Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

CNL-16-141

October 20, 2016

10 CFR 50.90

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

Watts Bar Nuclear Plant, Unit 1 and Unit 2
Facility Operating License Nos. NPF-90 and NFP-96
NRC Docket Nos. 50-390 and 50-391

Subject: **Application to Modify Watts Bar Nuclear Plant Units 1 and 2 Technical Specifications Regarding Intermittent Opening of the Auxiliary Building Secondary Containment Closure Technical Specification 3.7.12, "Auxiliary Building Gas Treatment System" (WBN-TS-16-19)**

In accordance with the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.90, "Application for amendment of license, construction permit, or early site permit," the Tennessee Valley Authority (TVA) is submitting for Nuclear Regulatory Commission (NRC) approval, a request for an amendment to Facility Operating License Nos. NPF-90 and NPF-96 for the Watts Bar Nuclear Plant (WBN) Unit 1 and Unit 2, respectively.

The proposed license amendment request (LAR) revises the WBN Unit 1 and Unit 2 Technical Specification (TS) 3.7.12, "Auxiliary Building Gas Treatment System (ABGTS)," and associated Bases. Specifically, TVA proposes to revise TS Limiting Condition for Operation (LCO) 3.7.12 to provide an action when both trains of the ABGTS are inoperable due to the auxiliary building secondary containment enclosure (ABSCE) boundary being inoperable. The LAR also adds a Note to the TS LCO that allows the ABSCE boundary to be open intermittently under administrative controls. This LAR is consistent with NUREG-1431, "Standard Technical Specifications – Westinghouse Plants."

The WBN Unit 1 and Unit 2 current TS 3.7.12 does not address the condition in which both trains of the ABGTS are inoperable due to a degraded ventilation system boundary such as the ABSCE. As a result, an opening in the ABSCE ventilation area boundary requires entry into TS 3.0.3 (an orderly shutdown of the unit) due to two inoperable trains of ABGTS. The proposed change would allow 24 hours to restore integrity of the ABSCE ventilation area boundary before requiring shutdown of the plant. The change would also allow opening of the ABSCE boundary under administrative controls. The proposed change also adopts the provisions in NUREG-1431, Revision 4 and applies the Note, Conditions, and Required Actions to TS 3.7.12 for the ABGTS.

Enclosure 1 to this letter provides a description of the proposed changes, technical evaluation of the proposed changes, regulatory evaluation, and a discussion of environmental considerations. Attachments 1, 2, 3, and 4 to the enclosure provide the existing TS and Bases pages marked-up to show the proposed changes. Attachments 5, 6, 7, and 8 to the enclosure provide the existing TS and Bases pages retyped to show the proposed changes. Changes to the existing TS Bases are provided for information only and will be implemented under the Technical Specification Bases Control Program.

The WBN Plant Operations Review Committee and the TVA Nuclear Safety Review Board have reviewed this proposed change and determined that operation of WBN Unit 1 and Unit 2 in accordance with the proposed change will not endanger the health and safety of the public.

TVA has determined that there are no significant hazards consideration associated with the proposed change and that the TS change qualifies for a categorical exclusion from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9). Additionally, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and enclosures to the Tennessee Department of Environment and Conservation.

TVA requests approval of the proposed TS change within 12 months of the date of this letter. The requested review period is consistent with NRC guidance and supports plans for implementation in support of maintenance activities and refueling outages. Once approved, the amendment will be fully implemented within 60 days in order to support the WBN Unit 2 refueling outage in October of 2017 and all subsequent refueling and maintenance outages for both units..

The new regulatory commitment associated with this change is provided in Enclosure 2.

Please address any questions regarding this request to Edward D. Schrull at 423- 751-3850.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 20th day of October 2016.

Respectfully,

J. W. Shea
Vice President, Nuclear Licensing

Enclosures

cc: See Page 3

Enclosures:

1. Evaluation of Proposed Change
2. List of Regulatory Commitments

cc (Enclosures):

NRC Regional Administrator - Region II
NRC Senior Resident Inspector - Watts Bar Nuclear Plant
NRC Project Manager – Watts Bar Nuclear Plant
Director, Division of Radiological Health - Tennessee State Department of Environment and Conservation (w/o enclosures)

ENCLOSURE 1
Tennessee Valley Authority
Watts Bar Nuclear Plant, Unit 1 and Unit 2

WBN-TS-16-19
EVALUATION OF PROPOSED CHANGE TO TS 3.7.12

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ENCLOSURE 1
Tennessee Valley Authority
Watts Bar Nuclear Plant, Unit 1 and Unit 2

WBN-TS-16-19
EVALUATION OF PROPOSED CHANGE TO TS 3.7.12

1.0 SUMMARY DESCRIPTION

This evaluation supports a request to amend Facility Operating License (OL) Nos. NPF-90 and NPF-96 for the Tennessee Valley Authority (TVA) Watts Bar Nuclear (WBN) Plant Unit 1 and Unit 2, respectively. The proposed amendment revises WBN Unit 1 and Unit 2 Technical Specification (TS) 3.7.12, "Auxiliary Building Gas Treatment System (ABGTS)" and associated Bases. Specifically, TVA proposes to revise TS 3.7.12 Limiting Condition for Operation (LCO) 3.7.12 to provide an action for when the auxiliary building secondary containment enclosure (ABSCE) boundary is degraded and a note that allows the ABSCE boundary to be open intermittently under administrative controls without entering LCO 3.7.12. The proposed changes are consistent with Revision 4 of NUREG-1431, "Standard Technical Specifications Westinghouse Plant" (Reference 1).

The change is needed to support the WBN Unit 2 refueling outage in October of 2017 and all subsequent refueling and maintenance outages for both units. In order to prevent shutdown of the operating unit when the other unit is in an outage, TS 3.7.12 must be modified to allow breaching of penetrations in excess of the area allowed for operability of the ABSCE boundary.

2.0 DETAILED DESCRIPTION

2.1 PROPOSED CHANGES

Consistent with Revision 4 of NUREG-1431, the proposed TS changes include:

- A Note is added to LCO 3.7.12 that would allow the ABSCE boundary to be opened intermittently under administrative controls without entering LCO 3.7.12.

- A new Condition B is added to LCO 3.7.12 to specify a Required Action with a Completion Time of 24 hours to restore an inoperable ABSCE boundary to operable status not subject to the new Note.

- The associated TS Bases are revised to specify the necessary administrative controls to restore the ABSCE boundary and the use of compensatory measures during the period the ABSCE boundary is inoperable.

- The existing Conditions, Required Actions, and Bases are renumbered accordingly.

The TS changes provided in NUREG-1431, Revision 4, are proposed for adoption with the following variances:

- The plant-specific terminology (e.g., system name – Auxiliary Building Gas Treatment System) is substituted for the TS system names in NUREG-1431.

- NUREG-1431 associated changes to TS 3.7.12 that are not applicable to WBN Unit 1 or Unit 2 were not adopted. The NUREG-1431 changes associated with TS 3.7.12 that are not applicable to both WBN Unit 1 and Unit 2 are the result of the changes made to TS 3.7.12 by Amendment 92 for WBN Unit 1 (Reference 2) and the OL for WBN Unit 2 (Reference 3). Amendment 92 for WBN Unit 1 and the OL for WBN Unit 2, in part, removed the requirements for ABGTS during the movement of irradiated fuel assemblies in the fuel handling area. Therefore, the NUREG-1431 changes reflected in this transmittal are limited to those associated with the ABGTS requirements in Modes 1, 2, 3, and 4.

Attachments 1 through 4 to this enclosure provide the existing WBN Unit 1 and Unit 2 TS and Bases pages marked-up to show the proposed changes. Attachments 5 through 8 to this enclosure provide the clean typed TS and Bases pages with the proposed changes incorporated.

The proposed Bases changes are provided to the NRC for information only.

2.2 CONDITION INTENDED TO RESOLVE

The proposed change to TS 3.7.12 eliminates the need to enter LCO 3.7.12 when the ABSCE boundary is opened intermittently under administrative controls.

WBN Unit 1 and Unit 2 TS 3.7.12 require two trains of the ABGTS to be operable in Modes 1, 2, 3, and 4. The various surveillance requirements (SRs) associated with this TS confirm operability of the ABGTS, including a system actuation test and filter testing. The TS also includes an SR that verifies the ABGTS is capable of establishing a negative pressure in the ABSCE during the post-accident mode of operation. The primary purpose of this SR is to demonstrate integrity of the ABSCE. To meet this SR, the ABSCE boundary must be intact. If the boundary is not intact, the SR cannot be met and both trains of the ABGTS cannot perform their intended function. If both trains of the ABGTS are inoperable, current TS 3.7.12 Condition B is entered, requiring the unit to be in Mode 3 in six hours and Mode 5 in 36 hours.

In order to support normal operation, short duration events (e.g., venting operations, test evolutions, fire damper testing, annulus entries), penetration openings, and auxiliary building (AB) isolations may be required. These events have been analyzed and do not exceed Title 10 of the *Code of Federal Regulations* (10 CFR) 100 limits for offsite dose and 10 CFR 50, Appendix A, General Design Criterion (GDC) 19 for the control room dose. Therefore, without the proposed TS 3.7.12 change of adding the 24 hour completion time to restore the ABSCE boundary (i.e., new Condition B), the unit in Modes 1, 2, 3, or 4 may be forced into an unnecessary shutdown in order to restore the ABSCE boundary. With the proposed changes, restoration of the ABSCE boundary within 24 hours would be allowed in Modes 1, 2, 3, and 4 without entering LCO 3.7.12, Condition C, specifically Required Action C.1 to be in Mode 3 within a Completion Time of six hours and Required Action C.2 to be in Mode 5 within a Completion Time of 36 hours.

During refueling and maintenance outages, additional breaches through the ABSCE boundary, above those limits applied on a normal basis, are needed to support required work activities, including ice blowing operations. In addition, the planned future replacement of the WBN Unit 2 steam generators is tentatively scheduled during RFO 4 in 2022, but could occur as early as 2019 during RFO 2. The actual date will be based on the periodic steam generator tube inspection program results as evaluated with respect to increasing tube degradation. Accordingly, ABSCE boundary breaches associated with RFOs, maintenance activities, and the planned WBN Unit 2 steam generator replacement project will be handled by administrative controls. Preplanned compensatory measures such as the addition of a fabric roll-up door similar to the configuration that was utilized to maintain the ABSCE boundary for WBN Unit 1 during WBN Unit 2 construction is an example. Therefore, without the proposed TS 3.7.12 change of adding the Note to intermittently open the ABSCE boundary under administrative controls, the unit in Modes 1, 2, 3, or 4 may be forced into an unnecessary shutdown in order to open the ABSCE boundary. Otherwise, with the proposed changes, intermittent opening of the ABSCE boundary under administrative controls would be allowed in Modes 1, 2, 3, and 4 without entering LCO 3.7.12.

3.0 TECHNICAL EVALUATION

Section 3.1 contains a description of the affected systems. Section 3.2 contains an evaluation of the proposed TS changes.

3.1 SYSTEM DESCRIPTION

A description of the relevant portions of the WBN containment system is presented below as background for the evaluation of the proposed changes.

3.1.1 Containment

The containment is a free standing steel pressure vessel surrounded by a reinforced concrete shield building. Containment piping penetration assemblies provide for the passage of process, service, sampling, and instrumentation pipelines into the containment vessel while maintaining containment integrity.

The inner steel containment and its penetrations establish the boundary of the containment, limiting the leakage of fission product radioactivity from the containment to the environment. The safety design basis for the containment is that the containment must withstand the pressures and temperatures of the limiting design basis accident (DBA) without exceeding the design leakage rates.

The shield building provides shielding as well as environmental missile protection for the containment vessel. An annular space exists between the walls and domes of the steel containment vessel and the concrete shield building to provide for the collection, mixing, holdup, and controlled release of containment out-leakage. Radioactive material may enter the shield building from the containment following a DBA. The shield building ensures that the release of radioactive material from the containment atmosphere is restricted to those leakage paths and associated leakage rates assumed in the accident analyses.

3.1.2 Emergency Gas Treatment System

The emergency gas treatment system (EGTS) establishes a negative pressure in the annulus between the shield building and the steel containment vessel. Filters in the system then control the release of radioactive contaminants to the environment.

The EGTS consists of two separate and redundant trains. Each train includes a heater, a prefilter, moisture separators, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of radioiodines, and a fan. Ductwork, valves, dampers, and instrumentation also form part of the system. The moisture separators function to reduce the moisture content of the airstream. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case of failure of the main HEPA filter bank. Only the upstream HEPA filter and the charcoal adsorber section are credited in the analysis. The system initiates and maintains a negative air pressure in the shield building by means of filtered exhaust ventilation of the shield building following receipt of a safety injection signal.

3.1.3 Auxiliary Building Secondary Containment Enclosure

The ABSCE is that portion of the auxiliary building (AB) and condensate demineralizer waste evaporator (CDWE) building (and for certain configurations, the annulus and primary containment, as discussed below) that serves to maintain an effective barrier for airborne radioactive contaminants released in the AB during abnormal events.

Entrances and exits to those portions of the AB within the primary containment barrier for both equipment and personnel are through air locks. The doors in each air lock are electrically interlocked such that only one side of the air lock can be opened at a time. A control room alarm is provided should both sides of an air lock ever be opened simultaneously.

The secondary containment enclosures are designed to provide a positive barrier to all potential primary containment leakage pathways during a DBA. For a DBA, the shield building containment enclosure provides the barrier to all airborne primary containment leakage, and the ABSCE provides a barrier to through-the-line leakage from containment that can potentially become airborne. The ABSCE also maintains an effective barrier for airborne radioactive contaminants originating inside the ABSCE during normal and abnormal events.

The original WBN design credited the secondary containment enclosures to mitigate the consequences of a fuel handling accident (FHA). Although these enclosures are available to minimize the consequences of a FHA, based on the use of the Regulatory Guide 1.183, Revision 0 (Alternate Source Term) methodology for a FHA, they are no longer required for mitigation of a postulated FHA (Reference 2).

3.1.4 Auxiliary Building Gas Treatment System

The ABGTS is a fully redundant air cleanup network provided to filter radioactive nuclide releases from the ABSCE during an accident to levels sufficiently low to keep the site boundary dose rates below the requirements of 10 CFR 100. This is accomplished by exhausting filtered air from the ABSCE to maintain a negative pressure within the ABSCE boundary. Exhaust air leaving the ABSCE is processed by the ABGTS filter train before it is discharged to the environment. The ABGTS initiates filtered ventilation of the ABSCE exhaust air following receipt of a Phase A containment isolation signal.

3.2 TECHNICAL ANALYSIS

If the ABSCE boundary is inoperable in Mode 1, 2, 3, or 4 such that the ABGTS trains cannot establish or maintain the required auxiliary building pressure, this TS change requires that action is taken to restore an operable ABSCE boundary within 24 hours in order to support ABGTS operation. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this period and the compensatory measures available to the operator to minimize the consequences of potential hazards. Additionally, LCO 3.7.12 is modified by a Note that allows the ABSCE boundary to be opened intermittently under administrative controls. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, a dedicated individual, who is in continuous communication with the control room, is stationed at the opening. This individual will have a method to rapidly close the opening when a need for ABSCE boundary integrity is required.

The proposed TS changes allow 24 hours during operation in Modes 1, 2, 3, and 4 for an inoperable ABSCE boundary to be restored before the initiation of a unit shut down is required. During the period that the ABSCE boundary is inoperable, appropriate compensatory measures will be utilized. The preplanned measures will be available to address these concerns for intentional and unintentional entry into proposed new LCO 3.7.12 Condition B. TVA will have approved written procedures in place that describe the compensatory measures to be taken in the event of an intentional or unintentional entry into LCO 3.7.12 Condition B. The procedures will provide appropriate, preplanned compensatory measures consistent with the intent, as applicable, of GDCs 19, 60, and 64 and 10 CFR Part 100 to protect plant personnel from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security (see Enclosure 2). The proposed 24 hour completion time is reasonable based on the low probability of a DBA occurring during this period and the use of preplanned compensatory measures. The 24 hour period is also a reasonable time to diagnose, plan, repair, and test most problems with the ABSCE boundary before requiring the unit to shutdown due to two inoperable trains of ABGTS and allow intermittent opening of the ABSCE boundary under administrative controls. Based on the low probability of an event occurring during the 24 hours that the ABSCE boundary is not intact and the fact that the ABSCE boundary can be re-established in order to support ABGTS operation, TVA concludes that this change is acceptable.

4.0 REGULATORY EVALUATION

4.1 APPLICABLE REGULATORY REQUIREMENTS/CRITERIA

- 10 CFR 50.67, "Accident Source Term," establishes limits on the accident source term used in design basis radiological consequence analyses with regard to radiation exposure to members of the public and to control room occupants.

- GDC 16, Containment design - Reactor containment and associated systems shall be provided to establish an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment and to assure that the containment design conditions important to safety are not exceeded for as long as postulated accident conditions require.

- GDC 19, Control room - A control room shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions, including loss-of-coolant accidents. Adequate radiation protection shall be provided to permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident.

- GDC 60, Control of releases of radioactive materials to the environment - 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.

- GDC 64, Monitoring radioactivity release - 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.

Conclusion

ABSCE boundary integrity ensures that the release of through-the-line leakage of radioactive materials from the primary containment would be restricted to those leakage paths and associated leakage rates assumed in the safety analyses. This restriction, in conjunction with operation of the ABGTS limits the site boundary radiation doses to within the dose guideline values of 10 CFR 50.67 and 10 CFR 100 during accident conditions. The proposed changes do not affect the ability of an operable ABGTS to perform its intended function. During times when the ABSCE boundary is open, administrative controls will ensure that the opening will be quickly sealed to maintain the validity of the licensing basis analyses of accident consequences. In the case that the ABSCE boundary is inoperable, the proposed new action requirement imposes a 24 hour time limit to restore the inoperable boundary. Based on the availability of compensatory measures and the low probability of an accident occurring during the 24 hour periods that that the ABGTS trains

are inoperable, TVA concludes that the proposed change is acceptable and complies with applicable regulatory requirements.

4.2 PRECEDENT

During the implementation of NUREG-1431 by licensees, the NRC staff and licensees recognized that there was a need to address unit shut down associated with inoperable ventilation system boundaries. Accordingly, the NRC revised NUREG-1431 in Revision 2 (ML011090393) to eliminate the requirement that a unit shut down for ventilation systems rendered inoperable by inoperable ventilation system boundaries. Revision 2 also revised the TS for various ventilation systems to allow 24 hours to restore ventilation barrier integrity before requiring a unit shut down. NUREG-1431, Revision 3 (ML041830612) and Revision 4 (ML12100A222) have retained the 24 hour restoration provision. Revisions 2 through 4 also included a provision that allows intermittent opening of a ventilation barrier under administrative controls.

The NRC has previously approved similar changes that were based on NUREG-1431. Amendment 136 for NextEra Energy Seabrook, LLC's Seabrook Station, Unit 1 (Reference 4) revised the TS based on NUREG-1431 to establish actions to be taken for inoperable ventilation systems due to a degraded ventilation area pressure boundary and to allow intermittent opening of ventilation boundaries under administrative controls.

The proposed changes are similar to existing provisions in NUREG-1431, Revision 4 for TS 3.7.10, "Control Room Emergency Filtration System (CREFS)," TS 3.7.12, "Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)," TS 3.7.13, "Fuel Building Air Cleanup System (FBACS)," and TS 3.7.14, Penetration Room Exhaust Air Cleanup System (PREACS)." Each of these TS includes a note that modifies the LCO to permit intermittent opening of the ventilation system boundary under administrative controls and an action with a 24 hour completion time for two inoperable ventilation trains due to an inoperable ventilation area boundary.

4.3 SIGNIFICANT HAZARDS CONSIDERATION

The Tennessee Valley Authority (TVA) proposes to revise Technical Specification (TS) 3.7.12, "Auxiliary Building Gas Treatment System (ABGTS)," to provide an Action to require restoration of the auxiliary building secondary containment enclosure (ABSCE) boundary to an operable status within 24 hours when the ABSCE boundary is degraded, and a note that allows the ABSCE boundary to be open intermittently under administrative controls.

TVA has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

ENCLOSURE 1
Tennessee Valley Authority
Watts Bar Nuclear Plant, Unit 1 and Unit 2

WBN-TS-16-19
EVALUATION OF PROPOSED CHANGE TO TS 3.7.12

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   The proposed changes do not require physical changes to plant systems, structures, or components. The ABGTS is an accident mitigating feature. As such, ABGTS is not associated with a potential accident-initiating mechanism.

   Therefore, the changes do not affect accident or transient initiation or consequences.

   The proposed new condition for the ABGTS TS would permit a 24 hour period to restore an inoperable pressure boundary to operable status. The consequences of implementing the 24 hour completion time are reasonable based upon the low probability of a design basis accident occurring during this time period, and the availability of a functional ABGTS train to provide a filtered release to the environment (albeit with the potential for unfiltered leakage).

   For cases where the ABSCE boundary is opened intermittently under administrative controls, appropriate compensatory measures would be required by the proposed TS to ensure the ABSCE boundary can be rapidly restored and the dose analysis assumptions can be supported. Based on the administrative controls required to rapidly restore an opened ABSCE boundary, the accident consequences do not cause an increase in dose above the applicable General Design Criteria, Standard Review Plan, or 10 CFR 100 limits. The plant operators will continue to maintain the ability to mitigate a design basis event.

   Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No.

   The proposed changes would not require any new or different accidents to be postulated and subsequently evaluated, since no changes are being made to the plant that would introduce any new accident causal mechanisms. This license amendment request does not impact any plant systems that are potential accident initiators; nor does it have any significantly adverse impact on any accident mitigating systems.

   Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

   Response: No.

   The proposed changes do not alter the permanent plant design, including instrument setpoints, nor does it change the assumptions contained in the safety analyses. Margin of safety is related to the ability of the fission product barriers to perform their design functions during and following accident conditions. These barriers include the fuel cladding, the reactor coolant system, and the containment system. The performance of these barriers will not be significantly degraded by the proposed changes. The proposed changes would allow the ABSCE boundary to be degraded for a limited period of time (24 hours). However, the probability of a design basis event occurring during this time is low. Additionally, a functional ABGTS train will be available to provide a filtered release to the environment (albeit with the potential for unfiltered leakage). When the ABSCE boundary is open on an intermittent basis, as permitted by the changes proposed in this amendment request, administrative controls would be in place to ensure that the integrity of the pressure boundaries could be rapidly restored and the dose analysis assumptions can be supported. Therefore, it is expected that the plant and the operators would maintain the ability to mitigate design basis events and none of the fission product barriers would be affected by this change.

   Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, TVA concludes that the proposed amendment(s) does (do) not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92 (c), and, accordingly, a finding of “no significant hazards consideration” is justified.

4.4 CONCLUSIONS

The proposed change would allow 24 hours to restore an inoperable ABSCE boundary before requiring the unit to shutdown due to two inoperable trains of ABGTS and allow intermittent opening of the ABSCE boundary under administrative controls. Based on the low probability of an event occurring during the 24 hours that the ABSCE boundary is not intact and the fact that the ABSCE boundary can be re-established in order to support ABGTS operation, TVA concludes that this change is acceptable.

In conclusion, based on the considerations discussed above, (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.

5.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 REFERENCES

1. NUREG-1431, “Standard Technical Specifications – Westinghouse Plants,” Revision 4, dated April 2012 (ML12100A222)

2. NRC letter to TVA, “Watts Bar Nuclear Plant, Unit 1 - Issuance of Amendment to Allow Selective Implementation of Alternate Source Term to Analyze the Dose Consequences Associated with Fuel-Handling Accidents (TAC No. ME8877),” dated June 19, 2013 (ML13141A564)

3. NRC letter to TVA, “Issuance of Facility Operating License No. NPF-96, Watts Bar Nuclear Plant Unit 2,” dated October 22, 2015 (ML15251A587)

4. NRC letter to NextEra Energy Seabrook, LLC, “Seabrook Station, Unit No. 1 – Issuance of Amendment Re: Addition of Action Statement to Limiting Condition for Operation 3.6.5.1, Containment Enclosure Emergency Air Cleanup System (TAC No. ME3988),” dated April 23, 2013 (ML113000063)

ENCLOSURE 1
Tennessee Valley Authority
Watts Bar Nuclear Plant, Unit 1 and Unit 2

WBN-TS-16-19
EVALUATION OF PROPOSED CHANGE TO TS 3.7.12

ATTACHMENT 1

Proposed TS Changes (Mark-Ups) for WBN Unit 1

3.7 PLANT SYSTEMS

3.7.12 Auxiliary Building Gas Treatment System (ABGTS)

LCO 3.7.12 Two ABGTS trains shall be OPERABLE.

---------- **NOTE** ----------
The Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, 3, and 4~~,~~.

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One ABGTS train inoperable.	A.1	Restore ABGTS train to OPERABLE status.	7 days
B.	**Two ABGTS trains inoperable due to inoperable ABSCE boundary.**	**B.1**	**Restore ABSCE boundary to OPERABLE status.**	**24 hours**
C~~B~~.	Required Action and associated Completion Time of Condition A **or B** not met. OR Two ABGTS trains inoperable **for reasons other than Condition B**.	C~~B~~.1 AND C~~B~~.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.12.1	Operate each ABGTS train for ≥ 10 continuous hours with the heaters operating.	31 days
SR 3.7.12.2	Perform required ABGTS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.12.3	Verify each ABGTS train actuates on an actual or simulated actuation signal.	18 months
SR 3.7.12.4	Verify one ABGTS train can maintain a pressure between -0.25 and -0.5 inches water gauge with respect to atmospheric pressure during the post accident mode of operation at a flow rate ≥ 9300 and ≤ 9900 cfm.	18 months on a STAGGERED TEST BASIS

ENCLOSURE 1
Tennessee Valley Authority
Watts Bar Nuclear Plant, Unit 1 and Unit 2

WBN-TS-16-19
EVALUATION OF PROPOSED CHANGE TO TS 3.7.12

ATTACHMENT 2

Proposed TS Changes (Mark-Ups) for WBN Unit 2

3.7 PLANT SYSTEMS

3.7.12 Auxiliary Building Gas Treatment System (ABGTS)

LCO 3.7.12 Two ABGTS trains shall be OPERABLE

---------- NOTE ----------
The Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One ABGTS train inoperable	A.1	Restore ABGTS train to OPERABLE status.	7 days
B. Two ABGTS trains inoperable due to inoperable ABSCE boundary.	B.1	Restore ABSCE boundary to OPERABLE status.	24 hours
~~B.~~C. Required Action and associated Completion Time of Condition A or B not met. OR Two ABGTS trains inoperable for reasons other than Condition B.	C~~B~~.1 AND C~~B~~.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.12.1	Operate each ABGTS train for $\geq$ 10 continuous hours with the heaters operating.	31 days
SR 3.7.12.2	Perform required ABGTS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.12.3	Verify each ABGTS train actuates on an actual or simulated actuation signal.	18 months
SR 3.7.12.4	Verify one ABGTS train can maintain a pressure between -0.25 inches and -0.5 inches water gauge with respect to atmospheric pressure during the post accident mode of operation at a flow rate $\geq$ 9300 cfm and $\leq$ 9900 cfm.	18 months on a STAGGERED TEST BASIS

ENCLOSURE 1
Tennessee Valley Authority
Watts Bar Nuclear Plant, Unit 1 and Unit 2

WBN-TS-16-19
EVALUATION OF PROPOSED CHANGE TO TS 3.7.12

ATTACHMENT 3

Proposed TS Bases Changes (Mark-Ups) for WBN Unit 1 (For Information Only)

B 3.7 PLANT SYSTEMS

B 3.7.12 Auxiliary Building Gas Treatment System (ABGTS)

BASES

BACKGROUND

The ABGTS filters airborne radioactive particulates from the area of active Unit 1 ECCS components and Unit 1 penetration rooms following a loss of coolant accident (LOCA).

The ABGTS consists of two independent and redundant trains. Each train consists of a heater, a prefilter, moisture separator, a high efficiency particulate air (HEPA) filter, two activated charcoal adsorber sections for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves or dampers, and instrumentation also form part of the system. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case the main HEPA filter bank fails. The downstream HEPA filter is not credited in the analysis. The system initiates filtered ventilation of the Auxiliary Building Secondary Containment Enclosure (ABSCE) exhaust air following receipt of a Phase A containment isolation signal.

The ABGTS is a standby system, not used during normal plant operations. During emergency operations, the ABSCE dampers are realigned and ABGTS fans are started to begin filtration. Air is exhausted from the Unit 1 ECCS pump rooms, Unit 1 penetration rooms, and fuel handling area through the filter trains. The prefilters or moisture separators remove any large particles in the air, and any entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal adsorbers.

The ABGTS is discussed in the FSAR, Sections 6.5.1, 9.4.2, 15.0, and 6.2.3 (Refs. 1, 2, 3, and 4, respectively).

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSES

The ABGTS design basis is established by the consequences of the limiting Design Basis Accident (DBA), which is a LOCA. The analysis of the LOCA assumes that radioactive materials leaked from the Emergency Core Cooling System (ECCS) are filtered and adsorbed by the ABGTS. The DBA analysis assumes that only one train of the ABGTS is functional due to a single failure that disables the other train. The accident analysis accounts for the reduction in airborne radioactive material provided by the one remaining train of this filtration system. The amount of fission products available for release from the ABSCE is determined for a LOCA. The assumptions and analysis for a LOCA follow the guidance provided in Regulatory Guide 1.4 (Ref. 6).

The ABGTS satisfies Criterion 3 of the NRC Policy Statement.

(continued)

BASES (continued)

LCO

Two independent and redundant trains of the ABGTS are required to be OPERABLE to ensure that at least one train is available, assuming a single failure that disables the other train, coincident with a loss of offsite power. Total system failure could result in the atmospheric release from the ABSCE exceeding the 10 CFR 100 (Ref. 7) limits in the event of a LOCA.

The ABGTS is considered OPERABLE when the individual components necessary to control exposure in the fuel handling building are OPERABLE in both trains. An ABGTS train is considered OPERABLE when its associated:

a. Fan is OPERABLE;

b. HEPA filter and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration function; and

c. Heater, moisture separator, ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained.

The LCO is modified by a Note allowing the ABSCE boundary to be opened intermittently under administrative controls. For entry and exit through doors the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for auxiliary building isolation is indicated.

APPLICABILITY

In MODE 1, 2, 3, or 4, the ABGTS is required to be OPERABLE to provide fission product removal associated with ECCS leaks due to a LOCA and leakage from containment and annulus.

In MODE 5 or 6, the ABGTS is not required to be OPERABLE since the ECCS is not required to be OPERABLE.

(continued)

BASES (continued)

ACTIONS

A.1

With one ABGTS train inoperable, action must be taken to restore OPERABLE status within 7 days. During this period, the remaining OPERABLE train is adequate to perform the ABGTS function. The 7 day Completion Time is based on the risk from an event occurring requiring the inoperable ABGTS train, and the remaining ABGTS train providing the required protection.

B.1

If the ABSCE boundary is inoperable, the ABGTS trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE ABSCE boundary within 24 hours. During the period that the ABSCE boundary is inoperable, appropriate compensatory measures consistent with the intent, as applicable, of GDC 19, 60, 61, 63, 64 and 10 CFR Part 100 should be utilized to protect plant personnel from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the ABSCE boundary.

C~~B~~.1 and C~~B~~.2

When Required Action A.1 **or B.1** cannot be completed within the associated Completion Time, or when both ABGTS trains are inoperable **for reasons other than an inoperable ABSCE boundary (i.e., Condition B)**, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in MODE 3 within 6 hours, and in MODE 5 within 36 hours. The Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.7.12.1

Standby systems should be checked periodically to ensure that they function properly. As the environmental and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system.

Monthly heater operation dries out any moisture accumulated in the charcoal from humidity in the ambient air. The system must be operated for $\geq$ 10 continuous hours with the heaters energized. The 31 day Frequency is based on the known reliability of the equipment and the two train redundancy available.

SR 3.7.12.2

This SR verifies that the required ABGTS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The ABGTS filter tests are in accordance with Regulatory Guide 1.52 (Ref. 8). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.12.3

This SR verifies that each ABGTS train starts and operates on an actual or simulated actuation signal. The 18 month Frequency is consistent with Reference 8.

SR 3.7.12.4

This SR verifies the integrity of the ABSCE. The ability of the ABSCE to maintain negative pressure with respect to potentially uncontaminated adjacent areas is periodically tested to verify proper function of the ABGTS. During the post accident mode of operation, the ABGTS is designed to maintain a slight negative pressure in the ABSCE, to prevent unfiltered LEAKAGE. The ABGTS is designed to maintain a negative pressure between -0.25 and -0.5 inches water gauge (value does not account for instrument error, Ref. 10) with respect to atmospheric pressure at a nominal flow rate $\geq$ 9300 and $\leq$ 9900 cfm. The Frequency of 18 months is consistent with the guidance provided in NUREG-0800, Section 6.5.1 (Ref. 9).

An 18 month Frequency (on a STAGGERED TEST BASIS) is consistent with Reference 8.

REFERENCES

1. Watts Bar FSAR, Section 6.5.1, "Engineered Safety Feature (ESF) Filter Systems."

2. Watts Bar FSAR, Section 9.4.2, "Fuel Handling Area Ventilation System."

3. Watts Bar FSAR, Section 15.0, "Accident Analysis."

4. Watts Bar FSAR, Section 6.2.3, "Secondary Containment Functional Design."

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REFERENCES (continued)

5. Deleted

6. Regulatory Guide 1.4, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss of Coolant Accident for Pressurized Water Reactors."

7. Title 10, Code of Federal Regulations, Part 100.11, "Determination of Exclusion Area, Low Population Zone, and Population Center Distance."

8. Regulatory Guide 1.52 (Rev. 2), "Design, Testing and Maintenance Criteria for Post Accident Engineered-Safety-Feature Atmospheric Cleanup System Air Filtration and Adsorption Units of Light-Water Cooled Nuclear Power Plants."

9. NUREG-0800, Section 6.5.1, "Standard Review Plan," Rev. 2, "ESF Atmosphere Cleanup System," July 1981.

10. Watts Bar Drawing 1-47W605-242, "Electrical Tech Spec Compliance Tables."

11. Deleted.

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ENCLOSURE 1
Tennessee Valley Authority
Watts Bar Nuclear Plant, Unit 1 and Unit 2

WBN-TS-16-19
EVALUATION OF PROPOSED CHANGE TO TS 3.7.12

ATTACHMENT 4

Proposed TS Bases Changes (Mark-Ups) for WBN Unit 2 (For Information Only)

B 3.7 PLANT SYSTEMS

B 3.7.12 Auxiliary Building Gas Treatment System (ABGTS)

BASES

BACKGROUND

The ABGTS filters airborne radioactive particulates from the area of active Unit 2 ECCS components and Unit 2 penetration rooms following a loss of coolant accident (LOCA).

The ABGTS consists of two independent and redundant trains. Each train consists of a heater, a prefilter, moisture separator, a high efficiency particulate air (HEPA) filter, two activated charcoal adsorber sections for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves or dampers, and instrumentation also form part of the system. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case the main HEPA filter bank fails. The downstream HEPA filter is not credited in the analysis. The system initiates filtered ventilation of the Auxiliary Building Secondary Containment Enclosure (ABSCE) exhaust air following receipt of a Phase A containment isolation signal.

The ABGTS is a standby system, not used during normal plant operations. During emergency operations, the ABSCE dampers are realigned and ABGTS fans are started to begin filtration. Air is exhausted from the Unit 2 ECCS pump rooms, Unit 2 penetration rooms, and fuel handling area through the filter trains. The prefilters or moisture separators remove any large particles in the air, and any entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal adsorbers.

The ABGTS is discussed in the FSAR, Sections 6.5.1, 9.4.2, 15.0, and 6.2.3 (Refs. 1, 2, 3, and 4, respectively).

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APPLICABLE SAFETY ANALYSES

The ABGTS design basis is established by the consequences of the limiting Design Basis Accident (DBA), which is a LOCA. The analysis of the LOCA assumes that radioactive materials leaked from the Emergency Core Cooling System (ECCS) are filtered and adsorbed by the ABGTS. The DBA analysis of the fuel handling accident assumes that only one train of the ABGTS is functional due to a single failure that disables the other train. The accident analysis accounts for the reduction in airborne radioactive material provided by the one remaining train of this filtration system. The amount of fission products available for release from the ABSCE is determined for a LOCA. The assumptions and analysis for a LOCA follow the guidance provided in Regulatory Guide 1.4 (Ref. 5).

The ABGTS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two independent and redundant trains of the ABGTS are required to be OPERABLE to ensure that at least one train is available, assuming a single failure that disables the other train, coincident with a loss of offsite power. Total system failure could result in the atmospheric release from the ABSCE exceeding the 10 CFR 100 (Ref. 6) limits in the event of a LOCA.

The ABGTS is considered OPERABLE when the individual components necessary to control exposure in the Auxiliary Building are OPERABLE in both trains. An ABGTS train is considered OPERABLE when its associated:

a. Fan is OPERABLE;

b. HEPA filter and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration function; and

c. Heater, moisture separator, ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained.

The LCO is modified by a Note allowing the ABSCE boundary to be opened intermittently under administrative controls. For entry and exit through doors the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for auxiliary building isolation is indicated.

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APPLICABILITY

In MODE 1, 2, 3, or 4, the ABGTS is required to be OPERABLE to provide fission product removal associated with ECCS leaks due to a LOCA and leakage from containment and annulus.

In MODE 5 or 6, the ABGTS is not required to be OPERABLE since the ECCS is not required to be OPERABLE.

ACTIONS

A.1

With one ABGTS train inoperable, action must be taken to restore OPERABLE status within 7 days. During this period, the remaining OPERABLE train is adequate to perform the ABGTS function. The 7-day Completion Time is based on the risk from an event occurring requiring the inoperable ABGTS train, and the remaining ABGTS train providing the required protection.

B.1

If the ABSCE boundary is inoperable, the ABGTS trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE ABSCE boundary within 24 hours. During the period that the ABSCE boundary is inoperable, appropriate compensatory measures consistent with the intent, as applicable, of GDC 19, 60, 61, 63, 64 and 10 CFR Part 100 should be utilized to protect plant personnel from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the ABSCE boundary.

C~~B~~.1 and C~~B~~.2

When Required Action A.1 **or B.1** cannot be completed within the associated Completion Time, or when both ABGTS trains are inoperable **for reasons other than an inoperable ABSCE boundary (i.e., Condition B)**, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in MODE 3 within 6 hours, and in MODE 5 within 36 hours. The Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner

(continued)

and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.12.1

Standby systems should be checked periodically to ensure that they function properly. As the environmental and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system.

Monthly heater operation dries out any moisture accumulated in the charcoal from humidity in the ambient air. The system must be operated for $\geq$ 10 continuous hours with the heaters energized. The 31-day Frequency is based on the known reliability of the equipment and the two train redundancy available.

SR 3.7.12.2

This SR verifies that the required ABGTS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The ABGTS filter tests are in accordance with Regulatory Guide 1.52 (Ref. 7). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.12.3

This SR verifies that each ABGTS train starts and operates on an actual or simulated actuation signal. The 18-month Frequency is consistent with Reference 7.

SR 3.7.12.4

This SR verifies the integrity of the ABSCE. The ability of the ABSCE to maintain negative pressure with respect to potentially uncontaminated adjacent areas is periodically tested to verify proper function of the ABGTS. During the post accident mode of operation, the ABGTS is designed to maintain a slight negative pressure in the ABSCE, to prevent unfiltered LEAKAGE. The ABGTS is designed to maintain a negative pressure between -0.25 inches water gauge and -0.5 inches water gauge (value does not account for instrument error) with respect to atmospheric pressure at a nominal flow rate $\geq$ 9300 cfm and $\leq$ 9900 cfm. The Frequency of 18 months is consistent with the guidance provided in NUREG-0800, Section 6.5.1 (Ref. 8).

An 18-month Frequency (on a STAGGERED TEST BASIS) is consistent with Reference 7.

REFERENCES

1. Watts Bar FSAR, Section 6.5.1, “Engineered Safety Feature (ESF) Filter Systems.”
2. Watts Bar FSAR, Section 9.4.2, “Fuel Handling Area Ventilation System.”
3. Watts Bar FSAR, Section 15.0, “Accident Analysis.”
4. Watts Bar FSAR, Section 6.2.3, “Secondary Containment Functional Design.”
5. Regulatory Guide 1.4, “Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss of Coolant Accident for Pressurized Water Reactors.”
6. Title 10, Code of Federal Regulations, Part 100.11, “Determination of Exclusion Area, Low Population Zone, and Population Center Distance.”

(continued)

REFERENCES (continued)

7. Regulatory Guide 1.52 (Rev. 2), “Design, Testing and Maintenance Criteria for Post Accident Engineered-Safety-Feature Atmospheric Cleanup System Air Filtration and Adsorption Units of Light-Water Cooled Nuclear Power Plants.”

8. NUREG-0800, Section 6.5.1, “Standard Review Plan,” Rev. 2, “ESF Atmosphere Cleanup System,” July 1981.

ENCLOSURE 1
Tennessee Valley Authority
Watts Bar Nuclear Plant, Unit 1 and Unit 2

WBN-TS-16-19
EVALUATION OF PROPOSED CHANGE TO TS 3.7.12

ATTACHMENT 5

Proposed TS Changes (Final Typed) for WBN Unit 1

3.7 PLANT SYSTEMS

3.7.12 Auxiliary Building Gas Treatment System (ABGTS)

LCO 3.7.12 Two ABGTS trains shall be OPERABLE.

---------- NOTE ----------
The Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ABGTS train inoperable.	A.1 Restore ABGTS train to OPERABLE status.	7 days
B. Two ABGTS trains inoperable due to inoperable ABSCE boundary.	B.1 Restore ABSCE boundary to OPERABLE status.	24 hours
C. Required Action and associated Completion Time of Condition A or B not met. OR Two ABGTS trains inoperable for reasons other than Condition B.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.12.1	Operate each ABGTS train for ≥ 10 continuous hours with the heaters operating.	31 days
SR 3.7.12.2	Perform required ABGTS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.12.3	Verify each ABGTS train actuates on an actual or simulated actuation signal.	18 months
SR 3.7.12.4	Verify one ABGTS train can maintain a pressure between -0.25 and -0.5 inches water gauge with respect to atmospheric pressure during the post accident mode of operation at a flow rate ≥ 9300 and ≤ 9900 cfm.	18 months on a STAGGERED TEST BASIS

ENCLOSURE 1
Tennessee Valley Authority
Watts Bar Nuclear Plant, Unit 1 and Unit 2

WBN-TS-16-19
EVALUATION OF PROPOSED CHANGE TO TS 3.7.12

ATTACHMENT 6

Proposed TS Changes (Final Typed) for WBN Unit 2

3.7 PLANT SYSTEMS

3.7.12 Auxiliary Building Gas Treatment System (ABGTS)

LCO 3.7.12 Two ABGTS trains shall be OPERABLE

---------- NOTE ----------
The Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One ABGTS train inoperable	A.1	Restore ABGTS train to OPERABLE status.	7 days
B. Two ABGTS trains inoperable due to inoperable ABSCE boundary.	B.1	Restore ABSCE boundary to OPERABLE status.	24 hours
C. Required Action and associated Completion Time of Condition A or B not met. OR Two ABGTS trains inoperable for reasons other than Condition B.	C.1 AND C.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.12.1	Operate each ABGTS train for $\geq$ 10 continuous hours with the heaters operating.	31 days
SR 3.7.12.2	Perform required ABGTS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.12.3	Verify each ABGTS train actuates on an actual or simulated actuation signal.	18 months
SR 3.7.12.4	Verify one ABGTS train can maintain a pressure between -0.25 inches and -0.5 inches water gauge with respect to atmospheric pressure during the post accident mode of operation at a flow rate $\geq$ 9300 cfm and $\leq$ 9900 cfm.	18 months on a STAGGERED TEST BASIS

ENCLOSURE 1
Tennessee Valley Authority
Watts Bar Nuclear Plant, Unit 1 and Unit 2

WBN-TS-16-19
EVALUATION OF PROPOSED CHANGE TO TS 3.7.12

ATTACHMENT 7

Proposed TS Bases Changes (Final Typed) for WBN Unit 1 (For Information Only)

B 3.7 PLANT SYSTEMS

B 3.7.12 Auxiliary Building Gas Treatment System (ABGTS)

BASES

BACKGROUND

The ABGTS filters airborne radioactive particulates from the area of active Unit 1 ECCS components and Unit 1 penetration rooms following a loss of coolant accident (LOCA).

The ABGTS consists of two independent and redundant trains. Each train consists of a heater, a prefilter, moisture separator, a high efficiency particulate air (HEPA) filter, two activated charcoal adsorber sections for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves or dampers, and instrumentation also form part of the system. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case the main HEPA filter bank fails. The downstream HEPA filter is not credited in the analysis. The system initiates filtered ventilation of the Auxiliary Building Secondary Containment Enclosure (ABSCE) exhaust air following receipt of a Phase A containment isolation signal.

The ABGTS is a standby system, not used during normal plant operations. During emergency operations, the ABSCE dampers are realigned and ABGTS fans are started to begin filtration. Air is exhausted from the Unit 1 ECCS pump rooms, Unit 1 penetration rooms, and fuel handling area through the filter trains. The prefilters or moisture separators remove any large particles in the air, and any entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal adsorbers.

The ABGTS is discussed in the FSAR, Sections 6.5.1, 9.4.2, 15.0, and 6.2.3 (Refs. 1, 2, 3, and 4, respectively).

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSES

The ABGTS design basis is established by the consequences of the limiting Design Basis Accident (DBA), which is a LOCA. The analysis of the LOCA assumes that radioactive materials leaked from the Emergency Core Cooling System (ECCS) are filtered and adsorbed by the ABGTS. The DBA analysis assumes that only one train of the ABGTS is functional due to a single failure that disables the other train. The accident analysis accounts for the reduction in airborne radioactive material provided by the one remaining train of this filtration system. The amount of fission products available for release from the ABSCE is determined for a LOCA. The assumptions and analysis for a LOCA follow the guidance provided in Regulatory Guide 1.4 (Ref. 6).

The ABGTS satisfies Criterion 3 of the NRC Policy Statement.

(continued)

BASES (continued)

LCO

Two independent and redundant trains of the ABGTS are required to be OPERABLE to ensure that at least one train is available, assuming a single failure that disables the other train, coincident with a loss of offsite power. Total system failure could result in the atmospheric release from the ABSCE exceeding the 10 CFR 100 (Ref. 7) limits in the event of a LOCA.

The ABGTS is considered OPERABLE when the individual components necessary to control exposure in the fuel handling building are OPERABLE in both trains. An ABGTS train is considered OPERABLE when its associated:

a. Fan is OPERABLE;

b. HEPA filter and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration function; and

c. Heater, moisture separator, ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained.

The LCO is modified by a Note allowing the ABSCE boundary to be opened intermittently under administrative controls. For entry and exit through doors the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for auxiliary building isolation is indicated.

APPLICABILITY

In MODE 1, 2, 3, or 4, the ABGTS is required to be OPERABLE to provide fission product removal associated with ECCS leaks due to a LOCA and leakage from containment and annulus.

In MODE 5 or 6, the ABGTS is not required to be OPERABLE since the ECCS is not required to be OPERABLE.

(continued)

BASES (continued)

ACTIONS

A.1

With one ABGTS train inoperable, action must be taken to restore OPERABLE status within 7 days. During this period, the remaining OPERABLE train is adequate to perform the ABGTS function. The 7 day Completion Time is based on the risk from an event occurring requiring the inoperable ABGTS train, and the remaining ABGTS train providing the required protection.

B.1

If the ABSCE boundary is inoperable, the ABGTS trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE ABSCE boundary within 24 hours. During the period that the ABSCE boundary is inoperable, appropriate compensatory measures consistent with the intent, as applicable, of GDC 19, 60, 61, 63, 64 and 10 CFR Part 100 should be utilized to protect plant personnel from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the ABSCE boundary.

C.1 and C.2

When Required Action A.1 or B.1 cannot be completed within the associated Completion Time, or when both ABGTS trains are inoperable for reasons other than an inoperable ABSCE boundary (i.e., Condition B), the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in MODE 3 within 6 hours, and in MODE 5 within 36 hours. The Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

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SURVEILLANCE REQUIREMENTS

SR 3.7.12.1

Standby systems should be checked periodically to ensure that they function properly. As the environmental and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system.

Monthly heater operation dries out any moisture accumulated in the charcoal from humidity in the ambient air. The system must be operated for $\geq$ 10 continuous hours with the heaters energized. The 31 day Frequency is based on the known reliability of the equipment and the two train redundancy available.

SR 3.7.12.2

This SR verifies that the required ABGTS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The ABGTS filter tests are in accordance with Regulatory Guide 1.52 (Ref. 8). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.12.3

This SR verifies that each ABGTS train starts and operates on an actual or simulated actuation signal. The 18 month Frequency is consistent with Reference 8.

SR 3.7.12.4

This SR verifies the integrity of the ABSCE. The ability of the ABSCE to maintain negative pressure with respect to potentially uncontaminated adjacent areas is periodically tested to verify proper function of the ABGTS. During the post accident mode of operation, the ABGTS is designed to maintain a slight negative pressure in the ABSCE, to prevent unfiltered LEAKAGE. The ABGTS is designed to maintain a negative pressure between -0.25 and -0.5 inches water gauge (value does not account for instrument error, Ref. 10) with respect to atmospheric pressure at a nominal flow rate $\geq$ 9300 and $\leq$ 9900 cfm. The Frequency of 18 months is consistent with the guidance provided in NUREG-0800, Section 6.5.1 (Ref. 9).

An 18 month Frequency (on a STAGGERED TEST BASIS) is consistent with Reference 8.

REFERENCES

1. Watts Bar FSAR, Section 6.5.1, "Engineered Safety Feature (ESF) Filter Systems."

2. Watts Bar FSAR, Section 9.4.2, "Fuel Handling Area Ventilation System."

3. Watts Bar FSAR, Section 15.0, "Accident Analysis."

4. Watts Bar FSAR, Section 6.2.3, "Secondary Containment Functional Design."

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REFERENCES (continued)

5. Deleted

6. Regulatory Guide 1.4, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss of Coolant Accident for Pressurized Water Reactors."

7. Title 10, Code of Federal Regulations, Part 100.11, "Determination of Exclusion Area, Low Population Zone, and Population Center Distance."

8. Regulatory Guide 1.52 (Rev. 2), "Design, Testing and Maintenance Criteria for Post Accident Engineered-Safety-Feature Atmospheric Cleanup System Air Filtration and Adsorption Units of Light-Water Cooled Nuclear Power Plants."

9. NUREG-0800, Section 6.5.1, "Standard Review Plan," Rev. 2, "ESF Atmosphere Cleanup System," July 1981.

10. Watts Bar Drawing 1-47W605-242, "Electrical Tech Spec Compliance Tables."

11. Deleted.

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ENCLOSURE 1
Tennessee Valley Authority
Watts Bar Nuclear Plant, Unit 1 and Unit 2

WBN-TS-16-19
EVALUATION OF PROPOSED CHANGE TO TS 3.7.12

ATTACHMENT 8

Proposed TS Bases Changes (Final Typed) for WBN Unit 2 (For Information Only)

B 3.7 PLANT SYSTEMS

B 3.7.12 Auxiliary Building Gas Treatment System (ABGTS)

BASES

BACKGROUND

The ABGTS filters airborne radioactive particulates from the area of active Unit 2 ECCS components and Unit 2 penetration rooms following a loss of coolant accident (LOCA).

The ABGTS consists of two independent and redundant trains. Each train consists of a heater, a prefilter, moisture separator, a high efficiency particulate air (HEPA) filter, two activated charcoal adsorber sections for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves or dampers, and instrumentation also form part of the system. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case the main HEPA filter bank fails. The downstream HEPA filter is not credited in the analysis. The system initiates filtered ventilation of the Auxiliary Building Secondary Containment Enclosure (ABSCE) exhaust air following receipt of a Phase A containment isolation signal.

The ABGTS is a standby system, not used during normal plant operations. During emergency operations, the ABSCE dampers are realigned and ABGTS fans are started to begin filtration. Air is exhausted from the Unit 2 ECCS pump rooms, Unit 2 penetration rooms, and fuel handling area through the filter trains. The prefilters or moisture separators remove any large particles in the air, and any entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal adsorbers.

The ABGTS is discussed in the FSAR, Sections 6.5.1, 9.4.2, 15.0, and 6.2.3 (Refs. 1, 2, 3, and 4, respectively).

(continued)

APPLICABLE SAFETY ANALYSES

The ABGTS design basis is established by the consequences of the limiting Design Basis Accident (DBA), which is a LOCA. The analysis of the LOCA assumes that radioactive materials leaked from the Emergency Core Cooling System (ECCS) are filtered and adsorbed by the ABGTS. The DBA analysis of the fuel handling accident assumes that only one train of the ABGTS is functional due to a single failure that disables the other train. The accident analysis accounts for the reduction in airborne radioactive material provided by the one remaining train of this filtration system. The amount of fission products available for release from the ABSCE is determined for a LOCA. The assumptions and analysis for a LOCA follow the guidance provided in Regulatory Guide 1.4 (Ref. 5).

The ABGTS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two independent and redundant trains of the ABGTS are required to be OPERABLE to ensure that at least one train is available, assuming a single failure that disables the other train, coincident with a loss of offsite power. Total system failure could result in the atmospheric release from the ABSCE exceeding the 10 CFR 100 (Ref. 6) limits in the event of a LOCA.

The ABGTS is considered OPERABLE when the individual components necessary to control exposure in the Auxiliary Building are OPERABLE in both trains. An ABGTS train is considered OPERABLE when its associated:

a. Fan is OPERABLE;

b. HEPA filter and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration function; and

c. Heater, moisture separator, ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained.

The LCO is modified by a Note allowing the ABSCE boundary to be opened intermittently under administrative controls. For entry and exit through doors the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for auxiliary building isolation is indicated.

(continued)

APPLICABILITY

In MODE 1, 2, 3, or 4, the ABGTS is required to be OPERABLE to provide fission product removal associated with ECCS leaks due to a LOCA and leakage from containment and annulus.

In MODE 5 or 6, the ABGTS is not required to be OPERABLE since the ECCS is not required to be OPERABLE.

ACTIONS

A.1

With one ABGTS train inoperable, action must be taken to restore OPERABLE status within 7 days. During this period, the remaining OPERABLE train is adequate to perform the ABGTS function. The 7-day Completion Time is based on the risk from an event occurring requiring the inoperable ABGTS train, and the remaining ABGTS train providing the required protection.

B.1

If the ABSCE boundary is inoperable, the ABGTS trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE ABSCE boundary within 24 hours. During the period that the ABSCE boundary is inoperable, appropriate compensatory measures consistent with the intent, as applicable, of GDC 19, 60, 61, 63, 64 and 10 CFR Part 100 should be utilized to protect plant personnel from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the ABSCE boundary.

C.1 and C.2

When Required Action A.1 or B.1 cannot be completed within the associated Completion Time, or when both ABGTS trains are inoperable for reasons other than an inoperable ABSCE boundary (i.e., Condition B), the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in MODE 3 within 6 hours, and in MODE 5 within 36 hours. The Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.7.12.1

Standby systems should be checked periodically to ensure that they function properly. As the environmental and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system.

Monthly heater operation dries out any moisture accumulated in the charcoal from humidity in the ambient air. The system must be operated for $\geq$ 10 continuous hours with the heaters energized. The 31-day Frequency is based on the known reliability of the equipment and the two train redundancy available.

SR 3.7.12.2

This SR verifies that the required ABGTS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The ABGTS filter tests are in accordance with Regulatory Guide 1.52 (Ref. 7). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.12.3

This SR verifies that each ABGTS train starts and operates on an actual or simulated actuation signal. The 18-month Frequency is consistent with Reference 7.

SR 3.7.12.4

This SR verifies the integrity of the ABSCE. The ability of the ABSCE to maintain negative pressure with respect to potentially uncontaminated adjacent areas is periodically tested to verify proper function of the ABGTS. During the post accident mode of operation, the ABGTS is designed to maintain a slight negative pressure in the ABSCE, to prevent unfiltered LEAKAGE. The ABGTS is designed to maintain a negative pressure between -0.25 inches water gauge and -0.5 inches water gauge (value does not account for instrument error) with respect to atmospheric pressure at a nominal flow rate $\geq$ 9300 cfm and $\leq$ 9900 cfm. The Frequency of 18 months is consistent with the guidance provided in NUREG-0800, Section 6.5.1 (Ref. 8).

An 18-month Frequency (on a STAGGERED TEST BASIS) is consistent with Reference 7.

REFERENCES

1. Watts Bar FSAR, Section 6.5.1, “Engineered Safety Feature (ESF) Filter Systems.”
2. Watts Bar FSAR, Section 9.4.2, “Fuel Handling Area Ventilation System.”
3. Watts Bar FSAR, Section 15.0, “Accident Analysis.”
4. Watts Bar FSAR, Section 6.2.3, “Secondary Containment Functional Design.”
5. Regulatory Guide 1.4, “Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss of Coolant Accident for Pressurized Water Reactors.”
6. Title 10, Code of Federal Regulations, Part 100.11, “Determination of Exclusion Area, Low Population Zone, and Population Center Distance.”

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REFERENCES (continued)

7. Regulatory Guide 1.52 (Rev. 2), “Design, Testing and Maintenance Criteria for Post Accident Engineered-Safety-Feature Atmospheric Cleanup System Air Filtration and Adsorption Units of Light-Water Cooled Nuclear Power Plants.”

8. NUREG-0800, Section 6.5.1, “Standard Review Plan,” Rev. 2, “ESF Atmosphere Cleanup System,” July 1981.

ENCLOSURE 2
Tennessee Valley Authority
Watts Bar Nuclear Plant, Unit 1 and Unit 2

WBN-TS-16-19
EVALUATION OF PROPOSED CHANGE TO TS 3.7.12

List of New Regulatory Commitments

No.	Commitment	Due Date/Event
1	TVA will have written procedures available describing compensatory measures to be taken in the event of an intentional or unintentional entry into TS 3.7.12 Condition B.	Prior to implementing the approved amendment