WBN2Public Resource

From: Poole, Justin
Sent: Friday, April 08, 2011 4:04 PM
To: Crouch, William D
Cc: Clark, Mark Steven; Hilmes, Steven A; WBN2HearingFile Resource
Subject: FW: Updated OI List
Attachments: 20110408 Open Item List Master NRC Update 04-08-11.docx

Justin C. Poole
Project Manager
NRR/DORL/LPWB
U.S. Nuclear Regulatory Commission
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email: Justin.Poole@nrc.gov

From: Darbali, Samir
Sent: Friday, April 08, 2011 4:03 PM
To: DeJesus, Jonathan; Poole, Justin
Cc: Rahn, David
Subject: Updated OI List

Justin,

Attached is the updated Open Items list to be sent to TVA.

Thanks,
Samir

Samir Darbali
Electronics Engineer
NRR/DE/EICB
Room: O-9D11
301-415-1360

Hearing Identifier: Watts_Bar_2_Operating_LA_Public
Email Number: 300

Mail Envelope Properties (19D990B45D535548840D1118C451C74D7F6E4FC1D9)

Subject: FW: Updated OI List
Sent Date: 4/8/2011 4:03:42 PM
Received Date: 4/8/2011 4:03:46 PM
From: Poole, Justin

Created By: Justin.Poole@nrc.gov

Recipients:
"Clark, Mark Steven" <msclark0@tva.gov>
Tracking Status: None
"Hilmes, Steven A" <sahilmes@tva.gov>
Tracking Status: None
"WBN2HearingFile Resource" <WBN2HearingFile.Resource@nrc.gov>
Tracking Status: None
"Crouch, William D" <wdcrouch@tva.gov>
Tracking Status: None

Post Office: HQCLSTR02.nrc.gov

Files	**Size**	**Date & Time**	
MESSAGE	504	4/8/2011 4:03:46 PM	
20110408 Open Item List Master NRC Update 04-08-11.docx			493388

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

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.			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 7.3-1	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.			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.			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 like-	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.			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.				Chapter 7.1 – Introduction		35. Y	Closed	Closed	N/A	N/A	
034.				Chapter 7.2 - Reactor Trip System		36. Y	Closed	Closed	N/A	N/A	
034.	7.3	7.3		Chapter 7.3 – ESFAS		37. Y	Closed	Closed	N/A	N/A	
034.	7.5.1.	7.5.2		Chapter 7.5 - Instrumentation Systems Important to Safety		38. Y	Closed	Closed	N/A	N/A	Closed
034.	7.5.1.	7.5.2		Chapter 7.6 - All Other Systems Required for Safety		39. Y	Closed	Closed	N/A	N/A	Closed
034.				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.	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.	7.5.2	EICB (Carte)	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			EICB (Carte)	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			EICB (Carte)	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. **<u>TVA Response to Follow-up NRC Request:</u>** (1) WEC presented the results of the self assessment to the NRC on February 2, 2011. (2) By agreement between TVA, WEC and the NRC, the Post Accident Monitoring System Test Plan, WNA-PT-00138-WBT, Revision 0 will not be revised. Instead a non-proprietary Common Q PAMS Test Summary Report will be developed and submitted to address the issues with the STP. Attachment 1 contains non-proprietary WNA-TR-02451-WBT, Revision 0, "Test Summary Report for the Post Accident Monitoring System," dated March 2011.	1. N	Open Pending Submittal of the Test Summary Report due 3/29/11 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 3/29/11** **NNC 1/27/11:** Issues with the STP were discussed in the weekly public meetings. Westinghouse to: (1) perfrom STP self assessment., and (2) Augment Test Summary report to provide missing test plan information **NNC 2/3/11:** At next audit compare & discuss: (1) WNA-PT-00058-GEN Rev. 0 (2) WNA-PT-00138-WBT Rev. 0 (3) AP1000 STP	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	EICB (Carte)	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	CSB (Carte)	2/19/2010	Responder: WEC Date: 5/25/10	2. N	Open	Open-NRC Review	EICB RAI ML102910002	TVA Letter dated 2/5/10	**NNC 8/25/10:** A CQ PAMS ISG6 compliance matrix was docketed on: (1)

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				The PAMS ISG6 compliance matrix supplied as Enclosure 1 to TVA letter dated February 5, 2010 is a first draft of the information needed. The shortcomings of the first three lines in the matrix are: Line 1: Section 11 of the Common Q topical report did include a commercial grade dedication program, but this program was not approved in the associated SE. Westinghouse stated that this was the program and it could now be reviewed. The NRC stated that TVA should identified what they believe was previously reviewed and approved. Line 2: TVA stated the D3 analysis was not applicable to PAMS, but provided no justification. The NRC asked for justification since SRP Chapter 7.5 identified SRM to SECV-93-087 Item II.Q as being SRP acceptance criteria for PAMS. Line 3: TVA identified that the Design report for computer integrity was completed as part of the common Q topical report. The NRC noted that this report is applicable for a system in a plant, and the CQ topical report did no specifically address this PAMS system at Watts Bar Unit 2. NRC then concluded that TVA should go through and provide a more complete and thorough compliance matrix.	The PAMS ISG6 compliance matrix supplied as Enclosure 1 to TVA letter dated February 5, 2010 is a first draft of the information needed. By letter dated April 8, 2010 TVA provided the PAMS Licensing Technical Report provided additional information. Attachment 3 contains the revised Common Q PAMS ISG-6 Compliance Matrix, dated June 11, 2010, that addresses these items (Reference 13). By letter Dated June 18, 2010 (see Attachment 3) TVA provided a table, "Watts Bar 2 - Common Q PAMS ISG-6 Compliance Matrix." It is TVA's understanding that this comment is focused on the fact that there are documents that NRC has requested that are currently listed as being available for audit at the Westinghouse offices. For those Common Q PAMS documents that are TVA deliverable documents from Westinghouse, TVA has agreed to provide those to NRC. Westinghouse documents that are not deliverable to TVA will be available for audit as stated above. Requirements Traceability Matrix issues will be tracked under NRC RAI Matrix Items 142 (Software Requirements Specification) and 145 (System Design Specification). Commercial Item Dedication issues will be tracked under NRC RAI Matrix Item 138. This item is considered closed. **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, (Reference 1) contains the following changes to address the NRC requests: (1) While RSEDs are not specifically mentioned, Section 7 has been revised to be applicable to both hardware and software which includes the RSEDs. (2) Table 6-1 item 15 reference added for WNA-VR-00280-WBT (RESD) **TVA Response to Second Follow-up NRC Request:** The NRC audited the Westinghouse commercial item dedication process for both hardware and software during the week of February 28 to March 4, 2011. The audif found the processes acceptable. Westinghouse and TVA previously agreed to provide additional information to address this item in Revision 3 of the Licensing Technical Report. Attachment 2 contains WNA-LI-00058-WBT-P, "Post-Accident Monitoring System (PAMS) Licensing Technical Report," Revision 3, dated March 2011 (proprietary). Attachment 3 contains WNA-LI-00058-WBT-NP, "Post-Accident Monitoring System (PAMS) Licensing Technical		Pending Submittal of Revision 3 of the Licensing Technical Report due 3/29/11. 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 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.	**Due 3/29/11** **NNC 2/2/11:** Issues with Common Q TR & SPM compliance were discussed in the weekly public meetings. Westinghouse to perform Common Q TR & SPM compliance self assessment; his will be discussed in detail on the next audit.	Item No. 2	TVA Letter dated 5/12/10 TVA Letter dated 6/18/10 TVA Letter dated 10/5/10	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
					Report," Revision 3 dated March 2011 (non-proprietary). Attachment 4 contains CWA-11-311, Application for Withholding Proprietary Information from Public Disclosure, WNA-LI-00058-WBT-P, Revision 3 "Nuclear Automation Watts Bar 2 NSSS Completion Program I&C Projects, Post-Accident Monitoring System (PAMS) Licensing Technical Report," dated March 14, 2011.						
044	7.5.2	7.5.1	C	February 25, 2010	Date: 5/25/10	48. Y	Closed	Closed	EICB RAI	TVA Letter dated	
045			C	February 25, 2010	Date: 5/25/10	49. Y	Closed	Closed	EICB RAI	TVA Letter dated	
046			C	February 25, 2010	Date: 5/25/10	50. Y	Closed	Closed	N/A – Request for	N/A	
047	7.5.2	7.5.1	C	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	C	April 8, 2010	Date: 5/25/10	52. Y	Closed	Closed	EICB RAI	TVA Letter dated	
049	7.5.2	7.5.1	C	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	C	4/8/2010	Responder: WEC Date: 5/25/10	54. N	Closed	Closed	EICB RAI	TVA Letter dated	**NNC 11/18/10:** SysRS Rev. 2 contains
051			C	April 15, 2010	Date: 5/25/10	55. 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	56. Y	Closed	Closed	RAI No. 12		
053	7.5.2	7.5.1	S	April 19, 2010	Date: 5/25/10	57. Y	Closed	Closed	RAI No. 13		
054	7.5.2	7.5.1	S	4/19/2010	Responder: Slifer/Clark Date: 5/25/10	58. 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	59. Y	Closed	Closed	RAI No. 15	TVA Letter dated	
056			S	April 19, 2010	Date: 5/25/10	60. 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	61. Y	Closed	Closed	RAI No. 17	TVA Letter dated	
058	7.5.0	7.5	S	April 19, 2010	Date: 5/25/10	62. Y	Closed	Closed	RAI No. 18	TVA Letter dated	
059	7.5.2	7.5.1	S	April 19, 2010	Date:	63. Y	Closed	Closed	RAI No. 19	TVA Letter dated	
060	7.5.2	7.5.1	C	April 19, 2010	Date: 5/25/10	64. Y	Closed	Closed	N/A	N/A	Addressed by Open Item No. 47
061	7.5.2	7.5.1	C	April 19, 2010	Date: 5/25/10	65. Y	Closed	Closed	N/A	N/A	Addressed by Open Item No. 48
062	7.5.2	7.5.1	C	April 19, 2010	Date: 5/25/10	66. Y	Closed	Closed	N/A	N/A	Addressed by Open Item No. 49
063	7.5.2	7.5.1	C	April 19, 2010	Date: 5/25/10	67. Y	Closed	Closed	N/A	N/A	Addressed by Open Item No. 50
064	7.5.2	7.5.1	C	By letter dated March 12, 2010 TVA stated that the target submittal	Responder: Webb Date: 4/8/2010	68. Y	Closed	Closed	N/A - No question	TVA Letter dated	
065	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	69. Y	Closed	Closed	N/A - No question	TVA Letter dated	
066	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	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:**	3. N	Open Pending Submittal of Revision 3 of the Licensing Technical Report due 3/29/11. Response included in letter dated 12/22/10. This item is addressed in Rev. 2 of the Licensing Technical Report	Open-NRC Review **Due: 3/29/11** **NNC 2/2/11:** Section 7 of the WBN2 PAMS LTR should be updated to include: (1) non-proprietary description of commercial grade dedication, and (2) Software example Commercial grade dedication will also be addressed at the next audit.	N/A - No question was asked. Item was opened to track comm8ittment 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
					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, (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. **TVA Response to Follow-up NRC Request dated 2/2/11:** The non-proprietary commercial grade dedication discussion is included in Attachment 3, WNA-LI-00058-WBT-NP, "Post-Accident Monitoring System (PAMS) Licensing Technical Report," Revision 3 dated March 2011 (non-proprietary) Section 7. The software example is included in Attachment 2, WNA-LI-00058-WBT-P, "Post-Accident Monitoring System (PAMS) Licensing Technical Report," Revision 3, dated March 2011 (proprietary) Section 7.						
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 Westinghouse Rockville office. To be addressed during 9/20-9/21 audit **TVA Response to Follow-up NRC Request:** For the commercial grade dedication process, please see the response to Request for Additional Information (RAI) item 3 in this letter, NRC Matrix Item 067. The component level EQ/Seismic summary reports for the hardware listed above are available for NRC review/audit as described below: (1) AI687 and AI688, the following documents were submitted in TVA Letter to NRC dated October 26, 2010, "Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Information	4. N	Open Response included in letter dated 12/22/10. This item is addressed in Rev. 2 of the Licensing Technical Report	Open-NRC Review **NNC 2/2/11:** Commercial grade dedication will be addressed at the next audit. Summary reports for AI687 & AI688 were **docketed one month late**.	N/A - No question was asked. Item was opened to track comm8ittment 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
					Requests," (Reference 5): a. EQ-EV-62-WBT, Revision 0, "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," dated September 10, 2010 b. EQLR-171, Revision 0, "Environmental and Seismic Test Report, Analog Input (AI)687 & AI688 Modules for use in Common Q PAMS," dated September 10, 2010 c. CN-EQT-10-44, Revision 0, "Dynamic Similarity Analysis for the Watts Bar Unit 2 Post Accident Monitoring System (PAMS)," dated September 28, 2010 (2) Upgraded PC Node Box – As stated in Westinghouse letter WBT-D-2024, dated June 9, 2010 "NRC Access to Common Q Documents at the Westinghouse Rockville Office," (Reference 6), the following documents are available for NRC audit at the Westinghouse Rockville office: a. CDI-3722, Revision 7, "Next Generation PC Node Box Commercial Dedication Instruction" b. LTR-EQ-10-50 "PC Node Box/Flat Panel Display System Components Qualification Summary" (3) Flat Panel Displays – As stated in Westinghouse letter WBT-D-2024, dated June 9, 2010 "NRC Access to Common Q Documents at the Westinghouse Rockville Office," (Reference 6), the following documents are available for NRC audit at the Westinghouse Rockville office: a. CDI-3803, Revision 8, "Next Generation Flat Panel Display (FPD) Commercial Dedication Instruction" b. LTR-EQ-10-50 "PC Node Box/Flat Panel Display System Components Qualification Summary" (4) Power supplies – As stated in Westinghouse letter WBT-D-2035 dated June 11, 2010 "NRC Access to Common Q Documents at the Westinghouse Rockville Office" (Reference 7), the following documents are available for NRC audit at the Westinghouse Rockville office: a. CDI- 4057, Revision 4, "Commercial Dedication Instruction" b. EQ-TP-1 05-GEN, Revision 0, "Electromagnetic Compatibility Test Plan and Procedure for Quint Power Supplies and Safety System Line Filter" c. Breakers," EQ-TP-114-GEN, Revision 0, "Seismic Qualification Test Procedure For Common Q Power Supplies, Quint Power Supplies, Line Filter Assemblies, and South Texas Units 3 & 4 Circuit" d. EQ-TP-117-GEN, Revision 0, "Environmental Qualification Test Procedure For Common Q Powe Supplies, Quint Power Supplies, and Line Filter Assemblies"						
069	7.5.2	7.5.1	CB (C art	By letter dated March 12, 2010 TVA stated that the target submittal date for the "Watts Bar 2 PAMS Specific FAT Report" was October	Responder: WEC Date: 5/25/10	5. N	Open	Open-NRC Review **Due 3/29/11**	N/A - No question was asked. Item	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
				2010. As agreed, the Watts Bar 2 PAMS Specific FAT Report will not be submitted. Instead a non-proprietary PAMS Test Summary Report will be submitted.	Attachment 1 contains non-proprietary WNA-TR-02451-WBT, Revision 0, "Test Summary Report for the Post Accident Monitoring System," dated March 2011.		Pending Submittal of the Test Summary Report due 3/29/11 Awaiting for document to be docketed by TVA.	**NNC 2/3/11:** The current due dated above is **4 months later than planned**.	was opened to track comm8ittment made by applicant.		
070	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	71. N	Closed	Closed	N/A - No question	TVA Letter dated	**NNC 11/23/10:** The dues date in this
071	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. N	Closed	Closed	N/A - No question	N/A	**NNC 11/23/10:** The dues date in this
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	73. Y	Closed	Closed	N/A - No question	N/A	
073	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	74. N	Closed	Closed	N/A - No question	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 Attachment 1 contains WNA-VR-00283-WBT-P, "IV&V Summary Report for the Post Accident Monitoring System," Revision 4, dated March 2011 (proprietary). Attachment 2 contains WNA-VR-00283-WBT-NP, "IV&V Summary Report for the Post Accident Monitoring System," Revision 4, dated March 2011 (non-proprietary). Attachment 3 contains CWA-11-3121, Application for Withholding Proprietary Information from Public Disclosure, WNA-VR-00283-WBT-P, Revision 4 "Nuclear Automation IV&V Summary Report for the Post Accident Monitoring System" (Proprietary)," dated March 3, 2011.	6. N	**Open** Response in letter dated March 16, 2011	**Open-NRC Review** **Due TBD** **NNC 2/3/11: <u>At least 3 months later than planned.</u>**	N/A - No question was asked. Item was opened to track commitment made by applicant.	N/A	Rev. 4 will be available for the NRC audit on 2/28/11. This document will not be submitted. Rev. 5 will be submitted after resolution of the datastorm display issue.
075	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	75. N	Closed	Closed	N/A - No question	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	76. 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	77. Y	Closed	Closed	N/A - No question	TVA Letter dated	
078			— C	4/26/2010	Responder: Clark Date: 5/25/10	78. Y	Closed	Closed	EICB RAI	TVA Letter dated	
079			— C	4/26/2010	Responder: Clark Date: 5/25/10	79. Y	Closed	Closed	EICB RAI	TVA Letter dated	Reviewed under Item 154
080			— S	4/26/2010	Responder: WEC	80. Y	Closed	Closed	RAI No. 2	TVA Letter dated	
081	7.5.2	7.5.1	EICB (Carte)	5/6/2010 The PAMS Licensing Technical Report (WNA-LI-00058-WBT Rev. 0, Dated April 2010), in Section 7, lists codes and standards applicable to the Common Q PAMS. This list contains references to old revisions of several regulatory documents, for example: (1) RG 1.29 - September 1978 vs. March 2007 (2) RG 1.53 - June 1973 vs. November 2003 (a) IEEE 379-1994 vs. -2000 (3) RG 1.75 - September 1975 vs. February 2005 (a) IEEE 384-1992 vs. -1992 (4) RG 1.100 - June 1988 vs. September 2009 (a) IEEE 344-1987 vs. -2004 (5) RG 1.152 - January 1996 vs. January 2006 (a) IEEE 7-4.33.2-1993 vs. -2003 (6) RG 1.168 - September 1997 vs. February 2004 (a) IEEE 1012-1986 vs. -1998 (b) IEEE 1028-1988 vs. -1997 (7) IEEE 279-1991 vs. 603-1991 (8) IEEE 323-1983 vs. -1974 (RG 1.89 Rev. 1 June 1984 endorses 323-1974) However, LIC-110, "Watts Bar Unit 2 License Application Review," states: "Design features and administrative programs that are unique to Unit 2 should then be reviewed in accordance with the current staff positions." Please identify all differences between the versions referenced and the current staff positions. Please provide	Responder: Merten/WEC The codes and standards documents listed in Section 7 of the Common Q PAMS Licensing Technical Report are the documents that the Common Q platform was licensed to when the NRC approved the original topical report and issued the approved SER. The WBN Unit 2 Common Q PAMS is designed in accordance with the approved Common Q topical report and approved SER and the codes and standards on which the SER was based. Since the current versions referenced are not applicable to WBN Unit 2, there is no basis for a comparison review. Bechtel to develop a matrix and work with Westinghouse to provide justification. **<u>TVA Response to Follow-up NRC Request:</u>** Attachment 4 contains the results of the TVA analysis of standards and regulatory guides applicable to the Common Q PAMS. Based on the results of the analysis, the Common Q PAMS design meets the applicable requirements and is acceptable.	7. N	Open ML101600092 Item No.1: There are three sets of regulatory criteria that relate to a Common Q application (e.g. WBN2 PAMS): (a) Common Q platform components – Common Q TR (b) Application Development Processes – Common Q SPM (c) Application Specific – current regulatory criteria The Common Q Topical Report and associated appendices primarily addressed (a) and (b). The Common Q SER states: '…Appendix 1, "Post Accident Monitoring Systems," provides the functional requirements and conceptual design approach for upgrading an existing PAMS based on Common Q components (page 58, Section 4.4.1.1, "Description")…On the	Open-NRC Review Due 2/25/11 TVA to provide requested information. **NNC 2/3/11:** The above due date has been **<u>missed by at least 2 months.</u>** Please provide new due date.	EICB RAI ML102910002 Item No. 9	TVA Letter dated 6/18/10	**NNC 1/5/11:** See Also Open Item No. 86 and 202.

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				a justification for the acceptability PAMS with respect to these differences.			basis of the above review, the staff concludes that Appendix 1 does not contain sufficient information to establish the generic acceptability of the proposed PAMS design (page 56, Section 4.4.1.3, "PAMS Evaluation")…' The NRC did not approve the proposed PAMS design. Section 6, "References," and Section 7, "Codes and Standards Applicable to the Common Q PAMS," of the PAMS Licensing Technical Report contain items that are not the current regulatory criteria. Please provide an explanation of how the WBN2 PAMS conforms with the application specific regulatory criteria applicable to the WBN2 PAMS design. For example IEEE Std. 603-1991 Clause 5.6.3, "Independence Between Safety Systems and Other Systems," and Clause 6.3, "Interaction Between the Sense and Command Features and Other Systems," contain application specific requirements that must be addressed by a PAMS system. Awaiting TVA Response.				
082	7.5.2	7.5.1	I&C	5/6/2010	Responder: WEC Date: 6/18/10	81. N	Closed	Closed	EICB RAI	TVA Letter dated	**NNC 11/18/10:** See also Open Item No.
083	7.5.2	7.5.1	I&C	May 6, 2010	Date: 6/18/10	82. Y	Closed	Closed	EICB RAI	TVA Letter dated	
084	7.5.2	7.5.1	I&C	May 6, 2010	Date: 6/18/10	83. Y	Closed	Closed	EICB RAI	TVA Letter dated	
085	7.5.2	7.5.1	I&C	5/6/2010	Responder: WEC	84. N	Closed	Closed	EICB RAI		
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	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	8. N	Open **TVA to address with item OI 81.**	Open-NRC Review Due 2/25/11 **NNC 2/3/11:** The above due date has been **missed by at least 2 months.** Please provide new due date.	EICB RAI ML102910002 Item No. 14	TVA Letter dated 6/18/10	**NNC 1/6/11:** See Also Open Item No.81 & 202

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
				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.	comparison review. Rev 0 of the Licensing Technical Report references Rev. 1 of ISG4 **TVA Response to Follow-up NRC Request:** The analysis for compliance with DI&C-ISG04, Revision 0 to Revision 1 was previously submitted as part of the Common Q PAMS Licensing Technical Report Revision 2 on December 22, 2010. Attachment 4 contains the results of the TVA analysis of standards and regulatory guides applicable to the Common Q PAMS. Based on the results of the analysis, the Common Q PAMS design is acceptable.						
087	7.5.2	7.5.1	– S	May 6, 2010	Date: 5/24/10	85. Y	Closed	Closed	RAI No. 20	TVA Letter dated	
088	7.5.2	7.5.1	– S	May 6, 2010	Date: 5/24/10	86. Y	Closed	Closed	RAI No. 21	TVA Letter dated	
089			– C	5/6/2010	Responder: Clark	87. Y	Closed	Closed	EICB RAI	TVA Letter dated	**NNC:** Docketed response states that
090			– C	5/6/2010	Responder: Clark Date: 5/25/10	88. Y	Closed	Closed	EICB RAI	TVA Letter dated	
091	7.4	7.4	– D a	May 20, 2010	Date: 5/25/10	89. 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 Due SER Issue	Open-TVA/Oversight Due: SER Issue			Continuous review as items are added
093			– C	May 20, 2010	Date: 5/25/10	90. Y	Closed	Closed	N/A	N/A	Will be reviewed under item 154
094			– C	5/20/2010	Responder: Clark Date: 5/25/10	91. Y	Closed	Closed	N/A	N/A	Information was found in FSAR
095	7.8.1,	XX	– D a	May 20, 2010	Date:	92. Y	Closed	Closed	EICB RAI No. 2	TVA Letter dated	
096	7.7.5	XX	– D a	5/20/2010	Responder:	93. Y	Closed	Closed	EICB RAI No.3	TVA Letter dated	
097	7.4.2	7.4	– D a	May 20, 2010	Date:	94. Y	Closed	Closed	EICB RAI No.4	TVA Letter dated	
098	7.4.2	7.4	– D a	May 25, 2010	Date:	95. Y	Closed	Closed	EICB RAI No.5	TVA Letter dated	
099			– B a	April 12, 2010	Date:	96. Y	Closed	Closed			Closed to Item 129
100			– C	5/20/2010	Responder: WEC	97. Y	Closed	Closed	N/A - No question	N/A	
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.	9. 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			– C	May 24, 2010	Date: 5/24/10	98. 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	99. 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	100. Y	Closed	Closed	EICB RAI No.1	TVA Letter dated	Submittal date is based on current
105			– C	April 29, 2010	Date:	101. Y	Closed	Closed	N/A	N/A	Will be reviewed under item 154.
106			– S	May 6, 2010	Date: 5/25/10	102. Y	Closed	Closed	RAI No. 9	TVA Letter dated	
107			– S	May 6, 2010	Date: 5/28/10	103. Y	Closed	Closed	RAI No. 22	TVA Letter dated	
108			– C	May 6, 2010	Date: 5/25/10	104. Y	Closed	Closed	N/A	N/A	Will be reviewed under OI#154

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109.			– C	5/6/2010	Responder: N/A	105. Y	Closed	Closed	N/A	N/A	Duplicate of another open Item.
109.	7.8	XX	– D a	5/6/2010	Responder: N/A	106. Y	Closed	Closed	N/A	N/A	
110			– C	May 6, 2010	Date:	107. Y	Closed	Closed	N/A	N/A	Information was found.
111			– C	May 6, 2010	Date: 5/28/10	108. Y	Closed	Closed	N/A	TVA Letter dated	Request to help find, not a request for
112			– G	June 1, 2010	Date:	109. Y	Closed	Closed	N/A	N/A	Information was received
113			– C	6/1/2010	Responder: Clark	110. Y	Closed	Closed	EICB RAI	TVA Letter dated	
114	7.2	7.2	– C	6/1/2010	Responder: WEC	111. Y	Close	Closed	EICB RAI	TVA Letter dated	
115			– C	2/25/2010	Responder: Clark	112. Y	Closed	Closed	EICB RAI	TVA Letter dated	
116			– C	6/3/2010	Responder: WEC	113. Y	Closed	Closed	EICB RAI	TVA Letter dated	Letter sent to Westinghouse requesting
117	7.1	7.1	– C	6/3/2010	Responder: Hilmes	114. Y	Closed	Closed	EICB RAI	TVA Letter dated	
118	7.4	7.4	– D a	6/8/2010	Responder: Merten	115. Y	Closed	Closed	EICB RAI No.1	TVA Letter dated	Submittal date is based on current
119			– S	June 10, 2010	Date:	116. Y	Closed	Closed	RAI No. 23	TVA Letter dated	
120			– C	5/6/2010	Responder: Hilmes/Merten/Costley	117. Y	Closed	Closed	EICB RAI	TVA Letter dated	
121			– C	5/6/2010	Responder: Webb/Webber	118. Y	Closed	Closed	EICB RAI	TVA Letter dated	
122			– C	June 14, 2010	Date:	119. Y	Closed	Closed	N/A - Request for	N/A	
123	7.7.3	7.4.1,	– D a	6/14/2010	Responder:	120. Y	Closed	Closed	ML101720589,	TVA Letter dated	
124	7.7.5	XX	– D a	6/14/2010	Responder:	121. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	
125	7.7.8	7.7.1.12	– D a	6/14/2010	Responder:	122. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	
126	7.8	7.8	– D a	June 14, 2010	Date:	123. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	
127	7.2	7.2	– C	6/16/2010	Responder: WEC/Clark	124. Y	Closed	Closed	EICB RAI	TVA Letter dated	
128	7.2	7.2	– C	6/18/2010	Responder: WEC Drake /TVA Craig	125. Y	Closed	Closed	EICB RAI	TVA Letter dated	Track through SE open item
129			– P	6/12/2010	Responder: WEC	126. Y	Closed	Closed	N/A	TVA Letter dated	
130			– P	6/28/2010	Responder: Clark	127. Y	Closed	Closed	N/A	TVA Letter dated	
131			– P	6/28/2010	Responder: Clark	128. Y	Closed	Closed	N/A	TVA Letter dated	
132			– P	6/28/2010	Responder: Clark	129. Y	Closed	Closed	N/A	TVA Letter dated	
133			– P	6/28/2010	Responder: Clark	130. Y	Closed	Closed		TVA Letter dated	
134			– P	6/28/2010	Responder: Clark	131. Y	Closed	Closed		TVA Letter dated	
135	7.3.1	7.3.1	– D a	6/30/2010	Responder: Clark	132. Y	Closed	Closed	RAI not necessary	TVA Letter dated	
136	7.3.2,	7.4, 5.6,	– D a	6/30/2010	Responder: Clark	133. Y	Closed	Closed	RAI not necessary	TVA Letter dated	
137			– C	Several WBN2 PAMS documents contain a table titled, "Document	Responder: WEC	134. Y	Closed	Closed	ML101650255, Item	TVA Letter dated	
138			EICB (Carte)	By letter dated February 3, 2010, Westinghouse informed TVA that certain PAMS documentation has been completed. (a) The draft ISG6 states that a commercial grade dedication plan should be provided with an application for a Tier 2 review. By letter dated February 5, 2010, TVA stated that the commercial grade dedication plan was included in the Common Q Topical Report Section 11, "Commercial Grade Dedication Program." Section 11 includes a description of the Common Q Commercial Grade Dedication Program, and states: "A detailed review plan is developed for each Common Q hardware or software component that requires commercial grade dedication." Please provide the commercial grade dedication plans for each Common Q hardware or software component that has not been previously reviewed and approved by the NRC.	Responder: WEC **<u>This item is used to track all Commercial Grade Dedication issues.</u>** 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, (Reference 1) contains the following changes 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.	10. N	Open Pending Submittal of Revision 3 of the Licensing Technical Report due 3/29/11. Revised response included in letter dated 12/22/10 TVA agreed to include a description of the generic Westinghouse <u>hardware</u> commercial grade dedication process in the PAMS licensing technical report. (see ML102920031 Item No 1)	Open-NRC Review **NNC 2/2/11:** Commercial grade dedication will be addressed at the next audit. **NNC 2/17/11:** The description of the commercial grade dedication process in the CQ PAMS LTR Rev. 2 should be updated to include a non-proprietary description and to	ML101650255, Item No. 2		See also No. 82.

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				(b) The draft ISG6 states that a commercial grade dedication report should be provided within 12 months of requested approval for a Tier 2 review. (i) Please provide 00000-ICE-37722 Rev. 0, "Commercial Grade Dedication Report for the QNX Operating System for Common Q Applications." (ii) Please provide WNA-CD-00018-GEN Rev. 3, "Commercial Dedication Report for QNX 4.25G for Common Q Applications."	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: (list included in letter) 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. **TVA Response to Follow-up NRC Request:** The non-proprietary commercial grade dedication discussion is included in Attachment 3, WNA-LI-00058-WBT-NP, "Post-Accident Monitoring System (PAMS) Licensing Technical Report," Revision 3 dated March 2011 (non-proprietary) Section 7. The software example is included in Attachment 2, WNA-LI-00058-WBT-P, "Post-Accident Monitoring System (PAMS) Licensing Technical Report," Revision 3, dated March 2011 (proprietary) Section 7.		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) 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) TVA agreed to include (in the PAMS licensing technical report) an evaluation of WBN2 critical characteristics for commercial software components against the generic critical characteristics. (see ML102920031 Item No 4)	include a software example.			
139			EICB (Carte)	The WBN2 PAMS System Requirements Specification (WBN2	Responder: WEC	135. 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)	Responder: Clark	136. N	Closed	Closed	ML101650255, Item	TVA Letter dated	WBN2 PAMS System Requirements
141			EICB (Carte)	Deleted by DORL	Date:	137. 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	Responder: WEC **This item is used to track all traceability issues with the Software Requirements Specification (SRS).** **TVA Response to 1:** Traceability of requirements for the WBN Unit 2 Common Q PAMS is ensured by: **a.** Preparation of the TVA Contract Compliance Matrix contained in WNA-LI-00058-WBT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" submitted in TVA Letter to NRC dated December 3, 2010 (Reference 1). **b.** Engineering review/comment/status of each revision of: **i.** WNA-DS-01617-WBT, "Post Accident Monitoring System - System Requirements Specification" **ii.** WNA-DS-01667-WBT, "Post Accident Monitoring System – System Design Specification" (hardware) **iii.** WNA-SD-00239-WBT, "Software Requirements Specification for the Post Accident Monitoring System" (software) **TVA Response to 2:** As documented in the RTM, some software requirements	11. N	Open Revised response included in letter dated 02/25/11 Response included in letter dated 12/22/10 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-NRC Review Due 2/25/11 (document submittals) **NNC 2/2/11:** Updated Specifications and RTMs to be provided by TVA Tracability to be addressed during the next audit.	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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				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?	are taken from generic documents. The decision to include generic software requirements was to reduce the overall scope for Common Q features that are unchanged across projects. Westinghouse reviewed the generic PAMS requirements and included those requirements that were applicable to WBN Unit 2 PAMS. Source: E-mail from Westinghouse (Matthew A. Shakun) to Bechtel (Mark S. Clark), RE: December 22 letter review, dated December 17, 2010 (Reference 13)						
				3. Clarify whether the unnumbered paragraphs in the Post Accident Monitoring System's Software Requirements Specification, such as in the section headings, or are all such sections simply considered to be informative? Does the same apply to documents referenced by the SRS? Such as WCAP-16096-NP-A, Rev. 1A, "Software Program Manual for Common Q Systems," which is incorporated by reference in requirement R2.3-2 in the SRS. R2.3-2 [The PAMS software shall comply with the requirements and guidelines defined in WCAP-16096-NP-A, "Software Program Manual for Common Q Systems" (reference 5).] 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.	**TVA Response to 3:** Unnumbered paragraphs in the Post Accident Monitoring System's Software Requirements Specification, such as in the section headings, are informative and are not to be interpreted as requirements. All requirements are explicitly numbered. It depends on the document type. The statement would be true for requirements documents (such as the SysRS or SDS) if they were incorporated by reference. However, for the specific item cited, WCAP-16096-NP-A, Rev. 1A, it does not contain numbered requirements. The requirements contained in this document are contained within the text of the various sections. Source: E-mail from Westinghouse (Matthew A. Shakun) to Bechtel (Mark S. Clark), RE: December 22 letter review, dated December 17, 2010 (Reference 13)						
				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?	**TVA Response to 4:** The Westinghouse SRS, WNA-SD-00239-WBT, Revision 3 contains references to other Westinghouse software requirements documents. Specifically, 00000-ICE-3238, Revision 5, "Software Requirements Specification Post Accident Monitoring System" 00000-ICE-3239, Revision 13, "Software Requirements Specification for the Common Q Generic Flat Panel Display Software" Source: E-mail from Westinghouse (Matthew A. Shakun) to Bechtel (Mark S. Clark), RE: December 22 letter review, dated December 17, 2010 (Reference 13)						
				5. References 12, 27, 29, and 31-44 in the Post Accident Monitoring System's Software Requirements Specification are various types of "…Reusable Software Element…". These references are used in the body of the SRS, for example:" R5.3.14-2 [The Addressable Constants CRC error signal shall be TRUE when any CAL CRC's respective ERROR terminal = TRUE (WNA-DS-00315-GEN, "Reusable Software Element Document CRC for Calibration Data" [Reference 12]).]	**TVA Response to 5:** Requirements for the reusable software elements (RSEDs) are evaluated in WNA-VR-00283-WBT-P, Revision 3, "IV&V Summary Report for the Post Accident Monitoring System," dated December 2010 (Attachment 10). RSED traceability is contained in WNA-VR-00280-WBT, Revision 2, "Watts Bar 2 NSSS Completion Program I&C Projects Requirements Traceability Matrix for the Reactor Vessel Level Indication System (RVLIS) Custom PC Elements." This document can be made available for audit						

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				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?	at the Westinghouse Rockville office. *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 a review of the Requirements Traceability Matrix(RTM), using the issues identified at the 9/15 public meeting as a guide (documented below) and update the RTM as required.* **TVA Response:** See response to letter Item 13 (NRC Matrix Item 145). 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.* **TVA Response:** See response to letter Item 13 (NRC Matrix Item 145). 3. *Westinghouse will add a comments column in the Requirements Traceability Matrix (RTM) to address items not in the SRS or SysRS.* **TVA Response:** A comments column has been added to WNA-VR-00279-WBT, Revision 3, "Watts Bar 2 NSSS Completion Program I&C Projects Requirements Traceability Matrix for the Post Accident Monitoring System." Source: E-mail from Westinghouse (Matthew A. Shakun) to Bechtel (Mark S. Clark), RE: December 22 letter review, dated December 17, 2010 (Reference 13) 4. *IEEE 830 says you shouldn't have planning information in the SRS. Westinghouse has agreed to remove this information.* **TVA Response:** Westinghouse has confirmed that process requirements have been removed from the SRS. Source: E-mail from Westinghouse (Andrew P. Drake) to Bechtel (Mark S. Clark), RE: Common Q RAI concerns, dated December 8, 2010 (Reference 17) 5. *IEEE 830 says you shouldn't have process requirements in the SRS. Westinghouse has agreed to remove these requirements.* **TVA Response:** Westinghouse confirmed that process requirements have been removed from the SRS. Source: E-mail from Westinghouse (Andrew P. Drake) to Bechtel (Mark S. Clark), RE: Common Q RAI concerns, dated December 8, 2010 (Reference 17)						

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					6. *Westinghouse will perform and document an evaluation of the SRS to ensure compliance with Reg. Guide 1.172 and justify any deviations.* **TVA Response:** WNA-LI-00058-WBT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" submitted in TVA Letter to NRC dated December 3, 2010, (Reference 1): Section 9, "Compliance Evaluation Of The Watts Bar 2 PAMS Software Requirements Specification To IEEE Standard 830-1998 And Regulatory Guide 1.172" has been added. 7. *25 issues identified by V&V where some requirements have not been included in the System Design Specification (SDS) (14) and SRS (11) at the revisions reviewed by V&V. Have these been addressed?* **TVA Response:** The twenty-five (25) issues are captured in Exception Reports (ERs): V&V-769 and V&V-770. These ERs have all been addressed and the ERs have been closed satisfactorily by Westinghouse IV&V. Source: E-mail from Westinghouse (Matthew A. Shakun) to Bechtel (Mark S. Clark), RE: December 22 letter review, dated December 17, 2010 (Reference 13) 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.* **TVA Response:** The hardware requirements in the Software Requirements Specification have been deleted and moved to System Design Specification. Source: E-mail from Westinghouse (Matthew A. Shakun) to Bechtel (Mark S. Clark), RE: December 22 letter review, dated December 16, 2010 (Reference 15) 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.* **TVA Response:** Westinghouse CAPs IR# 10-259-M034 has been issued. This item will be addressed in revision 4 of the RTM. Source: E-mail from Westinghouse (Matthew A. Shakun) to Bechtel (Mark S. Clark), RE: December 22 letter review, dated December 17, 2010 (Reference 13) 10. *Westinghouse to improve the traceability of the tests*						

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					that are performed with the function enable (FE) switch in the "ENABLE" position. **TVA Response:** The tests that are performed with the FE keyswitch in the ENABLE position are defined in the SRS Sections: 6.2 "Manually Initiated Testing," 7.2.23 "Annunciator Test Display," 7.2.25 "Saturation Margin Test Display," and 7.2.26 "Analog Output Test Display." 11. *Westinghouse to revise documents to be consistent with referring to the FE switch in the "ENABLE" position.* **TVA Response:** Westinghouse has elected to standardize on the terms "FE keyswitch" and "ENABLE." A review of recent documents for compliance with this comment and commitment was performed with the following results: *a.* Revision 3 of the SysRS, and SDS have been revised to use the terms "FE keyswitch." Revision 3 of the SDS is consistent in use of the term "ENABLE." *b.* SysRS Revision 3 is not consistent in use of the term "ENABLE" as noted below: *i.* R2.5.2.1-2 uses the term "ENABLED" instead of "ENABLE" *ii.* R2.5.2.1.3-3, R2.6.3.3-1, R2.6.3.3-2, R2.6.3.3-3, and R2.6.3.3-7, use the term "Enable" instead of "ENABLE" *c.* Revision 3 of the SRS is not consistent in use of the terms "FE keyswitch" and "ENABLE" as noted below: *i.* Tables 7.2-1 "Train A PAMS Data Transmitted to the Plant Computer" and 7.2-2 "Train B PAMS Data Transmitted to the Plant Computer" items 101 and 102 in the SRS refer to the FE switch. All other items in the SRS refer to the FE keyswitch. *ii.* Section 2.1, page 2-4, uses the term "Enable" instead of "ENABLE" *iii.* Requirements R7.2.14-6 and R7.2.16-7 use the term "active" instead of "ENABLE" *iv.* Requirements R7.2.23-2, R7.2.25-2, R7.2.26-2, R7.2.31-4, 7.2.56 FPDS Availability, and R7.2.57-4 use the term "enabled" instead of "ENABLE" *d.* WNA-AR-00180-WBT-P, Revision 0, "Failure Modes and Effects Analysis (FMEA) for the Post Accident Monitoring System," dated October 2010, submitted in TVA letter to NRC dated (Reference 12) is not consistent in use of the term "FE keyswitch" as noted below: *i.* Section 2.2 "System Description" and Table 3-1 "WB2 PAMS FMEA" refer to the FE switch. *ii.* Table 3-1 describes the switch as the "Functional Enable (FE) switch" and the "FE key-switch" *e.* Revision 2 of the Licensing Technical Report is not						

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					consistent in use of the term "FE keyswitch" as noted below: *i.* Sections 2.2, 5.3 use the term (FE) keylock switch on pages 2-3 (2 places), page 5-3, page 5-6 (4 places) The identified discrepancies in the use of the terms "FE keyswitch" and "ENABLE" in the SysRS, SRS, FMEA and Licensing Technical Report, will be corrected in the next revision of the documents. 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.* **TVA Response:** See response to letter item 13 (NRC Matrix Item 145). 13. *Westinghouse and TVA will develop a revised schedule for document submittals and provide it to the NRC no later than 9/30/10* **TVA Response:** The revised document submittal schedule was included as item 3 NRC Request (Matrix Item Number 142, TVA Commitments Nos. 10 and 17) in TVA letter to NRC dated October 26, 2010 (Reference 5). 14. *TVA will update the Procurement Requisition Resolution Matrix and submit it to show how the Common Q PAMS design meets the contract requirements.* **TVA Response:** The Procurement Requisition Resolution Matrix has been updated and is included in WNA-LI-00058-WBT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" submitted in TVA Letter to NRC dated December 3, 2010, (Reference 1), as Section 11, "TVA Contract Compliance Matrix." 15. *Westinghouse to add the Software Design Descriptions to the RTM* **TVA Response:** The Software Design Description documents were added to the RTM in WNA-VR-00279-WBT, Rev 2. Source: E-mail from Westinghouse (Matthew A. Shakun) to Bechtel (Mark S. Clark), RE: December 22 letter review, dated December 17, 2010 (Reference 13) 16. *Westinghouse to clarify how requirements or documents are incorporated by reference into the Common Q PAMS requirements.* **TVA Response:** When a Common Q PAMS requirements document						

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					references a section of another document, all requirements in that section are applicable. Source: E-mail from Westinghouse (Matthew A. Shakun) to Bechtel (Mark S. Clark), RE: December 22 letter review, dated December 17, 2010 (Reference 13) 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.* **TVA Response:** See response in letter dated December 22, 2010, item 2 (NRC Matrix Item 050). 18. *Westinghouse to resolve the following questions concerning Software Design Descriptions (SDDs)* a. *Is the SDD a standalone document or will it incorporate the generic SDD by reference?* b. *What are the SDDs?* c. *PAMS is a delta document so how do we capture all the generic requirements for traceability.* **TVA Response:** a. There are three SDDs prepared specifically for the Watts Bar 2 PAMS project. These are listed below in Item b. These documents and superior requirements documents refer to other generic SDDs also listed in Item b. b. The SDDs developed for this project are: i. WNA-SD-00248-WBT, Revision 1, "Watts Bar 2 NSSS Completion Program I&C Projects Software Design Description for the Post Accident Monitoring System Flat Panel Display" ii. WNA-SD-00250-WBT, Revision 1, "Watts Bar 2 NSSS Completion Program I&C Projects Software Design Description for the Post Accident Monitoring System AC160 Software" iii. WNA-SD-00277-WBT, Revision 2, "Watts Bar 2 NSSS Completion Program I&C Projects Software Design Description for the Post Accident Monitoring System Flat Panel Display System Screen Design Details" iv. Other generic SDDs referenced by the PAMS project are: (a) 00000-ICE-20157, Revision 18, "Software Design Description for the Common Q Generic Flat-Panel Software" (b) 00000-ICE-30152, Revision 5,						

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					"Software Design Description Post Accident Monitoring System AC160" (c) 00000-ICE-30140, Revision 4, "Software Design Description for the Common Q Core Protection Calculator System Database and Utility Functions" c. Refer to WNA-VR-00279-WBT, Revision 3. Source: E-mail from Westinghouse (Matthew A. Shakun) to Bechtel (Mark S. Clark), RE: December 22 letter review, dated December 17, 2010 (Reference 13) 19. *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. **TVA Response:** Section 3.2.4.1 of WCAP-15927 describes the RSED design process for custom PC elements and type circuits. The Glossary of Terms in the SPM defines custom PC elements and type circuits as modules. Therefore, the relationship between WCAP-15927 describing the RSED process as circuits, is defined in the SPM requirements for software module development. WCAP-15927 is on the AP1000 docket. Source: E-mail from Westinghouse (Matthew A. Shakun) to Bechtel (Mark S. Clark), RE: December 22 letter review, dated December 17, 2010 (Reference 13) **TVA Response to Follow-up NRC Request:** WNA-VR-00279-WBT, Revision 4, "Watts Bar 2 NSSS Completion Program I&C Projects Requirements Traceability Matrix for the Post Accident Monitoring System" is scheduled to be available for audit at the Westinghouse Rockville office February 21, 2011. The document will be available at the Westinghouse Cranberry offices to support the NRC Common Q PAMS audit. Attachment 9 contains the proprietary version of WNA-DS-01617-WBT-P, Revision 4, "Post Accident Monitoring System - System Requirements Specification," dated February 2011. Attachment 10 contains the non-proprietary version WNA-DS-01617-WBT-NP, Revision 4, "Post Accident Monitoring System - System Requirements Specification," dated February, 2011. Attachment 11 contains the Application for Withholding Proprietary Information from Public Disclosure, WNA-DS-01617-WBT-P, Revision 4, "Nuclear Automation Watts Bar 2 NSSS						

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					Completion Program I&C Projects, Post Accident Monitoring System - System Requirements Specification" (Proprietary), dated February 10, 2011. Attachment 12 contains the proprietary version of WNA-DS-01667-WBT-P, Revision 4, "Post Accident Monitoring System – System Design Specification," dated February 2011. Attachment 13 contains the non-proprietary version WNA-DS-01667-WBT-NP, Revision 4, "Post Accident Monitoring System – System Design Specification," dated February 2011. Attachment 14 contains the Application for Withholding Proprietary Information from Public Disclosure, WNA-DS-01667-WBT-P, Revision 4, "Nuclear Automation Watts Bar 2 NSSS Completion Program I&C Projects Post Accident Monitoring System - System Design Specification" (Proprietary), dated February 11, 2011. Attachment 15 contains the proprietary version of WNA-SD-00239-WBT-P, Revision 4, "Software Requirements Specification for the Post Accident Monitoring System," dated February 2011. Attachment 16 contains the non-proprietary version WNA-SD-00239-WBT-NP, Revision 4, "Software Requirements Specification for the Post Accident Monitoring System," dated February 2011. Attachment 17 contains the Application for Withholding Proprietary Information from Public Disclosure, WNA-SD-00239-WBT-P, Revision 4, "Nuclear Automation Watts Bar 2 NSSS Completion Program I&C Projects, Software Requirements Specification for the Post Accident Monitoring System" (Proprietary), dated February 10, 2011.						
143			EICB (Carte)	The WBN2 PAMS Software Requirements Specification (WBN2 PAMS SRS – ML101050202) contains a table (see page iii) titled, "Document Traceability & Compliance," which states that the WBN2 PAMS SRS was created to support the three documents identified (one of which is the WBN2 PAMS SysRS). Section 1.1, "Overview," of the WBN2 PAMS SRS states: "This document describes requirements for the major software components …" (a) Please list and describe each of the "major software components". Please include a description of any NRC review for each of these components. (b) Please list and describe each of the other software components. Please include a description of any NRC review for each of these components. (c) What other documents contain the requirements for the other software components? The WBN2 PAMS System Design Specification (WBN2 PAMS SDS) contains a table (see page iii) titled, "Document Traceability & Compliance," which states that the WBN2 PAMS SysRS was created to support the WBN2 PAMS SysRS. Section 1.1, "Purpose," of the WBN2 PAMS SDS states: "The purpose of this document is to define the hardware design requirements …" (c) Do the WBN2 PAMS SRS and SDS, together, implement all of the requirements in the WBN2 PAMS SysRS?	Responder: WEC Addressed in the 9/15 public meeting and 9/20 - 9/21 audit. A detailed explanation will be provided. **TVA Response:** (a) and (b) The requested information is provided in the following documents: i. WNA-LI-00058-WBT-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 (Reference 1). 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, Revision 3, "Watts Bar 2 NSSS Completion Program I&C Projects Requirements Traceability Matrix for the Post	12. N	Open Response included in letter dated 12/22/10	Open-NRC Review Due 2/25/11 (document submittals) To be addressed by Revision of the RTM, SRS, SysRS, and SysDS. **NNC 2/2/11:** Updated Specifications and RTMs to be provided by TVA **NNC 2/3/11:** The above due date has been **missed by at least 2 months.** Please provide new due date.	ML101650255, Item No. 7		WBN2 PAMS System Requirements Specification TVA docketed WNA-DS-01617-WBT Rev. 1, "RRAS Watts Bar 2 NSSS Completion Program I&C Projects Post Accident Monitoring System- System Requirements Specification," dated December 2009.

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
				(e) Please briefly describe all of the documents that implement the WBN2 PAMS SysRS.	Accident Monitoring System" (available for NRC audit at the Westinghouse Rockville office) To the best of TVA's knowledge, no prior NRC review of the software components has been performed. (c) WNA-VR-00280-WBT, Revision 2, "Watts Bar 2 NSSS Completion Program I&C Projects Requirements Traceability Matrix for the Reactor Vessel Level Indication System (RVLIS) Custom PC Elements" (available for NRC audit at the Westinghouse Rockville office) (d) No. Please see Item (e) below. (e) The documents that describe the requirements that implement the WBN Unit 2 SysRS are: i. WNA-VR-00279-WBT, Revision 3, "Watts Bar 2 NSSS Completion Program I&C Projects Requirements Traceability Matrix for the Post Accident Monitoring System" (available for NRC audit at the Westinghouse Rockville office) ii. WNA-VR-00280-WBT, Revision 2, "Watts Bar 2 NSSS Completion Program I&C Projects Requirements Traceability Matrix for the Reactor Vessel Level Indication System (RVLIS) Custom PC Elements" (available for NRC audit at the Westinghouse Rockville office) Source: E-mail from Westinghouse (Matthew A. Shakun) to Bechtel (Mark S. Clark), RE: December 22 letter review, dated December 17, 2010 (Reference 13) **TVA Response to Follow-up NRC Request:** See Response to item 3 (Item number 142)						
144			EICB (Carte)	The WBN2 PAMS Software Requirements Specification (WBN2 PAMS SRS) contains a table (see page iii) titled, "Document Traceability & Compliance," which states that the WBN2 PAMS SRS was created to support the three documents identified (two of these documents have been provided on the docket). (a) Please describe the third document (i.e., NABU-DP-00014-GEN Revision 2, "Design Process for Common Q Safety Systems"). (b) Please describe the flow of information between these three documents. (c) Does the PAMS SRS implement the requirements in these three documents? (d) Please describe if and how these three documents are used in the development of the PAMS Software Design Description. (e) Do the WBN2 V&V activities include verification that the requirements of these three documents have been incorporated into the WBN2 PAMS SRS.	Responder: WEC (a) The purpose of NABU-DP-00014-GEN document is to define the process for system level design, software design and implementation, and hardware design and implementation for Common Q safety system development. This document supplements the Common Q SPM, WCAP-16096-NP-A. The scope of NABU-DP-00014-GEN includes the design and implementation processes for the application development. For a fuller description of the design process described in NABU-DP-00014-GEN please refer to the Design Process for AP1000 Common Q Safety Systems, WCAP-15927 on the AP1000 docket. Since this is a Westinghouse process document that is not specifically referenced in the SRS, it will be removed in the next revision of the document. (b) – Closed to items 142 and 145 (c) – Closed 142 (d) – Closed to Item 142	13. N	Open Pending Submittal of Revision 3 of the Licensing Technical Report due 3/29/11. Revised response included in letter dated 12/22/10 Response provided in letter dated 10/5/10 NRC Review and WEC to complete response. b-d to be addressed at public meeting and audit. Will require information to be docketed.	Open-NRC Review Due 3/29/11 Responses to items a and e provided. **NNC 11/18/10:** (1) Items b-d closed to other Open Item nos. (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.	ML101650255, Item No. 8	TVA Letter dated 10/5/10	WBN2 PAMS Software Requirements Specification By letter dated April 8, 2010 (ML10101050203), TVA docketed WNA-SD-00239-WBT, Revision 1, ""RRAS Watts Bar 2 NSSS Completion Program I&C Projects, Software Requirements Specification for the Post Accident Monitoring System," dated February 2010 (ML101050202).

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					(e) WBN2 PAMS Software Requirements Specification (WNA-SD-00239-WBT, Rev. 1) refers to Document Traceability & Compliance table on page iii. This table has three entries; Design Process for Common Q Safety Systems (NABU-DP-00014-GEN, Rev. 2), RRAS Watts Bar 2 NSSS Completion Program I&C Projects Post Accident Monitoring System – System Requirements Specification (WNA-DS-01617-WBT, Rev. 1), and RRAS Watts Bar 2 NSSS Completion Program I&C Projects Post Accident Monitoring System – System Design Specification (WNA-DS-01667-WBT, Rev. 1). IV&V performed a Requirements Traceability Assessment during which it reviewed Software Requirements Specification (WBN2 PAMS SRS, WNA-SD-00239-WBT, Rev. 1) against System Requirements Specification (WNA-DS-01617-WBT, Rev. 1) and System Design Specification (WNA-DS-01667-WBT, Rev. 1). Requirements within Software Requirements Specification that are referring to NABU-DP-00014-GEN, Rev 2, Design Process for Common Q Safety Systems, have also been reviewed for traceability and compliance. During IV&V's RTA effort the anomaly reports V&V-769 and V&V- 770 have been initiated and reported in the IV&V Phase Summary Report for the System Definition Phase, WNA-VR-00283-WBT, Rev. 0. IV&V has verified that the requirements in SRS are derived from the specified documents listed in the Document Traceability and Compliance Table of WBN2 PAMS SRS. **TVA Response to Follow-up NRC Request:** (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. (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, (Reference 1) contains the following change to address the NRC request: Section 11, "TVA Contract Compliance Matrix" showing the origin of the requirements was added. **TVA Response to Second Follow-up NRC Request:** Section 13, Origin Tracing of WBN2 PAMS System Requirements Specification was added to the Licensing Technical Report Revision 3 to address this concern. Attachment 2 contains WNA-LI-00058-WBT-P, "Post-Accident Monitoring System (PAMS) Licensing Technical Report," Revision 3, dated March 2011 (proprietary).			**NNC 2/3/11:** CQ PAMS LTR Rev. 2 Section 11 & 12 do not adequately demonstrate the origin of requirements in SysRS. TVA to describe how to address concern.			
145			EICB (Carte)	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.	Responder: WEC (1) The review and update of the RTM is complete. The revised RTM can be made available for NRC audit at	14. N	Open Response included in letter dated 12/22/10	Open-NRC Review Due 2/25/11	ML101650255, Item No. 9		WBN2 PAMS System Design Specification TVA docketed WNA-DS-01667-WBT

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
				(a) Does the WBN2 PAMS SDS implement all of the hardware requirements in the WBN2 PAMS SysRS? (b) Please briefly describe all of the documents that implement the hardware requirements of the WBN2 PAMS SysRS. **This item is used to track all traceability issues with the System Design Specification (SDS).** **At the September 15 public meeting in Rockville, the following actions were agreed to. These items partially address the traceability concerns with the System Design Specification. This item will be updated with the results of the September 20 and 21 Commercial Grade Dedication and SDS RTM audit.** 1. Westinghouse will perform completed a review of the Requirements Traceability Matrix(RT), using the issues identified at the 9/15 public meeting as a guide (documented below) and update the RTM as required. 2. Some hardware requirements are contained 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.	the Westinghouse office in Rockville. (2) Please see letter Item 10 (NRC Matrix Item 142, sub item 13). (3) Please see letter Item 10 (NRC Matrix Item 142, sub item 12). (4) Section 11 "TVA Contract Compliance Matrix" was added to WNA-LI-00058-WBT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" submitted in TVA Letter to NRC dated December 3, 2010, (Reference 1). (5) WNA-VR-00283-WBT, Revision 1, "IV&V Summary Report for the Post Accident Monitoring System," submitted in TVA to NRC letter dated December 3, 2010 (Reference 1) includes the Requirements and Design phase reviews. (6) Per Westinghouse letter WBT-D-2268 "NRC Access to Common Q Documents at the Westinghouse Rockville Office" dated August 16, 2010 (Reference 9) "System Requirements Specification for the Common Q Generic Flat Panel Display," 00000-ICE-30155, Revision 9 is available for audit at the Westinghouse Rockville office. The generic AC160 specifications are contained in the documents listed below. The documents are available for NRC audit at the Westinghouse Rockville office in accordance with the letter number referenced. List is contained in letter. (7) A schedule was developed and is reviewed weekly by Westinghouse and TVA project management. (8) The revised document submittal schedule was included as item 3 NRC Request (Matrix Item Number 142, TVA Commitments Nos. 10 and 17) in TVA letter to NRC dated October 26, 2010. (9) The flow of documentation information was provided to the NRC inspector during the Common Q PAMS audit. Source: E-mail from Westinghouse (Andrew P. Drake) to Bechtel (Mark S. Clark), RE: RAI on SysRS, dated December 8, 2010 **TVA Response to Follow-up NRC Request:** See Response to item 3 (Item number 142)		During the September 20-21, 2010 audit at Westinghouse, it was acknowledged that TVA/Westinghouse had previously (in September 15, 2010 public meeting) stated: TVA would provide the RSED RTM. (see ML102920031 Item No 6) TVA would revise and resubmit the PAMS RTM to address all types of issues identified in the public meeting. (see 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)	To be addressed by Revision of the RTM, SRS, SysRS, and SysDS.			Rev. 1, "RRAS Watts Bar 2 NSSS Completion Program I&C Projects Post Accident Monitoring System- System Design Specification," dated December 2009.
146				6/17/2010	Responder:	138. Y	Closed	Closed	ML101650255, Item		PAMS System Requirements
147				6/17/2010	Responder:	139. Y	Closed	Closed	ML101650255, Item		PAMS System Requirements
148				6/17/2010	Responder:	140. 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	141. 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	142. Y	Close	Closed	ML101720589, Item	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
151	7.2	7.2	CGG	Provide the EDCR 52378 and 54504 which discusses the basis for	Responder: Clark	143. Y	Close	Closed	ML101720589, Item	TVA Letter dated	
152	7.2	7.2	CGG	Deleted portion of FSAR section 7.2.3.3.4 and moved to FSAR	Responder: Merten/Clark	144. Y	Close	Closed	ML101720589, Item	TVA Letter dated	
153	7.2	7.2	CGG	FSAR section 7.2.1.1.7 added the reference to FSAR section	Responder: Craig/Webb	145. Y	Close	Closed	ML101720589, Item	TVA Letter dated	
154	7.2	7.2	CGG	FSAR section 7.2.1.1.10, setpoints: NRC staff has issued RIS	Responder: Craig/Webb	146. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	EICB RAI ML102861885 sent to DORL
155	7.2	7.2	CGG	Summary of FSAR change document section 7.2 states that	Date:	147. Y	Closed	Closed	ML101720589, Item		
156	7.2	7.2	CGG	FSAR section 7.2.2.1.1 states that dashed lines in Figure 15.1-	Responder: WEC	148. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	Response on hold pending
157	7.2	7.2	CGG	FSAR section 7.2.2.1.1, fifth paragraph was deleted except for the	Responder: Tindell	149. Y	Close	Closed	ML101720589, Item	TVA Letter dated	
158	7.2	7.2	CGG	FSAR section 7.2.2.1.1, paragraph six was changed to state that	Responder: Tindell	150. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	
159	7.2	7.2	CGG	FSAR section 7.2.2.1.2 discusses reactor coolant flow	Responder: Craig	151. Y	Close	Closed	ML101720589, Item	TVA Letter dated	
160	7.2	7.2	CGG	FSAR section 7.2.2.2(7) deleted text which has references 12 and	Responder: Tindell	152. Y	Close	Closed	ML101720589, Item	TVA Letter dated	
161	7.2	7.2	CGG	FSAR section 7.2.2.3 states that changes to the control function	Responder: Clark	153. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	
162	7.2	7.2	CGG	FSAR section 7.2.2.2(14) states that bypass of a protection	Responder: Tindell	154. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	
163	7.2	7.2	CGG	Deleted by DORL	Date:	155. Y	Closed	Closed	ML101720589, Item		
164	7.2	7.2	CGG	FSAR section 7.2.2.2(20) has been revised to include the plant	Responder: Perkins	156. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	Item No. 8 sent to DORL
165	7.2	7.2	CGG	FSAR section 7.2.2.3.2, last paragraph of this section has been	Responder: Clark	157. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	
166	7.2	7.2	CGG	Changes to FSAR section 7.2.2.2(20) are justified based on the	Responder: Clark	158. Y	Closed	Closed	ML101720589, Item	TVA Letter dated	
167	7.2	7.2	CGG	FSAR section 7.2.2.4, provide an analysis or reference to chapter	Responder: Clark	159. Y	Close	Closed	ML101720589, Item	TVA Letter dated	
168	7.2	7.2	CGG	FSAR table 7.2-4, item 9 deleted loss of offsite power to station	Responder: Clark	160. Y	Close	Closed	ML101720589, Item	TVA Letter dated	
169			CGG	6/18/2010	Responder: Clark	161. Y	Closed	Closed			
170			CGG	6/17/2010	Responder: Clark	162. Y	Closed	Closed			
171	7.2	7.2	CGG	6/17/2010	Responder: Craig	163. Y	Closed	Closed	EICB RAI	TVA Letter dated	Closed to SE Open Item
172			CGG	6/17/2010	Responder: Craig	164. Y	Closed	Closed	EICB RAI		
173	7.1	7.1	CGG	6/17/2010	Responder: Craig/Webb/Powers	165. Y	Closed	Closed	EICB RAI		
174			CGG	6/28/2010	Responder: Hilmes/Craig	166. Y	Closed	Closed	EICB RAI		
175			CGG	June 28, 2010	Responder:	167. Y	Closed	Closed	EICB RAI		
176	7.1	7.1	CGG	6/28/2010	Responder: Craig/Webb	168. Y	Closed	Closed	EICB RAI		
177	7.5.2.	7.5.1	NAG	7/15/2010	Responder: Clark	169. Y	Closed	Closed	N/A	TVA Letter dated	RAI not required
178	7.5.2.	7.5.1	NAG	7/15/2010	Responder: Clark	170. Y	Closed	Closed	N/A	TVA Letter dated	RAI not required
179			CCC	An emphasis is placed on traceability in System Requirements	Responder: WEC	171. Y	Closed	Closed	N/A – Closed to	NA	
180			CCC	The SRP, BTP 7-14, Section B.3.3.1 states that Regulatory Guide	Responder: WEC	172. Y	Closed	Closed	N/A – Closed to	NA	
181			CCC	An emphasis is placed on traceability in System Requirements	Responder: WEC	173. Y	Closed	Closed	N/A – Closed to	NA	
182			CCC	Characteristics that the SRP states that a Software Requirements	Responder: WEC	174. 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"	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 12 in letter dated 12/22/10, NRC Matrix Item 144. **TVA Response to Second Follow-up NRC Request:** This item was addressed by updating the Contract	15. Y	Open Pending Submittal of Revision 3 of the Licensing Technical Report due 3/29/11. Revised response included in letter dated 12/22/10. Response provided in letter dated 10/21/10	Open-NRC Review **Due 3/29/11** **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	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
				referring purely to the changes from WNA-DS-01617-WBT "Post Accident Monitoring System-System Requirements Specification" or is it saying that there are additional changes beyond those and that the SRS defines them? If there are additional changes, what is their origin?	Compliance Matrix and adding Section 13, Origin Tracing of WBN2 PAMS System Requirements Specification to the Licensing Technical Report Revision 3 to address this concern. Attachment 2 contains WNA-LI-00058-WBT-P, "Post-Accident Monitoring System (PAMS) Licensing Technical Report," Revision 3, dated March 2011 (proprietary).			information would be in CQ PAMS LTR Rev. 2. **NNC 2/3/11:** CQ PMS LTR Rev. 2 Sections 11 & 12 do not prove this information. TVA to proive a plan to address requested information.			
184			C	7/15/2010	Responder: WEC	175. 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 is satisfies" Also the NRC considers that the SRS is the complete set of requirements used for the design of the software, whether it is contained within one document or many. In order to evaluate an SRS against the guidance in the SRP the staff needs access to all the requirements. References 12, 27, 29, and 31-44 in the Post Accident Monitoring System's Software Requirements Specification are various types of "…Reusable Software Element…". These references are used in the body of the SRS, for example:" R5.3.14-2 [The Addressable Constants CRC error signal shall be TRUE when any CAL CRC's respective ERROR terminal = TRUE (WNA-DS-00315-GEN, "Reusable Software Element Document CRC for Calibration Data" [Reference 12]).] They are also included via tables such as found in requirement R7.1.2-1 [The Watts Bar 2 PAMS shall use the application-specific type circuits and custom PC elements listed in Table 7.1-1.] Do the referenced reusable software element documents include requirements not explicitly stated in the SRS? If so what is their origin?	Responder: WEC Steve Clark to look at how to combine traceability items. Was addressed to during the 9/15 meeting and 9/20 - 9/21 audit. **TVA Response to Follow-up NRC Request:** (1) See 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, 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.	16. N	Open Response included in letter dated 12/22/10.	Open-NRC Review **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 **NNC 2/3/11:** To be addressed during next audit.	EICB RAI ML102980066 Item No. 17		
186	7.7.8	7.7.1.12	D a	7/15/2010	Responder: Perkins/Clark	176. Y	Closed	Closed	EICB RAI No.6	TVA Letter dated	
187			C	By letter dated June 18, 2010, TVA docketed responses to NRC	Responder: Merten	177. N	Closed	Closed	ML101970033, Item	TVA Letter dated	Are these connections already
188			C	By letter dated June 30, 2010, TVA docketed, "Tennessee Valley	Responder: Clark	178. Y	Closed	Closed	ML101970033, Item	TVA Letter dated	
189		7.6.7	S	7/20/2010	Responder: Clark	179. 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	180. Y	Closed	Closed	RAI No. 4	TVA Letter dated	Closed to OI-331.
191	7.9		C	NUREG-0800 Chapter 7, Section 7.9, "Data Communication	Responder: Jimmie Perkins	181. Y	Closed	Closed	ML10197016, Item	TVA Letter dated	
192	7.5.1.	7.5.2	N a	The NRC Staff is using SRP (NUREG-0800) Chapter 7 Section	Responder: Clark	182. Y	Closed	Closed	Item No. 1 sent to	TVA Letter dated	EICB RAI ML1028618855 sent to
193	7.5.1.	7.5.2	N a	The WBU2 FSAR, Section 7.5.2, "Plant Computer System,"	Responder: Clark	183. Y	Closed	Closed	Item No. 2 sent to	TVA Letter dated	EICB RAI ML1028618855 sent to

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
194	7.5.1.	7.5.2.1	Lana	The WBU2 FSAR Section 7.5.2.1, "Safety Parameter Display	Responder: Costley/Norman	184. Y	Closed	Closed	Item No. 3 sent to	TVA Letter dated	EICB RAI ML1028618855 sent to
195	7.5.1.	7.5.2.2	Lana	Bypassed and Inoperable Status Indication (BISI)	Responder: Costley/Norman	185. Y	Closed	Closed	Item No. 4 sent to	TVA Letter dated	EICB RAI ML1028618855 sent to
196	7.5.1.	7.5.2.2	Lana	Bypassed and Inoperable Status Indication (BISI)	Responder: Costley/Norman	186. Y	Closed	Closed	Item No. 5 sent to	TVA Letter dated	EICB RAI ML1028618855 sent to
197			X	Open Item 197 was never issued.		187. Y	Closed	Closed			
198	7.5.1.	7.5.2.2	Lana	SRP Section 7.5, Subsection III, "Review Procedures" states:	Responder: Costley/Norman	188. Y	Closed	Closed	Item No. 6 sent to	TVA Letter dated	EICB RAI ML1028618855 sent to
199	7.5.1.	7.5.2.3	Lana	The WBU2 FSAR Section 7.5.2.3, "Technical Support Center and	Responder: Costley/Norman	189. 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	190. Y	Closed	Closed	EICB RAI	TVA Letter dated	
201	7.7.1.	7.7.11	C	7/21/2010	Responder: Webb	191. 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.	Responder: WEC Revision 1 of the Licensing Technical Report will provide more detailed information on the changes to the platform. Rev. 2 of the Licensing Technical Report will include the applicability of guidance. **TVA Response to Follow-up NRC Request:** WNA-LI-00058-WBT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" (LTR) submitted in TVA Letter to NRC dated December 3, 2010, contains the following change to address the NRC request: Section 9, "Compliance Evaluation of the Watts Bar 2 PAMS Software Requirements Specification to IEEE Standard 830-1998 and Regulatory Guide 1.172" to show the origin of the requirements has been added. The descriptions and commitments in the Topical Report (TR) still apply. The LTR provides compliance evidence to the new ISG-04 criteria. The statement in the SE means that the TR can be evaluated against later NRC criteria when it appears. Source: E-mail from Westinghouse (Matthew A. Shakun) to Bechtel (Mark S. Clark), RE: December 22 letter review, dated December 17, 2010 **Partial TVA Response to Follow-up NRC Request:** Attachment 4 contains the results of the TVA analysis of standards and regulatory guides applicable to the Common Q PAMS. Based on the results of the analysis, the Common Q PAMS design is acceptable. The final response is pending submittal of the Licensing Technical Report Revision 3 scheduled for March 29, 2011. **TVA Response to Follow-up NRC Request:** *(1)* As discussed on page 9-1 of the Licensing Technical Report (Attachment 2) a comparison of IEEE 830-1993 and IEEE 830-1998 was performed and it was determined that the 1998 version enveloped all the	17. N	Open Pending Submittal of Revision 3 of the Licensing Technical Report due 3/29/11. Response included in letter dated 12/22/10 Partial Response provided in letter dated 10/5/10 **NNC 1/5/11:** Summary provided in Licensing Technical Report R2 has been reviewed and found to be unacceptable. LTR Section 9 evaluates the compliance of the SRS to IEEE 830-1998. There are two issues with this evaluation: (1) IEEE 830-1998 is not the current SRP acceptance criteria. IEEE 830-1998 has not been formally endorsed by a regulatory guide. (2) Westinghouse committed to evaluate the SRS against 830 when the NRC identified several inconsistencies. Yes ISG-4 is one new criteria, and an evaluation against it has been provided. In addition, LTR Rev. 2 Section 13 states: "The applicable NRC regulatory guides, IEEE and EPRI industry standards fo the common Q PAMS are shown below. Compliance to these codes and standards are stated in Section 4 of Reference 1." Reference 1 is the common Q topical report.	Open-NRC Review **Due 2/25/11 & 3/29/11** to provide information requested. Due TBD	EICB RAI ML102980066 Item No. 4	TVA Letter dated 10/5/10	**NNC 1/5/11:** See Also Open Item No. 81 and 86.

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
					requirements of the 1993 version which is endorsed by Regulatory Guide 1.172. Therefore the use of IEEE 830-1998 is acceptable. *(2)* Table 9.1 "IEEE Std 830-1998 Compliance" of the Licensing Technical Report (Attachment 2) evaluates the Software Requirements Specification against the requirements of IEEE 830-1998. *(3)* See TVA to NRC letter "Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation And Controls Staff Information Requests," dated February 25, 2011 Attachment 4 "Common Q PAMS Regulatory Guide and IEEE Standard Analysis." *(4)* This section of the Licensing Technical Report (Attachment 2) has been relocated to section 15. The comment has been addressed by adding Reference 40 to TVA to NRC letter dated February 25, 2011, Attachment 4 which is the "Common Q PAMS Regulatory Guide and IEEE Standard Analysis."						
203	7.5.1.	7.5.2	~~NCaa	7/26/2010	Responder: Clark	192. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
204	7.5.1.	7.5.2	~~NCaa	7/26/2010	Responder: Costley/Norman	193. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
205			~~CCaa	7/26/2010	Responder: Clark	194. Y	Closed	Closed	EICB RAI	TVA Letter dated	Question B related to prior NRC
206	7.5.1.	7.5.2	~~NCaa	7/27/2010	Responder: Clark	195. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
207			~~CC	July 27, 2010	Date:	196. Y	Closed	Closed			
208	7.5.2.	7.5.1	~~NCaa	7/27/2010	Responder: Clark	197. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
209	7.5.2.	7.5.1	~~NCaa	7/27/2010	Responder: Clark	198. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
210	7.5.2.	7.5.1	~~NCaa	7/27/2010	Responder: Clark	199. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
211	7.5.1.		~~CCaa	7/27/2010	Responder: Clark	200. 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. **IEEE-603 1991:** **5.5 System Integrity.** The safety systems shall be designed to accomplish their safety functions under the full range of applicable conditions enumerated in the design basis. **TVA Response:** The applicable conditions and Common Q PAMS system compliance are contained in WNA-LI-00058-WBT-P, Rev. 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" submitted in TVA Letter to NRC dated December 3, 2010, Section 11, "Contract Compliance Matrix" items: • 87 and 88 Seismic • 89, 90, 91, 92 and 185 EMI/RFI	18. N	Open Partial Response included in letter dated 03/16/11 Final response due 3/29/11	Open-NRC Review **NNC 2/17/2011:** IEEE 603 Clause 5.5 basically states that conditions identified in IEEE 603 Clauses 4.7 & 4.8 must be addressed in the design. Energy supply conditions have not been identified, or explicitly addressed.	EICB RAI ML102980066 Item No. 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
					• 300, 301 and 302 Environmental Seismic qualification of the equipment to meet the design basis requirements **5.7 Capability for Test and Calibration.** Capability for testing and calibration of safety system equipment shall be provided while retaining the capability of the safety systems to accomplish their safety functions. The capability for testing and calibration of safety system equipment shall be provided during power operation and shall duplicate, as closely as practicable, performance of the safety function. Testing of Class 1E systems shall be in accordance with the requirements of IEEE Std 338-1987. Exceptions to testing and calibration during power operation are allowed where this capability cannot be provided without adversely affecting the safety or operability of the generating station. In this case: (1) appropriate justification shall be provided (for example, demonstration that no practical design exists), (2) acceptable reliability of equipment operation shall be otherwise demonstrated, and (3) the capability shall be provided while the generating station is shut down. **TVA Response:** The requirements for test and calibration and Common Q PAMS system compliance, are contained in WNA-LI-00058-WBT-P, Rev. 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" Section 11, "TVA Contract Compliance Matrix" items: • 202 self test • 350 Maintenance Bypass • 351 Loop Tuning Parameters, • 400 and 401 3.7.2 Testing, Calibration, and Verification • 402, 403 and 404, 3.7.3 Channel Bypass or Removal from Operation **5.10 Repair.** The safety systems shall be designed to facilitate timely recognition, location, replacement, repair, and adjustment of malfunctioning equipment. **TVA Response:** The requirements for repair and Common Q PAMS system compliance are contained in WNA-LI-00058-WBT-P, Rev. 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" Section 11, "TVA Contract Compliance Matrix" items: • 179 Mean time to repair • 202 self test • 398 3.7 Maintenance • 399 3.7.1 Troubleshooting **6.5 Capability for Testing and Calibration**			**NNC 2/18/11:** Clause 5.7 is acceptably addressed. **NNC 2/18/2011:** WNA-AR-00189-WBT Rev. 0 Table 5-2 shows a MTTR of 7.2 hours. It is not clear how this satisfies the contractual item No. 179. The Contract Compliance Matrix Item 179 in Revision 3 of the LTR has been revised to show this item as a deviaition and to reflect TVA's acceptance of the 7.2 hour MTTR value. Attachment 2 contains WNA-LI-00058-WBT-P, "Post-Accident Monitoring System (PAMS) Licensing Technical Report," Revision 3, dated March 2011			

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
					6.5.1 Means shall be provided for checking, with a high degree of confidence, the operational availability of each sense and command feature input sensor required for a safety function during reactor operation. This may be accomplished in various ways; for example: (1) by perturbing the monitored variable, (2) within the constraints of 6.6, by introducing and varying, as appropriate, a substitute input to the sensor of the same nature as the measured variable, or (3) by cross-checking between channels that bear a known relationship to each other and that have readouts available. **6.5.2** One of the following means shall be provided for assuring the operational availability of each sense and command feature required during the post-accident period: (1) Checking the operational availability of sensors by use of the methods described in 6.5.1. (2) Specifying equipment that is stable and retains its calibration during the post-accident time period. **TVA Response:** The requirements for sense and command feature testing and Common Q PAMS system compliance are contained in WNA-LI-00058-WBT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" Section 11 "TVA Contract Compliance Matrix" items: • 10, display of sensor diagnostic information • 202 self test • 205 self diagnostics and watchdog timer • 264 through 271, system self checks • 311 system status displays, • 341 alarms, • 344 on-line diagnostics **IEEE 7-4.3.2-2003** **5.5 System integrity** In addition to the system integrity criteria provided by IEEE Std 603-1998, the following are necessary to achieve system integrity in digital equipment for use in safety systems: — Design for computer integrity — Design for test and calibration — Fault detection and self-diagnostics **5.5.1 Design for computer integrity** The computer shall be designed to perform its safety function when subjected to conditions, external or internal, that have significant potential for defeating the safety function. For example, input and output processing failures, precision or round off problems, improper recovery actions, electrical input voltage and frequency fluctuations, and maximum credible number of coincident signal changes.			(proprietary).			

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 the system requirements identify a safety system preferred failure mode, failures of the computer shall not preclude the safety system from being placed in that mode. Performance of computer system restart operations shall not result in the safety system being inhibited from performing its function. **TVA Response:** Common Q PAMS system reliability and failure modes are described in: • WNA-AR-00180-WBT, Revision 0, "Failure Modes and Effects Analysis (FMEA) for the Post Accident Monitoring System" • WNA-AR-00189-WBT, Revision 0 "Post Accident Monitoring System Reliability Analysis" The requirements for mean time between failure and Common Q PAMS system compliance are contained in WNA-LI-00058-WBT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report," Section 11 "TVA Contract Compliance Matrix" item 178. **5.5.2 Design for test and calibration** Test and calibration functions shall not adversely affect the ability of the computer to perform its safety function. Appropriate bypass of one redundant channel is not considered an adverse effect in this context. It shall be verified that the test and calibration functions do not affect computer functions that are not included in a calibration change (e.g., setpoint change). V&V, configuration management, and QA shall be required for test and calibration functions on separate computers (e.g., test and calibration computer) that provide the sole verification of test and calibration data. V&V, configuration management, and QA shall be required when the test and calibration function is inherent to the computer that is part of the safety system. V&V, configuration management, and QA are not required when the test and calibration function is resident on a separate computer and does not provide the sole verification of test and calibration data for the computer that is part of the safety system. **TVA Response:** The requirements for test and calibration and Common Q PAMS system compliance are contained in WNA-LI-00058-WBT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" Section 11 "TVA Contract Compliance Matrix" items: • 202 self test • 350 Maintenance Bypass • 351 Loop Tuning Parameters, • 400 and 401 3.7.2 Testing, Calibration, and Verification						

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
					• 402, 403 and 404, 3.7.3 Channel Bypass or Removal from Operation **5.5.3 Fault detection and self-diagnostics** Computer systems can experience partial failures that can degrade the capabilities of the computer system, but may not be immediately detectable by the system. Self-diagnostics are one means that can be used to assist in detecting these failures. Fault detection and self-diagnostics requirements are addressed in this sub-clause. The reliability requirements of the safety system shall be used to establish the need for self-diagnostics. Self diagnostics are not required for systems in which failures can be detected by alternate means in a timely manner. If self-diagnostics are incorporated into the system requirements, these functions shall be subject to the same V&V processes as the safety system functions. If reliability requirements warrant self-diagnostics, then computer programs shall incorporate functions to detect and report computer system faults and failures in a timely manner. Conversely, self-diagnostic functions shall not adversely affect the ability of the computer system to perform its safety function, or cause spurious actuations of the safety function. A typical set of self-diagnostic functions includes the following: — Memory functionality and integrity tests (e.g., PROM checksum and RAM tests) — Computer system instruction set (e.g., calculation tests) — Computer peripheral hardware tests (e.g., watchdog timers and keyboards) — Computer architecture support hardware (e.g., address lines and shared memory interfaces) — Communication link diagnostics (e.g., CRC checks) Infrequent communication link failures that do not result in a system failure or a lack of system functionality do not require reporting. When self-diagnostics are applied, the following self-diagnostic features shall be incorporated into the system design: a) Self-diagnostics during computer system startup b) Periodic self-diagnostics while the computer system is operating c) Self-diagnostic test failure reporting **TVA Response:** The requirements for fault detection and self diagnostics and Common Q PAMS system compliance are contained in WNA-LI-00058-WBT-P, Rev. 2, “Post-Accident Monitoring System (PAMS) Licensing Technical Report” Section 11 “TVA Contract						

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
					Compliance Matrix" items: • 107 error free download • 202 self test • 205 self diagnostics and watchdog timer • 263 primary and backup communication • 264 through 271, continuous on-line self checks • 311 system status displays, • 341 alarms, • 344 on-line diagnostics **5.7 Capability for test and calibration** No requirements beyond IEEE Std 603-1998 are necessary. **TVA Response:** No response required. Concurrence: E-mail from Westinghouse (Andrew P. Drake) to Bechtel (Mark S. Clark), RE: RAI 212 Response - Errors in the Contract Compliance Matrix, dated December 17, 2010 *(a)* Energy Supply conditions are specified in WNA-DS-01617-WBT-P, System Requirements Specification Rev. 4, Requirement 4.1-1 which requires 120Vac ±10% and 60±3Hz. Power to the Common Q PAMS is provided from the 120Vac vital power system. Per WBN Unit 2 FSAR section 8.3.1.1 the vital 120 volt ac system specifications are 120Vac ±2% and 60±0.5Hz. Based on this, the power provided meets the system requirements. Electromagnetic compatibility, seismic and environmental qualification of the equipment to meet the design basis requirements is documented in EQ-QR-68-WBT-P, Revision 0 "Qualification Summary Report for Post-Accident Monitoring System (PAMS)" (Proprietary) (Attachment 4). Attachment 5 contains EQ-QR-68-WBT-NP, Revision 0 "Qualification Summary Report for Post-Accident Monitoring System (PAMS)" (non-proprietary). Attachment 6 contains CWA-11-3118, Application for Withholding Proprietary Information from Public Disclosure, EQ-QR-68-WBT-P, Revision 0 "Qualification Summary Report for Post-Accident Monitoring System (PAMS)," (Proprietary), dated February 28, 2011. *(b)* The Contract Compliance Matrix Item 179 in Revision 3 of the Licensing Technical Report will be revised to show this item as a deviation and to reflect TVA's acceptance of the 7.2 hour MTTR value. WNA-LI-00058-WBT-P, "Post-Accident Monitoring System (PAMS) Licensing Technical Report," Revision 3, (proprietary) dated March 2011, will be submitted no later than March 29, 2011.						
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	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.	19. N	Open Pending Submittal of Revision 3 of the Licensing Technical Report due 3/29/11.	Open-NRC Review **Due 3/29/11** **NNC 2/3/11:** The	EICB RAI ML102980066 Item No. 18		

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
				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?	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. **TVA Response to Follow-up NRC Request:** The Regulatory Guide 1.97 classification of the Common Q PAMS variables is documented in TVA Design Criteria WB-DC-30-7 "Post Accident Monitoring Instrumentation" which was submitted as Attachment 5 on TVA to NRC letter "Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation And Controls Staff Information Requests" dated June 18, 2010 (Reference 1) The hardware design bases for the Common Q PAMS is described in the WBN Unit 2 FSAR section 7.5.1.8 "Post Accident Monitoring System (PAMS)." The Common Q PAMS indications are used to support operator response to events described in chapter 15 of the WBN Unit 2 FSAR such as: • RCCA/RCCA Bank dropped/misaligned • Steam Generator Tube Rupture • Inadvertent Loading of a Fuel Assembly Into an Improper Position • Loss of Shutdown Power • Major Reactor Coolant System Pipe Ruptures (Loss Of Coolant Accident) • Major Secondary System Pipe Rupture		Response is included in letter dated 10/25/10 NNC to review and revise this question after LTR R2 is received.	identified documentation does not include the design bases. Please provide schedule for providing the requested information.			
214			– C	7/27/2010	Responder: WEC	201. Y	Closed	Closed	EICB RAI	TVA Letter dated	
215			– P C	7/29/2010	Responder: WEC	202. Y	Closed	Closed			
216	7.5.1.	7.5.2	– N a	7/29/2010	Responder: Clark	203. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
217			– G	7/6/2010	Responder: Clark	204. Y	Close	Closed	EICB RAI	TVA Letter dated	
218			– C	7/6/2010	Responder: Clark	205. Y	Closed	Closed	EICB RAI	TVA Letter dated	
219			– C	8/4/2010	Responder: TVA Licensing	206. Y	Closed	Closed	EICB RAI		
220			– C	8/4/2010	Responder: Ayala	207. Y	Closed	Closed	EICB RAI	TVA Letter dated	
221	7.7.1.	7.7.1.3	– N a	8/4/2010	Responder: Trelease	208. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
222			– C	8/4/2010	Responder: Clark	209. Y	Close	Closed	EICB RAI	TVA Letter dated	
223			– C	8/4/2010	Responder: Clark	210. Y	Closed	Closed	EICB RAI		
224	7.5.1.	7.5.2	– N a	8/4/2010	Responder: Norman (TVA CEG)	211. Y	Closed	**Closed**	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
225			– G	8/4/2010	Responder: Scansen	212. Y	Close	Closed	EICB RAI	TVA Letter dated	
226			– C	8/4/2010	Responder: TVA Licensing	213. Y	Closed	Closed	N/A – Information	TVA Letter dated	See also Open Item Nos. 41 & 270.
227			– G	8/4/2010	Responder: Clark	214. Y	Close	Closed	EICB RAI	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
228			– C	8/4/2010	Responder: Clark	215. Y	Closed	Closed	EICB RAI	TVA Letter dated	
229			– C	8/4/2010	Responder: Clark	216. Y	Closed	Closed	EICB RAI	TVA Letter dated	
230			– C	8/4/2010	Responder: Webb	217. Y	Closed	Closed	EICB RAI	TVA Letter dated	
231			– C	8/4/2010	Responder: Clark	218. Y	Closed	Closed	EICB RAI	TVA Letter dated	
232			– S	8/4/2010	Responder: Clark	219. Y	Closed	Closed	RAI No. 5	TVA Letter dated	
233			– C	8/4/2010	Responder: Clark	220. Y	Closed	Closed	EICB RAI	TVA Letter dated	
234			– C	8/4/2010	Responder:	221. Y	Closed	Closed	N/A – Duplicate	N/A	
235			– C	8/4/2010	Responder: TVA Licensing	222. Y	Closed	Closed	N/A	N/A	
236			– C	8/4/2010	Responder: Clark	223. Y	Close	Closed	EICB RAI	TVA Letter dated	
237			– C	8/4/2010	Responder: Clark	224. Y	Closed	Closed	EICB RAI	TVA Letter dated	
238			– C	8/4/2010	Responder: Webb/Hilmes	225. Y	Closed	Closed	N/A – Duplicate	N/A	
239			– C	8/4/2010	Responder: Hilmes	226. Y	Closed	Closed	N/A – Meeting	N/A	
240			– C	8/4/2010	Responder: Clark	227. Y	Close	Closed	MI102910008	TVA Letter dated	
241			– S	8/4/2010	Responder: Davies	228. Y	Closed	Closed	RAI No. 10	TVA Letter dated	
242			– C	8/4/2010	Responder: Hilmes	229. Y	Close	Closed	EICB RAI	TVA Letter dated	
243			– C	8/3/2010	Responder: WEC	230. 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:** As shown is the listed documents, process related requirements have been deleted from the SRS and SysRS in Revision 3: Attachment 1 contains proprietary version of WNA-DS-01617-WBT-P, Revision 3, "Post Accident Monitoring System-System Requirements Specification," dated December 2010. Attachment 7 contains the proprietary version of WNA-SD-00239-WBT-P, Revision 3, "Software Requirements Specification for the Post Accident Monitoring System," dated December 2010. Source: E-mail from Westinghouse (Andrew P. Drake) to Bechtel (Mark S. Clark), RE: Common Q RAI concerns, dated December 8, 2010 (Reference 17) **TVA Response to Follow-up NRC Request:** The documents discussed in Item 3 have been revised to address compliance with the Topical Report (TR) and the	20. 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-NRC Review **Due 2/25/11** Document revisions **NNC 2/2/11:** Issues with Common Q TR & SPM compliance were discussed in the weekly public meetings. Westinghouse to perform Common Q TR & SPM compliance self assessment; this will be discussed in detail on the next audit.	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
					Software Program Manual (SPM).						
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. **TVA Response to Follow-up NRC Request:** The results of the self assessment were reviewed by Westinghouse with the NRC on February 2, 2011 and were further reviewed by TVA during the NRC Common Q PAMS audit during the week of February 28 to March 4, 2011. Corrections to WNA-TR-02451-WBT, "Test Summary Report for the Post Accident Monitoring System" and the self assessment were made as a result of the TVA review to ensure this comment was fully addressed. By agreement between TVA, WEC and the NRC, the Post Accident Monitoring System Test Plan, WNA-PT-00138-WBT, Revision 0 will not be revised. Instead a non-proprietary Common Q PAMS Test Summary Report will be developed and submitted to address the issues with TR and SPM compliance. Attachment 1 contains non-proprietary WNA-TR-02451-WBT, Revision 0, "Test Summary Report for the Post Accident Monitoring System," dated March 2011.	21. N	Open Pending Submittal of the Test Summary Report due 3/29/11 Response included in letter dated 12/3/10 Common Q PAMS Test Summary Report scheduled to be submitted March 29, 2011.	Open-NRC Review **Due 3/29/11** **NNC 2/2/11:** Issues with the Common Q TR & SPM were discussed in the weekly public meetings. Westinghouse to perform Common Q TR & SPM compliance self assessment	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" **TVA Response to Follow-up NRC Request:** The results of the Common Q TR and SPM self assessment were reviewed by Westinghouse with the NRC on February 2, 2011. The Westinghouse Watts Bar Unit 2 NSSS Completion I&C Projects Project Quality Plan, WNA-PQ-00220-WBT, Revision 1 is available for NRC audit at the Westinghouse Rockville Office and was available for review during the NRC Common Q PAMS audit during the week of February 28 to	22. N	Open Pending Submittal of Revision 3 of the Licensing Technical Report due 3/29/11. PQP provided for audit the week of 2/28/11. 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 3/29/11** **NNC 2/2/11:** Issues with the Common Q TR & SPM implementation were discussed in the weekly public meetings. Westinghouse to perform Common Q TR & SPM compliance self assessment	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."

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
					March 4, 2011. During the audit, the Westinghouse Quality Assurance in process audit of the Common Q PAMS project was reviewed by the NRC inspector with no issues identified.						
247			— C	8/8/2010	Responder: WEC	231. Y	Closed	Closed	EICB RAI	Response is	LIC-101 Rev. 3 Appendix B Section 4,
248			— C	8/8/2010	Responder: WEC	232. Y	Closed	Closed		Response is	LIC-101 Rev. 3 Appendix B Section 4,
249			— C	8/8/2010	Responder: WEC	233. 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, (Reference 1) contains the following changes to address the NRC requests: a. Section 2.2.1 Hardware/Software Change Process has been added to describe the process of how changes are evaluated. 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. 2. WNA-PT-00138-WBT, Revision 0, "Nuclear Automation Watts Bar 2 NSSS Completion Program I&C Projects, Post Accident Monitoring System Test Plan," (Proprietary), dated November 2010 submitted in TVA Letter to NRC, dated December 3, 2010 (Reference 1).	23. N	Open Revised response included in letter dated 12/22/10 Response included in letter dated 10/25/10.	Open-NRC Review **NNC 2/2/11:** To be addressed during the next audit.			LIC-101 Rev. 3 Appendix B Section 4, "Safety Evaluation" states: "the information relied upon in the SE must be docketed correspondence." LIC-101 Rev. 3 states: "The safety analysis that supports the change requested should include technical information in sufficient detail to enable the NRC staff to make an independent assessment regarding the acceptability of the proposal in terms of regulatory requirements and the protection of public health and safety."
251			EICB (Carte)	8/8/2010 The SPM describes the software testing and documents that will be created. The SPM also describes the testing tasks that are to be carried out. The acceptance criterion for software test implementation is that the tasks in the SPM have been carried out in their entirety. Please provide information that shows that testing been successfully accomplished.	Responder: WEC The software testing performed and documents created are addressed by the SPM Compliance matrix contained in Revision 1 of the Licensing Technical Report. Attachment 1 of the letter dated 10/25/10 contains the Proprietary version of Westinghouse's document titled: "Tennessee Valley Authority (TVA), Watts Bar Unit 2 (WBN2), Post-Accident Monitoring System (PAMS), Licensing Technical Report, Revision 1, WNA-LI-00058-WBT-P, Dated October 2010" **TVA Response to Follow-up NRC Request:** Please see the response to RAI item 21 in letter dated	24. N	Open Pending Submittal of the Test Summary Report due 3/29/11 Revised response included in letter dated 12/22/10 Partial response is provided in letter dated 10/25/10	Open-NRC Review **Due 3/29/11** **NNC 2/2/11:** Issues with the Common Q TR & SPM were discussed in the weekly public meetings. Westinghouse to perform Common Q TR & SPM compliance self assessment			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
					12/22/10, NRC Matrix Item 250. **TVA Response to second Follow-up NRC Request:** The results of the Common Q TR and SPM self assessment were reviewed by Westinghouse with the NRC on February 2, 2011. By agreement between TVA, WEC and the NRC, the Post Accident Monitoring System Test Plan, WNA-PT-00138-WBT, Revision 0 will not be revised. Instead a non-proprietary Common Q PAMS Test Summary Report will be developed and submitted to address the issues with TR and SPM compliance. Attachment 1 contains non-proprietary WNA-TR-02451-WBT, Revision 0, "Test Summary Report for the Post Accident Monitoring System," dated March 2011.						
252			EICB (Carte)	8/8/2010 The SPM contain requirements for software requirements traceability analysis and associated documentation (see Section 5.4.5.3, "Requirements Traceability Analysis"). Please provide information that demonstrates that requirements traceability analysis has been successfully accomplished.	Responder: WEC Explain response to AP1000 audit report. RTM docketed NRC awaiting V&V evaluation of RTM. The following responses are based on WBN Unit 2 Common Q PAMS traceability: Software requirements traceability analysis is described in the following documents: 1. WNA-LI-00058-WBT-P, Revision 2, "Post-Accident Monitoring System (PAMS) Licensing Technical Report" submitted in TVA Letter to NRC dated December 3, 2010, (Reference 1) Section 11, "TVA Contract Compliance Matrix" 2. WNA-VR-00279-WBT, "Watts Bar 2 NSSS Completion Program I&C Projects Requirements Traceability Matrix for the Post Accident Monitoring System" (available for NRC audit at the Westinghouse Rockville office) 3. WNA-VR-00280-WBT, "Watts Bar 2 NSSS Completion Program I&C Projects Requirements Traceability Matrix for the Reactor Vessel Level Indication System (RVLIS) Custom PC Elements" (available for NRC audit at the Westinghouse Rockville office) This document addresses the RSEDs used in the WBN Unit 2 Common Q PAMS. The V&V evaluation of the RTM is documented in section 2.2.2 of the following documents: 1. 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), submitted in TVA Letter to NRC dated December 3, 2010 (Reference 1).	25. N	Open Response included in letter dated 12/22/10 Read ML091560352	Open-NRC Review Due 2/25/11 (document submittals) **NNC 2/2/11**: Updated RTMs and specifications to be provided. Requirements traceability to be addressed during he next audit.			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
					2. 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), submitted in TVA Letter to NRC dated December 3, 2010 (Reference 1). 3. The integration phase is covered in Attachment 10, the proprietary version of "IV&V Summary Report for the Post Accident Monitoring System," WNA-VR-00283-WBT-P, Revision 3, dated December 2010. Attachment 11 contains the non-proprietary version of "IV&V Summary Report for the Post Accident Monitoring System," WNA-VR-00283-WBT-NP, Revision 3, dated December 2010. Attachment 12 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. **TVA Response to Follow-up NRC Request:** See Response to item 3 (Matrix Item Number 142)						
253			C-O	8/8/2010	Responder: Clark	234. Y	Closed	Closed		TVA Letter dated	Related to Open Item no. 83.
254			C-C	8/10/2010	Responder: WEC	235. Y	Closed	Closed	N/A - Request to	TVA Letter dated	
255			C-C	8/10/2010	Responder: WEC	236. Y	Closed	Closed	N/A - Request to	TVA Letter dated	
256			C-C	8/10/2010	Responder: WEC	237. Y	Closed	Closed	N/A - Request to	TVA Letter dated	
257			C-C	8/10/2010	Responder: WEC	238. Y	Closed	Closed	N/A - Request to	N/A	
258			C-C	8/10/2010	Responder: WEC	239. Y	Closed	Closed	N/A - Request to	N/A	
259			C-C	8/10/2010	Responder: WEC	240. Y	Closed	Closed	N/A - Request to	TVA Letter dated	
260			C-C	8/10/2010	Responder: WEC	241. Y	Closed	Closed	N/A - Request to	N/A	
261			C-C	8/10/2010	Responder: WEC	242. Y	Closed	Closed	N/A – Closed to	TVA Letter dated	LIC-110 Rev. 1 Section 6.2.2 states:
262			C-C	8/10/2010	Responder: WEC	243. Y	Closed	Closed	N/A - Request to	N/A	
263			C-C	8/11/2010	Responder: WEC	244. Y	Closed	Closed	ML101650255, Item		
264			C-C	8/11/2010	Responder: WEC	245. Y	Closed	Closed	ML101650255, Item		
265			C-C	8/11/2010	Responder: WEC	246. Y	Closed	Closed	ML101650255, Item		
266			C-C	8/11/2010	Responder: Webb/Webber	247. Y	Closed	Closed		TVA Letter dated	
267			C-C	8/11/2010	Responder: WEC	248. Y	Closed	Closed			
268			C-C	8/19/2010	Responder: WEC	249. N	Closed	Closed			
269			C-P	8/20/2010	Responder: NRC	250. Y	Closed	Closed	N/A	N/A	
270			C-C	8/23/2010	Responder: Clark	251. Y	Closed	Closed			See also Open Item Nod. 41 & 245.
271			C-C	8/23/2010	Responder: WEC	252. Y	Closed	Closed	N/A – Closed to	NA	
272	7.5.2.	7.5.1	C-NA	8/26/2010	Responder: Clark	253. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
273	7.5.2.	7.5.1	C-NA	8/26/2010	Responder: Clark	254. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
274.	7.5.2.	7.5.1	C-NA	8/26/2010	Responder: Clark	255. 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
274.			SCVB	8/26/2010	Responder: Stockton	256. Y	Closed	Closed	RAI No. 6	TVA Letter dated	
275			SCVB	8/27/2010	Responder: Clark	257. Y	Closed	Closed	Not Required	N/A	
276	7.6	7.6	CGCB	8/27/2010	Responder: Webb	258. Y	Closed	Closed	EICB RAI	TVA Letter dated	
277	7.6	7.6.3	CGCB	8/27/2010	Responder: Clark	259. Y	Close	Closed	EICB RAI	TVA Letter dated	
278	7.6	7.6.6	CGCB	8/27/2010	Responder: Trelease	260. Y	Close	Closed	EICB RAI	TVA Letter dated	
279	7.6	7.6.6	CGCB	8/27/2010	Responder: Mather	261. Y	Close	Closed	EICB RAI	TVA Letter dated	
280	7.6	7.6.6	CGCB	8/27/2010	Responder: Trelease	262. Y	Closed	Closed	EICB RAI	TVA Letter dated	
281	7.6	7.6.8	CGCB	8/27/2010	Responder: Webb	263.	Closed	Closed	EICB RAI	TVA Letter dated	
282	7.6	7.6.9	CGCB	8/27/2010	Responder: Trelease	264. Y	Close	Closed	EICB RAI	TVA Letter dated	
283	7.7.5	XX	DRAA	8/27/2010	Responder: Clark	265. 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	DRAA	8/27/2010	Responder: Webber	266. 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	DRAA	8/27/2010	Responder: McNeil	267. Y	Closed	Closed	EICB RAI No.15	TVA Letter dated	This item is a follow-up question to item
286	7.7.3	9.3.4.2.4	DRAA	8/27/2010	Responder: Webber	268. Y	Closed	Closed	EICB RAI No.16	TVA Letter dated	
287	7.3	7.3-1	DRAA	8/27/2010	Responder: Elton	269. Y	Closed	Closed	ML102390538, Item	Response	
288	7.3		CGCB	9/2/2010	Responder: McNeil	270. Y	Closed	Closed	EICB RAI		
289			SCVB	9/2/2010	Responder: Faulkner	271. Y	Closed	Closed	RAI No. 24	TVA Letter dated	
290		7.7	CCVB	9/7/2010	Responder: Clark	272. Y	Closed	Closed	N/A	N/A	This item is a duplicate of item 291.
291		7.7	CCVB	9/7/2010	Responder: Clark	273. Y	Closed	Closed		TVA Letter dated	
292	7.2.5	7.2	CGCB	9/7/2010	Responder: Craig	274. Y	Closed	Closed	EICB RAI	TVA Letter dated	
293	7.7.4	7.2.2.3.5	NVAA	9/8/2010	Responder: Craig	275. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
294	7.3	7.3.1.1.1	DRAA	9/9/2010	Responder: Elton	276. Y	Closed	Closed	ML102390538, Item	Response	
295	7.3	7.3.1.1.2	DRAA	9/9/2010	Responder: Elton	277. Y	Closed	Closed	ML102390538, Item	Response	
296	7.3	7.3.1.2.1	DRAA	9/9/2010	Responder: Elton	278. Y	Closed	Closed	ML102390538, Item	Response	
297	7.3	7.3.1.2.2	DRAA	9/9/2010	Responder: Elton	279. Y	Closed	Closed	ML102390538, Item	Response	
298	7.3	XX	DRAA	9/9/2010	Responder: Clark	280. Y	Closed	Closed	ML102390538, Item	Response	
299			CCAB	Provide Common Q Software Requirements Specification Post	Attachment 41 of the 10/5 letter contains the Common Q	281. Y	Closed	Closed		TVA Letter dated	
300			SCVB	Need Radiation Monitoring System Description/Design Criteria	Responder: Temples/Mather	282. Y	Closed	Closed	RAI No. 25	TVA Letter	
301			SCVB	1.TVA is requested to address the consequences of software	**Responder: WEC/Davies/Clark**	283. Y	Closed	Closed	RAI No. 11	TVA Letter dated	Note 1:
302	7.5.2.	7.5.1	NVAA	09/17/2010	Responder: Tindell	284. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
303	7.5.2.	7.5.1	NVAA	09/17/2010	Responder: Tindell	285. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
304	7.5.2.	7.5.1	NVAA	09/17/2010	Responder: Tindell	286. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
305	7.5.2.	7.5.1	NVAA	09/17/2010	Responder: Tindell	287. Y	Closed	Closed	EICB RAI	TVA Letter dated	EICB RAI ML102861885 sent to DORL
306	7.1	7.1	CGCB	FSAR amendment 100, page 7.1-12 provides the definition of	Responder: Hilmes	288. Y	Closed	Closed	EICB RAI	TVA Letter dated	
307	7.1	7.1	CGCB	(1) FSAR amendment 100, Section 7.1, page 7.1-12, definition of	Responder: Hilmes	289. Y	Closed	Closed	EICB RAI	TVA Letter dated	
308	7.1	7.1	CGCB	(1) FSAR Amendment 100, Section 7.1, page 7.1-13, definition of	Responder: Hilmes	290. Y	Closed	Closed	EICB RAI	TVA Letter dated	
309	7.1	7.1.2.1.9	CGCB	(1) FSAR amendment 100, Page 7.1-14, Westinghouse setpoint	Responder: Hilmes	291. Y	Closed	Closed	EICB RAI	TVA Letter dated	
310	7.1	7.1.2.1.9	CGCB	(1) FSAR amendment 100, Page 7.1-14, TVA setpoint	Responder: Hilmes	292. Y	Closed	Closed	EICB RAI	TVA Letter dated	
311	7.1	7.1	CGCB	Both Westinghouse and TVA setpoint methodology do not have	Responder: Hilmes	293. Y	Closed	Closed	EICB RAI	TVA Letter dated	
312		7.0	CCVB	By letter dated September 10,2010, TVA provided the summary	Responder: Stockton	294. Y	Close	Closed	EICB RAI	TVA Letter dated	
313	7.7.8	7.7.1.12	DRAA	EDCR 52408 (installation of AMSAC in Unit 2) states that Design	Responder: Ayala	295. Y	Closed	Closed	EICB RAI No.18	TVA Letter dated	
314	7.3	7.3	DRAA	The following 50.59 changes were listed in the March 12 RAI	Responder: Stockton	296. Y	Closed	Closed	EICB RAI No. 19	TVA Letter dated	Related to OI 10
315	7.5.3	7.5.3	CGCB	IE Bulletin 79-27 required that emergency operating procedures to	Responder: S. Smith (TVA Operations)	297. Y	Close	Closed	EICB RAI	TVA Letter dated	
316	7.5.2.	7.5	SCVB	TVA has provided various documents in support of RM-1000 high	Responder: Temples/Mather	298. Y	Closed	Closed	RAI No. 26		

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
	3			range monitors for WBN2. Please clarify the following: RM-1000 v1.1 Software Verification Report 04508006 (Sequoyah) RM-1000 v1.2 Software Verification Report 04508006 (Sequoyah) RM-1000 System Verification Test Results (Sequoyah) These documents were prepared for the Sequoyah plant. IS the version provided applicable to WBN2? Please confirm and explain if these documents are applicable to WBN 2 as provided or with differences?	The Sequoyah RM-1000 v1.1 Software Verification Report 04508006 and RM-1000 v1.2 Software Verification Report 04508006 are applicable to WBN Unit 2. The RM-1000 System Verification Test Results report is not applicable to WBN Unit 2. This document was for the non-safety related software and was superseded by the 04508006 v1.1 and v1.2 reports for the safety-related software.		Response provided in letter dated 10/21/10	Response acceptable per TVA letter of 10/21/10, Enclosure 1, Item 26.	ML102980005 10/26/2010		
317	7.5.2.	7.5	S - EICB (Singh)	TVA has provided a proprietary and a non-proprietary version of	Responder: Temples	299. Y	Closed	Closed	RAI No. 27	TVA Letter dated	
318	7.5.2. 3	7.5		TVA has provided the following documents for RM-1000 equipment qualification: (i) Qualification Test Report for RM-1000 Processor Module and Current-To-Frequency Converter 04508905-QR (January 2001) (ii) Qualification Test Report Supplement, RM-1000 Upgrades 04508905-1SP (June 2006) (iii) Qualification Test Report Supplement, RM-1000 Upgrades 04508905-2SP (June 2008) (iv) Qualification Test Report Supplement, RM-1000 Upgrades 04508905-3SP (May 2008) Please clarify whether all of these are fully applicable to WBN2 or are they applicable with exceptions? If with exceptions, then please clarify what those are. Supplement 3 was issued one month prior to supplement 2. Please explain the reason for the same.	*Responder: Temples* *(i) Applicable to WBN Unit 2. 04508905-1QR is applicable only in regards to the RM-1000, with the exception of re-qualification of certain RM-1000 equipment differences covered in the -1SP report. The Current-to-Frequency (I-F) converter module qualifications in the base report and the -1SP report are not applicable to the RM-1000s, and will be used later as references in the WBN Unit 2 specific qualification reports.* *(ii) Applicable to WBN Unit 2.* *(iii) Not applicable to WBN Unit 2* *(iv) Not applicable to WBN Unit 2* *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:** **NOTE:** The response for the current to frequency (I to F) converter in item 1 below is a reversal of the response previously provided in TVA to NRC letter dated October 29, 2010 (Reference 22). General Atomics Electronic Systems Inc. (GA-ESI) notified TVA of this change on December 8, 2010 (Reference 20). (1) The applicability of the qualification reports from GA-ESI e-mail dated December 10, 2010 (Reference 19) is as follows: a. 04508905-QR "Qualification Test Report for RM-1000 Processor Module and Current-to-Frequency Converter" is applicable to the WBN Unit 2 RM-1000 and I to F converter modules. b. 04508905-1SP "Supplement to Qualification Test	26. N	Open Revised response is included in 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	Open-NRC Review Due 2/25/11 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	RAI No. 28 ML102980005 10/26/2010	TVA Letter dated 10/29/10, Encl 1 Item 34, and TVA letter 11/24/10, Att. 2.	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					Report for RM-1000 Processor Module and Current-to-Frequency Converter" is applicable to the WBN Unit 2 RM-1000 module. c. 04508905-1SP is not applicable to the WBN Unit 2 I to F converter module. d. 04508905-2SP "Qualification Test Report Supplement, I-F Converter Upgrades" is applicable to the WBN Unit 2 I to F converter module. GA-ESI provided two other reports required to support qualification of the containment high range radiation monitors. The report descriptions are from GA-ESI e-mail on December 8, 2010 (Reference 20). The reports are: e. GA-ESI report 04038903-QSR, "Qualification Summary Report for Watts Bar Nuclear Plant Unit 2 Replacement Radiation Monitors:" The report is the principle report and the starting point for all the radiation monitors provided as part of the replacement contract. The report describes each monitor; referenced to the technical manual for the physical and functional description and lists the major components of the monitor system. Report section 3 identifies the TVA Watts Bar Unit 2 Environmental, Seismic, Electromagnetic Compatibility (EMC), and software requirements for each monitor. In section 4 a brief description of GA-ESI generic qualification programs for all radiation monitoring equipment in each of the four above areas is provided. The qualification basis for each monitor is provided in a separate supplement to the principle report and is identified in section 5. f. GA-ESI report 04038903-7SP, "Qualification Basis for 04034101-001 (2-RE-90-271, -272, -273, & -274) [TVA Note: These are the containment post accident high range radiation monitors.]:" GA-ESI report 04038903-7SP is divided into subsections to address the Environmental, Seismic, EMC, and Software qualification basis for the High Range Area Monitors. Within each subsection, the HRAM is compared to a tested or analyzed article to demonstrate similarity and/or evaluate differences, the tests that were performed, and evaluation to demonstrate qualification. In most cases, the qualification basis references other documents. In addition to qualification, a section is provided that lists the life of those replaceable components that have life expectancy less than 40 years. (2) This is addressed by response to RAI Question 336 in TVA to NRC letter dated November 24, 2010			documents. Was appropriate review guidance used? Further update required Provide model number/part number for the RM-1000 and I/F converter used for WBN-2. This information is needed to verify that the model or part number used is the equipment that has been qualified for WBN-2. Provide qualification reports 04038903-QSR and 04038903-7SP by the dues date of 1/22/11. Submit a copy of any other relevant reviewed versions of the qualification reports. Submit copies of the reviewed reports for 04508905-QR, 04508905-1SP, 04508905-2SP. Clarification of applicability of existing reports is acceptable.			

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					(Reference 8) (3) This is addressed by response to RAI Question 337 in TVA to NRC letter dated November 24, 2010 (Reference 8) (4) The 04508905-3SP Qualification Test Report Supplement, RM-1000 Upgrades" is not applicable to WBN Unit 2 (Reference 19). Please see Item 1, above, for applicability of the other reports. (5) TVA provided the proprietary versions of the reports by letter dated March 12, 2010 (Reference 10). By letter dated July 15, 2010 (Reference 23), TVA provided the non-proprietary version of the reports and included a copy of the proprietary report which had been erroneously marked as having not been reviewed. 04508905-QR report has been reviewed by TVA. The review of the remaining reports is ongoing. (6) See item 5. **TVA Response to Follow-up NRC Request:** The following documents are the qualification documents associated with the RM-1000 radiation monitors: Attachment 5 contains the approved proprietary version of General Atomics Electronic Systems 04508905-1SP, "Qualification Test Report Supplement, RM-1000 Upgrade." • Attachment 6 contains the approved proprietary version of General Atomics Electronic Systems 04508905-2SP, "Qualification Test Report Supplement, I-F Converter Upgrades." • Attachment 7 contains the approved proprietary version of General Atomics Electronic Systems 04038903-7SP, "Qualification Basis for 04034101 (2-RE-90-271, 272, 273 & 274)." • Attachment 8 contains the proprietary version of General Atomics Electronic Systems 04038903-QSR, "Qualification Summary Report for Watts Bar Nuclear Plant Unit 2 Replacement Radiation Monitors." In order to meet the NRC submittal schedule, the engineering review of this document was limited to the RM-1000. The document has been accepted for the RM-1000 monitors. Engineering approval will not occur until full review for all covered monitors is complete. • Attachment 23 contains the approved proprietary version of General Atomics Electronic Systems 04508905-QR, "Qualification Test Report for RM-1000 Processor Module and Current-To-Frequency Converter."						

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
319	7.5.2. 3	7.5	EICB (Singh)	TVA provided System Verification Test Results 04507007-1TR (July 1999) for Sequoyah to support test verification. However, the document states (page v) that it is not applicable for high range monitors with an action noted for fixing a problem with the high range RM-1000 monitors on page vi. TVA to respond to the following clarifications: Has the anomaly noted on page vi been resolved for the high range monitors? Provide the high range verification document for WBN2.	Responder: Temples See TVA letter to the NRC dated October 21, 2010, item 26 (RAI Matrix Item 316) for non-applicability of 04507007-1TR. The recorded anomaly was later resolved through the verification of software version 1.2, reported in RM-1000 v1.2 Software Verification Report 04508006. The high range verification documents are the Sequoyah RM-1000 v1.1 Software Verification Report 04508006 and RM-1000 v1.2 Software Verification Report 04508006.	300. Y	Closed Response is included in letter dated 10/29/10	Closed -Response Acceptable Due 10/31/10 Response acceptable. TVA to issue letter and confirm stated (future) dates	RAI No. 29 ML102980005 10/26/2010	TVA Letter dated 10/29/10 Enclosure 1 Item No. 35	
320			EEIB	Per Westinghouse letter WBT-D-2340, TENNESSEE VALLEY	Responder: Clark	301. Y	Closed	Closed	N/A	N/A	Duplicate of item 156
321			EEIB	For the purposes of measuring reactor coolant flow for Reactor	Responder: Clark	302. Y	Closed	Closed	N/A	N/A	Duplicate of OI# 157
322		7.7.1.11	ICSB	Section 7.7.1.11 will be added to FSAR Amendment 101 to provide	Responder: Clark	303. Y	Closed	Closed			
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. **TVA Response to Follow-up NRC Request** A FSAR change will be submitted in a future FSAR amendment to change the revision level back to 1. **TVA Response to Second Follow-up NRC Request** The differences between the Revision 1 and Revision 2 WCAPs is documented in Attachment 12, "WCAP 13869 Revision 1 to Revision 2 Change Analysis", to TVA to NRC letter dated October 29, 2010 (Reference 2). The design bases for the response to feedwater break inside containment, as documented in Chapter 15 of the WBN Unit 2 FSAR, is the same for WBN Unit 1. Since WBN Unit 2 is required to match the WBN Unit 1 licensing basis to the extent practical, the decision was made to revise the WBN Unit 2 FSAR to agree with the WBN Unit 1 FSAR which uses Revision 1.	27. Y	Open Due 3/29/11 Revised 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 Due: Need to provide additional info on why Rev. 1 is acceptable for both units. 3/10/11 Staff does not agree with the statement that there is no technical differences between WCAP-13869 rev.1 and rev2., but staff agree that rev1 and change analysis could be basis for acceptance for both Watts Bar units. 4/6/11 TVA response is acceptable, however this item remains open until TVA makes changes to FSAR.		TVA Letter dated 10/29/10 Enclosure 1 Item No. 36	
324			ICSB	Per the NRC reviewer, the BISI calculation is not required to be		304. Y	Closed	Closed			
325			ICSB	The Unit 2 loops in service for Unit 1 that are scheduled to be	Responder: TVA Startup Olson	305. Y	Closed	Closed			Closed to open item ?
326			ICSB	TVA uses double-sided methodology for as-found and as-left	Responder: Webb	306. Y	Closed	Closed		TVA Letter dated	
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.	28. Y	Open Response Included in letter dated 11/24/10	Open-NRC Review Due 11/24/10			
328	7.5.2.	7.5	ICSB	Provide the model number for the four containment high range	Responder: Temples	307. Y	Closed	Closed	RAI No. 30	TVA Letter dated	
329	7.6.1	7.6.7	ICSB	Section 7.6.7 of the FSAR (Amendment 100) states that, "The	Responder: Clark	308. Y	Closed	Closed	RAI No. 1	TVA Letter dated	
330	7.3	7.3	DSS	Related to Item 298	Responder: Hilmes/Faulkner	309. Y	Closed	Closed	EICB RAI No.20	Item 7, TVA letter	

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
331	7.6.1	7.6.7	~SD	As a follow up of OI 190, Staff has reviewed the proprietary version	Responder: WEC/Harless/Clark	310. Y	Closed	Closed	RAI No. 8	TVA Letter dated	Follow-up of OI-190.
332	7.5.2.	7.5.1	~Na	10/26/2010		311. Y	Closed	Closed	ML103000105 Item	TBD	EICB RAI ML103000105 sent to DORL
333	7.5.2.	7.5.1	~Na	10/27/2010		312. Y	Closed	Closed	ML103000105 Item	TBD	EICB RAI ML103000105 sent to DORL
334	7	7	~Da	FSAR Figure 7A-3 "Mechanical Flow and Control Diagram	Responder: Stockton	313. Y	Closed	Closed	RAI not required.	N/A	RAI not required because the figure is
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 TVA has reviewed the information provided by Westinghouse describing how the Loose Part Monitoring System (LPMS) sensor is qualified for normal operating conditions provided in Westinghouse letter WBT-D-2782, dated December 17, 2010 (Reference 11) as addressed in regulatory position C.1.g of Reg. Guide 1.133 and found it acceptable. The qualification information on the softline cable and charge converter/preamplifier is being assembled and will be submitted by March 11, 2011. Partial Response included in TVA to NRC letter dated December 22, 2010 (Reference 1). Attachment 18 contains the proprietary version of EQ-EV-71-WBT-P, Revision 1, "Environmental Evaluation and Operating History of the Westinghouse DMIMS-DX Preamplifier and Softline Cable Used at Watts Bar 2" dated February 2011 (Proprietary). Attachment 19 contains the non-proprietary version EQ-EV-71-WBT-NP, Revision 1, "Environmental Evaluation and Operating History of the Westinghouse DMIMS-DX Preamplifier and Softline Cable Used at Watts Bar 2," dated February 2011. Attachment 20 contains the Application for Withholding Proprietary Information from Public Disclosure, EQ-EV-71-WBT-P, Revision 1, "Environmental Evaluation and Operating History of the Westinghouse DMIMS-DX Preamplifier and Softline Cable Used at Watts Bar 2," (Proprietary) dated February 18, 2011. **TVA Response to Follow-up NRC Request:** The maximum WBN Unit 2 containment upper compartment normal operating temperature of 110 °F (43.3 °C) is shown on TVA environmental drawing 2-47E235-41 Revision 0. The maximum WBN Unit 2 containment lower compartment normal operating temperature of 150 °F (65.6 °C) is shown on TVA environmental drawing 2-47E235-42 Revision 0.	29. Y	Open **Partial** Response included in letter dated 12/22/10 As of 3/24/2011: The staff reviewed the proprietary version of EQ-EV-71-WBT-P, Revision 1, "Environmental Evaluation and Operating History of the Westinghouse DMIMS-DX Preamplifier and Softline Cable Used at Watts Bar 2" dated February 2011 (Proprietary).	Open-NRC Review Submit qual report by 3/11/11 as stated in TVA letter of 12/22/10, Encl 1, Item 28. Due 12/22/10	The report addresses this open item, however, the maximum Rx Containment Temperature is not addressed within the report and the staff needs this information to approved the maximum temperature qualification of 70° C for the preamplifier cable (Microdot Connector) end. TVA stated that they will provide the Containment maximum temp. and reference the environmental report which this data is taken from in their next letter, which is expected on Tuesday 3/29/2011.		We need to confirm when MEEB when they will complete their review of the seismic qualification report.
336	7.5.2.	7.5	~SG	Re: RM-1000 Report 04508905-QR	Responder: GA	314. Y	Closed	Closed			
337	7.5.2.	7.5	~SG	Re: RM-1000 Report 04508905-QR	Responder: GA	315. Y	Closed	Closed			
338	7.5.2.	7.5	~SG	In page 3-15 and appendix B of Qualification Test Report	04508905-QR, "Qualification Test Report for RM-1000	316. Y	Closed	Closed	RAI #4 letter dated	FSAR amend 103	Note: Item to be added to Section 3.10
339	7.5.2.	7.5	~SG	In the Qualification Test Report 04508905-QR, the licensee	As agreed to with the reviewer, Attachment 1 contains the	317. Y	Closed	Closed	RAI #5 letter dated	FSAR amend 103	Note: Item to be added to Section 3.10
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 used as the source for ENV 50140, ENV 55011 Class A, and EN 55022 Class B.	Responder: GA The following responses are based on e-mail: GA-ESI to Bechtel, dated December 8, 2010 (Reference 20), **(1)** The EMI/RFI tests described in Table 3-2 are based on GA-ESI report 04509050 and are summarized in GA-	2. N	Open Due 4/22/11 Response included in letter dated 12/22/10.	Open-TVA/Bechtel Provide the qual reports by 1/28/11 per TVA letter of 12/22/10. Due: 2/25/11			

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					ESI report 04508905-QR. The independent laboratory report, with curves, is part of GA-ESI report 04509050. Subsequent to issuing GA-ESI report 04508905-QR additional EMC testing was performed in accordance with TVA specific requirements. The results of the subsequent EMC testing are reported in GA-ESI report 04038800. GA-ESI report 04038800 includes the test curves and the report is used as the basis for EMC qualification of the Upper and Lower Inside Containment Post Accident Radiation Monitors (2-RE-90-271 through -274). The results of the testing and the acceptability of the RM-1000 monitors for use at WBN Unit 2 are addressed in GA-ESI report 04038903-7SP. This report will be submitted no later than January 28, 2010. **(2)** ENV 50140, EN 55011, and EN 55022 are British Standard Institution (BSI) publications concerning equipment electromagnetic and radio frequency performance. The standard titles are shown below: 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 **TVA Response to Follow-up NRC Request:** The total EMI/RFI testing of the RM-1000 and current-to-frequency converter is documented in the following reports: • Attachment 5 contains the proprietary version of General Atomics Electronic Systems 04508905-1SP, "Qualification Test Report Supplement, RM-1000 Upgrade." See sections 5.1.1, 5.1.2 and 5.1.4 for EMI/RFI. • Attachment 7 contains the proprietary version of General Atomics Electronic Systems 04038903-7SP, "Qualification Basis for 04034101 (2-RE-90-271, 272, 273 & 274)." See section 5 for EMC qualification basis. • Attachment 8 contains the proprietary version of General Atomics Electronic Systems 04038903-QSR, "Qualification Summary Report for Watts Bar Nuclear Plant Unit 2 Replacement Radiation Monitors." See section 3.4 for electromagnetic compatibility qualification requirements. • Attachment 23 contains the proprietary version of General Atomics Electronic Systems 04508905-QR, "Qualification Test Report for RM-1000 Processor Module and Current-To-Frequency Converter." See sections 3.2.1 through 3.2.5 and 6.2 for EMI/RFI. Attachments 7 and 8 document the EMI/RFI testing specific			Clarification Needed: Per 2/25/11 response TVA document SS-E18.14.01, Rev. 3 is the source document for all testing. Please provide this document for staff review. In addition British Standards (e.g. ENV 50140) have been cited in testing which are not per RG 1.180, R1. TVA to describe compliance of SS-E18-14.01 to RG 1.180 with justification for deviations. No test curves have been provided in any of the reports. As a minimum TVA to provide a few sample test curves or justify not supplying them. No EMI/RFI curves have been provided as yet. TVA to provide representative curves. NRC review proceeding in parallel. NRC current review guidance is based on compliance with RG 1.180 or equal with justification for variations. TVA is requested to provide the roadmap for compliance to RG 1.180 with justifications for any deviations. Simply following TVA standard specification SS E18.14.01, Rev. 3 is not sufficient.			

No.	SE Sec.	FSAR Sec.	NRC POC	Issue	TVA Response(s)	Response Acceptable Y/N	Status/ Current Actions	Resolution Path	RAI No. & Date	RAI Resp. Date	Comments
					to the WBN Unit 2 RM-1000 monitors and current-to-frequency converters. **TVA Response to Second Follow-up NRC Request:** GA-ESI qualification report 04038903-7SP, "Qualification Basis for 04034101 (2-RE-90-271, 272, 273 & 274)" Revision C dated February 22, 2011(Proprietary), submitted on TVA to NRC letter dated February 25, 2011 (Reference 2), section 5.1 states: "GA-ESI has performed the tests on a 2 channel RM-1000 radiation monitoring system the configuration of which is shown in GA-ESI drawing 04509000 *System Installation Configuration, RFI/EMI Test, RM-1000* the results of which are issued in GA-ESI report 04038800, *RM-1000 EMC Test Report, TVA* and 04509050, *RM-1000 EMC Test Report.* The equipment tested used an RM-1000 microprocessor radiation monitor Display/Control NIM Bin Assembly, an I-F Converter, line filter, and an RD-23 detector. The monitor system being qualified is the same as the monitor system tested and includes ECO-17656 modifications to ensure EMC compliance." The 04509050, RM-1000 EMC Test Report was approved by TVA for Sequoyah. The report contains the requested EMI test curves. As a result, it was not resubmitted for the WBN Unit 2 monitors. Attachment 1 contains the TVA approved proprietary version of GA-ESI report 04509050, RM-1000 EMC Test Report. The non-proprietary version and affidavit for withholding will be submitted within two weeks of receipt from GA-ESI. GA-ESI qualification report 04038903-7SP, section 5, provides a detailed discussion of the test results in GA-ESi report 04509050.						
341	7.5.2.	7.5		FSAR Tables 3.10 list seismically qualified equipment. However,	A review of WBN Unit 2 FSAR amendment 102 chapters	318. Y	Closed	Closed	RAI #1 letter dated	FSAR amend 103	
342	7.5.2.	7.5		Please confirm that RM-1000 monitors and the associated	The RM-1000 containment high range radiation monitors are	319. Y	Closed	Closed			
343	7.5.2.	7.5		Seismic RRS in the 04508905-QR report Figures 3-2 and 3-3	(1) The cause of the difference between the RRS and TRS	320. Y	Closed	Closed			
344	7.6.6	?	Eicg(Garg)	Unit 1 SE discussed in Section 7.6.5, "Valve Power Lockout". There is no section in FSAR which provides discussion on this subject. SE section discusses compliance with PSB-18. Provide a discussion which can be used by the staff to determine similar conclusion as Unit 1 and if the design is similar to Unit 1 then make a statement to that effect. Also provide the list of the valves where power lockout during normal reactor operation is utilized for valves whose inadvertent operation could affect plant safety. How do we meet the PSB?	***(a)*** In accordance with0PDP-6, "Locked Valve/Breaker Program," Revision 1 (Attachment 25), valves locked by design are shown on design output documents (flow diagrams, system descriptions, etc.). As documented in 0PDP-6, valves are locked for multiple reasons. It is anticipated that many of the valves that were locked to provide positive isolation between Unit 1 and Unit 2 will not be locked when Unit 2 becomes operational and will be removed from the locked valve program. At the same time, Unit 1 valves locked for operational/Appendix R/Single Failure criteria will result in the corresponding Unit 2 valves being locked. ***(b)*** The list of valves locked by design is contained in 0-PI-OPS-17.0, "18 Month Locked Valve Verification," Revision 44 (Attachment 21). Valves locked out by opening the associated circuit breaker are listed in 0-PI-OPS-17.1, "18 Month Locked Breaker Verification,"	30. Y	Close Due 3/29/11 ICSB-18 provides guidance on application of the single failure criterion to manually controlled electrically operated valves.. According to this BTP, electrically operated valves includes MOV, SOV and those valves operated indirectly by an electrical device, e.g.an air operated valves whose air supply is controlled by an electrical solenoid valves. FSAR Section 7.6.6 addresses only MOVs. If TVA has done an	Close			Close based on TVA letter dated 3/29/11

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
					Revision 14 (Attachment 24). **<u>TVA Response to Follow Up NRC Question</u>** SER Supplement 0, Section 8.3.1.8 states: 8.3.1.8 Application of the Single Failure Criterion to Manually Controlled Electrically Operated Valves - page 8-9 With regard to safety-related manually controlled, electrically operated valves, the staff asked the applicant to provide (1) an evaluation of all safety-related fluid systems to identify all such valves whose failure (that is, failure to operate on demand or undesired spurious operation) could result in the loss of capability to perform a system safety function (2) a description of the means provided to meet the single-failure criterion in safety-related fluid systems where it is identified that a single failure, as defined above, would result in the loss of capability to perform the system safety function In response, the applicant identified 17 such valves and documented in Section 7.6.6 of the FSAR that the design for these valves consists of modified control circuits. The modified circuit utilizes redundant contacts which are wired before and after each opening and closing coil. Based on its review of the information provided by the applicant, the staff concluded that the above provisions are in accordance with BTP ICSB 18 of SRP Appendix 8-A, with the exception of redundant valve position indication. Subsequently, the applicant stated that the method of locking out power with the required redundant instrumentation is shown on electrical drawing 45W760-63-2 Based on this drawing, the staff concludes that the design meets the staff's position and is acceptable. SER Supplement 5 states: 6.3.2 Evaluation, Page 6-3, **Supplement 5** In the SER, the staff stated that the applicant will lock out power from certain valves in the emergency core cooling system (ECCS) whose misalignment might affect ECCS effectiveness. Some of these valves would be required to operate following a LOCA, and the manual restoration of power would add to post-accident operational complexity. By letters dated September 15, 1982, and April 10, 1985, the applicant stated Watts Bar would use modified control circuits for these valves to ensure that no single failure would be able to energize the opening or closing coils of the valve operators. The design uses redundant contacts that are wired before and after each opening and closing coil. In addition, clear protective covers will be attached to the main control board over each respective control switch to prevent inadvertent actuation. As discussed in SER Sections 7.6.4		analysis to demonstrate compliance with the guidance of this BTP for Unit 1 and this analysis does not change for Unit 2 for other valves than TVA shouls make a statement to that effect. If there are changes to the analysis then justify those changes based on this BTP.				

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					and 8.3.1.8, the staff found this design acceptable. Accordingly, power will not be locked out from the following valves during operation: (1) hot-leg injection line valves (2) valves from residual heat removal (RHR) discharge to safety injection (SI) and charging pump suction (3) RHR suction valves from containment sump (4) RHR discharge valves (5) SI pump suction valve from refueling water storage tank (6) SI miniflow valve In addition, the applicant evaluated other valves that may be used for SI miniflow, RHR to SI cross-connect, and SI injection, but for which the consequences of single failure would be acceptable. Power will also not be locked out from these valves. This revision is acceptable to the staff. This review was tracked under TAC 63630. The design of WBN Unit 2 mirrors the design WBN Unit 1. As a result, the locked valves for PSB-18 are the same for WBN Unit 2 as for WBN Unit 1 and the list in the Unit 2 FSAR Section 7.6.6 is accurate for Unit 2.						
345	7.5.2.3	7.5	EICB (Singh)	Provide the normal temperatures and expected periods of high/low temperature excursions to assess aging requirements. TVA to further clarify if 86ºF for 40 years was used as the qualification requirement for aging tests. This has been stated in some of the subsections under section 4.2 of the 04508905-QR report but the rationale for using 86ºF (includes an internal temperature rise of 18ºF) for 40 years has not been justified in the 04508905-QR report or the supplement reports. TVA to provide the rationale for this acceptance criteria for WBN-2. Check on verification of the 40 year life of the rad monitors. How is this explained.	RM-1000 in a NIM Bin was Tested at 39°F for 72 Hrs and Tested at 131°F for 72 Hrs per Section 4.2.6 of 04508905-QR. This is stated in document 04038903-7SP, Section 2.1. The ambient temperature used for aging was 86°F(30°C). The NIM Bin has perforated holes in top and bottom covers and has an average internal temperature rise of approximately 18 °F due to natural air convection. So the average internal temperature used for aging was 104°F (40°C) In accordance with Attachment 8, 04038903-QSR, "Qualification Summary Report for Watts Bar Nuclear Plant Unit 2 Replacement Radiation Monitors" Section 3.2, the aging is to an ambient equivalent condition of 104°F which is based on an 86°F average ambient temperature of the environment and an enclosure temperature rise of 18°F. IEEE Std 1205-2000, Table D.8 shows that the upper bounding temperature is 104°F for all plant areas except the reactor building. The intent in qualifying the part for 40 years is to identify each component's failure mechanisms and to determine whether 40 years[1] of aging has a significant effect of these failure mechanisms. [1]The design life goal for most Class 1E equipment is 40 years, but for most electronic assemblies 20 years, or less, is more realistic. Because of rapidly changing technologies, replacement components sometimes become unavailable in a relatively short period of time.	31. Y	Closed	Closed Due: 2/25/11 Clarification Required: Regulatory Guide1.209 endorses with the exceptions IEEE 323-2003. One of these exceptions is that the documentation applicable to qualification in a mild environment should be consistent with the guidance given in Section 7.2 for the harsh environment. TVA has provided synopsis of test information in support of environmental qualification in the 2/25/2011 letter. TVA to describe compliance to the guidance of Section 7.2 of IEEE		Response provided by TVA letter dated 3/31/2011 in Item # 17.	

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					TVA Response to Follow-up NRC Request: *(1)* After review, GA-ESI report 04038903-7SP, "Qualification Basis for 04034101-001 (2-RE-90-271, -272, -273 & -274)", submitted on TVA to NRC letter dated February 25, 2011 (Reference 3) follows the applicable guidance of Reg. Guide 1.209 for IEEE 323 section 7.2 documentation. The information is either contained in or referenced in the report. The documents are part of the GA-ESI permanent records and the appropriate GA-ESI records are part of the permanent TVA WBN Unit 2 quality records. *(2)* The following IEEE 323 section 7.2 documentation requirements for equipment located in a harsh environment are not applicable for equipment located in a mild environment: k. Aging mechanisms are not required by Reg. Guide 1.209 l. Qualified life determination is not required by Reg. Guide 1.209 m. Age conditioning test results are not required by Reg. Guide 1.209 The remaining documentation requirements are applicable in whole or in part to the RM-1000 radiation monitors. As described in item 1 above, GA-ESI report 04038903-7SP, Qualification Basis for 04034101-001 (2-RE-90-271, -272, -273 & -274), either contains or references the required documentation. *(3)* As stated in Regulatory Guide 1.209, there is no need to establish a qualified life. This is addressed in the next to the last sentence of the second paragraph on page 2 which states: "In addition, because of ready accessibility for monitoring and maintenance in mild environments, the need to establish a qualified life does not apply." It is further discussed in the last paragraph on page 6 which states: "This guide does not intend to imply that a qualified life should be established for I&C systems in mild environments. Therefore, for the purposes of this guide, qualification is a validation of design to demonstrate that a safety-related computer-based I&C system is capable of performing its safety function under the specified environmental and operational stresses."			323. Please explain the basis for stating that the radiation monitors are qualified for 40 years. Please note that qualification requirements of the computer based I&C equipment needs to follow the guidance in RG 1.209.			
346	7.5.2.3	7.5	EICB (Singh)	TVA has previously stated in response to open item 319 that RM-1000 System Verification Test Results report, 04507007-1TR is not applicable to WBN-2. However, TVA has not provided a WBN-2 specific test results report. Please identify and provide the appropriate test results reports to complete the review.	Document 04507007-1TR is the RM-1000 System Verification Test Results. 04038903-QSR, "Qualification Summary Report for Watts Bar Nuclear Plant Unit 2 Replacement Radiation Monitors" (Attachment 8) and and 04038903-7SP, "Qualification Basis for 04034101 (2-RE-90-271, 272, 273 & 274) (Attachment 7) are the Watts Bar Unit 2 equipment specific qualification reports.	3. N	Open Due 4/22/11	Open-TVA/Bechtel Due: 2/25/11 The proposed response appears to be conflicting with the proposed response for OI-351 regarding not submitting the			

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								04508905-QR report. TVA to re-assess proposed response for both OIs. TVA to re-evaluate previous responses to OI-316 and OI-319 which have conflicting responses regarding the applicability of 04507007-1TR.			
347	7.5.2.	7.5	– S	Qualification report 04508905-1SP does not address EMI/RFI	Qualification report 04038903-7SP, Qualification Basis for	321. Y	Closed	Closed			
348	7.5.2.	7.5	– S	Qualification report 04508905-2SP does not address EMI/RFI	Qualification report 04038903-7SP, Qualification Basis for	322. Y	Closed	Closed			
349	7.5.2. 3	7.5	EICB (Singh)	Radiation testing was not considered in any of the test reports as all the equipment has been assumed to be located in nuclear power plant areas with mild environments and radiation dosages less than 1 x 10^3 rads for total integrated dose (TID). However, the radiation monitors and the I/F converters are located in the main control room which is defined as mild environment. For WBN-2 mild environment is defined as room or building zone where (1) the temperature, pressure, or relative humidity resulting from the direct effects of a design basis event (DBE) (e.g., temperature rise due to steam release) are no more severe than those which would occur during an abnormal plant operational condition, (2) the temperature will not exceed 130°F due to indirect effects of a DBE, (3) the event radiation dose is less than or equal to 1 x 10^4 rads, and (4) the total event plus the 40 year TID (total integrated dose) is less than or equal to 5 x 10^4 rads (reference WB-DC-40-54). TVA to address lack of radiation qualification for WBN-2.	The design criteria provides the criteria for determining what is a mild environment at WBN Unit 2. Calculation WBNAPS4004 "Summary of Mild Environment Conditions for Watts Bar Nuclear Plant" provides the actual values for each area of the plant. In accordance with Table 1, the Control Room has a 40 year maximum TID of 3.5x10^2 RAD and a maximum integrated accident dose of 710.5 RAD for a maximum TID of 1060.5 RAD. The accident dose of 710.5 RAD is the dose for a 100 day LOCA at the surface of the HEPA filter in the Mechanical Equipment Room. This is documented in TVA calculation WBNTSR-005, "Dose Due to the Control Building Emergency Air Cleanup Filters" Revision 3. However, on page 25 of WBNTSR-005, the shine from this source into the control room is negligible and is not considered in the dose calculation for the control room. Calculation WBNAPS3-126, "EQ Dose in the U1/U2 Auxiliary Instrument Rooms and the Computer Room in the Control Building" Revision 0 documents the environmental qualification (EQ) radiation dose in the control building. A review of this document by the TVA radiation protection engineer determined that the TID including the normal and accident dose values for the control room is less than 1x10^3 RAD. Calculation WBNAPS3-126, will be revised to include the control room by July 1, 2011. Since the control room TID has been determined to be less than 1x10^3 RAD, radiation qualification of the RM-1000.	4. Y	Open	Open-TVA/Licensing Due: 2/25/11 TVA to provide the assessment document or a summary of the document with the reference to the appropriate document/documents. February 25, 2011 response is acceptable. Item will be tracked as a confirmatory item in the SE. TVA to provide calculation or summary of calculation when complete.			
350	7.5.2.	7.5	– S	The seismic required response spectra (RRS) is shown in Figures	The RM-1000 was seismically tested in a NIM Bin and the	323. Y	Closed	Closed	RAI # 9, letter	FSAR amend 103	Note: Item to be added to Section 3.10
351	7.5.2.	7.5	– S	The replacement schedule for the components that have a	The replacement schedules stated in 04508905-1SP,	324. Y	Closed	Closed			
352	7.5.2.	7.5	– S	Please clarify how many RM-1000 radiation monitors are being	The total number of RM-1000 units procured under MR	325. Y	Closed	Closed			
353	7.5.2. 3	7.5	EICB (Singh)	Please provide a summary of the [manufacturer's] commercial dedication plan for radiation monitors with references to the guidance document that it follows. Also please include different facets (e.g. receiving, inspection, testing etc.) of the plan.	GA-ESI submitted their commercial grade dedication procedure (OP-7.3-240, "Safety-Related Commercial Grade Item Parts Acceptance," Revision H) to engineering for review. Engineering review of the procedure found that the procedure, Section 5, did not require multiple dedication methods for complex CGI or CGI used in digital safety systems. As a result, it was determined that the GA-ESI program did not meet the requirements of NUREG-800, Section 7.0A, Revision 5.	5. N	Open Due 4/22/11	Open-TVA/Bechtel TVA to note that staff has written a safety evaluation and accepted EPRI TR-106439 (1996) as an acceptable method of addressing commercial dedication. EPRI NP-			

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					A discussion with GA-ESI found that while not required by procedure, GA-ESI does perform vendor surveys as required by Method 2 of NP-5652. The surveys are done based on prudent business practices. Based on this discussion, GA-ESI agreed to review the CGI used in the WBN Unit 2 digital safety-related monitors to determine if they had been dedicated by more than one method. The review of the CGI used in the WBN Unit 2 digital safety-related monitors determined that all CGI had been dedicated using Method 1 of EPRI guideline NP-5652. However, in the sample of items reviewed, there were CGI that were dedicated using a single method. Based on the results of the engineering procedure review and the results of the GA-ESI CGI review, Service Request 346896 was initiated to document the condition and to place the monitors in "Conditional Release" status. Based on the results of the previous reviews, GA-ESI agreed to the following plan of action to resolve the CGD issue: 1. GA-ESI shall revise its commercial grade dedication procedure (OP-7.3-240) to require multiple dedication methods be utilized for complex commercial grade items and commercial grade items for digital safety class systems. The evidence that this has been completed will be provided to TVA by April 15, 2011. Specifically, Method 1 and at least one additional method from the list below will be used to ensure that the CGD procedure complies with the current SRP. Method 1 - Special Tests and Inspections Method 2 - Commercial Grade Survey of Supplier Method 3 - Source Verification Method 4 - Acceptable Supplier/Item Performance Record 2. GA-ESI shall take actions consistent with the revised operating procedure to address the CGIs used in the WBN Unit 2 safety-related digital monitors. Evidence that those actions have been completed will be provided no later than September 1, 2011. Based on the above action plan, TVA will resolve the issues with the GA-ESI CGD of CGI used in the WBN Unit 2 monitors and submit documentation of the resolution to the NRC by: • GA-ESI procedure OP-7.3-240 revision: April 30, 2011 • Resolution of CGD of CGI used in WBN Unit 2 RM-1000 monitors: September 15, 2011			5652 must be used in conjunction with the additional guidance in EPRI TR-106439 for commercial dedication processes e.g. EPRI NP-6404, EPRI TR-102260, GL 89-02, and GL-91-05 per Section 3.3 of EPRI TR-106439.			
354	7.5.2.3	7.5	EICB (Singh)	RG 1.180 endorsed the guidance of IEEE-1050-1996 with clarifications regarding Instrumentation and Control Equipment Grounding to minimize the effects of EMI/RFI and power surge related effects on the safety-related I&C systems. (1)TVA to describe the grounding of the I&C equipment and (2)to state whether or not it follows the guidance of IEEE Std 1050-1996.	*(1)* The WBN Unit 2 grounding system design is in accordance with WB-DC-30-32, Revision 3, "Design Criteria For Grounding" (Attachment 5). I&C equipment grounding is described in Section 2.2.3C.1 "I&C Grounding System" (page 15). The design is based on IEEE 80-1986 "IEEE Guide for Safety in AC Substation	32. Y	Closed Due 3/29/11	Closed			The grounding specification used by TVA does not meet IEEE 1050-1996 and therefore additional steps must be taken to assure that the radiation monitors are not susceptible to EMI/RFI interference when portable radio

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					Grounding." (2) The design of the WBN grounding system predates IEEE 1050. As a result WBN Units 1 and 2 do not follow the guidance of IEEE 1050 or Regulatory Guide 1.180.						devices are sued in the control room. TVA has agreed to do the survey after the radiation monitors are installed. Will be tracked for survey committment under OI-355.
355	7.5.2.3	7.5	EICB (Singh)	Staff has not found the stated exclusion zone for EMI/RFI interfering devices (e.g. hand-held radio devices) in the submitted documents. TVA to provide the distance for the exclusion zones if not provided already. If it is already a submitted information then please point the source of the information.	Cautions and distance limitations for WBN Unit 1 legacy equipment are documented in TVA procedure TI-134, Revision 0, "Control of Portable Two-Way Radios," (Attachment 7) Appendix B. Where WBN Unit 2 uses the same legacy equipment, the same cautions and distance limitations apply. New equipment is procured and tested to TVA Standard Specification SS E18.14.01, Revision 3, "Electromagnetic Interference (EMI) Testing Requirements for Electronic Devices" (Attachment 6). The TVA specification is conservative with respect to Regulatory Guide 1.180, Revision 1. The specification requires that equipment not be susceptible to external interference or create external interference. New equipment is either tested by the manufacturer or tested in the TVA EMI test facility to ensure it meets the specification. If issues are found, the equipment is modified and installation documents are revised to eliminate the issue(s). This is true for the RM-1000 radiation monitors which were tested prior to installation in Brown's Ferry at 10v/meter ("Browns Ferry High Range Radiation Monitor dated December 8, 2006). Based on this, no exclusion zone for radio use is required for the RM-1000 radiation monitors in WBN Unit 2. **TVA Response to Follow-up NRC Request:** TVA will perform an EMI survey of the containment high range radiation monitors after installation in WBN Unit 2 and submit the results to the NRC within two weeks of the survey being completed.	6. Y	Open Due 4/22/11	Open-TVA/Bechtel TVA to provide commitment that an EMI/RFI survey will be conducted after the installation of the equipment to confirm the non-susceptibility when using portable radio-frequency sources such as hand-held radios or other authorized devices that may be used in the control room. Summary of the results to be submitted to NRC to close this item. Survey results are to be available for audit by NRC.			
356	7.5.2.3	7.5	EICB (Singh)	The attachment number refers to your February 25, 2011 letter. RM-1000 Qualification Test Report 04508905-QR (Attachment 23); page 4-27 in Table 4-22 shows that RM-3 output failed during the OBE and SSE tests. The justification for failure of this RM-3 output is not explained in the report or any of the appendices in the report. Please provide the resolution for this failure. Please note that a similar failure was reported in the test in Table 4-21 which was resolved in Appendix F, Closed Nonconforming Material Reports.	The loss of the RM-3 output (current to frequency (I/F) converter output) was determined to be a result of a defect in the shaker table (described in section 4.3.6 page 4-23) which exposed the test articles to unexpected high G's. This caused a failure in the RM-1000 high voltage power supply output. The RM-1000 used in the I/F converter test setup (as shown in Figure 2-6 on page 2-9) was not included in the equipment set being qualified. Rather it was being used as a piece of test equipment to power the I/F converter and provide outputs to monitor I/F converter performance during the test. The resolution was to retest the I/F converter using a functional RM-1000 module at a later time (December). The balance of the components (non-failed) were tested to completion during the original testing runs in the November time frame.	33. Y	Closed	Closed		Closed by TVA letter of 3/31/11.	
357	7.5.2.3	7.5	EICB (Singh)	In Attachment 5, Qualification Test Report Supplement, RM-1000 (04508905-1SP), Attachment 6, Qualification Test Report Supplement, I-F Converter Upgrade (04508905-2SP), and	Attachment 8 contains GA-ESI qualification report 04508903-1TR "Seismic Qualification Test Results RM-1000 and Current-to Frequency (I/F) Converter" original release,	34. N		Open-NRC Review			

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				Attachment 23, Qualification Test Report for RM-1000 Processor Module and Current-To-Frequency Converter (04508905-QR), the applicant made a statement that the results for these tests are provided in SE document 04508903-1TR. Please provide SE document 04508903-1TR for the staff to review. IF this report has been submitted earlier then please advise us the letter number and date by which it was submitted.	dated April 1999.						
358	7.5.2.3	7.5	EICB (Singh)	The attachment numbers refer to your February 25, 2011 letter. In Attachment 2, "Wyle Test Report 41991 Safety Shutdown Earthquake (SSE) Test Response Spectra (TRS) Plots" all five (5) pages, in Attachment 5, "General Atomics Electronic Systems 04508905-1SP", page 5-5, Figure 5-2, and in Attachment 23, Qualification Test Report for RM-1000 Processor Module and Current-To-Frequency Converter (04508905-QR)", page 4-25, Figure 4-5 X-Axis SSE Test Response Spectra (TRS) versus Required Response Spectra (RRS), it shows that the TRS were below the RRS at various frequency (5% Damping). Please provide an explanation regarding why this is acceptable.	**NOTE: This response was inadvertently included in the letter dated 3/31/11. Please disregard. A revised response will be included in the next response letter.** The purpose of the 04508905-1SP", page 5-5, Figure 5-2 and Figure 5-1 on the previous page was to support the assertion that the Display Module from the RM2000 is qualified as used in the RM1000 That graph has the RRS plotted at 16 g, if it is re-plotted at 15 g (per CEB-SS-5.10 Rev. 3, Figure 3.1), then it meets your requirements and the TRS does not drop below the RRS. In the document 04508905-QR Figure 4-5 on page 4-25 is the TRS for the first test performed. See page 4-38 of the same document for the second TRS graph which was performed on December 4 1998. Again the retest was required because of the failed I/F converter output previously mentioned.	7. N	Open Due 4/22/11	Open-TVA/Bechtel			
359	7.7.1.1		EICB (Carte)	Was the CERPI system developed under a 10 CFR 50 Appendix B compliant program?	CERPI is a non-safety related system. Therefore, 10 CFR 50 Appendix B is not applicable.	8.	Open Due 4/22/11	Open-TVA/WEC			
360			EICB (Garg)	In order for staff to review the acceptability of the Incore Instrumentation System (IIS): *(a)* Provide a brief system description of IIS and its regulatory compliance *(i)* In your discussion include the discussion of WINCISE and BEACON system which are part of the IIS. *(ii)* Also provide the differences between the system used at WBN Unit vs. at Unit 2, e.g. Movable vs. fixed IIS. *(iii)* For WINCISE provide the basis for acceptance. *(b)* If this system has been accepted by the staff previously at some other plant then provide the reference to that SE. *(c)* If this has not been evaluated by the staff previously, then provide the effect of CCF of this system and its effect on safety system or chapter 15 analysis. *(d)* Does this have any interconnection with safety system? *(e)* For BEACON provide: *(i)* The acceptability of this system. *(ii)* I believe that this system was accepted at WBN Unit 1. If that is the case then provide the reference to that review. *(iii)* Also provide any differences of this system to the one at WBN Unit 1 system.		9.	Open Due 4/22/11	Open-TVA/WEC			
361	7.7.1.1		EICB (Carte)	Was the Foxboro IA system developed under a 10 CFR 50 Appendix B compliant program?	Foxboro I/A is a non-safety related system. Therefore, 10 CFR 50 Appendix B is not applicable.	10.	Open Due 4/22/11	Open-TVA/Bechtel			

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362	7.6.1	7.6.7	EICB (Kemper & Singh)	OI #331 requested TVA to provide information regarding how the Loose Parts Monitoring System (LPMS) in-containment components (e.g., Accelerometer (including the integral insulated hardline cable), Softline cable, and Remote Charge Preamplifiers) were qualified for vibration as addressed in regulatory position C.1.g of RG 1.133, Rev. 1. TVA responded by stating that "TVA has reviewed the information provided by Westinghouse describing how the Loose Part Monitoring System (LPMS) sensor is qualified for normal operating conditions provided in Westinghouse letter WBT-D-2782, dated December 17, 2010 (Reference 11) as addressed in regulatory position C.1.g of Reg. Guide 1.133 and found it acceptable. Vibration qualification is not applicable to the softline cable. Due to the installation location (junction boxes mounted to the shield or fan room walls) and previous seismic qualification, vibration qualification of the charge converter/preamplifier is not required. This completes the response to this item." However, the staff still desires further clarification on this response. Specifically, please provide a documented basis that demonstrates the LPMS in-containment equipment is qualified for normal operating conditions (e.g., test results compared to the equipment qualification specification), including vibration qualification. Also, provide justification for why vibration qualification if the Remote Charge Preamplifier is not required.		11.	Open-TVA					
363	7.5.1. 1.3 and 7.9.1	7.5.2	EICB (Rahn and Mossman)	OI#199 requested TVA to provide information concerning how TVA plans to meet regulatory criteria for Quality (10 CFR 50.55a(a)(1)) associated with the Technical Support Center and Nuclear Data Link. TVA responded in Letter Dated October 5, 2010, Item 63; however, TVA's response does not address the quality aspects of these system features. A similar question had been asked for Quality Criteria adherence for the SPDS and the BISI functions of the Integrated Computer System. In response to that request (same letter) TVA provided a description of TVA procedures, BISI software development procedures, and various management measures that will be taken to assure high quality in the design, operation, and maintenance of the SPDS and BISI functions of the ICS. Since the TSC and Nuclear Data Link information originates in the SPDS function of the ICS, are there any aspects of the quality measures that apply to the TSC and NDL features developed as part of quality processes for the ICS that are applicable to the data communications features? Specifically, what is the scope of TVA Procedure SPP-2.6 "Computer Software Control"? How does it apply		12.					

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				to the ICS functions of a) SPDS, b) BISI, and c) TSC and NDL functions? Wouldn't there be aspects of the quality procedures that apply to the development, maintenance, and operations of the software needed to support the data communications features. Also, what quality measures will be applied to develop, maintain, and operate the hardware that accomplishes the TSC and NDL functions to ensure that these features will be reliable and available when needed?							