May 28, 2009

James H. Riley, Director
Engineering, Nuclear Generation Division
Nuclear Energy Institute
1776 I Street, NW, Suite 400
Washington, DC 20006-3708

SUBJECT: PRELIMINARY ASSESSMENT OF RESPONSES TO GENERIC LETTER 2008–01, "MANAGING GAS ACCUMULATION IN EMERGENCY CORE COOLING, DECAY HEAT REMOVAL, AND CONTAINMENT SPRAY SYSTEMS," AND FUTURE NUCLEAR REGULATORY COMMISSION STAFF REVIEW PLANS.

Dear Mr. Riley:

The purposes of this letter are to identify issues that need to be addressed for the Nuclear Regulatory Commission (NRC) staff to complete its reviews of the Generic Letter (GL) 2008-01 (Reference 1) nine-month responses and to describe the NRC staff's plan for completing its reviews.

As stated in the GL, the licensees were requested to provide their bases, with reasonable assurance, to demonstrate that the emergency core cooling, decay heat removal and containment spray systems "are in compliance with the current licensing and design bases and applicable regulatory requirements, and that suitable design, operational, and testing control measures are in place for maintaining this compliance." Enclosed, please find the guidance document that the NRC staff reviewers will follow in preparing their assessments of the licensee responses to the GL. It also describes the necessary information needed to complete the reviews. Please forward this to the pressurized water reactor and boiling water reactor licensees for their information since it may influence their plans for providing additional information that the NRC staff will need to complete its reviews.

The guidance document was developed based on the NRC preliminary review of the nine - month responses where it was determined that additional information was needed for the NRC to complete its review. The guidance document also reflects the feedback from Nuclear Energy Institute (NEI) in conjunction with the NEI self assessment of the nine-month responses, which we understand found similar differences in expected levels of response. Furthermore, the guidance document was enriched significantly from discussions at the ongoing NEI Workshops and from NEI comments on the draft guidance document. Your feedback was appreciated.

You are aware that the NRC has commenced its detailed review of the nine-month responses. These reviews are being prioritized based on: (1) requests from the Regions to support their inspection schedules, and (2) by choosing a representative sample of all plant types to determine if generic issues exist and where to focus the review efforts. The first two plants under review are Wolf Creek and Browns Ferry. The next plants under review will be identified to NEI as the schedules are determined.

As plants are reviewed, the NRC will generate Requests for Additional Information (RAIs), if needed, to obtain the necessary information that is identified in the Enclosure. However, licensees have the option of providing supplements to their GL responses to avoid or minimize the RAI process. The NRC staff will include any supplemental information in its reviews that is received before the initial review is complete. After that time, any additional information needed by the NRC to complete the reviews will be requested using RAIs. If needed, the NRC could exercise other options to obtain the information to complete the reviews.

For those licensees that provided sufficient acceptable information in their nine-month response, or that do so in supplementary responses to the NRC, to clearly demonstrate that the GL concerns have been addressed, no additional information will be needed and follow-up inspections may be minimal or unnecessary.

If you have any questions about this letter, please call Warren Lyon at 301-415-2897 or contact him at warren.lyon@nrc.gov, Diana Woodyatt at 301-415-8583 or contact her at diana.woodyatt@nrc.gov, or Gregory Cranston at 301-415-0546 or contact him at gregory.cranston@nrc.gov.

Sincerely,

/RA/

William H. Ruland, Director
Division of Safety Systems
Office of Nuclear Reactor Regulation

Enclosure:
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cc: Mike Melton (NEI)

Reference

"Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," NRC Generic Letter 2008-01, ML072910759, January 11, 2008.

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"Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," NRC Generic Letter 2008-01, ML072910759, January 11, 2008.

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INFORMATION NECESSARY FOR THE OFFICE OF NUCLEAR REACTOR REGULATION TO ASSESS LICENSEE RESPONSES TO GENERIC LETTER (GL) 2008-01, ML090700225

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ENCLOSURE

NOMENCLATURE

BWR	boiling water reactor
CAP	corrective actions program
CLIIP	consolidated line item improvement process
CFR	Code of Federal Regulations
CS	containment spray
CVCS	chemical and volume control system
DHR	decay heat removal
ECC	emergency core cooling
ECCS	emergency core cooling system
GL	generic letter
HPCI	high pressure coolant injection
LPCI	low pressure coolant injection
NRC	Nuclear Regulatory Commission
NRR	(NRC Office of) Nuclear Reactor Regulation
PWR	pressurized water reactor
PWROG	pressurized water reactor owners group
RAI	request for additional information
RCS	reactor coolant system
RHR	residual heat removal
RV	reactor vessel
RWST	refueling water storage tank
SAT	spray additive tank
SDC	shutdown cooling
SI	safety injection
SR	surveillance requirement
TI	temporary instruction
TRM	technical requirements manual
TSs	technical specifications
TSTF	technical specifications task force
USAR	updated safety analysis report
UT	ultrasonic test
VCT	volume control tank

1.0 INTRODUCTION

GL 2008-01 (Reference 1) was issued to require "that each addressee evaluate its emergency core cooling system (ECCS), decay heat removal (DHR) system, and containment spray (CS) 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 action is taken when conditions adverse to quality are identified." The objectives were to establish that these subject systems would be operable when necessary and were in compliance with the regulations, to address issues where confirmatory action is needed to ensure operability and compliance, and to determine if additional regulatory action is required.

To assess the addressee evaluations and appropriate actions, the NRC requested "addressees to submit information to demonstrate that the subject systems are in compliance with the current licensing and design bases and applicable regulatory requirements, and that suitable design, operational, and testing control measures are in place for maintaining this compliance." The NRC further stated that it would "collect the requested information to determine if additional regulatory action is required" and it identified that activities "are being planned as a follow-up to this GL and for guidance in the Technical Specifications (TSs) Task Force program to develop improved TSs."

The NRC staff is reviewing the licensee responses to assess the addressee's:

- Determination that there is reasonable assurance that the subject systems are operable under all conditions where they may be needed to mitigate events, and

- Confirmatory and other actions to substantiate the above assurance.

This document will be used by the NRC staff to guide preparation of draft and final assessment reports that will be written for each of the addressee responses to the GL. In addition, the NRC staff has found that many responses are incomplete and additional information is needed to complete the reviews. Since this document describes the information necessary to perform a complete review, if a licensee wishes, the information can be used to voluntarily assess its nine month response to the GL and to voluntarily provide any information that is missing via a supplement to its GL response, thus alleviating the need for requests for additional information (RAIs) and reducing the resources necessary to address the GL issues. The NRC staff will incorporate supplements into its preparation of draft assessment reports and RAIs if received before the draft assessment report and RAIs are prepared.

2.0 REGULATORY EVALUATION

In GL 2008-01, the NRC requested that each addressee evaluate its ECCS, DHR system, and CS 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 action is taken when conditions adverse to quality are identified.

The GL further requested that each addressee submit a written response in accordance with Title 10 of the Code of Federal Regulations (CFR) Part 50.54(f) within nine months of the date of the GL to provide the following information:

- A description of the results of evaluations that were performed pursuant to the above requested actions. This description should provide sufficient information to demonstrate that the addressee is 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 with the licensing basis and operating license as those requirements apply to the subject systems;

- A brief description of all corrective actions (including plant, programmatic, procedure, and licensing basis modifications) that the addressee determined were necessary to assure compliance with these regulations; and,

- A statement regarding which corrective actions were completed, the schedule for completing the remaining corrective actions, and the basis for that schedule.

3.0 TECHNICAL EVALUATION

3.1 Subject Systems

Where voids are a potential concern, the subject systems should be identified in each licensee response. Typical pressurized water reactor (PWR) systems include:

- Safety Injection (SI) System or ECCS. This typically includes charging pumps, high pressure coolant injection (HPCI) system, low pressure injection (LPI) system, and SI accumulators where different licensees use different nomenclature that is not listed in this report for the same function.

- Residual Heat Removal (RHR), DHR, or Shutdown Cooling (SDC) System. Different licensees use different designations. Configurations typically include reactor vessel (RV) cold leg and hot leg injection, suction from the reactor coolant system (RCS), and containment emergency sump.

- CS System.

- Borated Refueling Water Storage System or its equivalent with respect to potential interactions with the ECCS. (Different licensees use different designations.)

- Chemical and Volume Control System (CVCS) with respect to potential interactions with the ECCS.

Typical boiling water reactor (BWR) systems include:

- Core Spray.

- High Pressure Coolant Injection (HPCI).

- RHR. Functions typically include suppression pool cooling, shutdown cooling, CS, containment cooling, decay heat removal, alternate decay heat removal, drywell / wetwell spray, suppression pool spray, ECCS keepfill, torus spray, and low pressure core spray, depending upon the plant and the licensee's designation of the system functions.

- Other components of the ECCS.

Addressing potential void concerns in support systems, such as component cooling water and service water, and in other systems that are important to safety, such as the auxiliary cooling system, are outside the scope of this GL and reporting void-related activities related to these systems is not required for the responses to the GL.

3.2 Historical Background

Addressing this topic is not necessary for purposes of the NRC staff assessment since a principal objective is to address the post-GL status. However, the NRC staff may summarize such information if it is provided and it provides insight into plant conditions related to voiding that may exist at other plants.

3.3 Licensing Basis

3.3.1 Licensing Basis Documents. Identified licensing basis documents include TSs, TS Bases, the Updated Safety Analysis Report (USAR), the Technical Requirements Manual (TRM), TRM Bases, responses to NRC generic communications, regulatory commitments, and operating license conditions. Additionally, Appendix B to Part 50, "Quality Assurance Criteria for Nuclear Power Plants," Criterion V, "Instructions, Procedures, and Drawings," states:

> "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished."

Thus, any item that is credited in the assessment of whether the subject systems are reasonably ensured to be operable must be captured in the licensing basis. Therefore, such documents as instructions, procedures, drawings, analysis techniques, vendor documentation, and any other documents that provide information that affects operation, are part of the licensing documentation. Note also that appropriate quantitative or qualitative acceptance criteria are included. In general, the NRC staff will consider that such documents have been acceptably discussed if they, and acceptance criteria, are identified and discussed in the licensee responses consistent with the coverage described in the remainder of this NRC Office of Nuclear Reactor Regulation (NRR) guidance document. It is not necessary that the identification and discussion be located in a specific part of the response.

3.3.2 TSs and TS Bases. Coverage of the subject systems provided by TSs and TS Bases, such as TS Surveillance Requirements (SRs) and clarification of the meaning of "full of water" should be summarized, and any changes in TSs or TS Bases accomplished after January 11, 2008, should be described and justified. Areas not covered by TSs and TS Bases, such as not providing SRs for ECCS suction piping and not ensuring a void assessment at high points that are not equipped with a vent, should be identified and the process of ensuring adequate coverage should be identified. For example, the NRC staff will accept use of the TRM, procedures, and similar documents to address areas that are not adequately covered in TSs. The basis for the coverage should be described in the licensee's GL response. Further, the NRC staff will accept venting, ultrasonic tests (UTs), or other justified means of determining void volumes to supplement TS SRs.

The NRC has concluded that "when voids are discovered in piping, if the licensee can establish that there is a reasonable expectation that the system in question will perform its specified safety function, the system piping can be considered filled with water such that the surveillance requirement is met" (Reference 2). This establishes that a TS SR that a system be "full of water" is consistent with the statement that voids are acceptable as long as the voids do not jeopardize operability, in contrast to a statement that a system be "water solid" which would preclude the presence of voids. Thus, reference to a process such as a procedure that requires acceptable surveillances to establish meeting acceptable void criteria will satisfy a TS SR until generic guidance is generated as discussed in Section 3.3.4.

With respect to void criteria, use of the industry criteria provided in Reference 3 for pump damage is not acceptable unless acceptably justified because system operability can be lost without damaging pumps. Further, meeting the NRR criteria provided in Reference 4 is acceptable without further justification.

TS SRs often include a qualification that limits the SR to accessible locations and "accessible" is not defined. Licensees have often applied this to areas that are posted as radiation areas when there was no significant radiation or other hazard associated with conducting the surveillance. This is not acceptable. The NRC staff will generally accept that locations inside containment are not accessible during power operation unless such locations are routinely visited, such as in some boiling water reactor (BWR) Mark III containments. Other locations, such as selected pipe chases and posted high radiation areas, may be considered inaccessible when an acceptable justification, such as a high radiation level or a high temperature hazard, exists. In such cases, due consideration must be given to accessibility and conducting surveillances when the plant or system is shut down. Note, however, that inaccessibility cannot be used as a reason for not performing a surveillance if the surveillance is necessary to reasonably ensure operability. In such cases, a hardware change may be necessary.

There is typically no TS SR to verify that PWR CS piping inside containment be full of water since this piping does not need to be filled for the CS system to be operable. However, if there are potential water traps in the piping that could result in a water hammer concern, then this should be addressed as part of the void assessment process.

The NRC staff will also expect coverage of more frequent surveillances than required by TSs if necessary to ensure subject system operability. In the short term, until generic TS guidance is

prepared as identified in Section 3.3.4, it is acceptable to supplement such shortcomings or to supplement TS requirements by alternate means such as procedures that contain acceptance criteria when the total coverage is sufficient to reasonably ensure subject system operability.

3.3.3 The USAR. The licensee's review of the USAR should be summarized. Any changes should be identified in Section 3.6.2 and discussed in more detail here if such detail is needed to describe the actions. Planned changes should be entered into the corrective action plan (CAP) and identified in Section 3.6.3.

3.3.4 Technical Specifications Task Force (TSTF). The NRC staff expects commitments from the licensees to monitor the industry resolution of the gas accumulation TS issues and, within no greater than one year following NRC approval of the TSTF or consolidated line item improvement process (CLIIP) Notice of Availability, to submit a TS amendment request, as appropriate, that is consistent with resolution of the generic changes process. This should be addressed in Section 3.6.3 and, optionally, additional information can be provided in this section.

3.4 Design Basis

3.4.1 Documentation. The licensee should summarize its review of such design basis documents as calculations, engineering evaluations, vendor technical manuals, and other documents. The results of reviewing such documents as engineering procedures and other non-design basis documents should also be summarized when the review identified aspects of the documents that apply to assessing subject system operability. Deficiencies and follow-up actions to address the deficiencies should be described. The CAP that addresses incomplete actions should be identified and a corresponding completion schedule should be provided in Section 3.6.3.

3.4.2 Potential Gas Intrusion Mechanisms. Where applicable to the plant design, potential sources of gas and associated void monitoring and control actions which may include the following should be described:

- SI Accumulators. SI accumulator level and pressure monitoring, discharge piping pressure, suction piping pressure, and refueling water storage tank (RWST) level; and response action if a pre-determined change occurs.

- RCS. Monitoring as identified above for the SI accumulators.

- Dissolved gas coming out of solution due to pressure reduction through piping components. Monitoring and control processes such as surveillance procedures and venting should be summarized here or by reference to Section 3.5 where the topic is addressed.
- Containment Emergency Sump. Pipe slope from the sumps toward the ECCS pumps with respect to gas movement in the piping between the sump and isolation valves, the potential for gas to be trapped between valves, potential vortex formation and its effect, and potential steam and gas formation as water passes through the strainers followed by potential transport into the pipes should be addressed.

- RWST. RWST level monitoring and operating procedures should be described with respect to controls to prevent air entrainment into the subject system piping.

- Level Instrumentation Error. Level instrumentation failure should be addressed with respect to prevention of gas intrusion from such sources as the RWST, volume control tank (VCT), spray additive tank (SAT), and the containment emergency sump supply water to the subject system pumps.

- Valve Leakage. Several potential concerns should be addressed, including (1) monitoring and control of gas due to leakage through isolation valves or through check valves that could potentially result in outgassing due to a pressure decrease and gas transport to other locations, (2) leakage through vent valves when the local system pressure is less than the nominal atmospheric pressure, and (3) leakage of pressurized air from the valves into the subject system piping if valve design permits a leakage path such as may be possible in some diaphragm valves.

- Operations. Gas concerns associated with system and plant shutdown, restart, and maintenance should be addressed.

3.4.3 Gas Volume Acceptance Criteria Versus Location. Typical potential gas accumulation locations that should be considered include:

- Highest locations as shown on applicable documentation.

- Local high points or air traps in nominally horizontal pipes resulting from deviations from horizontal during erection.

- Traps between two valves in horizontal pipes that do not have an adequate vent between them, such as an isolation valve and a check valve in series.

- Normally closed valves, including check valves.

- Local high points such as in heat exchangers, valve bodies, and vertical piping to relief valves.

- Pipe diameter changes.

- Orifices.

Void acceptance criteria should be stated or a description should be provided for (1) the process for correlating suction pipe voids to obtain void entering a pump and (2) the process for determining the acceptability of discharge pipe voids with respect to water hammer and the effect of injecting gas into the RCS. If criteria are used that are outside the Reference 4 bounds, they must be acceptably justified, such as by summarizing void movement analysis methodology with references to how the methodology has been verified. Note that the NRC staff will accept the Reference 4 criteria without justification. Note also that the Reference 4 criteria will be revised when justified by new information.

3.4.4 Pump Acceptance Criteria. Pump entrance void acceptance criteria should be stated. Justification should be provided if the criteria differ from the Reference 4 criteria. A commitment or a reference to a plant-specific document that describes the licensee's plan for addressing information that is obtained from the long-term industry tasks that are under way or planned to address concerns associated with gas accumulation and transport or pump response to gas should be provided and addressed in Section 3.6.3.

3.4.5 Pipe and Instrumentation Drawing (P&ID) and Isometric Drawing Reviews. The as-built plant configuration should be compared to the P&ID and isometric drawings, particularly as it relates to location of piping high points, vent valve locations, and potential gas accumulation locations as described in Section 3.3.4, above. Any drawing errors should be identified and entered into the CAP.

3.4.6 Walkdown Acceptance Criteria and Completed Walkdown Results.

Walkdowns conducted to address the following should be described, any discrepancies should be identified, and corrective actions should be identified to correct any discrepancies:

- Verify that each vent is installed and configured as shown on the design drawings.
- Verify the configuration of vent valves installed since GL 2008-01 was issued.
- Measure, or estimate in inaccessible areas, the distance on the pipe from the centerline of a nearby fitting (elbow, tee, etc.) to the centerline of the vent valve pipes.
- Perform a visual examination (no direct measurement) to determine if each vent is located at the top center of the pipe.

Dimensions and determination of the configuration of insulated pipe should be evaluated by either removing a portion of the insulation or otherwise obtaining sufficient insulation thickness measurements to establish the position of the pipe and components inside the insulation with sufficient accuracy to locate high points and other potential air traps. If this is not practical, applying judgment that the pipe and component dimensional relationship to the outside of the insulation is known and the basis for that judgment may be acceptable.

An example of acceptable selection criteria for obtaining dimensional data for the subject systems is as follows:

- Any straight 10 feet or longer piping run.
- Any piping run that has a vent.
- Any horizontal run that has a reducer, reducing tee, valve, orifice, venturi, or line size change on the same elevation.
- Any 10 feet or longer run made up of segments connected by elbows or fittings.

- For any run with a tee, such that if the tee run segment lengths are added to the pipe length, the total is over 10 feet.

- Any pipe 4 inches or greater nominal pipe size of any length.

- Any pipe or tubing that provides cooling to subject system components.

- Any pipe or tubing that is associated with instrumentation if a gas/liquid combination can occur in piping or tubing that is supposed to contain a single phase so that the instrumentation indication is significantly affected.

- The section of any vertical pipe 1 inch or greater nominal pipe size that is located below a valve that may be closed when in operation so that gas can be trapped below the valve.

A number of methods are acceptable for obtaining dimension data, including use of transits, levels, scales, and laser metrology.

Parts of the subject systems that are not covered by walkdowns should be identified and omission of walkdown coverage should be justified.

3.4.7 Incomplete Walkdowns. Walkdowns that remain to be accomplished should be described. Section 3.6.3 should be used to identify plant documentation that ensures the walkdowns will be accomplished and to provide a completion schedule.

3.4.8 Hardware Modifications Accomplished. Hardware modifications accomplished in response to the GL should be identified in Section 3.6.2. It is not necessary to provide detail. Section 3.4.8 may optionally be used to provide more information.

3.4.9 Incomplete Items and Completion Schedule. Section 3.6.3 should be used to identify remaining modifications and the plant documentation that ensures the modifications will be accomplished, and to provide a completion schedule. It is not necessary to provide detail. Section 3.4.9 may optionally be used to provide more information.

3.5 Testing

3.5.1 Overview of Procedures. A sufficiently detailed summary of procedures is expected for the NRC staff to assess coverage and to provide an NRR assessment report that the NRC inspectors can reference while conducting inspections under Temporary Instruction (TI) 2515/177.

Procedure verification should be described, such as review including actual plant walkdowns or by use of isometric drawings that have in turn been verified by walkdown results. Verification should consider the effect of pipe slopes in nominally horizontal pipes in addition to the items identified in Section 3.4.7. Completed procedure improvements and any new procedures that resulted from the review process should be listed in Section 3.6.2 and should be summarized here if the Section 3.6.2 listing does not identify the changes in general terms. Procedure

changes that are planned should be listed in Section 3.6.3 and should be summarized here if the Section 3.6.3 listing does not identify the changes in general terms.

The NRC staff expects coverage of (1) surveillance procedures, (2) fill and vent procedures, and (3) operating procedures such as initiation and steady state system operation when there is a potential for gas to affect operation.

3.5.2 Surveillance Procedures. The preferred approach is to minimize or eliminate gas whenever identified. If this is impractical or clearly unnecessary, it is acceptable to implement actions to reasonably ensure gas will not jeopardize system operability until the next scheduled surveillance.

An acceptable summary of surveillance procedures would typically cover the following items:

- List applicable procedures, administrative controls if they add to coverage, and operating modes to which they apply.

- Describe surveillance coverage and frequency identify piping locations that are not included in scheduled surveillances, and justify the excluded locations with respect to achieving a reasonable assurance of system operability. A broad identification of surveillance locations and methods is acceptable, such as all suction pipe high points vented via vents or that UTs are used where vents are not installed, etc.

- Where venting is accomplished, briefly describe how volumes are determined and provide estimated void volume determination uncertainty. In general, approximate methods of determining void volume are acceptable if the expected void volume is far removed from the acceptance limit. For example, an approximate determination of a void that is a factor of two less than the acceptance criterion would generally be acceptable. Smaller differences may also be acceptable when justified. If a void volume is anticipated that may approach the acceptance limit because of such behavior as changing SI accumulator level or pressure or other anomalous behavior, then it may be necessary to provide a more accurate determination. Note that void pressure should be considered when assessing voids and acceptance criteria. If the pressure may decrease from the as-measured condition, such as during a pump start transient or during system operation, then the void volume will increase.

- Re-performance of UT / venting at locations where gas may accumulate during venting at other locations should be addressed to (1) verify gas was removed after venting and (2) to ensure gas was not transported into a high point that was previously found to be gas-free. If the procedure is designed to prevent such gas transport, this should be identified and the conclusion justified.

- Post-surveillance activities, such as gas volume trending and response to failure to meet void acceptance criteria, should be described.

- Instructions for sampling and chemical analysis of accumulated gas should be described.

3.5.3 Fill and Vent Procedures. Many of the Section 3.5.2 items apply to fill and vent procedures as well. In addition, the following should be identified as appropriate:

- Venting or back-filling of instrument lines including controls or procedures that apply.
- Measures to guard against gas intrusion because of inadvertent draining, system realignments, incorrect maintenance procedures, or other evolutions.
- Use of clearance orders or other processes to establish boundaries to effectively isolate the portions of systems impacted by maintenance activities. Note the next high point location beyond a clearance order boundary should be checked to ensure piping that should have been unaffected by the maintenance activities is full.
- Control and revision of work packages due to change in maintenance work scope, including review and reauthorization of the package and any new temporary procedures.
- The post-maintenance recovery, review, and approval process should be summarized.

3.5.4 Operating Procedures. Procedures and administrative controls that were not discussed in Sections 3.5.2 and 3.5.3 should be discussed here. This may include, for example, monitoring of pump operation in all modes and specialized monitoring of appropriate plant parameters during shutdown operation, including reduced inventory and mid-loop operation for PWRs and control of RV water level in BWRs.

3.6 Corrective Actions

3.6.1 Interim Coverage of TS Inadequacies to Meet Appendix B Requirements. Supplementary actions, such as use of procedures and other processes to address control of voids in the subject systems that are not covered by TS requirements, should be identified. Reference to other sections in the report is sufficient.

3.6.2 Completed Corrective Actions. Completed corrective actions associated with the GL, including such items as hardware modifications and procedures improvements, should be listed. The NRC staff suggests using a table that identifies the CAP and that includes a brief description. It is not necessary to provide detail.

3.6.3 Incomplete Items, Completion Schedule, and Commitments. Remaining modifications and such items as completing walkdowns should be identified, the documentation that ensures the items will be accomplished should be identified, and a completion schedule should be provided. The NRC staff suggests using a table that identifies the CAP and includes a brief description. It is not necessary to provide detail.

3.7 Training. Training was not identified in the GL but is considered to be a necessary part of applying procedures and other activities when addressing the issues identified in the GL. Training should be briefly discussed and included in the Section 3.6 items.

4.0 CONCLUSIONS

This section should summarize why the above information is sufficient to support a conclusion that the subject systems are reasonably ensured to be operable whenever needed.

5.0 REFERENCES

1 Case, Michael J. “NRC Generic Letter 2008-01: Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems,” Letter from Director, Division of Policy and Rulemaking, Office of Nuclear Regulation, NRC, ML072910759, January 11, 2008.

2 Wert, Leonard D., Jr., “Task Interface Agreement – Emergency Core Cooling System (ECCS) Voiding Relative to Compliance with Surveillance Requirements (SR) 3.5.1.1, 3.5.2.3, and 3.5.3.1 (TIA 2008-03),” NRC Memorandum from Director, Division of Reactor Projects, Region II, ML082560209, October 21, 2008.

3 Beaulieu, David P., “Summary of the September 4, 2008, Category 2 Public Meeting with the Nuclear Energy Institute to Discuss NRC Generic Letter 2008-01, ‘Managing Gas Accumulation In Emergency Core Cooling, Decay Heat Removal, And Containment Spray Systems,’” NRC Memorandum, ML082770088, October 6, 2008.

4 Revision 2 To NRC Staff Criteria For Gas Movement In Suction Lines And Pump Response To Gas, March 26, 2009.