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

May 12, 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 - Response to U.S. Nuclear Regulatory Commission (NRC) Request for Additional Information Regarding Environmental Review (TAC No. MD8203)**

The purpose of this letter is to provide additional information in support of NRC's environmental review of WBN Unit 2 as requested by the NRC in Reference 1 subsequent to a site audit in October 2009.

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 request for additional information. By letter dated January 27, 2009 (Reference 4), TVA provided the Severe Accident Management Alternatives analysis report for WBN Unit 2. By letters dated December 23, 2009 (Reference 5), February 25, 2010 (Reference 6), and April 9, 2010 (Reference 7), TVA provided additional information in support of NRC's environmental review of WBN Unit 2.

The enclosure provides the NRC environmental review request for additional information and TVA's response. There are no regulatory commitments associated with this submittal.

If you have any questions, please contact me at (423) 365-2351.

Sincerely,

M. Bajestani

Masoud Bajestani
Watts Bar Unit 2 Vice President

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NRR

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References:

1. 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]

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

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

7. 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)"

Enclosure:

1. Response to NRC Request for Additional Information Regarding Environmental Review

Attachments to Enclosure:

1. TVA Watts Bar Nuclear Plant Flow Diagram for Dual Unit Operation

2. Watts Bar Nuclear Plant - Flows Associated with NPDES Flow Diagram for Dual Unit Operations (includes update to Table on page 3-3 of the 1978 EIS for dual unit operation)

cc (Enclosure):

U. S. Nuclear Regulatory Commission
Region II
Marquis One Tower
245 Peachtree Center Ave., NE Suite 1200
Atlanta, GA 30303-1257

NRC Resident Inspector Unit 2
Watts Bar Nuclear Plant
1260 Nuclear Plant Road
Spring City, Tennessee 37381

Enclosure

Response to NRC Request for Additional Information Regarding Environmental Review

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

Hydrology

H-16 *NRC Request*

The figure included in Appendix B of the 2007 TVA EIS shows water flow rates for plant systems with one unit in operation. Provide an update of this figure showing the flow rates for the system with WNB Unit 1 and 2 in operation.

Provide an update to the table on page 3-3 of 1978 EIS to include values that include the flow rates needed for both units in operation.

TVA Response

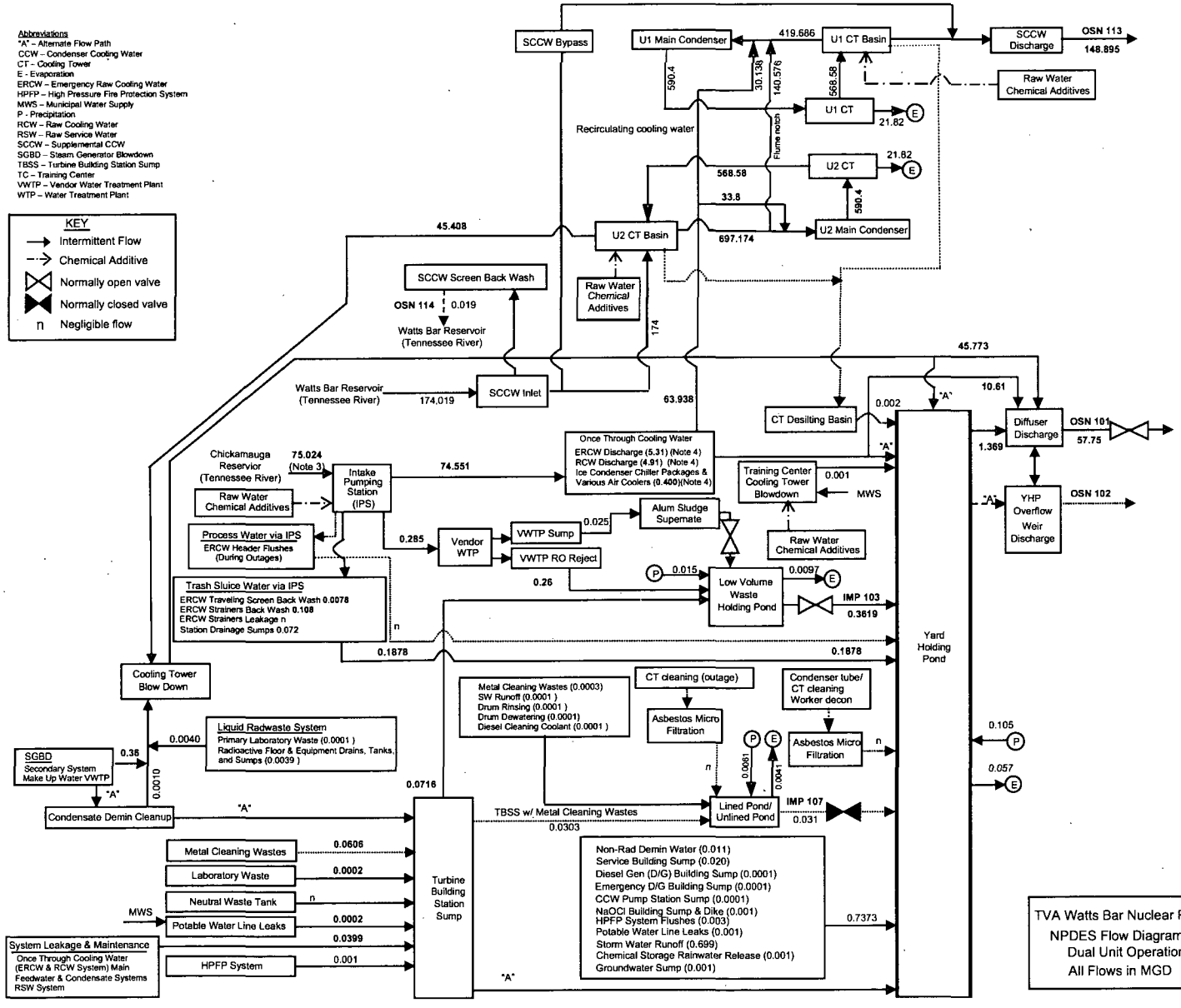
Attachment 1 to this enclosure is "TVA Watts Bar Nuclear Plant Flow Diagram for Dual Unit Operation," which is an update to the figure that was included in Appendix B of the 2007 TVA Environmental Impact Statement (EIS) showing the water flow rates for plant systems with one unit in operation. This updated figure shows the water flow rates for plant systems with WBN Units 1 and 2 in normal power generation mode. The flow rates listed in the flow schematic are in million gallons per day (mgd). The updated flow diagram for dual unit operation was developed using the Unit 1 flow diagram from NPDES Permit No. TN0020168 (pending), March 2009. This flow diagram also updates Supplemental Condenser Cooling Water (SCCW) discharge, which is based on the Condenser Cooling Water System hydraulic model for cooling tower basin study. The flow split between SCCW discharge and the cooling tower blowdown are rebalanced or estimated based on the design basis and functions of the Unit 2 systems supporting dual unit operation.

Attachment 2 of this enclosure is the "Watts Bar Nuclear Plant - Flows Associated with NPDES Flow Diagram for Dual Unit Operations," which includes the update to the Table on page 3-3 of the 1978 EIS for dual unit operation. The plant water flow rates provided in Attachment 2 are based on the "Flows Associated with NPDES Flow Diagram for Dual Unit Operation (as shown in Attachment 1) for TVA Watts Bar Nuclear Plant." A number of flow rates listed on the 1978 Table were deleted since they are no longer shown on the NPDES (Permit No.TN0020168) Flow Schematic diagram for 2009 and Attachment 1. Only the flow rates for dual unit operation at normal power generation mode are provided.

Attachment 1

TVA Watts Bar Nuclear Plant

Flow Diagram for Dual Unit Operation



Notes:

1. Both units are operating in normal power generation mode.
2. Raw water additives will be used in the Intake Pumping Station and the Cooling Tower Basins.
3. *For dual unit operation, two essential raw cooling water (ERCW) pumps and six raw cooling water (RCW) pumps are operating with a total maximum flow rate of 52,100 GPM (75.024 MGD).*
4. The flows through Ice Condenser chiller packages and various air coolers are doubled from Unit 1 Only Operation. The ERCW, and RCW discharge rates were ratioed by 21% to balance the flow diagram.

References:

1. N3-67-4002, R25, ERCW System Description.
2. Calculation No. MDN00002720100373 R0.

Attachment 2

Watts Bar Nuclear Plant

Flows Associated with NPDES Flow Diagram for Dual Unit Operations

(includes update to table on page 3-3 of the 1978 EIS for dual unit operation)

Watts Bar Nuclear Plant
Flows Associated with NPDES Flow Diagram for Dual Unit Operations

Flow Location	Flow-Normal Full Load Operation of Two Units
Intake	75.024 mgd or 52,100 gpm
Strainer Backwash	0.108 mgd or 75 gpm
Screen Backwash	0.0078 mgd 6 gpm
Essential Raw Cooling Water	30.96 mgd or 21,500 gpm
Raw Cooling Water System	44.064 mgd or 30,600 gpm
Cooling Tower Evaporation Rate	2 (21.82 mgd) = 43.64 mgd or 30,305 gpm
Cooling Tower Blowdown Rate	45.408 mgd or 31,533 gpm
Condenser Circulating Water System (Flow through Towers)	2 (590.4 mgd) or 820,000 gpm
Water Treatment Plant Supply	0.285 mgd or 198 gpm
Steam Generator Blowdown (Alternate)	0.36 mgd or 250 gpm
Holding Pond Discharge	1.369 mgd or 951 gpm
Radioactive Liquid Treatment System Discharge	0.0039 mgd or 3 gpm
Plant Discharge	57.75 mgd or 40,104 gpm
Supplemental Condenser Cooling Water Discharge	148.895 mgd or 103,399 gpm