Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402-2881

November 24, 1999

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

Gentlemen:

In the Matter of	)	Docket Nos. 50-390
Tennessee Valley Authority	)	50-327
		50-328

SEQUOYAH NUCLEAR PLANT (SQN), AND WATTS BAR NUCLEAR PLANT (WBN), 180-DAY RESPONSE TO GENERIC LETTER (GL) 99-02, "LABORATORY TESTING OF NUCLEAR-GRADE ACTIVATED CHARCOAL," DATED JUNE 3, 1999

This letter provides TVA's 180-day response for SQN and WBN to the subject GL regarding laboratory testing of nuclear-grade activated charcoal. A response was provided separately for Browns Ferry by letter dated November 18, 1999.

This GL requests information on the testing standards used by licensees to determine the methyl iodine removal efficiencies of charcoal adsorbers in safety-related ventilation systems. The review stemming from this GL determined that technical specification (TS) revisions were needed for SQN. Accordingly, SQN submitted TS Change 99-16 by letter dated November 24, 1999, which would incorporate ASTM D3803-1989 methyl iodine testing requirements into the surveillance requirements for safety-related charcoal adsorbers. The review at WBN determined that pursuant to site TS requirements, WBN uses ASTM D3803-1989 to perform methyl iodine removal efficiency tests of charcoal adsorbers. Therefore, the WBN response addresses NRC Requested Action 1 only.

Enclosures 1 and 2 provide the information requested by GL 99-02 for SQN (Units 1 and 2), and WBN (Unit 1), respectively.

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There were no analyses performed for the GL response which met the FSAR update requirements of 10 CFR 50.71(e).

If you have questions regarding this response, please contact Everett Whitaker at (423) 751-6369.

Sincerely,

Ralph H. Shell

for Mark J. Burzynski
Manager
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ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY (TVA)
SEQUOYAH NUCLEAR PLANT (SQN) UNITS 1 AND 2

180-DAY RESPONSE TO GENERIC LETTER (GL) 99-02, "LABORATORY TESTING OF NUCLEAR-GRADE ACTIVATED CHARCOAL" DATED JUNE 3, 1999

NRC Requested Action 1

Within 180 days of the date of this GL, submit a written response to the NRC describing your current Technical Specification (TS) requirements for the laboratory testing of charcoal samples for each Engineered Safety Feature (ESF) ventilation system including the specific test protocol, temperature, RH, charcoal bed thickness, total residence time per bed depth, and penetration at which the TS require the test to be performed. If your current TS specifically require laboratory testing of charcoal samples in accordance with the ASTM D3803-1989 protocol at 30 °C [86 °F] and you have been testing in accordance with this standard, then you only need to address this requested action (i.e., no TS amendment or additional testing is required).

TVA Response

The ESF ventilation systems credited in the accident analysis with removal of methyl iodide are the: Emergency Gas Treatment System (EGTS), Auxiliary Building Gas Treatment System (ABGTS), and Control Room Emergency Ventilation (CREV). The current TS requirements for these systems are shown in Appendix 1 to this enclosure. The current requirements are based on Regulatory Guide 1.52 and therefore are subject to the potential problems discussed in GL 99-02. The SQN TS requirements in Appendix 1 include mark-ups to show the effect of SQN change request, TS 99-16, which was submitted to NRC by letter dated November 24, 1999. TS 99-16 proposes to adopt ASTM D3803-1989 requirements for safety-related charcoal adsorber methyl iodine penetration testing. The revised TS requirements are consistent with the example provided in GL 99-02, "For Plants With Older Technical Specifications." As such, the specifications include the specific test protocol, test temperature, and RH.

Charcoal bed thickness and total residence time per bed depth are as follows: EGTS has two charcoal banks in series; each bank of filters is 2 inches thick with each having 0.25 second residence time. ABGTS has a single, 2 inch thick charcoal bank, with 0.25 second residence time. CREV has a single, 2 inch thick charcoal bank, with 0.25 second residence time.

NRC Requested Action 2

If you choose to adopt the ASTM D3803-1989 protocol, submit a TS amendment request to require testing to this protocol within 180 days of the date of this GL. The request should contain the test temperature, RH, and penetration at which the proposed TS will require the test to be performed and the basis for these values. If the system has a face velocity greater than 110 percent of 0.203 m/s [40 ft/min], then the revised TS should specify the face velocity.

Also, indicate when the next laboratory test is scheduled to be performed.

TVA Response

SQN TS change request, TS 99-16 was submitted to NRC by letter dated November 24, 1999. The change adopts the ASTM D3803-1989 testing protocol. It specifies test temperatures, RH values, and methyl iodine penetration allowables as requested by the GL. The safety-related charcoal filter face velocities for the affected systems are less than the value [11O percent of 40ft/min] specified in the GL and the GL errata, and therefore, no plant specific value of face velocity was requested in TS 99-16. The TS penetration values were developed consistent with the original licensing analysis and licensing basis except that a safety factor of two was used. This is consistent with the GL discussion which allows use of a safety factor of two when the ASTM D3803-1989 test methods are adopted.

Tests of methyl iodine penetration to the ASTM D3803-1989 standard for safety-related charcoal adsorbers or replacement of safety-related charcoal adsorbers with charcoal adsorbers tested to ASTM D3803-1989 are scheduled during the week of the dates shown below:

System	Train	Scheduled Test Date
Emergency Gas Treatment	A-A	01 MAY 00
	B-B	27 MAR 00
Auxiliary Building Gas Treatment	A-A	03 APR 00
	B-B	24 APR 00
Control Room Emergency Ventilation	A-A	03 APR 00
	B-B	22 MAY 00

NRC Requested Action 3

If you are proposing an alternate test protocol, address the attributes discussed below and submit a TS amendment request to require testing to this alternate protocol within 180 days of the date of this GL. The request should contain the test temperature, RH, and penetration at which the proposed TS will require the test to be performed and the basis for these values. If the system has a face velocity greater than 110 percent of 0.203 m/s [40 ft/min], then the revised TS should specify the face velocity. Also, indicate when the next laboratory test is scheduled to be performed.

The following information should be submitted for staff review to determine the acceptability of the alternate protocol:

1. Summary of the test method
2. Precision of the method
3. Description of the test apparatus along with tolerances
4. Parameter specifications
5. Material requirements
6. Hazards
7. Preparation of the apparatus before initiation of the test
8. Calibration requirements of the test equipment
9. Test procedure

10. Manner of calculating penetration and error
11. Repeatability and reproducibility of the results for 1 percent and 10 percent penetration and the penetration at a 95 percent confidence interval for charcoal tested at 70 percent RH and at 95 percent RH
12. Bias associated with the method
13. Results from at least two laboratories which demonstrate that the alternate test protocol achieves results that are consistent with, or more conservative than, results associated with ASTM D3803-1989

The demonstration identified in Item 13 above should be based upon a series of tests comparing the alternate test protocol and ASTM D3803-1989, and it should apply to both new and used charcoal tested at 70 percent RH and at 95 percent RH. If an addressee chooses to test its charcoal samples at actual accident conditions which are different from the test conditions specified in ASTM D3803-1989, then that test should be treated as an alternate protocol. At least two laboratories should be used in determining the acceptability of the alternate protocol. One laboratory should be used to develop the alternate protocol and the other to demonstrate the repeatability and reproducibility of the alternate protocol. The two laboratories should be able to demonstrate that the alternate protocol is at least as conservative as ASTM D3803-1989 and should be able to perform the ASTM D3803-1989 test and achieve repeatable and reproducible results.

TVA Response

As noted above, SQN has proposed TS changes consistent with the NRC guidance in GL 99-02 and GL 99-02 Errata. No alternate test protocol is being proposed.

NRC Requested Action 4

At the next required laboratory surveillance test of a charcoal sample that is 60 or more days after the date of this GL, test your charcoal samples in accordance with ASTM D3803-1989 or replace all of the charcoal with new charcoal that has been tested in accordance with ASTM D3803-1989. In all cases, the results should meet the acceptance criterion that is derived from applying a safety factor as low as 2 (see the note in Enclosure 2) to the charcoal filter efficiency assumed in your design-basis dose analysis, and the charcoal samples should continue to be tested in accordance with ASTM D3803-1989, in lieu of (emphasis added) the current TS-required laboratory testing, until the TS amendment is approved by NRC.

TVA Response

The SQN surveillance requirement (SR) test schedule for safety-related charcoal adsorbers has not required methyl iodine penetration tests since the GL implementation milestone (60 or more days after the date of the GL). Previous tests were performed in accordance with the SQN TS requirements and the results were evaluated against acceptance criteria derived using existing safety factors consistent with the appropriate revision of Regulatory Guide 1.52.

SQN procedures have been revised to incorporate charcoal adsorber sampling and laboratory testing in accordance with ASTM D3803-1989 should a conditional TS SR performance be required following painting, a fire, or some other activity that would require testing the adsorbers. Acceptance criteria for the revised procedures were derived by applying a safety factor of 2 for ASTM D3803-1989 test results to the charcoal filter efficiency of 95 percent assumed in SQN design-basis dose analyses. For EGTS, while the design-basis dose analysis assumes 95 percent efficiency, the acceptance criteria continued the past practice of using

extra conservatism by testing the filters as if the assumed efficiency was 99 percent. This was done to avoid any compliance concerns during the transition from existing TS requirements to the TS requirements discussed earlier. As noted in the GL, a safety factor of 2 is appropriate when ASTM D3803-1989 protocols are used since the improved testing methods yield a more accurate and reliable measure of filter efficiency.

NRC Requested Action 5

Addressees who choose not to do the above actions are requested to notify the NRC in writing of their decision as soon as a decision is reached, but no later than 60 days from the date of this GL. The 60-day written response should also discuss: (1) addressee plans to pursue a proposed alternative course of action (including the basis for establishing its acceptability), (2) the schedule for submitting that proposal for NRC staff review (that proposal should be submitted to the NRC no later than 180 days from the date of this GL), and (3) the basis for continued operability of affected systems and components until such time that the proposed alternative course of action is approved by the NRC.

TVA Response

As stated above, in accordance with NRC Requested Action 2, SQN has proposed TS changes for Units 1 and 2 which will incorporate ASTM D3803-1989 as the test standard for methyl iodine penetration tests for safety-related charcoal adsorbers in the EGTS, AGTS, and the CREV Systems. TVA has procedures in place to perform filter testing to ASTM D3803-1989 should that testing be required prior to NRC approval of the proposed TS changes.

Enclosure 1 - Appendix 1

Pages showing the effect of proposed TS change, SQN TS 99-16 submitted to NRC for approval by letter dated November 24, 1999.

I. AFFECTED PAGE LIST

Unit 1

3/4 6-13
3/4 6-14
3/4 7-18
3/4 7-19
3/4 7-20
3/4 9-12
3/4 9-13

Unit 2

3/4 6-13
3/4 6-14
3/4 7-18
3/4 7-19
3/4 7-20
3/4 9-14
3/4 9-15

II. MARKED PAGES

See attached.

TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT (SQN)
UNITS 1 AND 2

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE
REVISED PAGES

INSERT 1

shows the methyl iodide penetration less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C [86°F] and a relative humidity of 70%.

EMERGENCY GAS TREATMENT SYSTEM - EGTS - CLEANUP SUBSYSTEM

LIMITING CONDITION FOR OPERATION

3.6.1.8 Two independent emergency gas treatment system cleanup subsystems (EGTS) shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one EGTS cleanup subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.8 Each EGTS cleanup subsystem shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 hours with the heaters on.

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Position C.5.a., C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 (except for the provisions of ANSI N510 Sections 8 and 9), and the system flow rate is 4000 cfm ± 10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, ~~meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.~~

INSERT 1

3. Verifying a system flow rate of 4000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

SURVEILLANCE REQUIREMENTS (Continued)

c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, ~~meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.~~

INSERT 1

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 5 inches Water Gauge while operating the filter train at a flow rate of 4000 cfm ± 10%.

2. Verifying that the filter train starts on a Phase A containment isolation Test Signal.

3. Verify the operation of the filter cooling bypass valves.

4. Verifying that each system produces a negative pressure of greater than or equal to 0.5 inches W. G. in the annulus within 1 minute after a start signal.

e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove greater than or equal to 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 4000 cfm ± 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove greater than or equal to 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 4000 cfm ± 10%.

This page provided as a an aid for reviews. No changes are being proposed.

PLANT SYSTEMS

3/4.7.7 CONTROL ROOM EMERGENCY VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.7 Two independent control room emergency ventilation systems (CREVS) shall be OPERABLE.

APPLICABILITY: ALL MODES

ACTION:

MODES 1, 2, 3 and 4

a. With one CREVS inoperable, restore the inoperable system to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With both CREVS inoperable due to actions taken as a result of a tornado warning, restore at least one train to operable status within 8 hours or be in a least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

MODES 5 and 6

a. With one CREVS inoperable, restore the inoperable system to OPERABLE status within 7 days or initiate and maintain operation of the control room emergency ventilation system in the recirculation mode.

b. With both CREVS inoperable, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

c. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.7 Each CREVS shall be demonstrated OPERABLE:

a. At least once per 12 hours by verifying that the control room air temperature is less than or equal to 104EF.

b. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 15 minutes.

c. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

SURVEILLANCE REQUIREMENTS (Continued)

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 (except for the provisions of ANSI N510 Sections 8 and 9), and the system flow rate is 4000 cfm ± 10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, ~~meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.~~

INSERT 1

3. Verifying a system flow rate of 4000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

d. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, ~~meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.~~

INSERT 1

e. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 3 inches Water Gauge while operating the system at a flow rate of 4000 cfm ± 10%.

2. Verifying that on a safety injection signal or a high radiation signal from the air intake stream, the system automatically diverts its inlet flow through the HEPA filters and charcoal adsorber banks.

3. Verifying that the system maintains the control room at a positive pressure of greater than or equal to 1/8 inch Water Gauge relative to the outside atmosphere at a system flow rate of 4000 cfm ± 10% ($ 3000 cfm recirculation and # 1000 cfm fresh air).

f. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove greater than or equal to 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 4000 cfm ± 10%.

g. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove greater than or equal to 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 4000 cfm ± 10%.

3/4.7.8 AUXILIARY BUILDING GAS TREATMENT SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.8 Two independent auxiliary building gas treatment filter trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one auxiliary building gas treatment filter train inoperable, restore the inoperable train to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.8 Each auxiliary building gas treatment filter train shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filter and charcoal adsorber train and verifying that the system operates for at least 10 hours with the heaters on.

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 (except for the provisions of ANSI N510 Sections 8 and 9), and the system flow rate is 9000 cfm ± 10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, ~~meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.~~

→ INSERT 1

3. Verifying a system flow rate of 9000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

SURVEILLANCE REQUIREMENTS (Continued)

c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, ~~meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.~~

INSERT 1

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 3 inches Water Gauge while operating the filter train at a flow rate of 9000 cfm ± 10%.

2. Verifying that the filter trains start on a Containment Phase A Isolation test signal.

3. Verifying that the system maintains the spent fuel storage area and the ESF pump rooms at a pressure equal to or more negative than minus 1/4 inch water gage relative the outside atmosphere while maintaining a vacuum relief flow greater than 2000 cfm and a total system flow of 9000 cfm ± 10%.

4. Verifying that the heaters dissipate 32 ± 3.2 kw when tested in accordance with ANSI N510-1975.

e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove greater than or equal to 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 9000 cfm ± 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove greater than or equal to 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 9000 cfm ± 10%.

REFUELING OPERATIONS

3/4.9.12 AUXILIARY BUILDING GAS TREATMENT SYSTEM

LIMITING CONDITION FOR OPERATION

3.9.12 One auxiliary building gas treatment filter train shall be OPERABLE.

APPLICABILITY: Whenever irradiated fuel is in the storage pool.

ACTION:

a. With no auxiliary building gas treatment filter train OPERABLE, suspend all operations involving movement of fuel within the spent fuel pit or crane operation with loads over the spent fuel pit until at least one auxiliary building gas treatment filter train is restored to OPERABLE status.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.12 The above required auxiliary buildings gas treatment filter train shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 hours with the heaters on.

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 (except for the provisions of ANSI N510 Sections 8 and 9), and the system flow rate is 9000 cfm ± 10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, ~~meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.~~

INSERT 1

3. Verifying a system flow rate of 9000 cfm ± 10% during system operations when tested in accordance with ANSI N510-1975.

SURVEILLANCE REQUIREMENTS (Continued)

c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978 ~~meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.~~

INSERT 1

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 3 inches Water Gauge while operating the filter train at a flow rate of 9000 cfm ± 10%.

2. Verifying that the filter train starts on a high radiation signal from the fuel pool radiation monitoring system.

3. Verifying that the heaters dissipate 32 ± 3.2 kw when tested in accordance with ANSI N510-1975.

e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove greater than or equal to 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 9000 cfm ± 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove greater than or equal to 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 9000 cfm ± 10%.

EMERGENCY GAS TREATMENT SYSTEM - EGTS - CLEANUP SUBSYSTEM

LIMITING CONDITION FOR OPERATION

3.6.1.8 Two independent emergency gas treatment system cleanup subsystems (EGTS) shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one EGTS cleanup subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.8 Each EGTS cleanup subsystem shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 hours with the heaters on.

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Position C.5.a., C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 (except for the provisions of ANSI N510 Sections 8 and 9), and the system flow rate is 4000 cfm + 10%.

INSERT 1

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52 Revision 2, March 1978, ~~meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.~~

3. Verifying a system flow rate of 4000 cfm + 10% during system operation when tested in accordance with ANSI N510-1975.

SURVEILLANCE REQUIREMENTS (Continued)

c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52. Revision 2, March 1978, ~~meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.~~

INSERT 1

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 5 inches Water Gauge while operating the filter train at a flow rate of 4000 cfm + 10%.

2. Verifying that the filter train starts on a Phase A containment isolation Test Signal.

3. Verify the operation of the filter cooling bypass valves.

4. Verifying that each system produces a negative pressure of greater than or equal to 0.5 inches W.G. in the annulus within 1 minute after a start signal.

e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove greater than or equal to 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 4000 cfm + 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove greater than or equal to 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 4000 cfm + 10%.

This page provided as a an aid for reviews. No changes are being proposed.

3/4.7.7 CONTROL ROOM EMERGENCY VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.7 Two independent control room emergency ventilation systems (CVCS) shall be OPERABLE.

APPLICABILITY: ALL MODES

ACTION:

MODES 1, 2, 3 and 4:

a. With one CREVS inoperable, restore the inoperable system to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With both CREVS system inoperable due to actions taken as a result of a tornado warning, restore at least one train to operable status within 8 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

MODES 5 and 6:

a. With one CREVS inoperable, restore the inoperable system to OPERABLE status within 7 days or initiate and maintain operation of the control room emergency ventilation system in the recirculation mode.

b. With both CREVS inoperable, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

c. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.7 Each CREVS shall be demonstrated OPERABLE:

a. At least once per 12 hours by verifying that the control room air temperature is less than or equal to 104EF.

b. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 15 minutes.

c. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

SURVEILLANCE REQUIREMENTS (Continued)

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 (except for the provisions of ANSI N510 Sections 8 and 9), and the system flow rate is 4000 cfm ± 10%.

2. Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, ~~meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.~~

INSERT 1

3. Verifying a system flow rate of 4000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

d. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, ~~meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.~~

INSERT 1

e. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 3 inches Water Gauge while operating the system at a flow rate of 4000 cfm ± 10%.

2. Verifying that on a safety injection signal or high radiation signal from the air intake stream, the system automatically diverts its inlet flow through the HEPA filters and charcoal adsorber banks.

3. Verifying that the system maintains the control room at a positive pressure of greater than or equal to 1/8 inch Water Gauge relative to the outside atmosphere at a system flow rate of 4000 cfm ± 10% ($ 3000 cfm recirculation and # 1000 cfm fresh air).

f. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove greater than or equal to 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 4000 cfm ± 10%.

g. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove greater than or equal to 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 4000 cfm ± 10%.

3/4.7.8 AUXILIARY BUILDING GAS TREATMENT SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.8 Two independent auxiliary building gas treatment filter trains shall be OPERABLE.

APPLICABILITY: Modes 1, 2, 3 and 4.

ACTION:

With one auxiliary building gas treatment filter train inoperable, restore the inoperable train to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.8 Each auxiliary building gas treatment filter train shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filter and charcoal adsorber train and verifying that the system operates for at least 10 hours with the heaters on.

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 (except for the provisions of ANSI N510 Sections 8 and 9), and the system flow rate is 9000 cfm ± 10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, ~~meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.~~

INSERT 1

3. Verifying a system flow rate of 9000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

SURVEILLANCE REQUIREMENTS (Continued)

c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, ~~meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.~~

INSERT 1

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 3 inches Water Gauge while operating the filter train at a flow rate of 9000 cfm ± 10%.

2. Verifying that the filter trains start on a Containment Phase A Isolation test signal.

3. Verifying that the system maintains the spent fuel storage area and the ESF pump rooms at a pressure equal to or more negative than minus 1/4 inch water gauge relative the outside atmosphere while maintaining a vacuum relief flow greater than 2000 cfm and a total system flow of 9000 cfm ± 10%.

4. Verifying that the heaters dissipate 32 ± 3.2 kw when tested in accordance with ANSI N510-1975.

e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove greater than or equal to 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 9000 cfm ± 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove greater than or equal to 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 9000 cfm ± 10%.

REFUELING OPERATIONS

3/4.9.12 AUXILIARY BUILDING GAS TREATMENT SYSTEM

LIMITING CONDITION FOR OPERATION

3.9.12 One auxiliary building gas treatment filter train shall be OPERABLE.

APPLICABILITY: Whenever irradiated fuel is in the storage pool.

ACTION:

a. With no auxiliary building gas treatment filter train OPERABLE, suspend all operations involving movement of fuel within the spent fuel pit or crane operation with loads over the spent fuel pit until at least one auxiliary building gas treatment filter train is restored to OPERABLE status.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.12 The above required auxiliary building gas treatment filter train shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 hours with the heaters on.

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 (except for the provisions of ANSI N510 Sections 8 and 9), and the system flow rate is 9000 cfm ± 10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, ~~meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.~~

→ INSERT 1

3. Verifying a system flow rate of 9000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

SURVEILLANCE REQUIREMENTS (Continued)

c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, ~~meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.~~

INSERT 1

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 3 inches Water Gauge while operating the filter train at a flow rate of 9000 cfm ± 10%.

2. Verifying that the filter train starts on a high radiation signal from the fuel pool radiation monitoring system.

3. Verifying that the heaters dissipate 32 ± 3.2 kw when tested in accordance with ANSI N510-1975.

e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove greater than or equal to 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 9000 cfm ± 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove greater than or equal to 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 9000 cfm ± 10%.

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY (TVA)
WATTS BAR NUCLEAR PLANT (WBN) UNIT 1

180-DAY RESPONSE TO GENERIC LETTER (GL) 99-02, "LABORATORY TESTING OF NUCLEAR-GRADE ACTIVATED CHARCOAL" DATED JUNE 3, 1999

NRC Requested Action 1

Within 180 days of the date of this generic letter, submit a written response to the NRC describing your current TS requirements for the laboratory testing of charcoal samples for each ESF ventilation system including the specific test protocol, temperature, RH, charcoal bed thickness, total residence time per bed depth, and penetration at which the TS require the test to be performed. If your current TS specifically require laboratory testing of charcoal samples in accordance with the ASTM D3803-1989 protocol at 30 °C [86 °F], and you have been testing in accordance with this standard, then you only need to address this requested action (i.e. no TS amendment or additional testing is required).

TVA Response

The affected systems include: Reactor Building Purge, Emergency Gas Treatment (EGTS), Auxiliary Building Gas Treatment (ABGTS), and Control Room Emergency Ventilation (CREV). The laboratory testing requirements for nuclear-grade activated charcoal for WBN Unit 1, Engineered Safety Feature (ESF) ventilation systems are provided in the following excerpt from WBN Technical Specifications, Section 5.7.2.14, Ventilation Filter Testing Program.

Charcoal bed thickness and total residence time per bed depth are as follows for each respective train: The EGTS and ABGTS have two charcoal filter banks in series; each bank of charcoal filters is 2 inches thick with each bank having 0.25 second residence time. The Control Room Emergency Ventilation system and Reactor Building Purge system each have a single, 2 inch thick charcoal filter bank, with 0.25 second residence time.

Consistent with NRC Requested Action 1, since the current WBN TS require laboratory testing of charcoal samples in accordance with the ASTM D3803-1989 protocol at 30 °C [86 °F], and WBN has been testing in accordance with this standard, only this requested action is addressed for WBN.

5.7 Procedures, Programs, and Manuals

5.7.2.13 Secondary Water Chemistry Program (continued)

d. Procedures for the recording and management of data;

e. Procedures defining corrective actions for all off control
point chemistry conditions; and

f. A procedure identifying the authority responsible for the interpretation of the data and the sequence and timing of administrative events, which is required to initiate
corrective action.

5.7.2.14 Ventilation Filter Testing Program (VFTP)

A program shall be established to implement the following required testing of Engineered Safety Feature (ESF) filter ventilation systems at the frequencies specified in accordance with Regulatory Guide 1.52, Revision 2; ASME N510-1989, and the exceptions noted for each ESF system in Table 6.5 of the FSAR.

a. Demonstrate for each of the ESF systems that an inplace test of the high efficiency particulate air (HEPA) filters shows a penetration and system bypass within acceptance criterion when tested in accordance with Regulatory Guide 1.52, Revision 2, the exceptions noted for each ESF system in Table 6.5 of the FSAR, and ASME N510-1989 at the system flowrate specified below.

ESF VENTILATION SYSTEM	ACCEPTANCE CRITERIA	FLOW RATE
Reactor Building Purge	< 1.00%	14,000 cfm ± 10%
Emergency Gas Treatment	< 0.05%	4,000 cfm ± 10%
Auxiliary Building Gas Treatment	< 0.05%	9,000 cfm ± 10%
Control Room Emergency	< 1.00%	4,000 cfm ± 10%

(continued)

5.7 Procedures, Programs, and Manuals

5.7.2.14 Ventilation Filter Testing Program (VFTP) (continued)

b. Demonstrate for each of the ESF systems that an inplace test of the charcoal adsorber shows a penetration and system bypass within acceptance criterion when tested in accordance with Regulatory Guide 1.52, Revision 2, the exceptions noted for each ESF system in Table 6.5 of the FSAR, and ASME N510-1989 at the system flowrate specified below.

ESF VENTILATION SYSTEM	ACCEPTANCE CRITERIA	FLOW RATE
Reactor Building Purge	< 1.00%	14,000 cfm ± 10%
Emergency Gas Treatment	< 0.05%	4,000 cfm ± 10%
Auxiliary Building Gas Treatment	< 0.05%	9,000 cfm ± 10%
Control Room Emergency	< 1.00%	4,000 cfm ± 10%

c. Demonstrate for each of the ESF systems that a laboratory test of a sample of the charcoal adsorber, when obtained as described in Regulatory Guide 1.52, Revision 2, and the exceptions noted for each ESF system in Table 6.5 of the FSAR, shows the methyl iodide penetration less than the value specified below when tested in accordance with ASTM D3803-1989 at a temperature of ≤ 30°C and greater than or equal to the relative humidity specified below.

(continued)

5.7 Procedures, Programs, and Manuals

5.7.2.14 Ventilation Filter Testing Program (VFTP) (continued)

ESF VENTILATION SYSTEM	METHYL IODIDE PENETRATION	RELATIVE HUMIDITY
Reactor Building Purge	< 10%	95%
Emergency Gas Treatment	< 0.175%	70%
Auxiliary Building Gas Treatment	< 0.175%	70%
Control Room Emergency	< 1.0%	70%

d. Demonstrate for each of the ESF systems that the pressure drop across the entire filtration unit is less than the value specified below when tested in accordance with Regulatory Guide 1.52, Revision 2, the exceptions noted for each ESF system in Table 6.5 of the FSAR, and ASME N510-1989 at the system flowrate specified below.

ESF VENTILATION SYSTEM	PRESSURE DROP	FLOW RATE
Reactor Building Purge	< 4.7 inches water	14,000 cfm ± 10%
Emergency Gas Treatment	< 7.6 inches water	4,000 cfm ± 10%
Auxiliary Building Gas Treatment	< 7.6 inches water	9,000 cfm ± 10%
Control Room Emergency	< 3.5 inches water	4,000 cfm ± 10%

(continued)

5.7 Procedures, Programs, and Manuals

5.7.2.14 Ventilation Filter Testing Program (VFTP) (continued)

e. Demonstrate that the heaters for each of the ESF systems dissipate the value specified below when tested in accordance with ASME N510-1989.

ESF VENTILATION SYSTEM	AMOUNT OF HEAT
Emergency Gas Treatment	20 ± 2.0 kW
Auxiliary Building Gas Treatment	50 ± 5.0 kW

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the VFTP test frequencies.

5.7.2.15 Explosive Gas and Storage Tank Radioactivity Monitoring Program

This program provides controls for potentially explosive gas mixtures contained in the Waste Gas Holdup System, the quantity of radioactivity contained in gas storage tanks and the quantity of radioactivity contained in unprotected outdoor liquid storage tanks. The gaseous radioactivity quantities shall be determined following the methodology in Branch Technical Position (BTP) ETSB 11-5, "Postulated Radioactive Release due to Waste Gas System Leak or Failure." The liquid radwaste quantities shall be determined in accordance with Standard Review Plan, Section 15.7.3, "Postulated Radioactive Release due to Tank Failures".

The program shall include:

a. The limits for concentrations of hydrogen and oxygen in the Waste Gas Holdup System and a surveillance program to ensure the limits are maintained. Such limits shall be appropriate to the system's design criteria (i.e., the system is not designed to withstand a hydrogen explosion);

(continued)