FENOC

FirstEnergy Nuclear Operating Company

5501 North State Route 2
Oak Harbor, Ohio 43449

Barry S. Allen
Vice President - Nuclear

419-321-7676
Fax: 419-321-7582

September 23, 2010
L-10-265

10 CFR 50.54(f)

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

SUBJECT:
Davis-Besse Nuclear Power Station
Docket No. 50-346, License No. NPF-3
Post-Outage Supplemental Response to Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems" (TAC No. MD7819)

The Davis-Besse Nuclear Power Station (DBNPS) nine month response to Nuclear Regulatory Commission (NRC) Generic Letter 2008-01 was submitted by letter dated October 14, 2008 (Accession No. ML082900577). The nine month response included a commitment to submit a summary of the results of in-field piping verifications that had not yet been completed, within 90 days after startup from the next refueling outage. The attachment to this letter provides a summary of the piping evaluations, and updated information on identified gas management actions.

In summary, it is concluded that the applicable systems at DBNPS are capable of performing their intended safety function, and for DBNPS, FirstEnergy Nuclear Operating Company is currently in compliance with Criteria III, V, XI, XVI and XVII of Appendix B to 10 CFR 50, with respect to the gas management concerns in Generic Letter 2008-01.

There are no regulatory commitments contained in this submittal. If there are any questions or if additional information is required, please contact Mr. Thomas A. Lentz, Manager - Fleet Licensing, at (330) 761-6071.

I declare under penalty of perjury that the foregoing is true and correct. Executed on September 23, 2010.

Sincerely,

Barry S. Allen

Barry S. Allen

Attachment: Post-Outage Supplemental Response to Generic Letter 2008-01

cc: NRC Region III Administrator
NRC Resident Inspector
NRC Project Manager
Utility Radiological Safety Board

A134
NRR

Post-Outage Supplemental Response to Generic Letter 2008-01

This attachment provides the Davis-Besse Nuclear Power Station (DBNPS) post-outage supplemental response to Generic Letter (GL) 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," dated January 11, 2008. This supplements information provided in the nine month response dated October 14, 2008 (Accession No. ML082900577), and a subsequent submittal dated October 26, 2009 (Accession No. ML093020224). This submittal provides:

- In Section A, a summary of the recently completed evaluations of those in-field piping verifications that had not yet been completed at the time of the nine month response.
- In Section B, updates to the actions identified in the nine month response that have not already been reported as complete, and identification of other gas management-related actions that have been generated since the nine month response and have not already been reported as complete in the letter dated October 26, 2009.

A. EVALUATION RESULTS

1) Acceptance Criteria

The acceptance criteria discussed in the nine month response have not changed.

2) Confirmatory In-Field Piping Verifications

During the recently completed sixteenth refueling outage (1R16) at DBNPS, the piping verifications utilized three approaches; performing general piping walkdowns (visual inspections), ultrasonic testing (UT) void verifications at selected locations, and piping elevation/slope measurements using three-dimensional laser scanning or Zip Level® instrumentation. The scope of these containment and annulus verifications included high pressure injection (HPI) train 1 and 2 discharge piping segments, low pressure injection (LPI) train 1 and 2 suction and discharge piping segments, core flood tank (CFT) 1 and 2 discharge piping, and decay heat (DH) system common suction piping segments.

The piping measurements that used laser scanning or field measurement techniques on segments of the above listed piping inside containment were performed to obtain accurate measurements of changes in the pipe slope. Similar detailed piping measurements on annulus piping segments were concluded to not be necessary based on the results of the general piping walkdowns in the annulus.

Piping measurements were performed on bare piping surfaces following the removal of selected mirror insulation panels, with the exception of piping segments on LPI train 2 discharge piping and on CFT 1 discharge piping, which were measured with the insulation panels installed. The piping segments where the field measurements were obtained on insulated surfaces were confirmed to have sufficient flow rates to remove potential voids from the associated piping during flow tests performed during outages or by normal operation of the systems during the shutdown.

The HPI piping in the annulus and containment is uninsulated, and therefore did not require removal of insulation panels to perform inspections.

The piping measurement results were compiled, reviewed, and found to be acceptable.

Piping segments that may be susceptible to air/gas accumulation were considered during the review of the scanning and measurement results. The reviews concluded that voids that may exist in the subject piping prior to pump operation and dynamic flushing will not adversely affect the system during such pumping/flushing evolutions.

The reviews also determined that the subject discharge piping has Froude numbers during piping full flow tests that exceed those required to remove potential voids from the discharge piping segments that receive such tests. Similarly, for the DH suction and discharge piping, the normal DH system operation flow rate was determined to be sufficient to remove potential voids.

As discussed in the letter dated October 26, 2009, procedure DB-SP-03212, "Venting of ECCS Piping," was in the process of being revised prior to 1R16 to require UT verifications at appropriate venting locations, prior to performance of the venting activity that is required to meet the Technical Specification Surveillance Requirement. This procedure change was completed, and prior to startup from 1R16, procedure DB-SP-03212 was performed. Performance of DB-SP-03212 ensures that the subject ECCS piping is full of water. The results of the UT verifications confirmed that the DH system shutdown cooling operation flow rates are sufficient to remove potential voids from the containment DH suction and discharge piping. They also confirmed that full flow testing is sufficient to remove potential voids from the ECCS discharge piping in the containment, except for one location identified in an HPI train 1 branch line horizontal piping segment near a vent valve (HP77A). The identified void, which was discovered after the flow test, was evaluated and determined to not adversely impact the operability of HPI train 1 nor associated discharge piping. This piping segment was vented as part of the DB-SP-03212 evolution, and a follow-up UT test confirmed the piping was water solid, as anticipated.

3) Vents, Procedure Changes, or Other Corrective Actions

No new vent valves, procedure changes, or other corrective actions were necessary as a result of the above-described 1R16 evaluations of the previously uncompleted piping slope verifications; since as described above, each of the evaluated possible void locations was determined to not have the potential to adversely affect the system during system operational evolutions.

One vent valve that had been recommended by the original engineering reviews performed for the initial GL 2008-01 response has been installed. The enhancement table (Table 2) below provides the status of two other vent valves that were requested independent of GL 2008-01. Several procedure changes resulting from previous reviews have been completed, as identified in the following tables.

B. UPDATES TO PREVIOUS CORRECTIVE ACTIONS, AND NEW ACTIONS

1) Updates for Actions Described in the Nine Month Response

Corrective actions identified as complete in either the nine month response or the letter dated October 26, 2009, are not repeated below.

Necessary Actions to Achieve Full Compliance

Necessary actions to achieve full compliance with the regulations were listed in Table 1 of the nine month response. The table is updated below.

TABLE 1	
1.	**Summary**: DBNPS designs do not incorporate a pipe slope to ensure proper fill and vent by static methods. Current processes/procedures also do not incorporate dynamic flushing. Revise processes/procedures as appropriate to incorporate dynamic flushing. **Current Status**: Industry guidance regarding gas management issues has been issued to the industry by the Nuclear Energy Institute (NEI) in NEI 09-10, "Guidelines for Effective Prevention and Management of System Gas Accumulation." This industry guidance is currently under review by DBNPS personnel. The incorporation of this industry guidance, as appropriate, is expected to be completed during the current operating cycle (Cycle 17). In the interim, full compliance with the regulations identified in GL 2008-01 is achieved due to performance of a combination of ultrasonic testing (UT), venting, and dynamic flushing, as necessary to ensure maintenance of a proper fill and vent of the subject piping.

Enhancement Actions

Enhancement actions were listed in Table 2 of the nine month response. The table is updated below. These items were recommended to improve management of gas accumulation at DBNPS. Because current practices have been determined to be effective at maintaining system operability with respect to voids, and none of these actions are required for compliance with existing regulatory requirements, these actions are considered enhancements. If part of a Table 2 item remains incomplete, it is summarized below. The schedule for completion of each remaining enhancement item, along with follow-up activities identified during closure of any Table 2 item, is based on resource and plant availability, and the actions are managed in accordance with the FirstEnergy Nuclear Operating Company Corrective Action Program or other appropriate action tracking mechanisms. The sections identified in the table are from the nine month response.

TABLE 2	
Actions Identified During the Section 1 Licensing Basis Evaluation	
1	**Summary**: Track Updated Safety Analysis Report (USAR) changes to incorporate information describing performance-based periodic checks, and to more clearly reflect the concept that gas accumulation occurs, but is managed. **Current Status**: As noted in section 1a of the nine month response, this item is scheduled for completion 120 days following Nuclear Regulatory Commission (NRC) staff closure of the GL 2008-01 review for DBNPS.
Actions Identified During the Section 2a Design Basis Document Review	
2.	**Summary**: Track development of a design calculation to address vortexing and net positive suction head (NPSH) for decay heat system pumps during suction from the reactor. **Current Status**: The associated operating procedure was revised to incorporate the associated instrument uncertainty. Additional DH system operating data was obtained during 1R16 for use in the validation of the piping hydraulic model that will be used in development of a new design calculation. The design calculation is currently scheduled for issuance during the current operating cycle (Cycle 17).
Actions Identified During the Section 2e Gas Intrusion Review	
4.	**Summary**: Track enhancements identified, including procedure revisions and UT monitoring. The enhancements are summarized below: **B. Procedure Enhancements** **Items B.1, B.8, B.10, B.11, B.12, & B.13**: Enhancements to DB-OP-06012, "Decay Heat and Low Pressure Injection System Operating Procedure." **Current Status**: Scheduled for completion during the current operating cycle (Cycle 17).

Items B.2, B.6, & B.7: Enhancements to DB-OP-06021, "Spent Fuel Pool Operating Procedure."

Current Status: Scheduled for completion during the current operating cycle (Cycle 17).

Items B.4, B.5, and B.9: Enhancements originally planned to go into DB-OP-06021, "Spent Fuel Pool Operating Procedure" (Items B.4 & B.5) or DB-OP-06006, "Makeup and Purification System" (Item B.9).

Current Status: DB-OP-06012, "Decay Heat and Low Pressure Injection System Operating Procedure," was determined to be the appropriate procedure to be revised. Scheduled for completion during the current operating cycle (Cycle 17).

Item B.15: Enhancement to DB-SP-03304, "Containment Spray System Nozzle Check (Lower Header)," and DB-SP-03305, "Containment Spray System Nozzle Check (Upper Header)."

Current Status: Scheduled for completion during the current operating cycle (Cycle 17).

Item B.16: Enhancement to DB-OP-06006, "Makeup and Purification System."

Current Status: Scheduled for completion during the current operating cycle (Cycle 17).

C. Monitoring enhancements following plant startup from a plant shutdown to MODE 5

Item C.2: Enhancement to procedures DB-SP-03337 "Containment Spray Train 1 Quarterly Pump and Valve Test," DB-SP-03338, "Containment Spray Train 2 Quarterly Pump and Valve Test," DB-SP-03218, "HPI Train 1 Pump and Valve Test," DB-SP-03219, "HPI Train 2 Pump and Valve Test," DB-SP-03136, "Decay Heat Train 1 Pump and Valve Test," and DB-SP-03137, "Decay Heat Train 2 Pump and Valve Test."

Current Status: Complete (five of the six procedures were previously reported as revised - the remaining procedure DB-SP-03338 is now also revised).

Item C.3: Enhancement to DB-OP-06012, "Decay Heat and Low Pressure Injection System Operating Procedure."

Current Status: Scheduled for completion during the current operating cycle (Cycle 17).

D. Miscellaneous Enhancement Actions:

Items D.1 & D.2: Evaluate installation of a new check valve in the makeup (MU) pump 1 & 2 suction piping from the borated water storage tank (BWST) to prevent reverse flow from the MU system into the BWST/HPI pump suction piping.

Current Status: Evaluations are scheduled for completion prior to the end of the fourth quarter 2010.

Actions Identified During the Section 2g System In-Field Verification Review	
7.	**Summary**: Complete nine containment and annulus piping in-field verifications during the next refueling outage (1R16). **Current Status**: Piping in-field verifications were completed in 1R16.
8.	**Summary**: Track a design engineering review of the piping in-field verifications. Based on results, initiate additional follow-up items as appropriate. **Current Status**: Engineering reviews of the piping in-field verifications (Cycle 16 and 1R16) are completed. One vent valve was added, as discussed previously.
Actions Identified During the Section 3 Testing Evaluation	
9.	**Summary**: Evaluate, track, and incorporate potential enhancements identified during review of the following testing/surveillance procedures: 1. DB-PF-03011, "ECCS Integrated Train 1 Leakage Test" — Complete 2. DB-PF-03012, "ECCS Integrated Train 2 Leakage Test" — Revision in Cycle 17 3. DB-PF-03068, "Check Valve Forward Flow Tests" — Revision in Cycle 17 4. DB-PF-03069, "Check Valve Closure and Leakage Tests" — Revision in Cycle 17 5. DB-PF-04167, "Power Operated Valve Differential Pressure and Flow Test" — Revision in Cycle 17 8. DB-SP-03338, "Containment Spray Train 2 Quarterly Pump and Valve Test" — Revision in Cycle 17 **Current Status**: As noted above, status is either complete or the procedure is scheduled for revision during the current operating cycle (Cycle 17).
Actions Identified During the Section 4 Corrective Action Program Evaluation	
10.	**Summary**: Prior to the issuance of Generic Letter 2008-01, a corrective action program condition report identified the need to properly re-vent the DH pump discharge piping following completion of on-line maintenance activities that would require draining DH pump 1(2). The DH operating procedure has since been revised to include additional guidance on fill and vent following a drain, which provides for effective venting. However, installation of vent valves on both DH pump minimum recirculation lines was identified as an enhancement for plant operations and maintenance. Develop design change package for installation of vent valves on both DH pump minimum recirculation lines. **Current Status**: The design change package is scheduled for issuance in the fourth quarter of 2010.

2) Actions Identified Subsequent to the Nine Month Response

In addition to several procedure changes and a training item discussed in the letter dated October 26, 2009 (Items A, B, and C below), two new gas management actions are noted (Items D and E).

	TABLE 3
A.	**Summary**: Procedure DB-SP-03212, "Venting of ECCS Piping," to be revised prior to performance in 1R16 to add requirements to perform UT verifications at the specified venting locations prior to performing the Technical Specification required venting activity, and require that the piping must be water solid or a condition report must be written. **Current Status**: This revision was completed prior to procedure performance in 1R16.
B.	**Summary**: Procedures DB-SP-03300, "RCS Isolation Check Valve Leak Test," and DB-SP-3302, "CF28 and CF29 Leak Test," to be revised to require initiation of a condition report if back leakage is detected past check valves that separate higher pressure systems from lower pressure systems. **Current Status**: These revisions were completed prior to procedure performance in 1R16.
C.	**Summary**: An industry-developed computer-based training module addressing GL 2008-01 issues is scheduled to be reviewed, revised if appropriate, and completed by engineering and operations personnel prior to 1R16. **Current Status**: This training was completed prior to 1R16.
D.	**Summary**: During the normally scheduled 1R16 performance of high pressure injection train 2 back-to-back check valve testing, slight back-leakage was noted on both HPI Train 2 injection branch line's check valves (associated with reactor coolant system cold leg 2-2 and 2-1, respectively). Industry Operating Experience indicates that liquid leakage from a high pressure system past a check valve into a lower pressure system can potentially result in off-gassing of dissolved gas. A corrective action is tracking the development of a follow-up troubleshooting plan. **Current Status**: Troubleshooting plan is due to be implemented in the fourth quarter of 2010, with additional corrective actions, as appropriate, to follow for identified leakage.
E.	**Summary**: Review of industry operational experience identified a potential issue if the DH system should be realigned to LPI mode at a sufficiently high temperature, which could lead to flashing and void creation. Verified system operability is not impacted. **Current Status**: A control room Standing Order established appropriate controls until permanent changes to three procedures were completed.

CONCLUSION

In summary, the applicable systems, including the previously unevaluated portions, have been evaluated and determined to be capable of performing their intended safety function, and for DBNPS, FirstEnergy Nuclear Operating Company is currently in compliance with Criteria III, V, XI, XVI and XVII of Appendix B to 10 CFR 50, with respect to the gas management concerns outlined in GL 2008-01.