WBN2Public Resource

From: Wiebe, Joel
Sent: Tuesday, July 06, 2010 12:46 PM
To: Beissel, Dennis
Cc: WBN2HearingFile Resource; Poole, Justin; 'Stegen, Amanda'; 'Keller, Tonya K'
Subject: FW: TVA letter to NRC - ER RAI Clarification Response
Attachments: image001.gif; ER RAI Clarification Response Submittal 7-2-30_signed copy.pdf

I will provide the Attachments when they become available.

From: Boyd, Desiree L [mailto:dlboyd@tva.gov]
Sent: Tuesday, July 06, 2010 10:34 AM
To: Wiebe, Joel; Raghavan, Rags; Milano, Patrick; Campbell, Stephen
Subject: TVA letter to NRC - ER RAI Clarrification Response

Please see attached letter that was sent to the NRC today.

Thank you,

~*~*~*~*~*~*~*~*~*~*~*~*~*~*~*~
Désireé L. Boyd
WBN 2 Licensing Support
Sun Technical Services
dlboyd@tva.gov
423-365-8764
~*~*~*~*~*~*~*~*~*~*~*~*~*~*~*~

Hearing Identifier: Watts_Bar_2_Operating_LA_Public
Email Number: 37

Mail Envelope Properties (F371D08C516DE74F81193E6D891DC4AF36C0697332)

Subject: FW: TVA letter to NRC - ER RAI Clarification Response
Sent Date: 7/6/2010 12:45:51 PM
Received Date: 7/6/2010 12:45:55 PM
From: Wiebe, Joel

Created By: Joel.Wiebe@nrc.gov

Recipients:
"WBN2HearingFile Resource" <WBN2HearingFile.Resource@nrc.gov>
Tracking Status: None
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"Beissel, Dennis" <Dennis.Beissel@nrc.gov>
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Files	**Size**	**Date & Time**	
MESSAGE	624	7/6/2010 12:45:55 PM	
image001.gif	7977		
ER RAI Clarification Response Submittal 7-2-30_signed copy.pdf			788372

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

Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

July 2, 2010

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

Watts Bar Nuclear Plant, Unit 2
NRC Docket No. 50-391

Subject: **Watts Bar Nuclear Plant (WBN) Unit 2 - Submittal of Additional Information Requested During May 12, 2010, Request for Additional Information (RAI) Clarification Teleconference Regarding Environmental Review (TAC No. MD8203)**

The purpose of this letter is to provide the U.S. Nuclear Regulatory Commission (NRC) additional information requested during a teleconference May 12, 2010 (Reference 1), in support of the NRC's environmental review of WBN Unit 2. The purpose of the call was to clarify several of the TVA RAI responses provided to the NRC in the February 25, 2010, and April 9, 2010, submittals.

The WBN Unit 2 Final Supplemental Environmental Impact Statement (June 2007) was submitted to the NRC on February 15, 2008 (Reference 2). By letter dated July 2, 2008 (Reference 3), TVA responded to an NRC RAI. January 27, 2009 (Reference 4), TVA provided the Severe Accident Management Alternatives analysis report for WBN Unit 2.

By letter dated December 3, 2009 (Reference 5), the NRC requested additional information subsequent to an environmental site audit in October 2009. By letters dated December 23, 2009 (Reference 6), February 25, 2010 (Reference 7), April 9, 2010 (Reference 8), and May 12, 2010 (Reference 9), TVA provided responses to the December 3, 2009, RAIs.

The enclosure provides the information requested by the NRC. There are no regulatory commitments associated with this submittal. If you have any questions, please contact William Crouch at (423) 365-2004.

Sincerely,

for MB

Masoud Bajestani
Watts Bar Unit 2 Vice President

References:

1. Teleconference between NRC, PNNL, and TVA on May 12, 2010, "TVA RAI Clarification Call" (ML101370186)

2. TVA letter to NRC dated February 15, 2008, "Watts Bar Nuclear Plant (WBN) - Unit 2 - Final Supplemental Environmental Impact Statement for the Completion and Operation of Unit 2" (ML080510469)

3. TVA letter to NRC dated July 2, 2008, "Watts Bar Nuclear Plant (WBN) - Unit 2 - Final Supplemental Environmental Impact Statement - Request for Additional Information (TAC MD8203)" (ML081850460)

4. TVA letter to NRC dated January 27, 2009, "Watts Bar Nuclear Plant (WBN) Unit 2 - Final Supplemental Environmental Impact Statement - Severe Accident Management Alternatives (TAC MD8203)" (ML090360588)

5. NRC letter to TVA dated December 3, 2009, "Watts Bar Nuclear Plant, Unit 2 - Request for Additional Information Regarding Environmental Review (TAC No. MD8203)" (ML093030148 / ML093290073)

6. TVA letter to NRC dated December 23, 2009, "Watts Bar Nuclear Plant (WBN) Unit 2 – Additional Information Regarding Environmental Review (TAC No. MD8203)" (ML100210350)

7. TVA Letter to NRC dated February 25, 2010, "Watts Bar Nuclear Plant (WBN) Unit 2 - Additional Information Regarding Environmental Review (TAC No. MD8203)" (ML100630115)

8. TVA Letter to NRC dated April 9, 2010, "Watts Bar Nuclear Plant (WBN) Unit 2 - Response to U.S. Nuclear Regulatory Commission (NRC) Request for Additional Information Regarding Environmental Review (TAC No. MD8203)"

9. TVA Letter to NRC dated May 12, 2010, "Watts Bar Nuclear Plant (WBN) Unit 2 - Response to U.S. Nuclear Regulatory Commission (NRC) Request for Additional Information Regarding Environmental Review (TAC No. MD8203)"

Enclosure:

1. Additional Information Requested During May 12, 2010, RAI Teleconference Regarding Environmental Review

Attachments to Enclosure:

1. Tennessee Valley Authority, Office of Natural Resources and Economic Development – Division of Air and Water Resources, "Preoperational Assessment of Water Quality and Biological Resources of Chickamauga Reservoir, Watts Bar Nuclear Plant 1973-1985," December 1986 (paper copy and on enclosed Optical Storage Media [OSM])

2. Figure 1. Tennessee River Downstream from Watts Bar Dam Showing the Locations of the Three Mussel Sampling Stations (paper copy and on enclosed OSM)

3. Tennessee Valley Authority, Resource Group, Water Management, "Aquatic Environmental Conditions in the Vicinity of Watts Bar Nuclear Plant During Two Years of Operation, 1996-1997," Norris, Tennessee, June 1998 (Revised 06/07/2010) (paper copy and on enclosed OSM)

4. Summary of Revised Computation for RAI H-11: WBN_U2_RAI_H-11_Intake_Pumping_Station_Velocity_Rev2.pdf (paper copy and on enclosed OSM)

5. FENCDOSE Run for Fuel Handling Accident: W000221.ASC (located on enclosed OSM)

6. FENCDOSE Runs for Loss of Coolant Accident: R197F21Aout.txt; R197F21Bout.txt; R197F21A.txt; R197F21B.txt; TS9F11AA; TS9F11AB;TS9F11AC; TS9F11AD; TS9F11PA; and TS9F11PC (located on enclosed OSM)

cc (Enclosure):

U. S. Nuclear Regulatory Commission
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245 Peachtree Center Ave., NE Suite 1200
Atlanta, GA 30303-1257

NRC Resident Inspector Unit 2
Watts Bar Nuclear Plant
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bcc (Enclosure):

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D. E. Grissette, ADM 1V-WBN
R. M. Krich, LP 3R-C
A. L. Sterdis, LP 5A-C
E. J. Vigluicci, WT 6A-K
K. W. Whittenburg, SP 2B-C
EDMS, WT 3B-K (Re: T02 080215 001; T02 080702 003; T02 090127 001;
A02 091208 001; T02 091223 001; T02 100225 001;
T02 100409 001; T02 100512 002)

Enclosure

Additional Information Requested During May 12, 2010, RAI Clarification Teleconference Regarding Environmental Review

Tennessee Valley Authority
Watts Bar Nuclear Plant - Unit 2, Docket No. 50-391

Land Use

NRC Request

Clarification requested on total acreage for WBN site - there are inconsistencies with data provided in the February 25, 2010, RAI responses (1055 acres) and the value in the ER (1700 acres).

TVA response

The 1,055 acres is specifically related to Watts Bar Nuclear and just a portion of the Watts Bar reservation. The 1,700 acres encompasses the Watts Bar Dam and Hydro-Electric Plant, the Watts Bar Steam Plant, the TVA Central Maintenance Facility, and the Watts Bar Resort Area.

Aquatic Ecology

NRC Request

We need to be able to access the entire report on Preoperational Assessment – 1986. As we discussed previously on the phone, TVA only provided the document through page 302, and the appendices in Volume II. We are missing from page 302-484-plus from Volume 1.

> *TVA 1986. Preoperational Assessment of Water Quality and Biological Resources of Chickamauga Reservoir, Watts Bar Nuclear Plant 1973-1985. Office of Natural Resources and Economic Development – Division of Air and Water Resources.*

TVA response

TVA is scanning the entire 1986 document and submitting to NRC.

The following document is provided in Attachment 1:

> Tennessee Valley Authority, Office of Natural Resources and Economic Development – Division of Air and Water Resources, "Preoperational Assessment of Water Quality and Biological Resources of Chickamauga Reservoir, Watts Bar Nuclear Plant 1973-1985," December 1986

Enclosure

Additional Information Requested During May 12, 2010, RAI Clarification Teleconference Regarding Environmental Review

NRC Request

Clarification on AE-4 – specifically when we are talking monitoring sites is that the same as "beds." If it is then does the TRM 526-527 site really extend further upstream or is that just a small grouping of mussels at 592.2 R? And are these the ones you relocated across the river? Which ones were relocated to the boulder study area described in AE-7?

TVA Response

There is a 1994 report that has the mussel sampling stations AND the mussel beds in a figure. The mussels from 529.2 (SCCW discharge location) were not considered part of the bed that is downstream of the SCCW discharge. These mussels were moved across the river to the mussel bed by the boat launch. Although the freshwater mussels do tend to congregate in beds, there are a few that are distributed between the beds, and these were the types of mussels that were relocated.

The mussels that were placed in the boulder field as an experiment to see if reducing the flow of water would improve their survival were randomly selected from mussel beds downstream. They are located near the 528 river mile marker and almost directly across from the 528.9 boat ramp, mid-channel. They have not been checked since placement, but they are being checked July 2010 during a mussel survey.

TVA will submit the figure with the sampling locations and mussel bed locations to NRC.

The following document is provided in Attachment 2:

> Figure 1. Tennessee River Downstream from Watts Bar Dam Showing the Locations of the Three Mussel Sampling Stations

NRC Request

Please clarify why did TVA did not provide an update of TVA 1998 Aquatic Environmental Conditions in the Vicinity of Watts Bar nuclear plant, specifically sections on the entrainment sampling that we discussed in a phone call in late January.

TVA response

TVA has revised the 1998 (Aquatic Environmental Conditions in the Vicinity of Watts Bar Nuclear Plant During Two Years of Operation, 1996-1997). The entrainment numbers were recalculated based on the original data and they continue to show low levels of entrainment for the Intake Pumping Station (IPS).

Enclosure

Additional Information Requested During May 12, 2010, RAI Clarification Teleconference Regarding Environmental Review

The following document is provided in Attachment 3:

> Tennessee Valley Authority, Resource Group, Water Management, "Aquatic Environmental Conditions in the Vicinity of Watts Bar Nuclear Plant During Two Years of Operation, 1996-1997," Norris, Tennessee, June 1998 (Revised 06/07/2010)

Hydrology

NRC Request

TVA Response to H-10. Clarification of the Surface Water Chemical Analysis. Was the sample analyzed for trace metals and were they not reported because they were below detection?

TVA response

No trace element analyses were performed other than for copper, iron, and zinc because the analyses were not needed to support the chemical feed program.

NRC Request

TVA Response to H-6. Verification of the withdrawal rate from the French Drain.

TVA Response

The approximately 70 gpm reported by Arcadis is flowing specifically from the French Drain, and the 500 gpm reported by TVA is pumped from the sump and includes the water from the French Drain. The water from the sump is pumped into the yard holding pond.

NRC Request

TVA Response to H-11. Clarification of information regarding through screen velocity for the intake.

TVA Response

TVA responded to RAI H-11 in its February 25, 2010, submittal. As part of this response, TVA provided a computation for the velocity of water through the net open area of the traveling screens. The computation was given in an Excel spreadsheet file entitled H-11_Intake_Pumping_Station_Velocity_Rev1.xlsx. In the spreadsheet, the average velocity found for the flow through the net open area of the traveling screens was 1.2 feet per second (fps).

Enclosure

Additional Information Requested During May 12, 2010, RAI Clarification Teleconference Regarding Environmental Review

Based on inquiries raised in the RAI clarification teleconference on May 12, 2010, TVA has re-examined the computation for RAI H-11. In this process, revisions were made for two aspects of the computation—the withdrawal rate for the IPS and the fraction of the intake representing the net open area through the traveling screens. In the February 25, 2010, submittal, a withdrawal rate 78,200 gpm was assumed for the IPS. This corresponds to a maximum condition commensurate to the flow for an accident situation. In contrast, an IPS flow of about 52,100 gpm is representative of the normal operating conditions of WBN Unit 1 and Unit 2. As such, the computation has been revised using a withdrawal rate 52,100 gpm rather than 78,200 gpm. In the original computation, documentation was weak for the assumed fraction of the intake obstructed by supports and wire for the traveling screens. In the revised computation, new information from detailed vendor drawings was used to provide a more accurate estimate of the open area through the screens. This new information gives the net open area through the traveling screens to be about 50.3 percent of the intake. With these updates, the resulting velocity in the revised computation is approximately 0.8 fps.

Based on the new information presented above, an Excel spreadsheet file entitled WBN_U2_RAI_H-11_Intake_Pumping_Station_Velocity_Rev2.pdf is provided in Attachment 4 to summarize the revised computation for RAI H-11. In the attached Rev 2 spreadsheet, extraneous information given in the Rev 1 spreadsheet has been removed to make the computation more comprehensible.

Design Basis Accidents

NRC Request

Provide information on the status of the accident analysis (it appears some accident scenarios were not analyzed) as well as the assumptions that went into the analysis.

TVA Response

TVA will be providing status of the accidents analysis.

1. *For the design basis radiation analysis, did TVA use TID source terms and ICRP-2 or Alternate source terms and ICRP-30?*

   For the design basis radiation analysis, TVA used TID and ICRP-30. TVA transitioned from ICRP-2 to ICRP-30.

2. *TVA provided the NRC with FENCDOSE files for some of the accidents. The NRC would like to have the FENCDOSE for Loss of Coolant Accident (LOCA) and Fuel Handling Accident (FHA) to compare against.*

   The output files for FHA and LOCA are provided in Attachments 5 and 6.

Additional Information Requested During May 12, 2010, RAI Clarification Teleconference Regarding Environmental Review

3. *The NRC indicated that TVA did not analyze other SRP events such as RCP locked rotor and RCP shaft break.*

   The rod ejection accident was not analyzed for radiation impact. It is noted in FSAR Section 15.4.6.3 that this event is bounded radiologically by the large break LOCA.

   The current Unit 1 thermal hydraulic analysis for the Chapter 15 locked rotor and shaft break events does not predict any fuel experiencing departure from nucleate boiling (failure); as such, a dose analysis has not been performed for Chapter 15. It is anticipated WBN Unit 2 would have similar results when the final core design and thermal hydraulic analysis are completed for Unit 2. Unit 2 uses the same Westinghouse fuel type as Unit 1 and a lower licensed thermal power. At this time WBN Unit 2 does not intend to perform a locked rotor or RCP shaft break offsite dose analysis.

4. *The NRC indicated the latest SRP has a limit of 100 mrem offsite for waste gas decay tank rupture rather than 500 mrem TVA used on WBN Unit 1. The NRC provided this for informational purposes only since they said they obtained acceptable results in either case for the realistic analysis.*

   No action required.

RAD

NRC Request

Clarify information related to the dilution factor for the release from the plant to the river for the liquid effluents.

TVA Response

The dilution factors were calculated by dividing the cooling tower blowdown (20,000 gpm - 44.6 cfs) (see Fig 3-7 of the submittal) by the effluent flow rate (can vary from less than 100 gpm to 290 gpm - 13.4 cfm to 38.8 cfm).

All fishing is assumed to be sport fishing.

There is only one terrain adjustment factor for each sector.

Note: The telecon meeting minutes (Reference 1) indicated 13.4 cfs to 38.8 cfs in the above calculation. It should have indicated 13.4 cfm to 38.8 cfm.

Attachment 1

(Paper Copy and on Enclosed OSM)

Tennessee Valley Authority

Office of Natural Resources and Economic Development

Division of Air and Water Resources

Preoperational Assessment of Water Quality and Biological Resources of Chickamauga Reservoir

Watts Bar Nuclear Plant 1973-1985

December 1986

Attachment 2

(Paper Copy and on Enclosed OSM)

Figure 1

Tennessee River Downstream from Watts Bar Dam Showing the Locations of the Three Mussel Sampling Stations

Attachment 3

(Paper Copy and on Enclosed OSM)

Tennessee Valley Authority

Resource Group

Water Management

Aquatic Environmental Conditions
In the Vicinity of Watts Bar Nuclear Plant
During Two Years of Operation, 1996-1997

Norris, Tennessee

June 1998
(Revised 06/07/2010)

Attachment 4

(Paper Copy and on Enclosed OSM)

Summary of Revised Computation for RAI H-11

WBN_U2_RAI_H-11_Intake_Pumping_Station_Velocity_Rev2.pdf

Attachment 5

(Located on Enclosed OSM)

FENCDOSE Run for Fuel Handling Accident:

W000221.ASC

Attachment 6

(Located on Enclosed OSM)

FENCDOSE Runs for Loss of Coolant Accident:

R197F21Aout.txt
R197F21Bout.txt
R197F21A.txt
R197F21B.txt
TS9F11AA
TS9F11AB
TS9F11AC
TS9F11AD
TS9F11PA
TS9F11PC