FPL Energy

Point Beach Nuclear Plant

October 14, 2008

NRC 2008-0075
10 CFR 50.54(f)

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

Point Beach Nuclear Plant, Units 1 and 2
Dockets 50-266 and 50-301
Renewed License Nos. DPR-24 and DPR-27

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

References:
(1) NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," dated January 11, 2008 (ML072910759)
(2) FPL Energy Point Beach Letter NRC 2008-0019, Three-Month Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," dated May 12, 2008 (ML081340756)
(3) NRC Letter to FPL Energy Point Beach, "Point Beach Nuclear Plant, Units 1 and 2 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 September 25, 2008 (ML081360263)

The Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 2008-01 (Reference 1) to request that each licensee evaluate the licensing basis, design, testing, and corrective action program (CAP) action requests (ARs) for the emergency core cooling systems (ECCS), Shutdown Cooling (RHR) system, and containment spray (CS) system, to ensure that gas accumulation is maintained less than the void volume that challenges operability of these systems, and that appropriate action is taken when conditions adverse to quality are identified.

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

(a) A description of the results of evaluations that were performed pursuant to the requested actions;

(b) A description of all corrective actions, including plant, programmatic, procedure, and licensing basis modifications that were determined to be necessary to assure 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; and,

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

The enclosure to this letter contains the FPL Energy Point Beach, nine-month response to NRC GL 2008-01 for Point Beach Nuclear Plant (PBNP), Units 1 and 2.

FPL Energy Point Beach has concluded that the subject systems/functions at PBNP are operable in accordance with the Technical Specification (TS) definition of OPERABILITY and that PBNP is currently in compliance with 10 CFR 50 Appendix B, Criteria III, V, XI, XVI, and XVII, with respect to the concerns outlined in GL 2008-01 regarding managing gas accumulation in these systems/functions.

FPL Energy Point Beach has completed field inspections of the Unit 2 accessible portions of the applicable GL 2008-01 systems, with no unacceptable system voids detected. The remaining Unit 2 inspections, evaluations and required modifications will be completed during the Unit 2 refueling outage currently scheduled for fall 2009. FPL Energy Point Beach will provide a supplement to this response within 90 days following completion of that refueling outage as previously committed in Reference 2.

The Unit 1 field inspections of accessible and normally inaccessible portions of the applicable GL 2008-01 systems are in progress. The Unit 1 inspections, evaluations and required modifications will be completed during the on-going Unit 1 refueling outage. FPL Energy Point Beach will provide a supplement to this response within 90 days following completion of the current refueling outage.

During a teleconference between the NRC project manager and FPL Energy Point Beach on October 1, 2008, the NRC provided guidance as to the expectations for this nine-month response. FPL Energy Point Beach stated that this response would provide the information requested by GL 2008-01 with the exception of the confirmatory ultrasonic testing (UT) results for the Unit 1 piping and potential vent valves or other corrective actions that would result from analysis of the UT information during the Unit 1 2008 refueling outage. The information from the confirmatory UTs will be provided in the 90-day response following completion of the Unit 1 refueling outage.

The NRC staff concurred with this response schedule provided:

- This submittal fully describes all actions completed to date and those that remain to be completed,

- Provides a milestone schedule for completion of activities prior to restart of the unit following the refueling outage, and

- Contains a regulatory commitment for completion of activities and submittal of the 90-day report following completion of the fall 2008 Unit 1 refueling outage.

Summary of New Regulatory Commitments

1. FPL Energy Point Beach will provide a complete Unit 1 GL 2008-01 submittal 90 days following the completion of the fall 2008 refueling outage. The submittal will include the complete evaluation reviews based upon detailed walk downs and ultrasonic testing of both accessible and inaccessible GL 2008-01 piping sections performed prior to and during the Unit 1 refueling outage.

2. FPL Energy Point Beach will provide a complete Unit 2 GL 2008-01 submittal 90 days following the completion of the fall 2009 refueling outage. The submittal will include the complete evaluation reviews based upon detailed walk downs and necessary ultrasonic testing of inaccessible GL 2008-01 piping sections performed prior to and during the Unit 2 refueling outage.

3. FPL Energy Point Beach will monitor and support the industry and Nuclear Energy Institute (NEI) Gas Accumulation Management Team activities regarding the resolution of generic TS changes via the Technical Specification Task Force (TSTF) traveler process. FPL Energy Point Beach will review and evaluate the resolution of TS issues with respect to the changes contained in the TSTF traveler following NRC approval and Consolidated Line Item Improvement Process (CLIIP) Notice of Availability of the TSTF traveler in the Federal Register. A license amendment request will be submitted to the NRC within 180 days following the evaluation, if necessary. Appropriate Bases changes associated with the potential TS will also be made. The completion date for this regulatory commitment is contingent upon the approval of the TSTF.

4. FPL Energy Point Beach will implement a long-term gas accumulation management program including creation of new and/or revising existing associated procedures. The program will consider ongoing industry efforts as well as developing site-specific criteria. The program will be implemented by June 30, 2009.

There are no revisions to Regulatory Commitments previously made by FPL Energy Point Beach.

I declare under penalty of perjury that the foregoing and enclosed information is true and correct. Executed on October 14, 2008.

Very truly yours,

FPL ENERGY POINT BEACH, LLC

Larry Meyer
Site Vice President

Enclosure

cc: Administrator, Region III, USNRC
Project Manager, Point Beach Nuclear Plant, USNRC
Resident Inspector, Point Beach Nuclear Plant, USNRC
PSCW

FPL ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT UNITS 1 AND 2

NINE-MONTH RESPONSE TO NRC GENERIC LETTER 2008-01 MANAGING GAS ACCUMULATION IN EMERGENCY CORE COOLING, DECAY HEAT REMOVAL, AND CONTAINMENT SPRAY SYSTEMS

Background

This enclosure provides the nine-month 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. In GL 2008-01, the NRC requested "that each addressee evaluate its ECCS, DHR 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."

The following information is provided in this response:

a) A description of the results of evaluations that were performed pursuant to the requested actions (Section A),

b) A description of the corrective actions determined necessary to ensure 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 with respect to the subject systems (Section B), and

c) A statement regarding which corrective actions have been completed, the schedule for the corrective actions not yet complete, and the basis for that schedule (Section C).

The following systems were determined to be within the scope of GL 2008-01 for Point Beach Nuclear Plant (PBNP), Units 1 and 2.

Emergency Core Cooling System (ECCS): High Pressure Safety Injection (SI) and Low Pressure Safety Injection when operating in post-accident injection and sump recirculation modes.

Shutdown Cooling: Residual Heat Removal (RHR) – normal closed loop shutdown cooling mode for decay heat removal.

Containment Spray: Containment Spray (CS) system during post-accident operation to reduce containment pressure and scrub fission products from the containment atmosphere.

A. EVALUATION RESULTS

Licensing Basis Evaluation

The PBNP Units 1 and 2 licensing bases were reviewed with respect to gas accumulation in ECCS, RHR and CS systems. This review included the Technical Specifications (TS), TS Bases, Final Safety Analysis Report (FSAR), Technical Requirements Manual (TRM) responses to NRC generic communications, and License Conditions.

1. Summarize the results of the review of these documents:

The above listed documents and regulatory commitments were reviewed and evaluated for compliance with applicable regulatory requirements to determine whether changes are needed to address weaknesses or deficiencies in meeting regulatory requirements or commitments. The results were as follows:

a) PBNP TS Surveillance Requirement (SR) 3.5.2.2 requires verification that the ECCS piping is full of water every 31 days.

The TS Bases for SR 3.5.2.2 discuss that "maintaining the ECCS pumps and accessible portions of ECCS suction piping, including cross-connect piping to RHR, free of gas quantities that could jeopardize ECCS operability, ensures that the system will perform properly, injecting its full capacity into the Reactor Coolant System (RCS) upon demand. This is accomplished by venting the SI pumps and accessible portions of ECCS suction piping. Performance of this SR also includes venting accessible portions of the piping from the ECCS pumps to the RCS.

Licensee correspondence associated with License Amendment Request 229, dated March 27, 2003 (ML030970664), and May 30, 2003 (ML031600959), respectively, defined "accessible" portions of ECCS suction piping. In that correspondence, it was stated, "the installed vents in the ECCS system that are accessible from outside the containment structure provide adequate means for venting to ensure that the ECCS piping is sufficiently full of water to maintain ECCS operability."

The TS Bases phrase "free of gas quantities that could jeopardize ECCS operability" is equivalent to the GL 2008-01 phrase "sufficiently filled with water to ensure that they can reliably perform their intended functions." This wording was provided by the NRC staff in the safety evaluation for License Amendments 209/214, dated September 5, 2003, to ensure the wording of the TS Bases was sufficiently explicit to prevent inconsistent implementation and misinterpretation of the TSs. The NRC provided wording was inserted into the PBNP TS Bases for SR 3.5.2.2.

b) The TS SR 3.5.3.1 for ECCS Shutdown and associated Bases are the same as TS SR 3.5.2.2 and invoke the requirements of TS SR 3.5.2.2.

In MODE 4 the intent of TS 3.4.6 "is to provide forced flow from at least one reactor coolant pump (RCP) loop or one RHR loop for decay heat removal and transport. The flow provided by one RCP loop or RHR loop is adequate for decay heat removal." TS Basis 3.4.6 states that an "OPERABLE RHR loop comprises an OPERABLE RHR

pump capable of providing forced flow to an OPERABLE RHR heat exchanger. RHR pumps are OPERABLE if they are capable of being powered and are able to provide forced flow if required."

TS Basis 3.4.7 states that, "In MODE 5 with the RCS loops filled, the reactor coolant is circulated by means of two RHR loops connected to the RCS, each loop containing an RHR heat exchanger, an RHR pump, and appropriate flow and temperature instrumentation for control, protection, and indication. One RHR pump circulates the water through the RCS at a sufficient rate to prevent boric acid stratification." In MODE 5, Loops Not Filled, the Bases of TS 3.4.8 states that "The flow provided by one RHR loop is adequate for heat removal and for boron mixing."

Potential TS surveillance testing language improvements related to the potential for adverse gas accumulation in the GL 2008-01 systems are being addressed by the Technical Specification Task Force (TSTF) to provide an approved TSTF Traveler for making changes to individual licensee TSs. The development of such a traveler hinges on the results of the evaluations of a large number of licensees to address the various plant designs.

c) PBNP TS SR 3.6.6.4 requires "verification that each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head," at a frequency in accordance with the Inservice Testing Program which now requires this test during each refueling outage. SR 3.6.6.9 requires a "verification that each spray nozzle is unobstructed" at a frequency of 10 years.

The Bases for SR 3.6.6.4 discuss that "verifying each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head ensures that spray pump performance has not degraded during the cycle. Flow and differential pressure are normal tests of centrifugal pump performance required by the ASME Code. Since the containment spray pumps cannot be tested with flow through the spray headers, they are tested on a test line. This test confirms the pump design curve and is indicative of overall performance. Such in service tests confirm component OPERABILITY, trend performance, and detect incipient failures by abnormal performance. The Frequency of the SR is in accordance with the Inservice Testing Program.

The Bases for SR 3.6.6.9 provide that, "with the containment spray inlet valves closed and the spray header drained of any solution, low pressure air or smoke can be blown through test connections. This SR ensures that each spray nozzle is unobstructed and provides assurance that spray coverage of the containment during an accident is not degraded. Due to the passive design of the nozzle, a test at 10 year intervals is considered adequate to detect obstruction of the nozzles." Thus, there are no surveillances in place requiring verification of the CS piping to be full of water sufficient to ensure functionality of the system.

Surveillance procedures are in place to perform the testing required by SR 3.6.6.4. This testing provides assurance that the pumps will function as required. Existing TS surveillance procedures are in place to perform the testing of the spray nozzles required by SR 3.6.6.9. Approved procedures are in place to immediately notify Operations shift management upon failure of a pump to meet its acceptance criteria. The procedures do not specifically address voiding.

Approved procedures govern the filling and venting of the CS system following maintenance activities that may have voided portions of the system. The fill and vent activities and return to service testing are completed prior to declaring the system operable. The approved procedures have detailed venting steps that are designed to limit the gas voids present in the CS system.

FPL Energy Point Beach acknowledges that the current TS surveillance testing language may need improvement related to the potential for adverse gas accumulation in the CS system. TS improvements are being addressed by the Technical Specification Task Force (TSTF). The development of the traveler hinges on the results of the evaluations of a large number of licensees to address the various plant designs.

FPL Energy Point Beach is continuing to actively support the industry TSTF and Nuclear Energy Institute (NEI) Gas Accumulation Management Team activities regarding resolution of generic TS issues. FPL Energy Point Beach will evaluate resolution of TS issues with respect to the elements contained in the TSTF following its approval by the NRC. Based upon the results of the evaluation, FPL Energy Point Beach will submit a license amendment request with associated TS Bases changes within 180 days following the evaluation, if necessary. (Commitment 3)

d) FSAR Section 6.2.1, "Testing of Emergency Core Cooling System,"states, "The safety injection piping up to the final isolation valve is maintained full of borated water and the accumulators are maintained filled at their designated levels with borated water while the plant is in operation. The source of borated water used to fill the safety injection piping and the accumulators is the refueling water storage tank (RWST). The accumulators and injection lines will be procedurally refilled with borated water as required by using the safety injection pumps to recirculate refueling water through the injection headers."

   The FSAR provides a discussion of the procedurally required level in the RWST, at which time the high head SI and low head SI (RHR) pump suction are switched from the RWST to the containment sump recirculation mode. There is also a discussion on the level at which a CS pump may remain in service.

e) As discussed in Section 1.a above, a revision to the TS and the associated Bases was made in 2003 via Amendments 209/214 to require periodic venting and to acknowledge that some gas is allowable in the suction and discharge piping as long as the specified safety function can be performed.

f) The TRM contains no requirements for operability for the systems within the scope of GL 2008-01.

2. Summarize the changes to licensing basis documents (Corrective Actions):

Corrective Actions associated with the licensing basis review are:

a) Bases for TS SR 3.5.2.2 were developed to include the suction and discharge piping when the TS were revised in 2003. Plant procedures were implemented to satisfy these requirements. This corrective action was completed as part of implementation

of the License Amendments 209/214, dated September 5, 2003.

b) The Bases for TS SR 3.5.3.1 are identical to those for TS SR 3.5.2.2 and were also developed and completed as part of implementation of the License Amendments 209/214, dated September 5, 2003.

c) No changes to the FSAR were identified as being required from this review.

3. Provide a detailed list of items that have not been completed, a schedule for their completion, and the basis for that schedule:

a) TS improvements are being addressed by the TSTF to provide an approved TSTF traveler for making changes to individual licensee's TS related to the potential for unacceptable gas accumulation. The development of the TSTF traveler relies on the results of the evaluations of a large number of licensees to address the various plant designs.

FPL Energy Point Beach is continuing to support the industry and NEI Gas Accumulation Management Team activities regarding the resolution of generic TS changes via the TSTF traveler process. FPL Energy Point Beach will evaluate the resolution of TS issues as contained in the TSTF traveler for applicability to the PBNP design and licensing basis and submit a license amendment request with associated Bases changes within 180 days. (See Commitment 3)

As an interim measure, plant-specific initial screening criteria have been established for use in making Prompt Operability Determinations (POD) if gas accumulation is found in SI and RHR piping. See Design Evaluation Section 2 below.

b) A procedure to ensure that the CS system suction piping and the CS pumps and discharge piping up to the first closed discharge line isolation valve be maintained sufficiently full of water will be developed and implemented. An implementation procedure will be designed to ensure that the system remains operable and performs properly, injecting the required flow into the containment upon demand. The completion date for a new procedure or revision of this complexity takes into account the design, approval, training, and implementation of the procedure. This item will be complete by June 30, 2009.

c) PBNP will continue to monitor industry testing and analytical program activities during 2009 and take advantage of improvements or enhancements as required. PBNP will evaluate the results of the industry testing and analytical efforts to determine if additional changes to licensing basis documents are required. The completion date for this corrective action is dependent upon the completion of the industry testing and analytical programs.

Design Evaluation

PBNP Unit 1 and 2 design bases were reviewed with respect to gas accumulation in the ECCS, RHR and CS systems. The review included design basis documents, calculations, engineering evaluations, and vendor technical manuals.

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.**

   A review was conducted of the PBNP Units 1 and 2 design basis with respect to gas accumulation in the high head and low head safety injection systems, the CS system, and the RHR system. The review evaluated the PBNP design basis against the technical considerations discussed in GL 2008-01. The results of this review are provided below.

   a) Gas Binding of System Pumps

      The original Westinghouse piping layout criteria contain the following basis: "Suction piping must be arranged so that gases cannot accumulate in pockets." In addition to that criterion, vent valve locations were selected during the construction phase based on evaluations by plant personnel.

      The low-low level alarm on the spray additive tanks in the CS system was selected to alert the operators prior to the tank becoming empty. Subsequent evaluations determined that if no operator action is taken and the tanks run dry, the amount of air taken into the CS system is not significant and will not affect operability of the CS pumps.

      Potential vortexing of the pump suction while on the RWST is addressed procedurally in the Emergency Operating Procedures (EOPs) and supported by appropriate setpoint calculations.

      The containment sump strainer performance, including appropriate debris transport analyses, is provided under separate correspondence with the NRC as part of the response to GL 2004-02.

   b) Modifications to PBNP Subsequent to 2002 Gas Binding Event

      Subsequent to a Unit 2 shutdown in 2002, a Train B safety injection pump was damaged due to nitrogen laden water leaking back into the ECCS from the safety injection (SI) accumulators. As a result, to ensure appropriate venting, the discharge piping on Unit 1 and 2 was modified by installing ten vent valves This modification was an enhancement that reduces the possibility of pump damage, water slugs and delayed SI.

      Unit 2 vent lines, valves and plugs were installed on the SI pump discharge piping SI-1501R-3 (Train A) and SI-1501R-2 (Train B), with five of the vents located in the primary auxiliary building (PAB) and the sixth in containment.

      Unit 1 vent lines, valves and plugs were installed on the SI pump discharge piping SI-1501R-3 (Train A) and SI-1501R-2 (Train B), with three of the vents located in the PAB and the fourth in containment.

The CS was analyzed for the effects of an empty spray additive tank. The conclusion of that review was that the amount of air entrainment is not significant and gas binding of the CS pumps is not a concern.

A PBNP calculation documents the relationship used in established procedures to determine the maximum allowable SI venting interval to ensure that no potentially gas-laden accumulator water leakage is allowed to reach an SI pump. The frequency of venting is increased accordingly, if necessary.

c) Current Design Basis Calculations and Acceptance Criteria

A calculation evaluated the possibility of CS pump gas ingestion due to a loss of spray chemical addition tank level. The calculation concluded that the postulated void would result in a void fraction well within the established industry limits.

An additional evaluation concluded that the existing procedures were adequate to manage the effects of evolved gas due to dissolved gasses in the RCS.

The following table identifies new plant-specific calculations and analyses that have been performed to establish acceptance criteria for gas accumulation in piping of the SI, RHR and CS systems.

GL 2008-01 PBNP Specific Analyses

PBNP-994-40-M01 Rev 0	ECCS Discharge Piping Gas Void Calculation and Operability Determination
PBNP-994-40-M02 Rev 1	ECCS Suction Piping Gas Void Calculation and Operability Determination

2. Discuss new applicable gas volume acceptance criteria for each piping segment in each system where gas can accumulate where no acceptance criteria previously existed and summarize the Corrective Actions, and schedule for completion of any Corrective Actions.

a) Pump Suction Piping

The interim allowable gas accumulation in the pump suction piping is based on limiting the gas entrainment after a pump start. A Pressurized Water Reactors Owners Group (PWROG) program established interim pump gas ingestion limits to be employed by the member utilities. These have been used in establishing the acceptance criteria for in-scope pumps at PBNP. The interim criteria address pump mechanical integrity only and are as follows:

Table 1: Generic Interim Pump Integrity Acceptance Criteria

	Single-Stage	**Multi-Stage Stiff Shaft**	**Multi-Stage Flexible Shaft**
Steady-State	2%	2%	2%
Transient*	5% for 20 sec.	20% for 20 sec.	10% for 5 sec.
$Q_{B.E.P.}$ Range	70%-120%	70%-140%	70%-120%
Pump Type (transient data)	WDF	CA	RLIJ, JHF
*Transient criteria are based on pump test data and vendor-supplied information			

Current fill and vent procedures are designed to provide assurance that the volume of gas in the pump suction piping for the affected systems is limited such that pump gas ingestion is within the above PWROG program established interim criteria.

A plant-specific evaluation was performed for use in operability determinations to define acceptance criteria for suction piping volume in the GL 2008-01 systems based upon the above criteria. These criteria apply to the entire system and, as such, are conservative. The results are as follows:

Table 2: Allowable Initial Void Volume Suction

System	Lineup	Acceptable Void Size
RH	6" and 8" Pump Recirculation Piping (full Flow Test Line)	0.300 ft^3
RH	10" RH Pump Suction from the Sump and RWST	0.087 ft^3
RH	8" and 10" RH Hot Leg Return Piping at standby conditions. (including 2" min flow piping)	2.011 ft^3
CS/SI	All CS/SI Pump Suction Piping Excluding Piggyback piping	0.039 ft^3
CS/SI	Piggyback Piping from RHR Discharge	0.206 ft^3

(These values already take into account the normal pressure and temperature of the system (s))

b) Pump Discharge Piping

Gas accumulations in closed pump discharge piping has been postulated to be a source of pressure pulsations that may lift relief valves (if installed) or cause transient loading of piping and supports in excess of their design.

Due to the large number of variables involved, a reasonably small volume of 0.25 ft^3 for any single discharge side void was selected as a maximum allowable size void for initial screening purposes. This was applied to all in-scope closed end discharge piping.

UT inspections were performed at locations identified by field walk-downs as being un-vented high spots in excess of 0.25 ft^3. When voids were identified in excess of this acceptance criterion, the associated discharge piping was considered inoperable pending a revised evaluation of the potential pressure pulsations.

c) RCS Allowable Gas Injection

The PWROG qualitatively evaluated the impact of non-condensable gases entering the RCS on the ability of the post-accident core cooling functions of the RCS. This evaluation assumed that 5 cubic feet of non-condensable gas at 400 psig was present in the high head safety injection discharge piping concurrent with 5 cubic feet of non-condensable gas at 100 psig in the low head safety injection discharge piping. The qualitative evaluation concluded that the quantities of gas will not prevent the ECCS from performing its core cooling function.

PBNP procedures will provide assurance that the cumulative gas accumulation in any sections of the low head safety injection system core deluge piping is less than 5 cubic feet of non-condensable gas at 100 psig at any location. Procedures will also provide

assurance that the gas accumulation in any sections of the high head safety injection redundant cold leg and core deluge piping is verified to be less than 5 cubic feet of non-condensable gas at 400 psig at any location.

3. **Summarize the changes, if any, to the design basis documents (Corrective Actions) and the schedule for completion of the Corrective Actions.**

   a) Interim Actions

   As discussed above, FPL Energy Point Beach developed interim acceptance criteria to assure acceptable performance of the subject systems.

   b) Long-Term Actions

   A discussion of a long-term gas accumulation management program as outlined in the Corrective Action Schedule, Section C below, will be inserted into the design basis documents for SI, RHR and CS as well as decay heat removal. This action will be completed 90 days following completion of the gas accumulation management program documents.

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

   FPL Energy Point Beach performed a detailed review of the P&ID's to identify the applicable portions of the GL 2008-01 piping systems. The corresponding Isometrics were then identified for field evaluation. This review documented piping locations that have system high points that may contain a volume of gas and provided a means for determining if further field verification of a potential gas volume was required and the effect of a gas void on operability of the system(s). See Section 7 below for the results of these reviews.

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.**

   New vent valves to be installed in the GL 2008-01 in-scope systems as a result of the drawing review, piping measurements, analysis, and UT are discussed in Item 7 below.

   Existing vent valves were identified on the GL 2008-01 in scope systems drawing and procedure reviews. Some valves were installed following the event described in Design Evaluation Section 1 above. The remainder existed prior to that event.

   Each existing valve was related to a fill and vent procedure or a surveillance procedure to assure operability. Location on a valve position check list was also verified. Valves not listed in a procedure or checklist have been entered into the CAP for inclusion in the appropriate procedure or checklist and will be tracked to completion.

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.**

   Detailed system walkdowns were performed on the accessible areas of the PBNP Units 1 and 2 SI, RHR and CS Systems. Laser scanning was used on these systems to identify local conditions or high points that could accumulate gas and challenge system function.

Laser scanning on insulated pipe was accomplished with the use of rods through the insulation with calibrated targets attached.

Once identified from laser scanning, the PBNP GL 2008-01 system piping high point locations were evaluated similar to those identified in the isometric and P&ID reviews. That is, calculations were performed for the identified locations to determine if the maximum volume of gas that could be present in that location satisfied acceptance criteria. Note that the acceptance criteria considered cumulative affects. If satisfied, these locations were eliminated from the list of potential vent valve additions. With these locations eliminated, the remaining locations were subjected to UT examination to determine the amount of voids, if any, located in these areas. If determined not to satisfy the initial conservative acceptance criteria, the appropriate TSAC was entered. If dynamic venting or a more detailed analysis could not demonstrate restored operability, the location was identified for vent valve installation. As of the date of this letter, no new vent valves have been installed as a result of the GL 2008-01 review.

One location was identified for vent valve installation as a result of UT inspections: The "B" train of low head SI discharge piping on Unit 1 contains a high spot in excess of the 0.25 ft^3 screening criteria for pressure pulsations in discharge piping. This condition will be corrected prior to restart from the ongoing Unit 1 refueling outage.

The initial conservative void acceptance criteria used is discussed in the Gas Volume Acceptance Section 2 above.

A list of existing vents that are present in the GL 2008-01 scope systems was generated. Procedural use of these valves was also identified. Procedures that are used to manipulate the vents to ensure that the system is sufficiently full of water are noted in the Testing and Evaluation section below. The current procedurally listed acceptance criteria are based upon opening the vent and allowing flow to continue until no evidence of gas is observed in the flow stream. The minimum open time is designated in the procedure. The size of the void is ascertained by timing the gas release and using the ideal gas laws to arrive at a rough estimate of the void size. See the discussion on trending under the Maintenance Rule in Section 5 of the Testing Evaluation section below.

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 2).**

The Unit 1 inspections and evaluations are in progress and will be completed, including any required modifications prior to return to service from the ongoing Unit 1 refueling outage. FPL Energy Point Beach will provide a supplement to this response within 90 days following completion of this current refueling outage as previously committed in Reference 1.

Following is a summary of the Unit 2 accessible piping locations identified for UT inspection and the results of those inspections:

Unit 2 Accessible Piping				
Inspection Locations	Inspection Complete	Locations with Void	Void Size (ft^3)	Status
19	19	1	0.000032	Satisfactory

Void location is on the discharge of the "B" High Head Safety Injection Pump

Following is an 'in-progress' summary of the Unit 1 accessible piping locations identified for UT inspection, and the results:

Unit 1 Accessible Piping (In-Progress)			
Inspection Locations	Inspection Complete	Locations with Void	Void Size (ft^3)
16	12	1	0.571

Void location is on the discharge of the "B" Residual Heat Removal Pump and Heat Exchanger

The Unit 1 Inaccessible Piping locations identified for UT inspection are in progress. Eleven inspections have been completed. Determination of the final number of inspection points is not yet completed as piping walkdowns are still in progress. Assessment of voids identified to date is still in progress.

No unacceptable voids were found in the Unit 2 accessible portions of the ECCS. The Unit 1 Accessible and normally inaccessible portions of the Unit 1 piping systems is underway in the current Unit 1 refueling outage and will be summarized in the 90-day supplement to this response. Voids identified will be fully evaluated for acceptability or mitigating actions taken prior to restart from the current refueling outage.

The in-scope inaccessible valves for Unit 2 will be walked down, measured in detail and analyzed to identify potential vent valve locations during the Unit 2 fall 2009 refueling outage. The locations of the needed vent valves will be provided as part of a report scheduled for submittal to the NRC 90 days following the completion of the Unit 2 Fall 2009 refueling outage as previously committed in Reference 2.

The in-scope inaccessible piping for Unit 1 will be walked down, measured in detail and analyzed to identify potential vent valve locations during the ongoing Unit 1 fall 2008 refueling outage. The locations of vent valve additions will be provided as part of a report scheduled for submittal to the NRC 90 days following the completion of the ongoing Unit 1 Fall 2008 refueling outage as previously committed in Reference 2.

8. **Discuss the results of the fill and vent activities and procedure reviews for each system. (Note that routine periodic surveillance testing is addressed in the "Testing Evaluation" section of this template).**

The procedure review included 59 GL 2008-01 related Operations checklists, system operating procedures, operating procedures, shutdown emergency procedures (SEPs), and operating instructions. Potential changes identified during the review were enhanced

controls for the filling and venting of ECCS, RHR and CS systems, following maintenance, as well as during operation of the systems. These changes would achieve consistency, enhance the applicability, and improve ease of use by the Operations staff. Consistency between procedure subsets relative to venting criteria and limits will be improved. The reviewed procedures provided assurance that operability of the systems would be maintained. Some procedures do not address filling and venting instrument lines associated with portions of piping that have been drained for maintenance or testing. A separate set of Instrument and Control procedures control fill and vent of instrumentation.

9. **Identify procedure revisions that have been completed or are planned and identify new procedures resulting from the fill and vent activities and procedure reviews that need to be developed, and summarize the Corrective Actions, and schedule for completion of the Corrective Actions. (Note that routine periodic surveillance testing is addressed in the "Testing Evaluation" section of this template).**

   FPL Energy Point Beach has determined that the current fill and vent procedures for the subject systems are adequate to assure acceptable system performance following maintenance or operational activities that could result in gas void formation based on current reviews and the results of the Unit 2 accessible inspections and evaluations. The adequacy of the Unit 1 procedures will be again reviewed subsequent to completion of the ongoing work. If changes are required for Unit 1 procedures, the corresponding Unit 2 procedures will also be reviewed. Enhancements to procedures will include the use of additional venting steps, venting sequence, venting time, venting frequency, and/or use of additional inspection methods such as UT. Necessary procedure revisions have been captured in the CAP program to ensure revisions will be completed by June 30, 2009.

10. **Discuss potential gas intrusion mechanisms into each system for each piping segment that is vulnerable to gas intrusion. This should include venting activities affecting voids or having the potential to introduce a void.**

    a) ECCS

    In the ECCS system potential gas intrusion mechanisms include dissolved gas coming out of solution (e.g., accumulator back-leakage and intersystem leakage from the RCS, recovery from shutdown cooling following a forced outage, in-leakage through vent valves and/or valve packing when the local system pressure is less than atmospheric, inadvertent draining due to incorrect maintenance or testing procedures, inadequate post maintenance fill and vent activities, and conditions where local temperatures are at or above saturation temperature.

    Existing TS surveillance procedures are in place to immediately notify Operations shift management upon discovery of any SI system voiding for documentation and investigation in the CAP. PBNP has historically treated occurrences of identified voiding on a case-by-case basis, performing an operability review using the best available information at the time of discovery.

    In accordance with Criteria V and XI of Appendix B to 10 CFR 50, procedures are in place to set schedules for the venting of the SI system to ensure system operability. These procedures provide required venting intervals if less than the 31 days required by SR 3.5.2.2.

The FSAR provides a discussion of the procedurally required level in the refueling water storage tank (RWST), at which time the high head SI and low head SI (RHR) pump suction are switched from the RWST to the containment sump recirculation mode. There is also a discussion on the level at which a CS pump may remain in service. No specific discussion of vortex prevention is contained in the FSAR. A calculation has been performed to establish minimum RWST level to prevent vortexing in the RWST.

FPL Energy Point Beach provided information concerning vortexing and buoyant debris effects during containment sump recirculation in the response to GL 2004-02 Item 3.f.3 dated February 29, 2008 (ML080630613).

b) Shutdown cooling

In the shutdown cooling system, potential gas intrusion mechanisms include dissolved gas coming out of solution (e.g., accumulator back leakage and intersystem leakage from the RCS), inadvertent draining due to inadequate maintenance or testing procedures, inadequate post maintenance fill and vent activities, changes in fluid properties during plant operation (system is isolated), and conditions where local temperatures are at or above saturation temperature.

UT was performed on a location on the Unit 1 RHR system inaccessible suction piping from the RCS hot leg downstream of the normally closed isolation valves. A void was found that the initial assessment indicates does not challenge RHR operability in the shutdown cooling mode of operation. Shutdown cooling was successfully established at the start of the current refueling outage.

TS surveillance procedures are in place to immediately notify Operations shift management upon discovery of any ECCS system voiding for documentation and investigation in the CAP. FPL Energy Point Beach has historically treated occurrences of identified voiding on a case-by-case basis performing an operability review using best available information at the time of discovery. In accordance with Criteria V and XI of Appendix B to 10 CFR 50, explicit procedures are in place to set schedules for the venting of the ECCS system to ensure system operability. These procedures provide required venting intervals if less than the 31 days required by SR 3.5.2.2 as invoked by SR 3.5.3.1.

c) Containment Spray

The CS system does not interface with higher pressure systems that could result in leakage into the system. In the CS system potential gas intrusion mechanisms include inadvertent draining due to inadequate maintenance or testing procedures and inadequate post maintenance fill and vent activities. Dynamic venting during procedurally controlled pump runs assures operability of the system. See the discussion on fill and vent procedures above.

11. Ongoing Industry Programs

Ongoing industry programs are planned in the following areas which may impact the conclusions reached during the Design Evaluation of PBNP Units 1 and 2 relative to gas accumulation. The ongoing industry activities will be monitored to determine if additional

changes to the PBNP Units 1 and 2 design may be required or desired to provide additional margin.

a) Gas Transport in Pump Suction Piping

The PWROG has initiated testing to provide additional knowledge relative to gas transport in large diameter piping. One program performed testing of gas transport in 6-inch and 8-inch piping. Another program will perform additional testing of gas transport in 4-inch and 12-inch low temperature systems and 4-inch high temperature systems. This program will also integrate the results of the 4-inch, 6-inch, 8-inch, and 12-inch testing.

b) Pump Acceptance Criteria

Long-term industry tasks were identified that will provide additional tools to address GL 2008-01 with respect to pump gas void ingestion tolerance limits.

12. Provide a detailed list of items that have not been completed, a schedule for completion, and the basis for that schedule.

a) The existing Operations checklists and procedures will be updated as required to include the use of any vent valves not currently credited in the venting procedures. For the procedures needing revision, changes will be tracked via the CAP. This action will be completed by June 30, 2009.

b) FPL will support the industry programs on gas transport in ECCS systems and determine if any design, operating or surveillance procedure updates are required. This action is tracked in the CAP as an ongoing activity.

c) In Unit 1, additional vent valves identified as corrective actions resulting from the GL 2008-01 review and analysis of accessible and inaccessible piping, will be installed prior to the Unit 1 restart after the fall 2008 refueling outage. A report will be submitted 90 days following the completion of the Unit 1 fall 2008 refueling outage. (Commitment 1)

d) In Unit 2, additional vent valves that may be identified on inaccessible pipe segments during the fall 2009 refueling outage, will be installed prior to the Unit 2 restart after that outage. A report will be submitted 90 days following the completion of the Unit 2 Fall 2009 refueling outage. (Commitment 2)

e) Procedure revisions identified as part of the procedure review discussed above are being evaluated, prioritized and tracked in the CAP. This item will be completed by June 30, 2009.

f) Ongoing industry programs regarding gas transport in pump suction piping and pump acceptance criteria will be monitored to determine if additional changes may be appropriate at PBNP.

g) PBNP procedures will provide assurance that the total gas accumulation in all sections of the low head safety injection system cold leg and hot leg piping is verified to be less than 5 cubic feet of non-condensable gas at 100 psig. PBNP procedures

will also provide assurance that the total gas accumulation in all sections of the high head safety injection cold leg and hot leg piping is verified to be less than 5 cubic feet of non-condensable gas at 400 psig. These limits may be revised as a result of further efforts and analyses or future detailed evaluations that may be performed as a result of plant-specific issues. This action will be completed by June 30, 2009.

Conclusion

Based upon the above, FPL Energy Point Beach has concluded that PBNP Units 1 and 2 are in conformance with commitments to 10 CFR 50, Appendix B, Criterion III (Design Control), as described in the FPL QATR FPL-1 or any identified actions that have not yet been completed will be entered into the PBNP CAP for tracking and resolution, as described in Sections B and C.

Testing Evaluation

PBNP Units 1 and 2 testing practices were reviewed with respect to gas accumulation in the ECCS, Shutdown Cooling (RHR) and CS systems. The review included operating instructions, surveillance procedures, maintenance procedures, and instrument and control procedures.

1. **Discuss the results of the periodic venting or gas accumulation surveillance procedure review.**

   The procedure review included Technical Specification Tests, ASME Section XI Inservice Tests and Operations Refueling Tests.

   The procedure review results identified minor revisions applying to venting acceptance criteria and limits as well as the use of additional vent valves already existing in the systems. In general, operating procedures do not address filling and venting instrument lines associated with portions of piping that have been drained for maintenance or testing. Consistency between procedure subsets relative to venting criteria and limits will be improved. CS Inservice Tests need to include transitions to appropriate Operating Instructions for fill and vent recovery. Prior to interconnecting systems during inservice tests, additional venting is appropriate to eliminate the potential of transporting a gas void between systems.

   No instances were identified where procedural controls for the surveillance or testing of ECCS, Shutdown Cooling and CS systems, following maintenance, would leave the systems in an inoperable condition.

   The current licensing basis for the CS system does not specifically provide for verification that gas accumulation has not occurred in the system. However, PBNP TS SR 3.6.6.4 requires "verification that each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head." In performance of this test a full flow dynamic sweep is accomplished which would flush any voids into the RWST. Post-maintenance operating instructions are in place to vent portions of the system with pump runs using a mini-recirculation flow path to ensure system operability. SR 3.6.6.9 requires a "verification that each spray nozzle is unobstructed." at a frequency of 10 years.

2. **Identify procedure revisions, that have been completed or are planned and identify new procedures resulting from the periodic venting or gas accumulation surveillance procedure review that need to be developed.**

   A new procedure or revision will be developed and implemented to assure that the CS system (discharge and suction piping up to the first closed discharge line isolation valve) is "sufficiently" full of liquid to reliably perform the intended safety function. This corrective action is consistent with GL 2008-01 and also considers acceptance criteria for gas voids in the CS piping. There is no current evidence that gas voiding is present in the GL 2008-01 portion of the CS system. See Section C of this response for corrective actions regarding gas void acceptance criteria. Actions to resolve potential void formation in the decay heat removal suction leg are being tracked in the CAP.

   The procedures discussed above in Section 1 will be revised as required. These revisions will include providing additional venting acceptance criteria and limits. In addition, new vent valves that FPL Energy Point Beach plans to install and existing vent valves not currently used for venting will be incorporated in applicable procedures. Venting in additional sections of affected systems will be included in several inservice tests. Transitions to Operating Instructions will be added as required to CS tests to assist in the recovery fill and vent process. Lastly, the use of appropriate cross-references in associated procedures will be improved. These corrective actions will be tracked in the CAP.

3. **Discuss how procedures adequately address the manual operation of the [RHR] system in its decay heat removal mode of operation. Include how the procedures assure that the [RHR] system is sufficiently full of water to perform its decay heat removal safety function (high point venting or UT) and how pump operation is monitored by plant personnel (including a description of the available instrumentation and alarms).**

   The following discussion is divided into three sections, placing the decay heat removal system in operation, operating the system in the decay heat removal mode, and restoration of the system to the configuration required for normal plant operation (low head safety injection).

   a) The RHR system is procedurally run in its shutdown cooling mode prior to taking credit for the system as the mode of cooling for the two RCS loops in TS 3.4.6. Operating procedures provide steps to realign, pressurize and place in operation the RHR system from its standby low head safety injection mode to its shutdown cooling function. The system is aligned for the decay heat removal mode with the exception of the suction valves from the RCS and the discharge motor operated valves. The RHR system is pressurized initially with RWST head. The pressure is increased to the RCS pressure by use of the chemical and volume control system (CVCS) letdown connection to the RHR system. The RCS interface valves are then opened. Voids that may have existed are compressed due to the increase to RCS system pressure. The system is warmed by first using RCP differential pressure to drive a small warm-up flow. The pumps are then started one at a time with flow throttled to limit system heat-up. The decay heat removal system is then placed into operation to cool or maintain RCS temperature by use of the RHR heat exchangers. The decay heat removal flows initially used for cooldown are sufficient to ensure mixture and removal of any gas pockets that may have been present at system startup. The procedure provides guidance for minimum and maximum flow rates for one and two pump

operation. It also provides precautions on cross tie connections to other systems (high head safety injection (HHSI) and CS) to prevent depressurization of the shutdown cooling system during operation.

b) Once the system is aligned, pressurized and placed in operation, a system operating procedure controls the operation of the RHR system in the shutdown cooling mode. This includes different combinations of pumps and heat exchangers including starting and stopping of pumps. The procedure emphasizes RHR flow limitations for different pump combinations. When the RCS is drained to a reduced inventory condition, the shutdown cooling system is limited to single train operation at limited flow to minimize possible air intrusion due to vortexing at the RCS loop suction.

   The control room operator can monitor pressure, flow, inlet and outlet heat exchanger temperature, and reactor vessel level instruments while operating the decay heat removal system.

   The plant process computer in the control room also monitors the equivalent parameters. Control room alarms include RHR loop low flow alarm, and reactor vessel level high and low alarms. Local indicators can also be valved in to provide individual RHR pump suction and discharge pressure, a reactor vessel level sight glass and RHR heat exchanger outlet temperature indication.

   Once the RCS drain down to reduced inventory is completed with RHR in operation flow limits, level limits and alarm set points are imposed to preclude air intrusion at the RCS hot leg RHR suction.

   A shutdown emergency procedure (SEP) addresses conditions that have resulted or could result in a loss of decay heat removal. A portion of this procedure specifically addresses issues related to air intrusion. Additionally, a portion of the SEP addresses the recovery from a loss of shutdown cooling due to unstable pump discharge pressure, flow, or low reactor vessel level.

c) Removal of the shutdown cooling system from service and returning the RHR system to its low head SI configuration is controlled by procedure. The procedure provides for cooling, flushing, and equilibrating boron concentration. The system is maintained pressurized under the RWST head during this switchover. This procedure also includes venting the cross tie lines between the RHR pumps and the SI pumps followed by a run of the RHR pumps with flow through the SI pumps back to the RWST by way of the SI recirculation lines.

4. Summarize the results of the procedure reviews performed to determine that gas intrusion does not occur as a result of inadvertent draining due to valve manipulations specified in the procedures, system realignments, or incorrect maintenance procedures. Identify effect of venting on other parts of the systems.

Appropriate procedures have been evaluated and where appropriate, suggested revisions identified. The inclusion of confirmatory UT examinations including acceptance criteria and actions to quantify gas void volume when discovered have been considered and will be included if needed. Trending of void identification will be included. See Section C for corrective actions concerning the proposed gas accumulation management program. These identified corrective actions will be tracked by the CAP to resolution.

Potential weaknesses or deficiencies in procedural controls were identified as part of this evaluation for shutdown cooling. These deficiencies will be tracked by the CAP to resolution.

Provisions for performing dynamic venting by using the recirculation flow path at design basis flow rates or the mini-flow recirculation lines will be reviewed and evaluated and where appropriate, will be added to venting procedures. The identified changes will tracked by the CAP to resolution.

5. **Describe how gas voids are documented (including the detection method such as venting and measuring or UT and void sizing and post venting checks), dispositioned (including method(s) used such as static or dynamic venting), and trended, if found in any of the subject systems. If temperature and pressure are changing that may effect your trending, need to understand the effects pressure changes on void behavior/size.**

   Explain here or in the "Corrective Actions Evaluation" section the threshold (acceptance criteria) for entry into the Corrective Action Program (CAP) and how the CAP addresses disposition and trending. For gas voids less than the CAP threshold, if applicable, describe how these gas voids are documented and trended as a means to detect system changes that may be indicative of degradation leading to future gas voiding.

   Results from a review of PBNP Units 1 and 2 venting surveillance procedures determined acceptance criteria are in place for the detection of gas voids by noting gas bubbles in the vent effluent. Specifically, TS surveillance procedure, 1&2TS-ECCS-200, "Safeguards System Venting (Monthly)," provides that, "If any significant amount of gas (more than 2 seconds to vent water) is detected from the pump casing vents, then Engineering should be contacted immediately for assistance to determine pump Operability." If a POD is necessary, it is initiated by use of the CAP.

   PBNP trends gas accumulation through the maintenance rule. As a result of the 2002 gas binding event at PBNP and Maintenance Rule a(1) action plan, two equipment monitoring criteria for the SI system have been put in place. These criteria are for the total accumulator leakage into the ECCS over time. At present, a gas void is characterized by the time needed to produce clear water at the vent. From void gas release time a rough gas volume is derived using the ideal gas law. A more accurate characterization can be made using a water displacement (inverted container) apparatus which could establish volume and be sampled to verify gas make-up. This water displacement process will be evaluated and implemented if appropriate. See Section C for corrective actions concerning the proposed gas accumulation management program.

   The venting procedures require engineering to be informed if detectable gas is found. The corrective action procedure requires an Action Request (AR) to be written if a condition adverse to quality is found.

   FPL Energy Point Beach will implement a long-term gas void monitoring program. The industry is in the process of developing long term void criteria, including licensing basis requirements. FPL Energy Point Beach has contracted with an engineering firm to perform system modeling which will be used to determine final acceptance criteria. FPL Energy Point Beach will be developing the program and associated procedures in parallel with the

industry activities. Until the final program is implemented, the interim actions described in this response will remain in affect to ensure operability of the affected systems.

As part of the response to GL 2008-01, evaluations have been performed to determine susceptible locations where there is the potential for a significant void. As a result of these evaluations, UTs have been performed on identified locations. For each location where a void was detected, an interim acceptance criteria was established and the information documented in the CAP.

The above actions will ensure operability until implementation of the final void monitoring program.

Based upon evaluations of gas sources, various locations may be identified that will require periodic UT verification to monitor the size of a potential void. Appropriate procedures will be updated to include the location, the acceptance criteria, and the required frequency of monitoring. The frequency of monitoring may be adjusted based upon operating history.

Additionally, filling, venting, and maintenance processes will be updated to specify that inspections are performed at appropriate points after a GL 2008-01 system is refilled and vented after maintenance as part of returning the system to service.

Appropriate procedures will be revised to include consideration of confirmatory UT examinations, including acceptance criteria and required actions to quantify a void when discovered. Trending of void identification is discussed above. The appropriate identified corrective actions will be tracked in the CAP.

FPL Energy Point Beach has concluded that PBNP is in conformance with its commitments to 10 CFR 50, Appendix B, Criteria V and XI for Performance Testing and Written Procedures, respectively, and Criterion XVII for Records Retention of associated documents, as described in the FPL QATR, FPL-1. or any deviations that have not yet been corrected are entered into the PBNP CAP for tracking and resolution, as described in Sections B and C of this enclosure.

6. **Provide a detailed list of items that have not been completed, a schedule for their completion, and the basis for that schedule.**

   The procedure review described above identified proposed changes to be evaluated for procedure revision. Those procedures for which procedure revisions are to be made will be revised to ensure the system is "free of gas quantities that could jeopardize ECCS operability." These changes will be entered into the CAP. The CAP will set the priorities for completion of the procedure revisions.

   a) If new valves are installed in any suction or discharge piping for the GL 2008-01 in-scope systems, the appropriate procedures will be revised to reflect the new valve to be used for venting prior to returning the system to service. This will be completed as part of the turnover process for installation of new plant equipment in accordance with the modification process.

   b) A procedure to provide a process to assure that the CS system is kept "sufficiently" full of liquid has been identified. Proposed revisions have been recommended. Currently, there is no evidence of gas voiding in the GL 2008-01 portion of the CS system. The

TS SR 3.6.6.4 required full flow recirculation to the RWST provides this assurance. There is no licensing basis requirement beyond the requirements of TS 3.6.6.4. Revisions will be tracked within the CAP and completed by June 30, 2009.

c) Interim actions described that monitor gas voids will continue and ensure operability of the affected systems. In addition, FPL Energy Point Beach will implement a long-term gas void monitoring program. Inputs will be derived from industry activities and an engineering firm contracted to perform system modeling to determine final acceptance criteria. These activities will be tracked in the CAP. The long term gas accumulation management program will be implemented by June 30, 2009. The following corrective actions are part of the gas void monitoring program.

   i. Appropriate procedures will be revised to include consideration of confirmatory UT examinations, including acceptance criteria, and required actions to quantify a void when discovered. Trending of void identification Is discussed above. Identified actions will be completed by June 30, 2009.

   ii. Potential piping high point void locations were identified that may be required to be evaluated periodically using UT examinations. Appropriate procedures will be updated to include location, acceptance criteria, and required frequency. The frequency and type of monitoring may be adjusted based upon operating history and further evaluations. These revisions will be implemented by June 30, 2009.

d) Station processes will be enhanced ensuring the use of fill and vent procedures to return an ECCS system to service after draining and refilling. These enhancements will outline the UT examinations recommended. This item will be implemented by June 30, 2009.

e) Dynamic venting will be evaluated and where appropriate added to venting procedures. Identified changes will be entered into the CAP. The evaluation and appropriate procedure changes will be completed by June 30, 2009.

The basis for the completion dates are discussed in Section C.2. below.

Corrective Actions Evaluation

1. **Summarize the results of the reviews regarding how gas accumulation has been addressed at your site.**

   An evaluation of PBNP operating experience program was completed. Event reports related to gas intrusion/accumulation throughout the industry and at PBNP were reviewed. Completed corrective actions associated with operating experience include: training (initial and continuing) for all affected work groups, new procedures as well as changes and improvements to existing procedures, hardware fixes such as new vent valves and RCS level instrumentation, new and upgraded calculations, and various administrative improvements.

FPL Energy Point Beach's CAP documents identified gas intrusion/accumulation issues as potentially nonconforming conditions. Existing processes require an action request (AR) to be initiated, and the Shift Manager notified, if the accumulated gas volume acceptance criteria specified in the procedures are exceeded. As part of FPL Energy Point Beach's CAP, ARs related to plant equipment are evaluated for potential impact on operability and reportability. Prompt operability determinations are made and necessary follow-up actions are tracked in the CAP to completion to resolve identified non-conformances or performance enhancements in a timely manner. Management oversight is provided to assure that proper priority is assigned to achieve timely resolution. In addition, Nuclear Oversight monitors the station's performance and identifies performance deficiencies for correction.

See Section 5 under Testing Evaluation for the discussion of how FPL Energy Point Beach addresses voids identified using required engineering evaluation(s) and the CAP to ensure operability.

2. **Provide a detailed list of items that have not been completed, a schedule for their completion, and the basis for that schedule.**

   The review of the operating experience information discussed above identified no corrective actions that were needed. Corrective actions relevant to how gas accumulation have been addressed were discussed through out this letter. No new items were identified in this evaluation.

Conclusion

Based upon the above, FPL Energy Point Beach has concluded that PBNP is in conformance with its commitments to 10 CFR 50, Appendix B, Criterion XVI for Corrective Actions, as described in the FPL QATR, FPL-1, or any deviations that have not yet been corrected are entered into the PBNP CAP for tracking and final resolution, as described below in Sections B and C.

B. DESCRIPTION OF NECESSARY CORRECTIVE ACTIONS

The following corrective actions were identified, during the above-described reviews and evaluations, to be necessary to evaluate system operability, as defined in the TS, and to assure compliance with the applicable regulations and previous regulatory commitments:

1. FPL Energy Point Beach is continuing to support the industry and NEI Gas Accumulation Management Team activities regarding the resolution of generic TS changes via the TSTF traveler process. FPL Energy Point Beach will review and evaluate the resolution of TS issues with respect to the changes contained in the TSTF traveler following NRC approval and CLIIP Notice of Availability of the TSTF traveler in the Federal Register. Based upon the results of the evaluation, a license amendment request will be submitted to the NRC within 180 days following the evaluation, if determined to be necessary. The appropriate Bases changes associated with the potential TS will also be made. The completion date for this regulatory commitment is dependent upon approval of the proposed TSTF.

2. FPL Energy Point Beach modifications, maintenance or procedure changes identified as a result of the analyses of system walk down results will be entered into the CAP.

C. CORRECTIVE ACTION SCHEDULE

1. **Summarize the corrective actions that have been completed as a result of the evaluations discussed above.**

   The following process was used to determine those identified high points that may require corrective actions:

   - A screening criteria was established for the acceptability of a potential high point gas void in a system based upon PWROG program criteria. These initial screening criteria are contained in tables in Design Evaluation Section 2 above. This criteria was then compared to results of drawing reviews and piping walk downs.
   - If the calculated maximum void volume was greater than the screening criteria established in 1 above a UT examination of the piping section was performed.
   - If the void found exceeded the screening criteria in Item 1 above, the associated train was declared to be inoperable, and a refined analysis was initiated to further assess operability.
   - If the refined analysis resulted in a void fraction that was considered acceptable the configuration was accepted as found.
   - If the refined analysis resulted in a void fraction that was considered unacceptable a dynamic vent was performed or a vent was installed and the piping vented.

   See Design Evaluation Section 7 above for the results of the piping inspections. No operability determinations needed to be performed as a result of the inspections.

2. **Summarize any open corrective actions yet to be completed, including the scope, schedule, and a basis for that schedule.**

   a)ECCS

   - The current design change process will be evaluated to determine if additional guidance is needed regarding the potential for gas accumulation. This item will be completed by June 30, 2009.
   - The ongoing industry activities will be monitored to determine if additional changes to the PBNP Units 1 and 2 design may be required or desired to provide additional margin. Identified modifications will be tracked by the CAP. Completion of these items is dependent upon completion of the industry activity.
   - PBNP procedures will provide assurance that the total gas accumulation in all sections of the low head safety injection system cold leg and hot leg piping is verified to be less than 5 cubic feet of non-condensable gas at 100 psig. PBNP procedures will also provide assurance that the total gas accumulation in all sections of the high head safety injection cold leg and hot leg piping is verified to be less than 5 cubic feet of non-condensable gas at 400 psig. Specific values may change based upon further analyses. This action will be completed by June 30, 2009.
   - FPL Energy Point Beach will consider procedure changes to perform appropriate post-maintenance fill UT verifications of the ECCS and CS systems. This corrective

action will be complete prior to maintenance on the applicable systems, but no later than June 30, 2009.

- FPL Energy Point Beach will consider appropriate procedure revisions to include the location, the acceptance criteria, and the required frequency of monitoring for locations identified for periodic monitoring. Note that the location, acceptance criteria and frequency may be adjusted based upon operating history and additional analyses. This action will be completed by June 30, 2009.

- FPL Energy Point Beach will implement a long term gas accumulation management program including creating new and revising existing associated procedures. The program will consider ongoing industry efforts as well as developing specific acceptance criteria. This will be completed by June 30, 2009.

- The procedure review identified proposed changes and provided recommendations for procedure revisions. Those procedures for which procedure revisions are to be made will be revised to ensure the system is "free of gas quantities that could jeopardize ECCS operability." These changes will be entered into the CAP. The CAP will establish the priorities for completion of the procedure revisions.

- If new valves are installed in suction or discharge piping for the GL 2008-01 in-scope systems, the appropriate procedures will be revised in accordance with the modification process installing the new valves.

b) Shutdown cooling

Fill and Vent procedures were reviewed. Procedure enhancements were identified that will be entered into the CAP and completed by June 30, 2009.

c) Containment Spray

As an interim measure prior to implementation for the TSTF CLIIP, new procedures will be implemented or existing procedures will be appropriately enhanced to include a post outage verification (frequency based upon operating history) that the CS system suction piping and the CS pumps and piping up to the first closed discharge line isolation valve are maintained sufficiently full of water by statically or dynamically venting system high points, UT, or other acceptable methods. The identified procedure changes will be completed by June 30, 2009.

d) Generic Corrective Actions

- FPL Energy Point Beach will monitor the results of industry testing and analytical programs associated with allowable gas volume limits for pumps and piping. This corrective action will evaluate the results of industry testing and analytical efforts to determine if any additional changes to the applicable gas volume acceptance criteria are required. The completion date for this corrective action is dependent upon the completion of the industry testing and analytical programs which were not completed prior to October 11, 2008. If changes to the acceptance criteria are needed, the changes will be entered into the CAP.

- FPL Energy Point Beach will monitor the results of industry testing and analytical programs related to gas accumulation. FPL Energy Point Beach will evaluate the

results of the industry testing and analytical efforts to determine if additional changes to licensing basis documents are required. The completion date for this corrective action is dependent upon the completion of the industry testing and analytical programs which was not complete prior to October 11, 2008.

- FPL Energy Point Beach will monitor the long-term industry tasks identified that will provide additional tools to address GL 2008-01 with respect to pump gas void ingestion tolerance limits. These tools will be evaluated for incorporation into the PBNP processes and procedures. Those identified for use will be tracked by the CAP. Completion of these items is dependent upon the industry task completion.

- Ongoing industry activities will be monitored by FPL Energy Point Beach to determine if additional changes to the PBNP Unit 1 and Unit 2 designs may be required or desired to provide additional margin. If modifications are determined to be necessary, they will be entered into the CAP. Completion of these items is dependent on the industry task completion.

- Dynamic venting will be evaluated and where appropriate added to venting procedures. Identified changes will be entered into the CAP. The evaluation and appropriate procedure changes will be completed by June 30, 2009.

Conclusion

FPL Energy Point Beach has evaluated the accessible portions of those PBNP systems in Unit 2 that perform the functions described in this GL and has concluded that these systems are OPERABLE as defined in the PBNP TS and are in conformance to commitments to the applicable General Design Criteria (GDC), as stated in the FSAR.

FPL Energy Point Beach has evaluated, with the exception of confirmatory UTs, the accessible portions of those PBNP systems in Unit 1 that perform the functions described in this GL and has concluded that these systems are OPERABLE, as defined in the PBNP TS and are in conformance with the applicable GDC, as stated in the FSAR. The UT information for the accessible and inaccessible piping in Unit 1 will be provided in the GL 2008-01 report that will be submitted 90 days following the completion of the fall 2008 refueling outage. (Commitment 1)

The open corrective actions are considered to be enhancements to the existing programs, processes and procedures for assuring continued operability of the subject systems.