee Valley Authority Watts Bar Nuclear Plant Unit 2 Response to NRC RAIs on LPMS (Reference 5). Attachment 14 contains "Westinghouse DIMMS-DXTM Loose Part Detection System Description," Revision 1.</p> <p>In responding to Item 4, conflicting information was found between the Westinghouse-prepared FSAR section and various Westinghouse technical documents. To fully respond to this item, a change to the FSAR is required to change the minimum flat sensor frequency response from 5 Hz to 10 Hz. Attachment 3 contains the FSAR Amendment 102 Change Markups that reflect the revised frequency response of the sensor.</p> <p>Westinghouse document 1TS3182, Revision 0, Watts Bar Unit 2 DMIMS-DXTM System Validation Data Package, dated July 2010 has been added as reference 8 to FSAR Section 7.6 in amendment 102. Per Westinghouse letter WBT-D-2580, this document will be revised to reflect the 10Hz minimum frequency and provide the basis for the frequency response values in</p>			<p>Due 12/22/10</p> <p>Pending FSAR Amendment 102 submittal</p> <p>TVA to reference the DMIMS-DXTM Operations Manual in the FSAR as the source document</p> <p>TVA to reference the source document for item# 4 per the response.</p>	<p>ML102980005 10/26/2010</p>	<p>10/29/10 Enclosure 1 Item No. 40</p>	

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 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.	the FSAR. 5) In-containment component qualification for vibration as addressed in regulatory position C.1.g of RG 1.133, will be addressed in a future RAI response letter. TVA Final Partial Response: Items 1) through 4) were addressed in the partial response provided in TVA to NRC letter dated October 29, 2010. Item 5 is addressed as follows: WEC to provide						
332	7.5.2.1	7.5.1	M S	10/26/2010		286. Y	Closed	Closed	ML103000105 Item	TBD	EICB RAI ML103000105 sent to DORL
333	7.5.2.1	7.5.1	M S	10/27/2010		287. Y	Closed	Closed	ML103000105 Item	TBD	EICB RAI ML103000105 sent to DORL
334	7	7	EICB (Darball)	FSAR Figure 7A-3 "Mechanical Flow and Control Diagram Symbols" doesn't show the symbols for the first column of valves. Please correct this in a future FSAR amendment.	Responder: Stockton	11. Y	Open Figure will be corrected in FSAR Amendment 102.	Open-TVA/A102 Due 12/17/10 Pending FSAR Amendment 102 submittal.	RAI not required.	N/A	RAI not required because the figure is not part of any SE section.
335	7.6.1	7.6.7	EICB (Singh)	LPMS: Reference to OI-331, sub item 2. Provide analysis, test, or combined analysis and test for normal operating radiation, temperature, and humidity environment per regulatory position C.1.g of RG 1.133. As an alternate TVA may confirm that the required equipment has been qualified for the environments stated in RG 1.133, position C.1.g and that TVA has reviewed the test report and found it acceptable.	Responder: WEC WEC to provide	29. N	Open	Open-TVA/WEC Due 12/22/10			
336	7.5.2.3	7.5	M S	Re: RM-1000 Report 04508905-QR	Responder: GA	288. Y	Closed	Closed			
337	7.5.2.3	7.5	M S	Re: RM-1000 Report 04508905-QR	Responder: GA	289. Y	Closed	Closed			
338	7.5.2.3	7.5	EICB (Singh)	In page 3-15 and appendix B of Qualification Test Report 04508905-QR, licensee described the selection of seismic required response spectra (RRS) and indicated Figure 3-2 (page 3-17), Figure 3-3 (page 3-18) are the RRSs used. The RRS curves used for actual testing are lower than the RRS curves that are shown on Figures 3-2 and 3-3. The RRS curves used for testing are shown in Figure 4-5, 4-6, 4-7, 4-8, 4-11, 4-12, 4-13, and 4-14 (pages 4-25, 4-26, 4-28, 4-29, 4-37, 4-38, 4-40, 4-41). Please clarify and justify why the RRS curves used in actual tests are lower than the RRS curves determined in Figures 3-2 and 3-3. In addition please justify that the RRS used for testing envelopes the RRS required for WBN-2 application specific seismic conditions.	Responder: Civil EQB Get date from Bob Brown	2. N	Open	Open-TVA/Bechtel Due: 12/22/10			
339	7.5.2.3	7.5	EICB (Singh)	In the Qualification Test Report 04508905-QR, the licensee provided only eight Safe Shutdown Earthquake (SSE) Test Response Spectra (TRS) as mentioned in the previous open item (OI-338). Please provide all SSE and Operating Basis Earthquake (OBE) TRS plots for NRC review.	Responder: Bob Brown	3. N	Open	Open-TVA/Bechtel Due: 12/22/10			
340	7.5.2.3	7.5	EICB (Singh)	Provide test result curves for all EMI/RFI tests listed in Table 3.2.3 (page 3-8) of the Qualification Test Report 04508905-QR. In addition, please provide the standards or the guidance documents	Responder: GA (1) The EMI/RFI test described in Table 3-2 are based on	2. N	Open Response included in letter	Open-TVA/GA Due:12/22/10			

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
				used as the source for ENV 50140, ENV 55011 Class A, and EN 55022 Class B.	<p>GA-ESI report 04509050 and only summarized in GA-ESI report 04508905-QR. The independent laboratory report, with curves, is part of GA-ESI report 04509050. Subsequent to the writing of GA-ESI report 0458905-QR additional EMC testing was conducted to TVA specific requirements. The results of that testing are reported in GA-ESI report 04038800. GA-ESI report 04038800 includes the test curves and is the report used as the basis for EMC qualification of the Upper and Lower Inside Containment Post Accident Radiation Monitors (2-RE-90-271 through -274).</p> <p>(2) ENV 50140, EN 55011, and EN 55022 are British Standards Institution publications concerning equipment electromagnetic and radio frequency performance. The standard titles are shown below:</p> <ul style="list-style-type: none"> a. ENV 50140 - Electromagnetic Compatibility - Basic Immunity Standard - Radiated Radio-Frequency Electromagnetic Field - Immunity Test b. EN 55011 - Industrial, scientific and medical equipment — Radio-frequency disturbance characteristics — Limits and methods of measurement c. EN 55022- Information technology equipment — Radio disturbance characteristics — Limits and methods of measurement 		dated 12/22/10.				