

December 10, 2008

TVA-WBN-TS-08-04

10 CFR 50.55a

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555-0001

Gentlemen:

In the Matter of ) Docket No. 50-390  
Tennessee Valley Authority (TVA) )

**WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 - CORRECTED RESPONSE TO  
REQUEST FOR ADDITIONAL INFORMATION REGARDING THE RELIEF REQUEST  
FOR THE RISK-INFORMED INSERVICE INSPECTION PROGRAM (TAC NO. MD9596)**

The purpose of this letter is to respond to NRC's request for additional information (RAI) dated October 28, 2008. This corrected response supersedes TVA's December 3, 2008 letter on this subject.

On December 4, 2007, TVA submitted proposed alternatives to 10 CFR 50.55a(g), "Inservice Inspection Requirements," based on alternative methodology described in Electric Power Research Institute (EPRI) Technical Report TR-112657 Revision B-A, "Revised Risk-Informed Inservice Inspection Evaluation Procedure." NRC's October 28, 2008 request for additional information requested clarification of elements of the original submittal. On December 3, 2008, TVA responded to the RAI. However, the response to question 1 contained an error. TVA's corrected response to this RAI is provided in the enclosure. There are no regulatory commitments associated with submittal.

If you have any questions concerning this matter, please call me at (423) 365-1824.

Sincerely,

M. K. Brandon  
Manager, Site Licensing and  
Industry Affairs  
U.S. Nuclear Regulatory Commission

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Enclosure

cc: NRC Resident Inspector  
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## ENCLOSURE

### WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 CORRECTED RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING THE RELIEF REQUEST FOR THE RISK-INFORMED INSERVICE INSPECTION PROGRAM

By letter dated December 4, 2007, TVA submitted proposed alternatives to 10 CFR 50.55a(g), "Inservice Inspection Requirements," based on alternative methodology described in Electric Power Research Institute (EPRI) Technical Report TR-112657 Revision B-A, "Revised Risk-Informed Inservice Inspection Evaluation Procedure." On October 28, 2008 NRC issued a request for additional information seeking clarification of three elements of the original submittal. NRC's questions and TVA's responses are provided below:

#### Question 1

Section 3.1 of the submittal states that, "segments were defined as continuous runs of piping whose failure would result in the same consequence." Section 3.4 further defines risk groups as welds "susceptible to the same degradation mechanism and whose failure would result in the same consequence." Table 3.1 identifies segments and Table 3.4 identifies risk groups, and the entries in the two tables are not easily comparable.

Please clarify what the "same consequence" in Section 3.1 means (e.g., is it the consequential failure of exactly the same functions and equipment, or simply the same consequence category?) Based on this clarification, please explain how the number of segments in a system in Table 3.1 is related to the number of risk groups in the same system in Table 3.4.

#### Response 1

*The term "same consequence" as used in Section 3.1 refers to the same consequence category.*

*"Risk Group" refers to a grouping of inspection elements within a single system that all have the same Risk Category, and are all potentially subject to the same degradation mechanism. As such, each Risk Group is analogous to an individual line in Table 3.6. There is no fixed relationship between the number of Segments in a system in Table 3.1 and the number of Risk Groups in the same system in Table 3.4.*

#### Question 2

Section 3.5.1, "Additional Examinations" (page E1-9 of the submittal), presents the criteria for engineering evaluation and additional examinations. The submittal states that "Additional examinations will be performed on those elements with the same root cause conditions or degradation mechanisms. The additional examinations will include high-risk significant elements and medium risk significant elements, if needed, up to a number equivalent to the number of elements required to be inspected on the segment or segments during the current outage. If unacceptable flaws or relevant conditions are again found similar to the initial problem, the remaining elements identified as susceptible will be examined." Please clarify when these remaining elements will be examined.

### Response 2

*The additional examination sample would be examined during the current outage. If unacceptable flaws or relevant conditions are identified in the first additional examination sample, the remaining elements identified as susceptible would also be examined during the current outage.*

### Question 3

Table 3.5 shows that, in Category 4, there are 21 elements selected for inspection in the Reactor Coolant System (RCS). However, Table 3.6 shows only 20 Category 4 inspection locations in the RCS system. Please clarify this apparent inconsistency.

### Response 3

*The inconsistency was due to an error in transposition. The 21 elements selected for inspection in the RCS system in Category 4 consist of 20 B-J welds and one B-F weld. In the transposition to Table 3.6, the B-F weld was inadvertently omitted. The B-F weld omitted was 1-068D-B001-02. Table 3.6 should show 21 RI-ISI Inspection Locations for RCS Category 4. As a result, the delta in table 3.6 will change to -20, CDF impact will decrease to 1.18 E-09 and LERF impact will decrease to 1.37E-11. A revised Table 3.6 is provided below. A few other minor errors were identified in total rows, and these have also been corrected in the table below.*

**Table 3.6**  
**WBN Unit 1 - Risk Impact Analysis Results**

System <sup>(1)</sup>	Category	Consequence Rank	Failure Potential		Inspection Locations			CDF Impact <sup>(3)</sup>		LERF Impact <sup>(3)</sup>	
			DMs	Rank	Section XI <sup>(2)</sup>	RI-ISI	Delta	w/ POD	w/o POD	w/ POD	w/o POD
RCS	2	High	TT, PWSCC	Medium	1	1	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RCS	2	High	PWSCC	Medium	13	8	-5	5.90E-09	5.90E-09	6.83E-11	6.83E-11
RCS	2	High	TASCS	Medium	0	2	2	-4.24E-09	-2.36E-09	-4.91E-11	-2.73E-11
RCS	2	High	TASCS, TT	Medium	1	1	0	-1.41E-09	0.00E+00	-1.64E-11	0.00E+00
RCS	2	High	TT	Medium	1	0	-1	7.07E-10	1.18E-09	8.19E-12	1.37E-11
RCS	4	High	None	Low	41	21	-20	1.18E-09	1.18E-09	1.37E-11	1.37E-11
RCS	7a	Low	None	Low	0	0	0	negligible	negligible	negligible	negligible
<b>RCS Total</b>								<b>2.12E14E-09</b>	<b>5.90E-09</b>	<b>-2.46E47E-11</b>	<b>6.83E84E-11</b>
CVCS	2	High	TASCS	Medium	0	1	1	-2.12E-09	-1.18E-09	-2.46E-11	-1.37E-11
CVCS	2	High	TASCS, TT	Medium	0	1	1	-2.12E-09	-1.18E-09	-2.46E-11	-1.37E-11
CVCS	2	High	TT	Medium	0	2	2	-4.24E-09	-2.36E-09	-4.91E-11	-2.73E-11
CVCS	4	High	None	Low	0	12	12	-7.07E-10	-7.07E-10	-8.19E-12	-8.19E-12
CVCS	6a	Medium	None	Low	32	0	-32	negligible	negligible	negligible	negligible
CVCS	6b	Low	TT	Medium	0	0	0	negligible	negligible	negligible	negligible
CVCS	7a	Low	None	Low	0	0	0	negligible	negligible	negligible	negligible
<b>CVCS Total</b>								<b>-9.20E19E-09</b>	<b>-5.42E43E-09</b>	<b>-1.06E-10</b>	<b>-6.28E29E-11</b>
RHR	2	High	IGSCC	Medium	1	3	2	-2.36E-09	-2.36E-09	-2.73E-11	-2.73E-11
RHR	2	High	TASCS	Medium	0	2	2	-4.24E-09	-2.36E-09	-4.91E-11	-2.73E-11
RHR	4	High	None	Low	17	13	-4	2.36E-10	2.36E-10	2.73E-12	2.73E-12
RHR	6a	Medium	None	Low	23	0	-23	negligible	negligible	negligible	negligible
<b>RHR Total</b>								<b>-6.37E36E-09</b>	<b>-4.48E-09</b>	<b>-7.37E-11</b>	<b>-5.19E-11</b>
SIS	2	High	IGSCC	Medium	1	7	6	-6.00E-11	-6.00E-11	-6.00E-12	-6.00E-12
SIS	4	High	None	Low	22	68	46	-2.71E-09	-2.71E-09	-3.14E-11	-3.14E-11
SIS	5a	Medium	IGSCC	Medium	5	2	-3	3.00E-11	3.00E-11	3.00E-12	3.00E-12
SIS	6a	Medium	None	Low	33	0	-33	negligible	negligible	negligible	negligible
SIS	7a	Low	None	Low	6	0	-6	negligible	negligible	negligible	negligible
<b>SIS Total</b>								<b>-2.74E-09</b>	<b>-2.74E-09</b>	<b>-3.44E-11</b>	<b>-3.44E-11</b>

**Table 3.6 (cont.)  
WBN Unit 1 - Risk Impact Analysis Results**

System <sup>(1)</sup>	Category	Consequence Rank	Failure Potential		Inspection Locations			CDF Impact <sup>(3)</sup>		LERF Impact <sup>(3)</sup>	
			DMs	Rank	Section XI <sup>(2)</sup>	RI-ISI	Delta	w/ POD	w/o POD	w/ POD	w/o POD
CI	6a	Medium	None	Low	0	0	0	negligible	negligible	negligible	negligible
CI	7a	Low	None	Low	0	0	0	negligible	negligible	negligible	negligible
<b>CI Total</b>								<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>
CSS	6a	Medium	None	Low	3	0	-3	negligible	negligible	negligible	negligible
CSS	7a	Low	None	Low	13	0	-13	negligible	negligible	negligible	negligible
<b>CSS Total</b>								<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>
AFW*	5a (3)	Medium (High)	TASCS (FAC)	Medium	1	1	0	-1.20E-11	0.00E+00	-1.20E-12	0.00E+00
AFW*	6a	Low	None (FAC)	Low	8	0	-8	negligible	negligible	negligible	negligible
AFW	6a (3)	Low (High)	None (FAC)	Low	1	0	-1	negligible	negligible	negligible	negligible
AFW	6b (5b)	Low (Medium)	TASCS, TT (FAC)	Medium	1	0	-1	negligible	negligible	negligible	negligible
AFW*	7a	Low	None (FAC)	Low	4	0	-4	negligible	negligible	negligible	negligible
AFW	7a (5b)	Low (Medium)	None (FAC)	Low	1	0	-1	negligible	negligible	negligible	negligible
<b>AFW Total</b>								<b>-1.20E-11</b>	<b>0.00E+00</b>	<b>-1.20E-12</b>	<b>0.00E+00</b>
FWS	6a (3)	Low (High)	None (FAC)	Low	14	0	-14	negligible	negligible	negligible	negligible
FWS	6b (5b)	Low (Medium)	TASCS, TT (FAC)	Medium	2	0	-2	negligible	negligible	negligible	negligible
FWS	7a (5b)	Low (Medium)	None (FAC)	Low	3	0	-3	negligible	negligible	negligible	negligible
<b>FWS Total</b>								<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>
MSS	4	High	None	(High)	23	3	-20	1.18E-09	1.18E-09	1.37E-11	1.37E-11
MSS	6a	Low	None	(High)	120	0	-120	negligible	negligible	negligible	negligible
<b>MSS Total</b>								<b>1.18E-09</b>	<b>1.18E-09</b>	<b>1.37E-11</b>	<b>1.37E-11</b>
<b>Grand Total</b>								<b>-1.50E-08</b>	<b>5.57E-09</b>	<b>-1.78E-10</b>	<b>6.72E-11</b>

\*AFW <4NPS added in Interval 2. Section XI locations estimated at 7.5% of population

Table 3.6 shows values as two significant digits; however, totals are based on four significant digits (following the decimal).

**Notes**

1. Systems are described in Table 3.1-1.
2. Only those ASME Section XI Code inspection locations that received a volumetric examination in addition to a surface examination are included in the count. Inspection locations previously subjected to a surface examination only were not considered in accordance with Section 3.7.1 of EPRI TR-112657.

3. Per Section 3.7.1 of EPRI TR-112657, the contribution of low risk categories 6 and 7 need not be considered in assessing the change in risk. Hence, the word "negligible" is given in these cases in lieu of values for CDF and LERF Impact. For those cases in high, medium or low risk region piping where the change in risk calculation produces a value of zero for CDF or LERF Impact, "no change" is listed.