



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 8, 2009

Mr. William R. Campbell, Jr.
Chief Nuclear Officer and
Executive Vice President
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT, UNIT 1 — ISSUANCE OF AMENDMENT
REGARDING THE ALLOWABLE VALUE FOR THE CONTAINMENT PURGE
EXHAUST RADIATION MONITORS (TAC NO. MD8395)

Dear Mr. Campbell:

The Commission has issued the enclosed Amendment No. 74 to Facility Operating License No. NPF-90 for Watts Bar Nuclear Plant, Unit 1. This amendment is in response to your application dated March 27, 2008 (Agencywide Document and Access Management System Accession No. ML080870349), as supplemented September 26, 2008 (ML082730087).

This amendment revises the allowable value listed for Function 3, "Containment Purge Exhaust Radiation Monitors," in Table 3.3.6-1, "Containment Vent Isolation Instrumentation," of the limited condition for operation 3.3.6.

A copy of the safety evaluation is also enclosed. Notice of issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

A handwritten signature in black ink, appearing to read "John G. Lamb", written over a horizontal line.

John G. Lamb, Senior Project Manager
Watts Bar Special Projects Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-390

Enclosures: 1. Amendment No. 74 to NPF-90
2. Safety Evaluation

cc w/enclosures: Distribution via Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-390

WATTS BAR NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 74
License No. NPF-90

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Tennessee Valley Authority (the licensee) dated March 27, 2008, as supplemented September 26, 2008, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

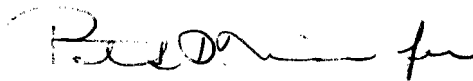
2. Accordingly, the license is amended by changes to the Facility Operating License and Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-90 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 74 , and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. TVA shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance, and shall be implemented no later than 30 days from the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



L. Raghavan, Chief
Watts Bar Special Projects Branch
Division of operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Operating License
And Technical Specifications

Date of Issuance: January 8, 2009

ATTACHMENT TO AMENDMENT NO. 74
FACILITY OPERATING LICENSE NO. NPF-90
DOCKET NO. 50-390

Replace Page 3 of Operating License NPF-90 with the attached Page 3.

Replace the following page of the Appendix A Technical Specifications with the attached page. The revised page is identified by amendment number and contain vertical lines indicating the area of change.

Remove Pages

3.3-56

Insert Pages

3.3-56

- (4) TVA, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required, any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis, instrument calibration, or other activity associated with radioactive apparatus or components; and
 - (5) TVA, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect, and is subject to the additional conditions specified or incorporated below.
- (1) Maximum Power Level

TVA is authorized to operate the facility at reactor core power levels not in excess of 3459 megawatts thermal.
 - (2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A as revised through Amendment No. 74 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. TVA shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.
 - (3) Safety Parameter Display System (SPDS) (Section 18.2 of SER Supplements 5 and 15)

Prior to startup following the first refueling outage, TVA shall accomplish the necessary activities, provide acceptable responses, and implement all proposed corrective actions related to having the Watts Bar Unit 1 SPDS operational.
 - (4) Vehicle Bomb Control Program (Section 13.6.9 of SSER 20)

During the period of the exemption granted in paragraph 2.D.(3) of this license, in implementing the power ascension phase of the approved initial test program, TVA shall not exceed 50% power until the requirements of 10 CFR 73.55(c)(7) and (8) are fully implemented. TVA shall submit a letter under oath or affirmation when the requirements of 73.55(c)(7) and (8) have been fully implemented.

Table 3.3.6-1 (page 1 of 1)
Containment Vent Isolation Instrumentation

FUNCTION	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Manual Initiation	2	SR 3.3.6.6	NA
2. Automatic Actuation Logic and Actuation Relays	2 trains	SR 3.3.6.2 SR 3.3.6.3 SR 3.3.6.5	NA
3. Containment Purge Exhaust Radiation Monitors	2	SR 3.3.6.1 SR 3.3.6.4 SR 3.3.6.7	$\leq 8.41\text{E-}02 \mu\text{Ci/cc}^{(a)}$ ($8.41\text{E}+04$ cpm) $\leq 2.8\text{E-}02 \mu\text{Ci/cc}^{(b)}$ ($2.8\text{E}+04$ cpm)
4. Safety Injection	Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 1, for all initiation functions and requirements.		

(a) During movement of irradiated fuel assemblies within containment.

(b) Modes 1, 2, 3, and 4.



UNITED STATES
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WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 74 TO FACILITY OPERATING LICENSE NO. NPF-90

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT, UNIT 1

DOCKET NO. 50-390

1.0 INTRODUCTION

By letter dated March 27, 2008 (Agencywide Document Access and Management System (ADAMS) Accession No. ML080870349), as supplemented September 26, 2008 (ADAMS Accession No. ML082730087), the Tennessee Valley Authority (TVA or the licensee), submitted a request for changes to the Watts Bar Nuclear Plant, Unit 1, Technical Specifications (TSs). The requested changes would revise the allowable value (AV) listed for Function 3, "Containment Purge Exhaust Radiation Monitors," in Table 3.3.6-1, "Containment Vent Isolation Instrumentation," of the limited condition for operation 3.3.6. The containment purge exhaust radiation monitors initiate containment vent isolation to mitigate the potential release of radioactive effluents via this flow path following a postulated small-break loss-of-coolant accident (SBLOCA). By letter dated August 1, 2008 (ADAMS Accession No. ML082130424), the U.S. Nuclear Regulatory Commission (NRC) staff requested additional information, which the licensee provided in its submittal, dated September 26, 2008.

The supplement, dated September 26, 2008, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on May 6, 2008 (73 FR 25047).

2.0 REGULATORY EVALUATION

The following regulatory bases and guidance documents pertain to the proposed TS change:

- Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36(c)(1)(ii)(A) states the following:

Limiting safety system settings for nuclear reactors are settings for automatic protective devices related to those variables having significant safety functions. Where a limiting safety system setting is specified for a variable on which a safety limit has been placed, the setting must be so chosen that automatic protective action will correct the abnormal situation before a safety limit is exceeded. If, during operation, it is determined that the automatic safety system does not function as required, the licensee shall take corrective action, which may include shutting down the reactor.

- Regulatory Guide (RG) 1.105, Revision 3, "Setpoints for Safety-Related Instrumentation," issued December 1999, describes a method acceptable to the staff for complying with the NRC regulations for ensuring that setpoints for safety-related instrumentation are initially within, and remain within, the TS limits.
- Regulatory Issue Summary (RIS) 2006-17, "NRC Staff Position on the Requirements of 10 CFR 50.36, 'Technical Specifications,' Regarding Limiting Safety System Settings during Periodic Testing and Calibration of Instrument Channels," dated August 24, 2006.
- 10 CFR Part 50, Appendix A, "General Design Criteria (GDC)," Criterion 60, "Control of Releases of Radioactive Materials to the Environment," states the following:

The nuclear power unit design shall include means to control suitably the release of radioactive materials in gaseous and liquid effluents and to handle radioactive solid wastes produced during normal reactor operation, including anticipated operational occurrences. Sufficient holdup capacity shall be provided for retention of gaseous and liquid effluents containing radioactive materials, particularly where unfavorable site environmental conditions can be expected to impose unusual operational limitations upon the release of such effluents to the environment.

- 10 CFR Part 50, Appendix A, GDC 64, "Monitoring Radioactivity Releases," states the following:

Means shall be provided for monitoring the reactor containment atmosphere, spaces containing components for recirculation of loss-of-coolant accident fluids, effluent discharge paths, and the plant environs for radioactivity that may be released from normal operations, including anticipated operational occurrences, and from postulated accidents.

3.0 BACKGROUND

The containment purge exhaust radiation monitors are gaseous effluent monitors that continuously monitor the radioactivity of the containment exhaust air, as required by 10 CFR Part 50, Appendix A, GDC 60 and 64. These safety-related monitors perform a primary safety function of mitigating the consequences of the offsite dose for an SBLOCA event. A high-radiation signal from either monitor will shut down the purge ventilation system fans in the reactor building and will isolate the system by closing its respective dampers and butterfly valves. The automatic isolation limits the release of radioactive material to the environment within the requirements described in 10 CFR Part 100, "Reactor Site Criteria." For large-break LOCAs, a safety injection signal is credited for the isolation function.

The original analytical limit (AL) and AV were based on the assumption that a containment purge exhaust filter is available to keep the exclusion area boundary dose within limit for an SBLOCA event. This requires that these filters be tested in accordance with Regulatory Guide 1.52, Revision 3, "Design, Inspection, and Testing Criteria for Air Filtration

and Adsorption Units of Post-Accident Engineered-Safety-Feature Atmosphere Cleanup Systems in Light-Water-Cooled Nuclear Power Plants,” issued June 2001. To avoid testing in Modes 1, 2, 3, and 4, the licensee has calculated a new AL and AV for those monitors that do not take credit for containment purge exhaust filters.

4.0 TECHNICAL EVALUATION

Instrumentation Review

The licensee has added a new AV for TS Table 3.3.6-1, Function 3, “Containment Purge Exhaust Radiation Monitors,” which is less than or equal to 2.8×10^{-2} $\mu\text{Ci/cc}$ (2.8×10^4 cpm). In addition to this, the licensee has added two footnotes to the TS table that describe the previous AV to be used during the movement of irradiated fuel assemblies within the containment and the new AV to be used during Modes 1, 2, 3, and 4. This will negate the requirement to test the containment purge exhaust filters, as the new AV does not take credit for these filters. The licensee’s original submittal did not identify these values as limiting safety system settings (LSSSs) but, based on the staff’s request for additional information, the licensee, in its response, has agreed with the staff’s assertion that these values are LSSSs.

Also, in reply to the staff’s request, the licensee submitted the setpoint calculation methodology for this function and, based on its calculation, identified the following values.

	Purge Filters Credited		Purge Filters Not Credited	
	$\mu\text{Ci/cc}$	volts	$\mu\text{Ci/cc}$	volts
Analytical Limit (AL)	1.87E-01	7.12	4.3E-02	6.055
Allowable Value (AV)	8.41E-02	6.541	2.8E-02	5.745
Limiting Trip Setpoint (LTSP)	5.0E-02	6.165	1.9E-02	5.465
Acceptable As-Left (AAL)	1.01E-05	± 0.1	1.01E-05	± 0.1
Acceptable As-Found (AAF)	1.39E-05	± 0.242	1.39E-05	± 0.242

The licensee established the AL for both cases so that the monitor will isolate the containment purge exhaust before exceeding 10 percent of the offsite dose limits for a postulated SBLOCA. The licensee calculated the LTSP by using the total error based on the required response time, range, and accuracy of the containment purge exhaust monitors and by applying a correction factor to compensate for pressure differences between the process and the detector. The licensee determined the correction factor by using the guidance provided by the radiation monitor supplier and established the AAL value as 1 percent of the full-scale output of the bistable. This value is conservative, compared to the guidance provided in Regulatory Issue Summary (RIS) 2006-17. The licensee calculated the AAF value by taking the square root of sum of the squares of bistable reference accuracy, test instrument calibration accuracy, bistable drift accuracy, and AAL value. The AAF value meets the guidance provided in RIS 2006-17. The NRC staff found that the AAF value is acceptable.

In response to the staff question regarding the operability determination of the containment purge exhaust monitors, the licensee stated that the plant procedures contain a limitation that the nominal setpoint cannot exceed the LTSP, which will ensure that the radiation monitors trip before the process variable exceeds the AL, thereby meeting the requirements of GDC 60 and

64. Also, the plant procedure requires that, whenever the radiation monitors are out of specified tolerances, the licensee's corrective action program document and evaluate this condition. Therefore, the staff finds that the licensee has procedural control to determine the operability of the instruments.

Instrumentation Summary

Based on its review of the licensee's submittal, the NRC staff has concluded that the instrument setpoint methodology for the proposed TS changes is acceptable. The NRC staff further concludes that, by adding footnotes to the TS tables, the instrument operability will be controlled in the TS rather than through procedures. Finally, the NRC staff concludes that the proposed TS changes meet the requirements of 10 CFR 50.36(c)(1)(ii)(A) and are, therefore, acceptable.

Containment Review

WBN Unit 1 Updated Final Safety Analysis Report (UFSAR) section 9.4.6 "Reactor Building Purge Ventilating System (RBPVS)" states "[t]he RBPVS is designed to maintain the environment in the primary containment and Shield Building annulus within acceptable limits for equipment operation and for personnel access during inspection, testing, maintenance, and refueling operations; and to provide a filtration path for any through-duct outleakage from the primary containment to limit the release of radioactivity to the environment."

The UFSAR also states, "[t]he primary containment exhaust is monitored by redundant radiation detectors which provide automatic RBPVS isolation upon detecting the setpoint radioactivity in the exhaust air stream. The RBPVS isolation valves automatically close upon the actuation of a containment ventilation isolation signal, or upon manual actuation from the MCR [main control room]." Technical Specification 5.7.2.14, "Ventilation Filter Testing Program (VFTP)" requirements for the Reactor Building Purge of a flow rate of 14,000 cubic feet per minute plus or minus 10 percent and an acceptance criterion of less than 1.00 percent will not be changed.

The licensee proposes to revise the allowable setpoint value for the Containment Purge exhaust radiation monitors in TS Table 3.3.6-1 to a more restrictive value while in Modes 1 to 4.

The new value is based on initiating a CVI to control releases from a SBLOCA to well within 10 CFR 100 limits without the need to take credit for the Containment Purge exhaust filters. No change is required during the movement of irradiated fuel assemblies within containment.

The proposed revision to the setpoint values for the containment purge exhaust radiation monitors as listed in Function 3, Table 3.3.6-1, "Containment Vent Isolation Instrumentation," of LCO 3.3.6 does not change the function or operation of the Containment Purge Air Exhaust System. The requirements of technical specification LCO 3.9.8, "Two Reactor Building Purge Air Cleanup Units" will not be changed since TS LCO 3.9.8 requires operability of the Containment Purge exhaust filters during movement of irradiated fuel assemblies within containment.

Containment Summary

The NRC staff finds that the proposed changes to the containment purge exhaust radiation monitor allowable values will not change the function or performance of the RBPVS. Therefore, the NRC staff finds the proposed change is acceptable.

5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Tennessee State official was notified of the proposed issuance of the amendment. The State official had no comments.

6.0 ENVIRONMENTAL CONSIDERATION

The amendment changes requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding 73 FR 25047, dated May 6, 2008. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

7.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: H. Garg and B. Heida

Date: January 8, 2009

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Chief Nuclear Officer and
Executive Vice President
Tennessee Valley Authority
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Sincerely,

\RA

John G. Lamb, Senior Project Manager
Watts Bar Special Projects Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-390

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2. Safety Evaluation

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ADAMS Accession Number Amendment: ML083380369

*via memorandum

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