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10 CFR 50.4

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

Watts Bar Nuclear Plant, Unit 1
Facility Operating License No. NPF-90
NRC Docket No. 50-390

Subject: **2010 Annual Non-Radiological Environmental Operating Report**

The purpose of this letter is to submit the enclosed Watts Bar Nuclear Plant (WBN) 2010 Annual Non-Radiological Operating Report. The Tennessee Valley Authority is submitting this report in accordance with Section 5.4.1 of Appendix B, "Environmental Protection Plan," of the WBN Operating License. This report, which addresses the period from February 7, 2010, through February 6, 2011, is required to be submitted within 90 days following each anniversary of issuance of the operating license. Since the WBN operating license date of issuance was February 7, 1996, this 2010 report is due no later than May 8, 2011.

There are no regulatory commitments in this letter. Please direct any questions concerning this matter to Kara Stacy at 423-751-3489.

Respectfully,

for R. M. Krich

Enclosure:
2010 Annual Non-Radiological Environmental Operating Report

cc (Enclosure):
NRC Regional Administrator - Region II
NRC Senior Resident Inspector - Watts Bar Nuclear Plant
U.S. Fish and Wildlife Service

Enclosure

Watts Bar Nuclear Plant, Unit 1

2010 Annual Non-Radiological Environmental Operating Report



TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT

**ANNUAL NON-RADIOLOGICAL
ENVIRONMENTAL OPERATING
REPORT**

FEBRUARY 7, 2010, THROUGH FEBRUARY 6, 2011

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I. INTRODUCTION

The Watts Bar Nuclear Plant (WBN) Annual Non-Radiological Environmental Operating Report is provided for the period of February 7, 2010, through February 6, 2011. This report was prepared in accordance with Appendix B to facility operating license NPF-90, "Environmental Protection Plan (EPP)," Section 5.4.1, "Routine Reports." This report includes a summary of:

- A. Reports previously submitted as specified in the WBN National Pollutant Discharge Elimination System (NPDES) Permit Number TN0020168.
- B. All special reports submitted per EPP Section 4.1, "Environmental Monitoring."
- C. All EPP noncompliances and the corrective actions taken to remedy them.
- D. Changes made to applicable state and federal permits and certifications.
- E. Changes in station design that could involve a significant environmental impact or change the findings of the Final Environmental Statement.
- F. Non-routine reports submitted per EPP Section 4.2, "Unusual or Important Environmental Events."
- G. Changes in approved EPP.

II. REPORTS PREVIOUSLY SUBMITTED AS SPECIFIED IN THE WBN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

The following reports were submitted as specified in the WBN NPDES Permit Number TN0020168 and the Tennessee Storm Water Multi-Sector General Permit (TMSP) Number TNR051343 and TNR050000:

- A. The annual sampling and analysis required by the TMSP for storm water was performed and the annual report was submitted to the Tennessee Department of Environment and Conservation (TDEC) prior to the March 31, 2010, deadline.
- B. As required by the NPDES permit, Discharge Monitoring Reports (DMRs) were completed and submitted monthly to TDEC no later than 15 days after the completion of the reporting period.
- C. DMR Quality Assurance Laboratory Performance Evaluation Study 30 was completed by and submitted to Environmental Resource Associates, TDEC, and the Environmental Protection Agency prior to the August 20, 2010, deadline. All analyte performance evaluations were "acceptable."
- D. The annual Biocide/Corrosion Treatment Report (B/CTP) was completed and submitted to TDEC prior to the February 15, 2011, deadline.

- E. The "Summer 2009 Compliance Survey for Watts Bar Nuclear Plant Outfall 113 Passive Mixing Zone" was submitted to TDEC, Division of Water Pollution Control, on February 23, 2010. The "Winter 2010 Compliance Survey for Watts Bar Nuclear Plant Outfall 113 Passive Mixing Zone" was submitted to TDEC on August 12, 2010.

III. SPECIAL BIOLOGICAL MONITORING REPORTS

A. EPP Section 4.1.1, "Aquatic Monitoring"

1. Routine semi-annual Whole Effluent Toxicity or chronic biotoxicity tests were conducted on plant effluents and the appropriate reports were submitted as part of the DMR for May 2010 (Outfall Serial Numbers [OSNs] 101, 112, 113), and for September/October 2010 (OSNs 101, 112, 113) as required by the NPDES permit. All TVA test results were valid for all sampling outfalls and dates, and for both 25 percent inhibition concentration (IC₂₅) tests (*P. promelas* and *C. dubia*).
2. An annual report on the "Biological Monitoring of the Tennessee River near the Watts Bar Nuclear Plant 2009" was submitted to TDEC on June 14, 2010, indicating no adverse impact to aquatic life due to WBN operation. This report is not required in accordance with Part III, Section I, of the WBN NPDES Permit, but was a recommendation in the "Watts Bar Nuclear Plant Supplemental Condenser Cooling Water System Fish Monitoring Program, 2001" report for consistency with other required annual reporting programs at Tennessee and Alabama nuclear plants.
3. In accordance with the provisions of Tennessee Code Annotated Section 69-8-301 et seq., the Water Resources Information Act, WBN submitted the Water Withdrawal Registration Form for Calendar Year 2010 to TDEC prior to the February 15, 2011, deadline. Although federal agencies are not subject to laws and regulations promulgated by state governments unless Congress has clearly waived the federal government's sovereign immunity, TVA voluntarily agreed in 2003, as a matter of policy, to provide the registration information to assist both TVA and TDEC in carrying out their water management responsibilities.

B. EPP Section 4.1.2, "Maintenance of Transmission Line Corridors"

Listed below are the 500 kV transmission lines associated with WBN and information regarding the maintenance that was performed on each line:

500 kV Line Identifier	Maintenance Performed
Bull Run - Watts Bar (Note Below)	No major clearing was performed on these line corridors using herbicides.
Watts Bar - Roane	The chemical mix listed below was applied with a low volume backpack at a rate of 20 gallons per brush acre: Accord Concentrate - 4% Habitat - .75% Surfactant - .75% Escort - 3 oz./100 gallon TVA applied 8780 gallons of this mix which equates to treating 439 brush acres.
Watts Bar - Volunteer	No major clearing was performed on these line corridors using herbicides.
Watts Bar - Sequoyah 1 (Note Below)	
Watts Bar - Sequoyah 2	
<p>Note: The transmission line designated as Bull Run - Sequoyah in previous versions of this report has been split into the following transmission lines: 1) Watts Bar Sequoyah 1, 2) Bull Run - Watts Bar.</p>	

IV. ENVIRONMENTAL PROTECTION PLAN NONCOMPLIANCES

WBN did not receive a Notice of Violations from February 2010 to February 2011. In accordance with the NPDES permit, the following noncompliances were reported to TDEC:

- A. Tennessee Storm Water Multi-Sector General Permit for Industrial Activities (TMSP), Sector O, requires annual monitoring of total recoverable iron. On March 11, 2010, WBN exceeded the benchmark monitoring requirement for total recoverable iron as stated in the NPDES permit, Table O-2 (Benchmark Monitoring Requirements for Steam Electric Power Generating Facilities at monitoring point SW-9). According to TDEC, the Benchmark Monitoring Requirements are target values and should not be construed to represent permit limits. Therefore, this was not a permit noncompliance or a reportable environmental event (REE).

In accordance with the TMSP, WBN notified TDEC of this exceedance, reviewed its storm water pollution prevention plan (SWPPP), made an addition to the plan to assist in reducing specific effluent concentrations to equal to or less than the benchmark monitoring requirements, and submitted a brief summary of the proposed SWPPP modification to the State, including a timetable for implementation. Best management practices (BMPs) were implemented following the March 2010 benchmark exceedance and the outfall was re-sampled on December 12, 2010. Although the December 2010 value exceeded the Benchmark Monitoring Requirement for total recoverable iron, it

showed a downward trend from the March 2010 sampling results, which may be attributable to the implementation of the BMPs.

- B. When Storm Water Outfall Number 8 was sampled for total recoverable iron on July 19, 2010, the benchmark monitoring requirement for total recoverable iron as stated in the TMSP Table O-2 was exceeded. This was not a permit noncompliance or a reportable environmental event (REE). In accordance with the TMSP, WBN notified TDEC of the exceedance, reviewed its SWPPP and made an addition to the plan to assist in reducing specific effluent concentrations to equal to or less than Benchmark Monitoring Requirements. A brief summary of the proposed SWPPP modification, including a timetable for implementation, was submitted to TDEC. BMPs were implemented and, to assess the effectiveness of the BMPs, the outfall was monitored again on November 16, 2010. Since the analytical results were within benchmark monitoring requirements, this BMP was considered a success.
- C. On August 27, 2010, TVA provided written notification to TDEC on a July 16, 2010, High Pressure Fire Protection (HPFP) leak. A verbal notification for this same leak was provided by telephone to the Chattanooga Environmental Field Office (CEFO) on August 19, 2010, at 1610. At no time was this leak a threat to public drinking supplies, to human health, or to the environment. WBN has not observed fish distress, fish mortality, or abnormal bird migration since the day of the discovery. Event summaries and repair updates were provided in the DMRs and accompanying cover letters. On October 15, 2010, WBN observed no flow conditions in the wet weather conveyance from the HPFP leak and the effluent remaining in the excavation pit was re-routed to an approved NPDES Outfall. Daily observations noted that no additional HPFP effluent reached the adjacent wet weather conveyance after this date. The HPFP pipe repair was completed on November 5, 2010.
- D. On September 1, 2010, WBN submitted written notification regarding Intake Pumping Station (IPS) Essential Raw Cooling Water (ERCW) backwash and traveling screen runoff trough release on August 25, 2010. In accordance with the NPDES permit, the event was reported in the August 2010 DMR, since the water source was treated with sodium hypochlorite. At no time was there a threat to public drinking supplies, to human health, or to the environment and WBN did not observe fish distress, fish mortality, or abnormal bird migration associated with this IPS release.

V. CHANGES MADE TO APPLICABLE STATE AND FEDERAL PERMITS AND CERTIFICATIONS

- A. NPDES Permit Number TN 0020168
 - 1. On February 16, 2010, WBN provided TDEC CEFO a courtesy notification, including relevant information such as source, volume and discharge location, concerning Unit 2 Condenser Circulating Water (CCW) system flushes. In a follow-up discussion with TDEC, it was determined that permitting requirements did not apply, since only existing outfalls would be utilized and no supplemental chemical additives would

be utilized. On June 14, 2010, WBN submitted another pipe flush schedule and hydrostatic test schedule to TDEC.

2. On March 4, 2010, WBN requested an amendment to the current raw water treatment plan or B/CTP. In accordance with the NPDES permit, Part III, G, this request was to replace a specific product with a "similar" product containing "essentially the same chemical" as products previously approved by the Division and to incorporate a chemical name change. The processes and frequencies of applying the products would not change. In addition, the discharge concentrations of the replacement chemicals would remain the same as the currently approved chemicals, ensuring the same high level of protection for aquatic life in the Tennessee River, while providing flexibility for plant equipment options. The following tables were included in that request:

- (1) The Raw Water Chemical Additives, proposed chemicals as well as those currently in use (depicted in parenthesis and/or footnote),
- (2) The Raw Water Application Guide,
- (3) Calculations Showing the Worst Case Scenario, and
- (4) Product Toxicity Data Summary and Comparison with Maximum Instream Wastewater Concentrations, a summary of the Raw Water Treatment Programs, a Treatment Plan Overview, Toxicity Summaries, and a Material Safety Data Sheet for each product with an accompanying Product Bulletin.

TDEC approved the amendment on April 30, 2010.

3. On June 4, 2010, WBN received TDEC's approved NPDES Permit Number TN0020168 renewal, effective July 1, 2010, with an expiration of December 31, 2011. The permit renewal included TDEC's approval of the minor modification to the NPDES permit removing NPDES outfalls Internal Monitoring Point 111, and monitoring at OSN 112 for TMSP only (SW-11). From January 1, 2010, through June 30, 2010, WBN monitored OSN 112 for NPDES parameters and SW-11 for TMSP parameters. However, beginning July 1, 2010, the NPDES renewal effective date, SW-11 (former OSN 112) is monitored for TMPS parameters only, including additional compliance conditions for discharging to a section of the Chickamauga Reservoir that is Exceptional Tennessee Waters.
4. TVA applied to TDEC for a General Permit for Discharges of Hydrostatic Test Water on July 1, 2010, in support of Unit 2 construction activities. No supplemental chemical additives would be added to aid in the cleaning process and all water utilized for the tests would be discharged via permitted NPDES outfalls. The Hydrostatic General Permit, TNG670000, was effective July 16, 2010, with an expiration date of December 14, 2010. Since the draft permit had not been finalized, WBN submitted a renewal application on November 12, 2010, in accordance with Section 11.1 of the Hydrostatic General Permit to administratively continue the coverage. TDEC issued a permit with the effective date of

April 6, 2011, and an expiration date of April 1, 2013.

5. On August 17, 2010, TVA submitted a NPDES permit modification request to TDEC for the addition of Unit 2 operation. The identified impacts to wastewater discharges and water intake effects are:
 - (1) Insignificant hydrothermal effects on near-field temperatures and on the operation of the Supplemental Condenser Cooling Water (SCCW) system are expected,
 - (2) Although Towerbrom® treatments for CCW will increase 100 percent, TVA anticipates compliance with the existing, approved B/CTP,
 - (3) The intake pumping station (IPS) rate will increase from approximately 52 MGD to approximately 75 MGD, and
 - (4) A corresponding increase of ERCW and raw cooling water chemical additives will occur.

TDEC provided notice of completeness of the application and submitted material on September 14, 2010.

6. On December 16, 2010, TVA submitted a NPDES permit modification request to TDEC with an updated flow schematic illustrating that the HPFP water is supplied to the site from the IPS, which may be continuously chlorinated. The HPFP pressure is regulated by a pressure control valve which is designed to open, when necessary, to relieve excess pressure and allow flow to the intake forebay. Since the system is designed for at least one ERCW pump to be in service at all times when there is nuclear fuel on site, any water relieved to the intake forebay would be immediately circulated back into the IPS and disseminated to the various plant systems.

B. Air Permits

WBN is currently operating under Air Permit Number 448529, which expired on September 1, 2010. Continued operation under this permit is permissible since TVA submitted a 2010 Air Permit application on June 29, 2010. This application met the 60-day requirement prior to the permit's expiration date.

VI. CHANGES IN FACILITY DESIGN OR OPERATION

In accordance with EPP Section 3.1, "Plant Design and Operation," facility design and operational changes were reviewed for potential effect on the environment as described below. A review of facility design and operational changes proposed from February 7, 2010, through February 6, 2011, was performed. Projects considered as having potential impact on the environment included those that:

- Could have caused waste stream generation/alteration.
- Required the acquisition/modification of permits.
- Involved the use of hazardous material.
- Required physical construction.

The review, performed in accordance with the guidelines of the TVA's National Environmental Policy Act (NEPA) Program, documented that design and operational changes did not involve an unreviewed environmental question. The following criteria were used to identify those projects with a potential for environmental effects:

- A. Waste Stream Generation/Alteration
(Air, Hazardous Waste, Solid Waste, PCB's, Asbestos, Wastewater)
- B. Permit Acquisition/Modification
[NPDES, Air, Inert Landfill, Other (316b, 404, etc.)]
- C. Hazardous Materials
[Hazardous Materials that are environmentally unfriendly and are likely to generate a Resource Conservation and Recovery Act hazardous or Toxic Substances Control Act waste]
- D. Physical Construction Involved
(Erosion/Sedimentation Effects, Transportation Effects, Noise Effects, Groundwater Effects, Surface Water Effects, Floodplain Effects, Wetland Effects, Prime Farmland Effects, Unique Natural Features Effects, Aquatic Ecology Effects, Terrestrial Ecology Effects, Protected Species Effects, Sensitive Habitat Effects, Visual Effects, Historical, Cultural and Archeological Effects, Changes in Site Land Use, and Controversy).
- E. Special Tests
There were no special tests conducted during this period that met the environmental impact criteria.
- F. Temporary Alterations
There were no temporary alterations conducted during this period that met the environmental impact criteria.
- G. Design and Operational Changes
Most of the design and operational changes conducted during this period did not meet the environmental impact criteria. There were 33 facility design and operational changes made during this report period with a potential impact on the environment. The appropriate environmental reviews were completed and all changes were found to be within the scope of existing environmental permits and in compliance with NEPA regulations. Those Categorical Exclusion Checklists (CECs) written to document the site changes reviewed are as follows:
 - (1) 21753 Protective Cover for Flow Control Equipment
 - (2) 21884 Tree Removal (Near Switchyard and North Portal)
 - (3) 21938 Amendment to CEC 20964, Sewage Lift Station
 - (4) 21946 Pedestrian Walkway from Warehouse to Training Center

- (5) 21953 Design Change Notice (DCN) 55326 Force on Force Fence
- (6) 21955 WBN Security Target Range Upgrade
- (7) 21964 Condenser Circulating Water Pump Impeller Replacement
- (8) 21985 Relocation and Expansion of Fence
- (9) 22071 North Portal Potential Tree Removal
- (10) 22164 Hydrazine Tank Replacement
- (11) 22217 Cooling Tower Exterior Lighting Improvements
- (12) 22255 DCN 51977 - Replace Obsolete Control Building Air Intake Duct Smoke Detectors
- (13) 22360 Cable Storage Tent at U2 Receiving
- (14) 22373 Temporary Alteration Control Form for Temporary Chilled Water Cooling System
- (15) 22503 480V Uninterruptible Power Supply (UPS) Power Supply Line & Trench
- (16) 22631 Pre-Fabricated Building on Existing Pad
- (17) 22791 Raise Catch Basin
- (18) 22875 Main Feed Pump Turbine Transmitter Replacement
- (19) 22919 Turbine Lube Oil Flush
- (20) 23051 New Smoking Area North of Plant Services Building
- (21) 23117 DCN 56486 - Re-Route of Leaking HPFP piping below SCCW
- (22) 23285 Spoil Pile Gate
- (23) 23310 Waste Storage Area at Hut 24
- (24) 23313 Installation of Level Work Platform at the Intake Pumping Station
- (25) 23349 Installation of Wind Screen Around Existing Rain Gauge
- (26) 23498 Increase the Size of the Parking Lot at WBN Ball Field
- (27) 23540 UPS Backup Generator
- (28) 23549 Reroute Fill Line for Yard Fuel Oil Storage Tanks
- (29) 23681 WBN Glycol Chiller Replacement-DCN 53688, Revision B
- (30) 23688 Parking for Yard 2
- (31) 23710 Replace Unit 2 B Train ABCSE General Ventilation Dampers
- (32) 23762 Project/Crew Trailers to Support U1R10 Refueling Outage
- (33) 23832 U1R10 Special Project Trailers

All other facility design and operational changes made during this report period with a potential impact on the environment were found to be within the scope of existing environmental permits and in compliance with regulations.

In summary, there were no facility designs or operational changes from February 7, 2010, to February 6, 2011, which resulted in an unreviewed environmental question.

VII. NON-ROUTINE REPORTS

No non-routine reports for EPP Section 4.2 were issued during this reporting period.

VIII. CHANGES IN APPROVED ENVIRONMENTAL PROTECTION PLAN SPECIFICATIONS

No changes were made to Appendix B, EPP, of the WBN operating license during the reporting period.