



Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402-2801

June 6, 2008

10 CFR 50.54(f)

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

Gentlemen:

In the Matter of)
Tennessee Valley Authority)

Docket Nos. 50-259 50-327
50-260 50-328
50-296 50-390
50-391

**BROWNS FERRY NUCLEAR PLANT (BFN) UNITS 1, 2 AND 3, SEQUOYAH
NUCLEAR PLANT (SQN) UNITS 1 AND 2, AND WATTS BAR NUCLEAR PLANT
(WBN) UNITS 1 AND 2 - REVISED INITIAL RESPONSE TO NRC GENERIC
LETTER (GL) 2008-01: MANAGING GAS ACCUMULATION IN EMERGENCY
CORE COOLING, DECAY HEAT REMOVAL, AND CONTAINMENT SPRAY
SYSTEMS, DATED JANUARY 11, 2008**

Reference: TVA's letter to NRC dated May 9, 2008, Initial Response to NRC
Generic Letter (GL) 2008-01: Managing Gas Accumulation in
Emergency Core Cooling, Decay Heat Removal, and Containment
Spray Systems, Dated January 11, 2008

This letter provides TVA's revised initial response to GL 2008-01. This revised response includes the additional information discussed by TVA and NRC Staff members on May 21, 2008 to provide more specific criteria for determination of inaccessibility and more responsive commitments to provide the required generic letter response. This letter and commitments supersede TVA's initial response to GL 2008-01.

The Nuclear Regulatory Commission (NRC) issued GL 2008-01 to request that each licensee evaluate the licensing basis, design, testing, and corrective actions for the Emergency Core Cooling (ECCS), Decay Heat Removal (DHR), Residual Heat Removal (RHR), and Containment Spray System (CSS) to ensure that gas accumulation is maintained less than the amount that challenges operability of these systems, and that appropriate action is taken when conditions adverse to quality are identified.

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GL 2008-01 directed each licensee to submit a written response in accordance with 10 CFR 50.54(f) within 9 months of the date of the GL to provide the following information:

- (a) A description of the results of evaluations that were performed pursuant to the requested actions of the GL. This description should provide sufficient information to demonstrate that you are or will be in compliance with the quality assurance criteria in Sections III, V, XI, XVI, and XVII of Appendix B to 10 CFR Part 50 and the licensing basis and operating license as those requirements apply to the subject systems of the GL;
- (b) A description of all corrective actions, including plant, programmatic, procedure, and licensing basis modifications that you determined were necessary to assure compliance with these regulations; and,
- (c) A statement regarding which corrective actions were completed, the schedule for completing the remaining corrective actions, and the basis for that schedule.

Additionally, the NRC requested that if a licensee cannot meet the requested response date, the licensee "... shall provide a response within 3 months of the date of the GL." In the 3-month response, the licensee was requested to describe, "... the alternative course of action that it proposes to take, including the basis for the acceptability of the proposed alternative course of action."

Enclosures 1, 2 and 3 to this letter contain TVA's revised initial response to NRC GL 2008-01 for BFN, SQN, and WBN, respectively. The revised regulatory commitments are listed in Enclosure 4.

Should you have any question concerning this letter, please contact Rob Brown at (423) 751-7228.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 6 day of June 2008.

Sincerely,



Michael A. Purcell
Senior Licensing Manager
Nuclear Power Group

Enclosure
cc: See page 3

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Enclosure

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ENCLOSURE 1

BROWNS FERRY NUCLEAR PLANT (BFN) UNITS 1, 2 AND 3 – REVISED INITIAL RESPONSE TO NRC GENERIC LETTER (GL) 2008-01

As part of Generic Letter (GL) 2008-01, the NRC requested that each licensee evaluate its Emergency Core Cooling System (ECCS), Decay Heat Removal, and Containment Spray System licensing basis, design, testing, and corrective actions to ensure that gas accumulation is maintained less than the amount that challenges operability of these systems, and that appropriate actions are taken when conditions adverse to quality are identified. The results of these evaluations are requested to be reported within nine months of the date of the GL pursuant to 10 CFR 50.54 (f). The GL goes on to state that licensees who do not believe that they can complete the requested evaluations within the nine month period are required to inform the NRC of the proposed alternative actions; and provide sufficient justification for such alternatives.

BFN does not anticipate being able to fully complete the requested evaluations within the nine month period and offers the following proposed alternative actions and supporting justifications of adequacy. BFN initiated Problem Evaluation Report (PER) No. 142923 to address the completion of activities to support the required GL 2008-01 submittal to NRC.

BFN will be able to complete a significant amount of the requested actions, in particular those involving reviews of plant design, licensing basis documentation, system operating and testing procedures and submit this information to NRC by October 11, 2008, per the GL. However, the GL requested evaluations also require investigative or confirmatory walkdowns of the subject systems to confirm pertinent design details (e.g., locations of high point vents), and as-built configurations (e.g., pipe elevations and slope).

The BFN Units 1, 2, and 3 ECCS network consists of the High Pressure Coolant Injection (HPCI), the Core Spray (CS), the Low Pressure Coolant Injection (LPCI) mode of RHR, and the Automatic Depressurization System. The GL applicable portions of the ECCS are the HPCI System, CS System, and the LPCI mode of the RHR System. The GL applicable portion of Decay Heat Removal is the Shutdown Cooling mode of the RHR system. The GL applicable portions of Containment Spray are the Drywell and Torus Spray/Cooling modes of RHR.

For piping located outside containment, most field walkdowns needed to determine pipe configuration details in accordance with the GL will be performed prior to October 11, 2008. However, there may be limited piping lengths of the HPCI System, CS System, and the RHR System that require insulation or shielding removal or scaffolding erected to obtain configuration details. This piping will be evaluated based on available information by October 11, 2008 to ensure safety function is not inhibited by gas accumulation. Following the field walkdowns, changes identified will be incorporated into the evaluations so that the piping will be evaluated per the requirements of GL 2008-01.

Piping located inside containment and in the steam tunnel cannot be accessed during normal operations due to high radiation and the inert containment atmosphere. Accordingly, field configuration assessments for this pipe must be accomplished during scheduled refueling outages. The next refueling outage opportunities are as follows:

<u>BFN Unit</u>	<u>Scheduled Refueling Outage</u>
1	Fall 2010
2	Spring 2009
3	Spring 2010

Piping sections inside containment and in the steam tunnel that will be assessed during the next available refueling outage after December 2008¹ for reasons noted above are as follows:

- CS discharge piping - Containment penetration to reactor vessel.
- HPCI discharge piping - Steam tunnel penetration to its connection to the Main Feedwater piping.
- RHR System suction and discharge piping - Containment penetration to the connection to the Reactor Recirculation System piping.

Adverse conditions discovered during the next BFN Unit 2 refueling outage will be entered into the Corrective Action Program and evaluated for applicability for BFN Units 1 and 3. TVA's Corrective Action Program ensures that deficiencies identified at one unit will be considered for applicability to the other units.

BFN has high confidence that the HPCI System, CS System, and the RHR System can fulfill their required functions, based upon its operating experience, which includes system walkdowns, detailed evaluations, and testing performed since plant licensing. BFN will complete the GL actions for these systems with the exception of some of the investigative or confirmatory walkdowns (described above) by October 11, 2008. Detailed design and operating reviews of these systems, including the areas accessible only during outages, will provide a high degree of confidence that these systems will perform their design functions.

By October 11, 2008, BFN will complete GL 2008-01 actions for these systems, with the exception of the investigative or confirmatory walkdowns postponed until the next refueling outage for each unit as described above. Necessary field verification for those excluded portions will be completed during that refueling outage.

BFN will incorporate results of the additional field verifications into the evaluations of the safety impact of potential gas accumulation on those systems, and will submit to NRC a supplemental response that documents completion, identifies necessary additional corrective actions, and identifies impacts to the October 11, 2008 response as a result of the completed evaluation, within 90 days after the startup from the next refueling outage for each unit.

¹ BFN Unit 1 is scheduled for a refueling outage starting on October 27, 2008. However, there is insufficient time to adequately plan walkdowns during this outage (e.g., plan measurements based on assessment, erect scaffolding and/or insulation removal as applicable and incorporate ALARA and risk management conditions into the outage schedule).

ENCLOSURE 2

SEQUOYAH NUCLEAR PLANT (SQN) UNITS 1 AND 2 - REVISED INITIAL RESPONSE TO NRC GENERIC LETTER (GL) 2008-01

As part of Generic Letter (GL) 2008-01, NRC requested that each licensee evaluate its Emergency Core Cooling System (ECCS), Decay Heat Removal, and Containment Spray System (CSS) licensing basis, design, testing, and corrective actions to ensure that gas accumulation is maintained less than the amount that challenges operability of these systems, and that appropriate actions are taken when conditions adverse to quality are identified. The results of these evaluations are to be reported within nine months of the date of the GL pursuant to 10 CFR 50.54 (f). The GL goes on to state that licensees who do not believe that they can complete the requested evaluations within the nine month period are required to inform NRC of the proposed alternative actions; and provide sufficient justification for such alternatives.

SQN does not anticipate being able to fully complete the requested evaluations within the nine month period and offers the following proposed alternative actions and supporting justifications of adequacy. SQN initiated Problem Evaluation Report (PER) No. 138122 to address the completion of activities to support the required GL 2008-01 submittal to NRC.

SQN will be able to complete a significant amount of the requested actions, in particular those involving reviews of plant design, licensing basis documentation, and system operating and testing procedures and submit this information to NRC by October 11, 2008. However, the GL evaluations also require investigative or confirmatory walkdowns of the subject systems to confirm pertinent design details (e.g., locations of high point vents), and as-built configurations (e.g., pipe elevations and slope).

For pipe located outside containment, most field walkdowns needed to determine pipe configuration details will be performed before October 11, 2008 in accordance with the GL. However, there are portions of ECCS, Residual Heat Removal (RHR), and CSS that require insulation removal, shielding removal, or scaffolding erected to obtain configuration details. This piping will be evaluated based on available information by October 11, 2008 to ensure the safety function is not inhibited by gas accumulation. Following the field walkdowns, changes identified will be incorporated into the evaluations so that the piping will be evaluated per the requirements of GL 2008-01.

Much of the piping located inside the Reactor Building cannot be accessed during normal operations because of high radiation and risk associated with being inside containment at power. Accordingly, field configuration assessments for this pipe must be accomplished during scheduled refueling outages. The next refueling outage opportunities are as follows:

<u>SQN Unit</u>	<u>Scheduled Refueling Outage</u>
1	Spring 2009
2	Fall 2009

The following systems contain piping that will not be accessed until the next refueling outage because of the potential for high dose exposure or the need for extensive scaffolding:

- Piping in the systems of interest located outside the Reactor Building which is inaccessible because it is in a high radiation area or requires scaffolding for access, where erection of that scaffolding during operation could pose a risk to worker safety or to safe operation of the plant
- Piping in the Reactor Building annulus that is inaccessible because it is in a high radiation area or that requires scaffolding for access.
- Safety Injection (SI) System discharge piping - containment penetration to reactor coolant loops.
- SI System discharge piping - cold leg accumulator tanks to reactor coolant loops.
- CSS and RHR Spray System discharge piping - containment penetration to riser.
- Chemical Volume Control System discharge piping - containment penetration to reactor coolant loops.
- RHR System suction and discharge piping - containment penetration to reactor coolant loops.

These excluded portions may contain segments that are accessible without posing undue risks to operations or radiological/occupational safety. Such segments will be considered accessible, and will be included in the field verifications to be performed by October 11, 2008.

GL 2008-01 adverse conditions discovered at WBN will be entered into the Corrective Action Program and evaluated for applicability at SQN due to their design and construction similarities. TVA's Corrective Action Program ensures that deficiencies identified at one unit will be considered for applicability to the other units.

SQN has high confidence that the ECCS, RHR, and CSS can fulfill their required functions, based upon our operating experience, which includes system walkdowns, detailed evaluations, and testing performed since plant licensing. As-constructed drawings will be used in performing the walkdowns and developing the response for GL 2008-01. In particular, the existing high point locations will be examined to ensure the piping can be vented acceptably.

Before NRC issued GL 2008-01, SQN had performed evaluations of the as-constructed drawing for the ECCS (Safety Injection and Centrifugal Charging) and RHR System to ensure the high points in the pump discharge portions of the systems could be vented. The evaluations identified a number of locations that required vent capability and this resulted in the addition of vents at these locations. Existing plant procedures require venting the ECCS and RHR pumps and piping on a 31 day frequency.

Although the CSS has not received the same level of review and is not currently included in the venting procedures described for the ECCS and RHR systems, it is also believed to be capable of performing its design functions, based upon SQN's existing design, plant operating experience, and testing performed since plant licensing. The requirements of GL 2008-01 will be applied to the CSS as well as the ECCS and RHR systems.

By October 11, 2008, SQN will complete GL 2008-01 actions for these systems, with the exception of the investigative or confirmatory walkdowns postponed until the next refueling outage as described above. Necessary field verification for those excluded portions will be completed during these refueling outages.

SQN will incorporate results of the additional field verifications into the evaluations of the safety impact of potential gas accumulation on those systems, and will submit to NRC a supplemental response that documents completion, identifies necessary additional corrective actions, and identifies impacts to the October 11, 2008 response as a result of the completed evaluation, within 90 days after the startup from the next refueling outage for each unit.

ENCLOSURE 3

WATTS BAR NUCLEAR PLANT (WBN) UNITS 1 AND 2 - REVISED INITIAL RESPONSE TO NRC GENERIC LETTER (GL) 2008-01

As part of Generic Letter (GL) 2008-01, NRC requested that each licensee evaluate its Emergency Core Cooling System (ECCS), Decay Heat Removal, and Containment Spray System (CSS) licensing basis, design, testing, and corrective actions to ensure that gas accumulation is maintained less than the amount that challenges operability of these systems, and that appropriate actions are taken when conditions adverse to quality are identified. The results of these evaluations are to be reported within nine months of the date of the GL pursuant to 10 CFR 50.54 (f). The GL goes on to state that licensees who do not believe that they can complete the requested evaluations within the nine month period are required to inform NRC of the proposed alternative actions; and provide sufficient justification for such alternatives.

WBN does not anticipate being able to fully complete the requested evaluations within the nine month period and offers the following proposed alternative actions and supporting justifications of adequacy. WBN initiated Problem Evaluation Report (PER) No. 142887 to address the completion of activities to support the required GL 2008-01 submittal to NRC.

WBN will be able to compete a significant amount of the requested actions, in particular those involving reviews of plant design, licensing basis documentation, and system operating and testing procedures and submit this information to NRC by October 11, 2008. However, the GL evaluations also require investigative or confirmatory walkdowns of the subject systems to confirm pertinent design details (e.g., locations of high point vents), and as-built configurations (e.g., pipe elevations and slope).

For pipe located outside containment, most field walkdowns needed to determine pipe configuration details will be performed before October 11, 2008 in accordance with the GL. However, there are portions of ECCS, Residual Heat Removal (RHR), and CSS that require insulation removal, shielding removal, or scaffolding erected to obtain configuration details. This piping will be evaluated based on available information by October 11, 2008 to ensure the safety function is not inhibited by gas accumulation. Following the field walkdowns, changes identified will be incorporated into the evaluations so that the piping will be evaluated per the requirements of GL 2008-01.

Much of the piping located inside the Reactor Building cannot be accessed during normal operations because of high radiation and risk associated with being inside containment at power. Accordingly, field configuration assessments for this pipe must be accomplished during scheduled refueling outages. The next refueling outage opportunity is fall 2009.

The following systems contain piping that will not be accessed until the next refueling outage because of the potential for high dose exposure or the need for extensive scaffolding:

- Piping in the systems of interest located outside the Reactor Building which is inaccessible because it is in a high radiation area or requires scaffolding for access, where erection of that scaffolding during operation could pose a risk to worker safety or to safe operation of the plant
- Piping in the Reactor Building annulus that is inaccessible because it is in a high radiation area or that requires scaffolding for access.
- Safety Injection (SI) System discharge piping - containment penetration to reactor coolant loops.
- SI System discharge piping - cold leg accumulator tanks to reactor coolant loops.
- CSS and RHR Spray System discharge piping - containment penetration to riser.
- Chemical Volume Control System discharge piping - containment penetration to reactor coolant loops.
- RHR System suction and discharge piping - containment penetration to reactor coolant loops.

These excluded portions may contain segments that are accessible without posing undue risks to operations or radiological/occupational safety. Such segments will be considered accessible, and will be included in the field verifications to be performed by October 11, 2008.

GL 2008-01 adverse conditions discovered at SQN will be entered into the Corrective Action Program and evaluated for applicability at WBN Unit 1 due to their design and construction similarities. TVA's Corrective Action Program ensures that deficiencies identified at one unit will be considered for applicability to the other units.

WBN has high confidence that the ECCS, RHR, and CSS can fulfill their required functions, based upon our operating experience, which includes system walkdowns, detailed evaluations, and testing performed since plant licensing. As-constructed drawings will be used in performing the walkdowns and developing the response for GL 2008-01. In particular, the existing high point locations will be examined to ensure the piping can be vented acceptably.

Before NRC issued GL 2008-01, WBN had performed evaluations of the as-constructed drawing for the ECCS (Safety Injection and Centrifugal Charging) and RHR System to ensure the high points in the pump discharge portions of the systems could be vented. The evaluations identified several locations that required vent capability and this resulted in the addition of vents at these locations. In addition, vents have been added to intermediate high points in the ECCS pump discharge piping to alleviate problems involving relief valve lifts during ECCS pump starts. Existing plant procedures require venting the ECCS and RHR pumps and piping on a 31 day frequency.

Although the CSS has not received the same level of review and is not currently included in the venting procedures described for the ECCS and RHR systems, it is also believed to be capable of performing its design functions, based upon WBN's existing design, plant operating experience, and testing performed since plant licensing. The requirements of GL 2008-01 will be applied to the CSS as well as the ECCS and RHR systems.

By October 11, 2008, WBN will complete GL 2008-01 actions for these systems, with the exception of the investigative or confirmatory walkdowns postponed until the fall 2009 refueling outage as described above. Necessary field verification for those excluded portions will be completed during that refueling outage.

WBN will incorporate results of the additional field verifications into the evaluations of the safety impact of potential gas accumulation on those systems, and will submit to NRC a supplemental response that documents completion, identifies necessary additional corrective actions, and identifies impacts to the October 11, 2008 response as a result of the completed evaluation, within 90 days after the startup from the fall 2009 refueling outage.

TVA does not have an operating license for WBN Unit 2, and therefore, WBN Unit 2 is not addressed in this response.

ENCLOSURE 4
LIST OF TVA COMMITMENTS

LIST OF BFN-SPECIFIC COMMITMENTS

1. By October 11, 2008, BFN will complete GL 2008-01 actions for affected BFN systems, with the exception of the investigative or confirmatory walkdowns postponed until the next refueling outage for each unit.
2. Complete the detailed walkdowns of BFN Unit 1, 2 and 3 inaccessible piping sections of GL 2008-01 subject systems prior to startup for the listed refueling outage for respective units (Unit 1 Cycle 8, Unit 2 Cycle 15, Unit 3 Cycle 14).
3. Complete evaluations of GL 2008-01 subject systems using results of the detailed walkdowns of inaccessible piping sections and submit supplemental responses to NRC documenting completion of the walkdowns and any impact upon the GL 2008-01 response as a result of completed evaluation within 90 days following startup from the listed refueling outages (Unit 1 Cycle 8, Unit 2 Cycle 15, Unit 3 Cycle 14).
4. Any adverse conditions discovered during the next BFN Unit 2 refueling outage will be entered into the Corrective Action Program and evaluated for applicability for BFN Units 1 and 3.

LIST OF SQN-SPECIFIC COMMITMENTS

1. By October 11, 2008, SQN will complete GL 2008-01 actions for affected SQN systems, with the exception of the investigative or confirmatory walkdowns postponed until the next refueling outage for each unit (Unit 1 Cycle 16, Unit 2 Cycle 16).
2. Complete the detailed walkdowns of SQN inaccessible piping sections of GL 2008-01 subject systems prior to startup after the next refueling outage for each unit (Unit 1 Cycle 16, Unit 2 Cycle 16).
3. Complete evaluations of GL 2008-01 subject systems using results of the detailed walkdowns of inaccessible piping sections and submit supplemental responses to NRC documenting completion of the walkdowns and any impact upon the GL 2008-01 response as a result of completed evaluation within 90 days following startup from the listed refueling outages (Unit 1 Cycle 16, Unit 2 Cycle 16).
4. GL 2008-01 adverse conditions discovered at WBN will be entered into the Corrective Action Program and evaluated for applicability at SQN due to their design and construction similarities.

LIST OF WBN-SPECIFIC COMMITMENTS

1. By October 11, 2008, WBN Unit 1 will complete GL 2008-01 actions for these systems, with the exception of the investigative or confirmatory walkdowns postponed until the Unit 1 Cycle 9 refueling outage.
2. Complete the detailed walkdowns of WBN Unit 1 inaccessible piping sections of GL 2008-01 subject systems prior to startup after the Unit 1 Cycle 9 refueling outage.
3. Complete evaluations of GL 2008-01 subject systems using results of the detailed walkdowns of inaccessible piping sections and submit supplemental responses to NRC documenting completion of the walkdowns and any impact upon the GL 2008-01 nine month response as a result of completed evaluation within 90 days following startup from the Unit 1 Cycle 9 refueling outage.
4. GL 2008-01 adverse conditions discovered at SQN will be entered into the Corrective Action Program and evaluated for applicability at WBN Unit 1 due to their design and construction similarities.