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U S Nuclear Regulatory Commission
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Prairie Island Nuclear Generating Plant Units 1 and 2
Dockets 50-282 and 50-306
License Nos. DPR-42 and DPR-60

Ninety-Day 2R25 Post-Outage Report Pursuant to Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"

- References:
1. Nuclear Regulatory Commission (NRC) Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems", dated January 11, 2008, Accession Number ML072910759.
 2. Nuclear Management Company, LLC, (NMC) letter to NRC RE: Update to Three-Month Response and Request for Extension to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems", dated September 15, 2008, Accession Number ML082600139.
 3. Northern States Power Company, a Minnesota corporation (NSPM), letter to NRC, RE: Nine-Month Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems", dated October 14, 2008, Accession Number ML082880483.

The NRC issued Generic Letter (GL) 2008-01 (Reference 1) to request that each licensee evaluate the licensing basis, design, testing, and corrective action programs for the Safety injection (SI), Residual Heat Removal (RHR), and Containment Spray (CS) systems, 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.

In Reference 2, NMC¹, proposed an alternative schedule for responding to Reference 1 and committed to “. . .submit the results of the evaluation of accessible area walkdowns and Unit 2 containment and RHR pit walkdowns with the follow-up report 90 days following completion of 2R25.”

In Reference 3, Enclosure Section B, Commitment 3, NSPM committed to “. . .identify corrective actions to minimize gas accumulation and its consequences for Unit 1 outside containment accessible areas and Unit 2 inside and outside containment and the Unit 2 RHR pit areas in the 90-day 2R25 post-outage report.”

The Enclosure to this letter summarizes walkdown results and corrective actions for Unit 1 outside containment accessible areas and Unit 2 inside and outside containment and the Unit 2 RHR pit areas.

If there are any questions or if additional information is needed, please contact Mr. Dale Vincent, P.E., at 651-388-1121.

Summary of Commitments

This letter closes the above quoted commitments made in References 2 and 3.

This letter makes the following new commitments for resolution of GL 2008-01:

1. Corrective actions for fourteen locations were identified during the drawing reviews as inverted U or dead end tee pipe configurations and corrective actions for an additional eleven locations were discussed in Statement 7 of the Enclosure. Unit 1 corrective actions will be completed by the end of refueling outage 1R27 in 2011, and Unit 2 corrective actions will be completed by the end of refueling outage 2R26 in 2010.
2. An analysis, that assumes a void is present, will be completed on the inaccessible susceptible void location (2SI-32) on the cross-tie line from 21 RHR pump to the 21 SI pump in the second quarter of 2009.
3. An extent of condition review of flow element and orifices considering lessons learned from evaluating the voids in the RHR pump miniflow lines, completed January 24, 2009, identified additional locations to evaluate. The corrective actions (that is, walkdowns) for this extent of condition review will be completed for the Units 1 and 2 locations outside containment in the second quarter of 2009. The Units 1 and 2 locations inside containment will be completed consistent with accessibility no later than 1R26 in 2009 and 2R26 in 2010, respectively.

¹ On September 22, 2008, NMC transferred its operating authority to NSPM. By letter dated September 3, 2008, NSPM assumed responsibility for actions and commitments previously submitted by NMC.

This letter revises Commitment 1 in Reference 3, Enclosure Section B to:

By the end of third quarter of 2009 for Unit 2 and end of second quarter 2010 for Unit 1, NSPM will develop and implement interim surveillance measures in owner-controlled documents (until implementation of Reference 3, Enclosure Section B, Commitment 2 activities is complete) to periodically verify the piping is sufficiently full such that its functional requirements are maintained.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on **JAN 30 2009**



Joel P. Sorensen
Director Site Operations
Prairie Island Nuclear Generating Plant Units 1 and 2
Northern States Power Company - Minnesota

Enclosure

cc: Administrator, Region III, USNRC
Project Manager, Prairie Island, USNRC
Resident Inspector, Prairie Island, USNRC

ENCLOSURE

NINETY-DAY 2R25 POST-OUTAGE REPORT PURSUANT TO GENERIC LETTER 2008-01, "MANAGING GAS ACCUMULATION IN EMERGENCY CORE COOLING, DECAY HEAT REMOVAL, AND CONTAINMENT SPRAY SYSTEMS"

This enclosure contains the Northern States Power Company, a Minnesota corporation (NSPM) Ninety-Day 2R25 Post-Outage Report 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. In GL 2008-01, the NRC requested "that each addressee evaluate its emergency core cooling system (ECCS), decay heat removal system, 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 action is taken when conditions adverse to quality are identified." This action was completed by submitting an alternate course of resolution by Reference 1, which was accepted by the NRC by Reference 2, and completed by Reference 3.

The following information is provided in this response to fulfill Commitment 3 that was made in the Reference 3, Enclosure Section B:

Commitment 3: "NSPM will identify corrective actions to minimize gas accumulation and its consequences for Unit 1 outside containment accessible areas and Unit 2 inside and outside containment and the Unit 2 RHR pit areas in the 90-day 2R25 post-outage report."

Specific statements were made in Reference 3 with respect to actions that would be addressed in the 90-day 2R25 post-outage report: each statement is repeated below in Section A and the results of the actions are provided. The Statement numbers correspond to the numbering in the Design Evaluation Section of the Enclosure to Reference 3.

A. ACTIVITY RESULTS

Statement 1:

Statement from Nine-Month Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"

- 1. Discuss the results of the review of the design basis documents. This discussion should include a description of any plant specific calculations or analyses that were performed to confirm the acceptability of gas accumulation in the piping of the affected systems, including any acceptance criteria if applicable. Note: This should describe the "as found" (pre Generic Letter) condition prior to any corrective or enhancement actions.**

NSPM reviewed the PINGP [Prairie Island Nuclear Generating Plant] design basis with respect to gas accumulation in the subject systems. Various design basis documents were reviewed including design guidelines, calculations, engineering evaluations, design change packages, design basis documents and vendor technical requirements.

Design drawings provide sufficient detail regarding placement of vent, drain or test connections to fill and vent systems during return to service. These details can also be used to adequately vent (e.g., dynamic flush) during refill operations for system piping that cannot be statically vented. NSPM will evaluate the need for additional vent valve locations as part of the piping walkdown activities. The results of the walkdown activities will be reported in the post-2R25 90-day follow-up letter.

90-Day 2R25 Post-Outage Report

The result of the evaluation for additional vent valve locations is discussed with Statement 6 below.

Statement 4:

Statement from Nine-Month Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"

- 4. Discuss the results of the system P&ID and isometric drawing reviews to identify all system vents and high points.**

The piping and isometric drawings for the SI [safety injection], RHR [residual heat removal] and CS [containment spray] were reviewed to identify vents, high points and susceptible void locations.

Each line that did not screen out was reviewed to determine if it could be effectively vented with an existing system vent or procedure. Horizontal line slope, horizontal line local high point information, and vent orientation details will be obtained from field walkdowns. The results of the walkdown activities will be reported in the post-2R25 90-day follow-up letter.

Physical walkdowns performed during and after 2R25 will measure horizontal pipe slope and compare the configuration to the piping and isometric drawing reviews to identify susceptible void locations. NSPM will evaluate the susceptible void locations by the methodologies discussed in Design Section 2 and ultrasonic techniques will be used to quantify void size.

90-Day 2R25 Post-Outage Report

Horizontal line slope, horizontal line local high point information, and vent orientation details were obtained from field walkdowns and the evaluation is discussed with Statement 5 below.

The NSPM nine-month response to GL 2008-01 identified several locations as susceptible void locations based on the drawing reviews¹. These locations and the walkdown results are provided in Table 1 and discussed further in Statement 6.

¹ Further review determined the refueling water storage tank (RWST) supply line to the CS pumps common suction were not considered susceptible void locations based on drawing review; however, the Unit 2 location was considered a susceptible void location based on walkdown results. UT confirmed no void existed.

**Table 1
 Drawing Review Susceptible Void Locations**

Description (Location Identifier ²)	Unit 1 Susceptible Void Location	Unit 2 Susceptible Void Location
Unit 1 SI pump discharge cross-tie (1SI-6)	No void	Unit 2 configuration differs from Unit 1
Abandoned in place boric acid storage tanks supply line to the SI pump common suction (1SI-2, 2SI-18)	Void	No void
RHR pump cross-tie upstream of the RHR heat exchangers (22PIT-3)	1R26	No void
RHR pump cross-tie downstream of the RHR heat exchangers (22PIT-1)	1R26	Void
RHR flush line connection to the RHR pump cross-tie downstream of the RHR heat exchangers (22PIT-2)	1R26	Void
Accumulator fill line from the SI cold leg injection (2SI-9, 2SI-13)	1R26	No void

Ultrasonic testing (UT) measurements determined two of the drawing review susceptible void locations had a void that could not be vented. Each condition was entered into the corrective action program. Operability evaluations confirmed there was no impact on operability due to the voided non-conforming conditions, that is, the condition is operable but non-conforming.

- Unit 1 abandoned in place boric acid storage tanks supply line to the SI pump common suction is a dead end tee (1SI-2). The void is less than the interim acceptance criterion.
- Unit 2 RHR flush line connection to the RHR pump cross-tie downstream of the RHR heat exchangers is a dead end tee (22PIT-2). The line was vented and subsequent UT measurements confirmed a significant reduction in the void size. The dead end tee is isolated from the RHR system and has no impact during RHR emergency core cooling system (ECCS) alignment.

UT measurements determined one of the drawing review susceptible void locations had a void and it was vented.

- Unit 2 RHR pump cross-tie upstream of the RHR heat exchangers void location is an inverted U (22PIT-1). It was statically vented by a local vent valve.

² Unique PINGP numbers assigned to susceptible and actual void locations.

The NSPM nine-month response to GL 2008-01 identified several other locations deemed susceptible because of extensive industry operating experience. They were:

- The two RHR cross-ties to the SI pumps suction for each unit (1SI-3, 1SI-4, 2SI-30, 2SI-31)
- The two RHR cross-ties to the CS pumps suction for each unit (1CS-3, 1CS-4, 2CS-2, 2CS-3)

UT measurements determined there were no voids at these susceptible void locations on either unit. NSPM is evaluating the addition of vent valves for operational convenience or procedure changes to vent the RHR cross-tie to the CS pump suction locations.

Statement 5:

Statement from Nine-Month Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"

- 5. *Identify new vent valve locations, modifications to existing vent valves, or utilization of existing vent valves, based on the drawing review, and summarize the Corrective Actions, and schedule for completion of the Corrective Actions.***

NSPM drawing reviews identified susceptible void locations that are locations for potential plant modifications. However, the information is not definitive and a decision to modify the plant will be based on the drawing reviews combined with GL 2008-01 activities and the walkdown results. The specific piping sections associated with the susceptible void locations will be used to identify locations that may require vents. The design change process will determine the exact number and location of vents. NSPM will identify corrective actions to minimize gas accumulation and its consequences for Unit 1 outside containment accessible areas and Unit 2 inside and outside containment and the Unit 2 RHR pit areas in the 90-day 2R25 post-outage report.

90-Day 2R25 Post-Outage Report

Fourteen locations were identified during the Unit 2 drawing reviews to be inverted U or dead end tee pipe configurations with no installed vent and confirmed by walkdown. They are summarized in Table 2.

The corrective actions currently planned for these locations are the installation of vent valves. NSPM may implement alternative corrective actions that are equally effective to resolve these locations, such as, performance of analyses which demonstrate no adverse effects for a void at a particular location. These alternative corrective actions may require changes to the PINGP licensing and design basis.

**Table 2
 Inverted U and Dead End Tee Locations Based on Drawing Review**

	Description of Location
Inverted U	Unit 1 SI pumps discharge cross-tie (1SI-6)
	21 SI pump injection line inside containment (2SI-13)
	22 SI pump injection line inside containment (2SI-9)
	Units 1 and 2 caustic addition (CA) lines (1CS-9, 1CS-10, 2CS-10, 2CS-12)
Dead End Tee	RHR flush line (22PIT-2)
	Units 1 and 2 flanges for the CA line at the suction of the CS pumps (1CS-7, 1CS-8, 2CS-11, 2CS-13)
	Units 1 and 2 abandoned in place boric acid storage tanks supply line to the SI pump common suction (1SI-2, 2SI-18)

The following two local high point locations were identified during the drawing reviews that do not have a vent valve where operational convenience would dictate or one is needed to statically vent a void rather than dynamically vent:

- SI injection line to RCS Loop A upstream of check valve 2SI-9-2 (2SI-14A).
- SI injection line to RCS Loop B upstream of check valve 2SI-9-1 (2SI-14B).

The completion time frame for the corrective actions for the locations on Unit 1 is during refueling outage 1R27 in 2011, and for the locations on Unit 2 is during refueling outage 2R26 in 2010.

Statement 6:

Statement from Nine-Month Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"

- 6. Discuss the results (including the scope and acceptance criteria used) of the system confirmation walkdowns that have been completed for the**

portions of the systems that require venting to ensure that they are sufficiently full of water.

2R25 walkdowns inside containment and RHR pit areas are being performed for piping susceptible to gas intrusion. NSPM will provide these results and the results of the outside containment walkdowns for Unit 1 and 2 in the 90-day 2R25 post-outage report.

90-Day 2R25 Post-Outage Report

NSPM completed walkdowns during and following the 2R25 outage (Fall 2008) for the Unit 1 outside containment accessible areas and Unit 2 inside and outside containment and the Unit 2 RHR pit areas. The walkdowns for the Unit 1 inside containment and Unit 1 RHR pit areas will be performed during the 1R26 outage (Fall 2009) and reported 90 days following the completion of the outage. This proposed alternative course of action was approved in Reference 2.

Walkdown Summary

NSPM performed walkdowns of piping in the subject systems to ensure that the as-built configuration of the piping matches the design documentation and identify susceptible void locations. NSPM performed measurements during these walkdowns using work order guidance and a ZipLevel™ to determine relative pipe elevations for the subject systems. The measurements were recorded on isometric drawings that were used to identify adverse slope. Ninety-two susceptible void locations were identified using these drawings and screening criteria. All accessible susceptible void locations were measured by UT to identify if there was an actual void, except for three locations. Two of these locations were on vertical pipes and were included in the population to ensure they were considered for the addition of vent valves for operational convenience. The third susceptible void location on Unit 2 outside containment was not accessible and is discussed as a corrective action in Section B, Description of Necessary Additional Corrective Actions.

As shown in Table 3, twelve of these locations had a void as determined by the UT measurements.

**Table 3
 Summary of Walkdown Results**

Susceptible Locations	Unit 1 ³		Unit 2	
	Susceptible Void Locations	Actual Voids	Susceptible Void Locations	Actual Voids
RHR				
• Discharge	1	0	8	2
• Suction	5	3	10	3
SI				
• Discharge	4	0	25	0
• Suction	6	1	8	1
CS				
• Discharge	0	0	0	0
• Suction	12	0	13	2

Walkdown Methodology

NSPM performed walkdowns of piping in the subject systems to ensure that the as-built configuration of the piping matches the design documentation and identify susceptible void locations. NSPM performed measurements during these walkdowns using work order guidance and a ZipLevel™ to determine relative pipe elevations for the subject systems. Measurements were taken “on- the-pipe” without the distorting effects of insulation⁴ on relative elevations by: 1) virtue of it being un-insulated; 2) removal of the insulation; or 3) use of a shim aid to be “on-the-pipe”. These measurements were generally taken at approximately 8 to 10 foot intervals at marked locations (for example, hangers) where possible. The measurements were recorded on isometric drawings. Elevation sketches were developed as an aid to identify adverse slope and susceptible void locations. Susceptible void locations were identified using these drawings and sketches with the following screening criteria:

- Is the line a local high point?
- Is the slope of the line adverse as measured by the GL 2008-01 walkdowns (that is, a local rise > 0.25 inch that could locally form a void)?
- Does the line vent to a riser?
- Is there potential for gas intrusion in the line?

³ Walkdown results only for Unit 1 outside containment accessible areas; walkdown results for Unit 1 inside containment and Unit 1 RHR pit areas will be reported 90 days following the 1R26 refueling outage.

⁴ Measurements were taken on the Unit 2 CS common suction line in the trench with the insulation in place since it was impractical to remove the insulation and the insulation is in good, undamaged condition.

- Is it a dead end tee?
- Is there continuous flow in an orifice?

Each line that did not screen out was reviewed to determine if it could be effectively vented with an existing system vent or procedure. Horizontal line slope, horizontal line local high point information, and vent orientation details were obtained from the walkdowns.

As an aid to performing operability determinations, interim acceptance criterion for the void size was developed for most susceptible void locations using methods described in Nuclear Energy Institute (NEI) guidance:

- Discharge pipe waterhammer was based on FAI/08-70, and
- Pump suction void fraction of 2% was based on NUREG/CR-2792.

Contingency actions were identified, and a UT performed at each accessible location. The corrective action program was used to document voids identified by UT measurements even if they were within the interim acceptance criterion. If a void was identified at a susceptible location, its disposition was: 1) an operability evaluation due to the voided non-conforming condition; or 2) filled and vented to correct the voided non-conforming condition.

One susceptible void location (2SI-32) on the cross-tie line from 21 RHR pump to the 21 SI pump is inaccessible due to its configuration in a pipe trench below concrete shielding blocks. Because this location is not accessible at power, NSPM did not complete walkdowns, elevation measurements or UT; thus, this location will be treated as a susceptible void location. Other locations on this line were inspected by UT and determined to have no voids. This inaccessible location was documented in the corrective action program. As discussed in Section B, Description of Necessary Additional Corrective Actions, an analysis will be completed which conservatively assumes a void exists at this location.

Walkdown Results

The walkdown results for the Unit 1 outside containment accessible areas and Unit 2 inside and outside containment and the Unit 2 RHR pit areas are reported below. (The walkdowns for the Unit 1 inside containment and Unit 1 RHR pit areas will be performed during the 1R26 outage (Fall 2009) and reported 90 days following the completion of the outage.)

NSPM walkdowns were performed using the methodology described above. One configuration did not match the drawing and was documented in the corrective action program.

- Unit 1 Residual Heat Removal System

A void (1RH-3) was identified by UT in the Unit 1 common hot leg suction line used for shutdown cooling on December 16, 2008. Immediate corrective actions reduced the size of the void. A second void (1RH-5) in this line was identified in containment between the second off isolation valves and the containment penetration. The condition was documented in the corrective action program. An operability evaluation confirmed the condition is operable but non-conforming.

A void (1RH-4) was identified by UT at the orifice in the 11 RHR pump miniflow line on January 19, 2009. The condition was documented in the corrective action program. An operability evaluation confirmed the condition is operable but non-conforming.

- Unit 1 Safety Injection System

A void (1SI-2) was identified by UT in the dead end tee formed by the abandoned in place boric acid storage tanks supply line to the SI pump common suction on January 21, 2009. The condition was documented in the corrective action program. An operability evaluation confirmed the condition is operable but non-conforming.

- Unit 2 Residual Heat Removal System

A void (22PIT-1) was identified by UT in the 22 RHR pit area at an inverted U on October 9, 2008. This condition was discovered following maintenance on the RHR system while the reactor core was offloaded. The condition was documented in the corrective action program. The void was statically vented.

A void (22PIT-2) was identified by UT in the 22 RHR pit area in a flush line at a dead end tee between two cross-tie isolation valves on October 9, 2008. The cross-tie line is normally isolated for RHR ECCS standby, but is un-isolated for RHR shutdown cooling. This condition was discovered following maintenance on the RHR system while the reactor core was offloaded. The condition was documented in the corrective action program. Immediate corrective actions reduced the size of the void. An operability evaluation confirmed the condition is operable but non-conforming.

A void (22PIT-5) was identified by UT in the 22 RHR pit area at an elbow approximately 14 feet upstream of the 22 RHR pump on October 9, 2008. This condition was discovered following maintenance on the RHR system while the reactor core was offloaded. The condition was documented in the corrective action program. The void size was within the interim acceptance criterion and it was dynamically flushed. Pump operability testing was subsequently performed successfully.

A void (2RH-2) was identified by UT in the Unit 2 common hot leg suction line used for shutdown cooling on December 18, 2008. Previously, UT measurements for this location during 2R25 determined there was no void. The Unit 2 void was identified by the corrective action extent of condition for the similar void location on Unit 1. The condition was documented in the corrective action program. An operability evaluation confirmed the condition is operable but non-conforming.

A void (2RH-10) was identified by UT at the orifice in the 21 RHR pump miniflow line on January 22, 2009. Previously, this location was not identified as a susceptible location. The Unit 2 void was identified by the corrective action extent of condition for the similar void location on Unit 1 (1RH-4). The condition was documented in the corrective action program. An operability evaluation confirmed the condition is operable but non-conforming. An extent of condition review of flow elements and orifices considered lessons learned from evaluating the voids in the RHR pump miniflow lines. This review, which was completed on January 24, 2009, identified additional locations to evaluate. None of these locations were previously screened as susceptible void locations for the walkdowns. The lines with the orifices identified by the extent of condition review were either dynamically vented or the susceptible locations in the lines were verified water solid by UT⁵. Also, there is no evidence of accumulator out leakage that could result in gas intrusion in these lines. These locations are in addition to the 92 previously identified susceptible void locations. The completion of the corrective action for this extent of condition review is the subject of a commitment discussed in Section B, Description of Necessary Additional Corrective Actions.

- Unit 2 Safety Injection System

A void (2SI-21) was identified by UT in the line at the elbow before it turns downward to the 21 SI pump on December 29, 2008. The condition was documented in the corrective action program. Immediate corrective action did not reduce the void size. An operability evaluation confirmed the condition is operable but non-conforming.

- Unit 2 Containment Spray System

A void (2CS-6) was identified by UT in the common CA line to the CS pumps on December 10, 2008. The condition was documented in the corrective action program. An operability evaluation confirmed the condition is operable but non-conforming.

A void (2CS-11) was identified by UT in the CA line in a dead end tee upstream the 22 CS pump on December 10, 2008. The condition was documented in the corrective action program. An operability evaluation confirmed the condition is operable but non-conforming.

⁵ Except for a ¾" line, with an orifice, to the accumulator check valve test line.

Statement 7:

Statement from Nine-Month Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"

7. **Identify new vent valve locations, modifications to existing vent valves, or utilization of existing vent valves, that resulted from the confirmatory walkdowns, and summarize the Corrective Actions, and the schedule for completion of the Corrective Actions, i.e., the walkdowns that have been completed, and the walkdowns not yet complete (refer to Reference [5] Three-Month Response to NRC Generic Letter 2008-01).**

2R25 walkdowns inside containment and the RHR pit areas are being performed during 2R25. The walkdown information and the drawing review information will be evaluated together to determine the need for additional vent valve locations as discussed in Design Section 5. NSPM will present these results and the results of the outside containment walkdowns of piping sections for Unit 1 and 2 in the 90-day 2R25 post-outage report.

90-Day 2R25 Post-Outage Report

The corrective actions currently planned for the locations discussed in Statement 6 are the installation of vent valves. NSPM may implement alternative corrective actions that are equally effective to resolve these susceptible void locations, such as, performance of analyses which demonstrate no adverse effects for a void at a particular location. These alternative corrective actions may require changes to the PINGP licensing and design basis.

The locations for corrective actions are:

- Units 1 and 2 common hot leg suction lines (1RH-3 and the comparable Unit 2 location, 1RH-5, 2RH-2)
- Units 1 and 2 RHR pump miniflow lines (1RH-4, 1RH-6, 2RH-10, 2RH-9)
- Unit 1 at the abandoned in place boric acid storage tanks supply line to the SI pumps (1SI-2) (also identified in drawing review)
- Unit 2 RHR flush line dead end tee (22PIT-2) (also identified in drawing review)
- 22 RHR pump suction line (22PIT-5)
- 21 SI pump suction line (2SI-21)
- Unit 2 common CA line to the CS pumps (2CS-6)
- Unit 2 dead end tee on CA line upstream the 22 CS pump (2CS-11) (also identified in drawing review)

Corrective actions to install additional vent valves or alternative corrective actions are continually being assessed based NSPM on-going reviews and the sharing of industry operating experience.

The completion time frame for the corrective actions for the locations on Unit 1 is during refueling outage 1R27 in 2011, and for the locations on Unit 2 is during refueling outage 2R26 in 2010.

Statement 10:

Statement from Nine-Month Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"

10. Discuss potential gas intrusion mechanisms into each system for each piping segment that is vulnerable to gas intrusion.

NSPM identified the following potential gas intrusion mechanisms:

1. Leakage from the accumulators

Tie-in points from the accumulators into the SI systems have been identified to ensure venting capability should a leakage path develop resulting in degassing from the accumulators. Piping segments within these systems at elevations higher than the accumulator tie-in points have been evaluated by drawing reviews. Plant walkdowns inside containment are being performed for Unit 2 during 2R25. Unit 1 walkdown is scheduled for 1R26. NSPM will evaluate the need to add additional vents based on the drawing reviews and walkdowns performed during 2R26 [sic; this should have been 2R25] and 1R26.

90-Day 2R25 Post-Outage Report

The accumulator fill line from the SI cold leg injection was identified as a susceptible void location based on industry operating experience. Historically, the accumulators have not been a source of gas intrusion at PINGP. During refueling outage 2R25, the potential gas intrusion locations were identified as susceptible void locations (2SI-13 and 2SI-16). UT measurements did not identify any voids. However, additional vent valve capability may be added as corrective action to the inverted U configuration on the SI to 21 accumulator fill line (2SI-13).

The gas intrusion pathway at PINGP can be from accumulator fill or accumulator test lines and valves. The valves are normally closed air operated valves that fail closed on loss of air. NSPM will evaluate isolation capability of these gas intrusion sources

through the design change process. Among the considerations for corrective action will be the addition of a manual valve for redundant isolation capability.

B. DESCRIPTION OF NECESSARY ADDITIONAL CORRECTIVE ACTIONS

1. Additional Corrective Actions

NSPM makes the following new commitments for resolution of GL 2008-01:

1. Corrective actions for fourteen locations were identified during the drawing reviews as inverted U or dead end tee pipe configurations and corrective actions for an additional eleven locations were discussed in Statement 7 above. Unit 1 corrective actions will be completed by the end of refueling outage 1R27 in 2011, and Unit 2 corrective actions will be completed by the end of refueling outage 2R26 in 2010.
2. An analysis, that assumes a void is present, will be completed on the inaccessible susceptible void location (2SI-32) on the cross-tie line from 21 RHR pump to the 21 SI pump in the second quarter of 2009.
3. An extent of condition review of flow element and orifices considering lessons learned from evaluating the voids in the RHR pump miniflow lines, completed January 24, 2009, identified additional locations to evaluate. The corrective actions (that is, walkdowns) for this extent of condition review will be completed for the Units 1 and 2 locations outside containment in the second quarter of 2009. The Units 1 and 2 locations inside containment will be completed consistent with accessibility no later than 1R26 in 2009 and 2R26 in 2010, respectively.

2. Corrective Action Updates

NSPM revises Commitment 1 in Section B of the Enclosure to Reference 3 to:

1. By the end of third quarter of 2009 for Unit 2 and end of second quarter 2010 for Unit 1, NSPM will develop and implement interim surveillance measures in owner-controlled documents (until implementation of Reference 3, Enclosure Section B, Commitment 2 activities is complete) to periodically verify the piping is sufficiently full such that its functional requirements are maintained.

C. REFERENCES

1. Nuclear Management Company, LLC, letter to NRC RE: Update to Three-Month Response and Request for Extension to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and

Enclosure
First 90-day report

- Containment Spray Systems", dated September 15, 2008, Accession Number ML082600139.
2. NRC letter to NSPM RE: Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," Proposed Alternative Course of Action, dated October 8, 2008, Accession Number ML082320824
 3. NSPM letter to NRC RE: Nine-Month Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems", dated October 14, 2008, Accession Number ML082880483.