UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 5, 2008

Vice President, Operations
Entergy Operations, Inc.
Grand Gulf Nuclear Station
P.O. Box 756
Port Gibson, MS 39150

SUBJECT: GRAND GULF NUCLEAR STATION, UNIT 1 – STAFF EVALUATION AND BASIS FOR DENIAL OF PROPOSED TECHNICAL SPECIFICATION CHANGE RELATED TO THE CONDENSATE STORAGE TANK LEVEL-LOW SETPOINT CHANGES (TAC NO. MD4675)

Dear Sir or Madam:

In your application dated March 1, 2007 (GNRO-2007/00016), as supplemented by letters dated September 5 and 21, 2007, and February 14, 2008 (GNRO-2007/00061, GNRO-2007/00068, and GNRO-2008/00006), Entergy Operations, Inc. (EOI), proposed to change the allowable values for the condensate storage tank (CST) level-low setpoints in the Technical Specifications (TSs) for the Grand Gulf Nuclear Station, Unit 1. The proposed changes were to correct errors discovered in the setpoints listed in the plant TSs.

In its review of the application, the Nuclear Regulatory Commission (NRC) staff has had several discussions with your staff on whether the CST level setpoints are safety limit (SL)-related in accordance with Regulatory Information Summary 2006-17, "NRC Staff Position on the Requirements of 10 CFR 50.36, 'Technical Specifications,' Regarding Limiting Safety System Settings During Periodic Testing and Calibration of Instrument Channels." The NRC staff's understanding is that EOI's position is that the proposed CST level-low allowable values in TS Tables 3.3.5.1-1 and 3.3.5.2-1 are not SL-related is documented in its supplemental letter dated February 14, 2008.

Enclosed is the NRC staff's evaluation and basis for denial of a proposed change in the amendment request. This is based on our understanding of the technical basis, provided in the EOI letter dated February 14, 2008, that the CST level setpoints in the application are not SL-related.

The enclosed staff evaluation contains the NRC staff's conclusions on the proposed changes to the TSs and the EOI position that these changes are not SL-limited. The staff's conclusions are given to show EOI the staff's basis that the change for the high pressure core spray system is SL-limited and that it requires the footnotes addressed in Section 4.2.2 of the enclosed evaluation.

We request that your staff review the enclosed evaluation and provide comments within 45 days of the receipt of this letter.

If you have any questions, please contact Jack Donohew at 301-415-1307 or via e-mail at jack.donohew@nrc.gov.

Sincerely,

Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-416

Enclosure:
As stated

cc w/encl: Distribution via Listserv

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

PROVIDING BASIS FOR PARTIAL DENIAL OF APPLICATION DATED MARCH 1, 2007

ON THE CONDENSATE STORAGE TANK LEVEL-LOW SETPOINT

ENTERGY OPERATIONS, INC., ET AL.

GRAND GULF NUCLEAR STATION, UNIT 1

DOCKET NO. 50-416

1.0 INTRODUCTION

By the application dated March 1, 2007, supplemented by letters dated September 5 and 21, 2007, and February 14, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML070670083, ML072550241, ML072700886, and ML080580196, respectively), Entergy Operations, Inc. (the licensee) proposed the following changes to the allowable values (AVs) for condensate storage tank (CST) level-low function in the Technical Specifications (TSs) for Grand Gulf Nuclear Station (GGNS), Unit 1:

1.1 In TS Table 3.3.5.1-1, "Emergency Core Cooling System Instrumentation," Function 3, "High Pressure Core Spray (HPCS) System," increase the AV from "≥ -3 inches" to "≥ 4.7 ft."

1.2 In TS Table 3.3.5.2-1, "Reactor Core Isolation Cooling System [(RCIC)] Instrumentation," Function 3, "Condensate Storage Tank Level-Low," increase the AV from "≥ -3 inches" to "≥ 3.7 ft."

The licensee stated that the proposed TS changes are necessary to correct an error in the original plant design. The licensee's calculation JC-Q1E22-N654-1, Revision 1, indicates that the error can be resolved by calculating the affected setpoints from the top of the CST suction pipe. Currently, the nonconservative setpoints are being controlled administratively to higher levels in conformance with U.S. Nuclear Regulatory Commission (NRC) Administrative Letter (AL) 98-10, "Dispositioning of Technical Specifications That Are Insufficient to Assure Plant Safety," dated December 29, 1998.

The supplemental letters dated September 5 and 21, 2007, and February 14, 2008, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on May 5, 2007 (72 FR 26176).

Enclosure

2.0 BACKGROUND

The CST is designed to provide condensate water for the HPCS and RCIC systems during emergency conditions, as well as to serve other functions. The CST reserves a volume specifically for HPCS and RCIC. This is accomplished by the use of standpipes inside the CST that ensures that HPCS/RCIC systems can, but other systems can not, draw the CST level below 18.9 feet. Normally, the suction valves between the HPCS/RCIC and the CST are open, and, upon receiving an HPCS/RCIC initiation signal on the reactor vessel water level falling to the "Reactor Vessel Water Level-Low Low, Level 2," the water is pumped from the CST to the core. When the water level in the CST falls below the "Condensate Storage Tank Level-Low," setpoints, the HPCS and RCIC suctions are automatically transferred to the suppression pool, with the suppression pool suction valves opening before the CST suction valves close.

Updated Final Safety Analysis Report (UFSAR) Section 7.3.1.1.3.3 states that the CST is the normal source of water supply for the HPCS system and, when the water level in the CST falls below a pre-selected level, HPCS is automatically transferred to the suppression pool. There are no requirements in the TSs on the minimum volume of water in the CST for Modes 1, 2, and 3; however, there are requirements on the minimum volume in the CST for Modes 4 and 5.

The CST is the preferred source of water for the HPCS and RCIC system, but the CST is not a seismic Category 1 structure, and, therefore, it is not credited for design-basis accidents (DBAs). Because of this limitation of the CST, the accident analyses credit the suppression pool as the HPCS suction source, which further amplifies the importance of the automatic transfer of the HPCS and RCIC suctions from the CST to the suppression pool upon the "Condensate Storage Tank Level-Low," actuations. In the event of a failure of the non-safety-related HPCS/RCIC piping, an automatic transfer from the CST to the suppression pool will occur.

In addition, UFSAR Section 6.3.1.2.1 states, "The primary purpose of HPCS is to maintain reactor vessel inventory after small breaks which do not depressurize the reactor vessel. HPCS also provides spray cooling heat transfer during breaks in which the core is calculated to uncover." HPCS is part of the ECCS and USFAR Section 6.3.1.1.1 states that ECCS is designed to protect any postulated loss-of-coolant accidents (LOCAs) caused by rupture of the primary coolant system piping.

In addition to the RCIC and HPCS systems, there is also the following low pressure system to add water to the core: low-pressure core injection (LPCI), and low-pressure core spray (LPCS) for injection at low pressure. The ECCS at GGNS to maintain the water level in the core during abnormal operating occurrences (AOOs), transients, and accidents (including the DBAs) are the HPCS for injection into the core at high pressure and the automatic depressurization system (ADS), LPCI, and LPCS) for injection at low pressure. RCIC can also inject water into the reactor coolant system at high pressure, but it is not part of the ECCS and is not credited during accidents. The LPCS and LPCI systems draw water from the suppression pool.

3.0 REGULATORY EVALUATION

The NRC staff reviewed the proposed TS changes in the application against the regulatory requirements and guidance listed below to ensure that there is reasonable assurance that the systems and components affected by the proposed TS changes will perform their safety functions.

3.1 Regulatory Requirements:

3.1.1 In Title 10, Section 50.2, "Definitions," to Part 50, "Domestic Licensing of Production and Utilization Facilities," of the *Code of Federal Regulations* (10 CFR 50.2), safety-related structures, systems and components (SSCs) are defined as those SSCs that are relied upon to remain functional during and following design basis events to assure: (1) the integrity of the reactor coolant pressure boundary; (2) the capability to shut down the reactor and maintain it in a safe shutdown condition; or (3) the capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the applicable guideline exposures set forth in § 50.34(a)(1) or § 100.11 of this chapter, as applicable.

3.1.2 In 10 CFR 50.36, "Technical specifications," the Commission established its regulatory requirements related to the contents of the TSs. This section states, "Each applicant for a license authorizing operation of a production or utilization facility shall include in his application proposed technical specifications in accordance with the requirements of this section."

Furthermore, 10 CFR 50.36(c)(1)(ii)(A) states, "Limiting safety system settings for nuclear reactors are setting for automatic protective devices related to those variables having significant safety functions. Where a limiting safety system setting [LSSS] is specified for a variable on which a safety limit has been placed, the setting must be so chosen that automatic protective action will correct the abnormal situation before a safety limit is exceeded." These LSSS are referred to SL-related LSSS and non-SL-related LSSS.

Specifically, 10 CFR 50.36(c)(2) defines limiting conditions for operation (LCO) as "the lowest functional capability or performance levels of equipment required for safe operation of the facility."

In addition, 10 CFR 50.36(c)(3) states, "Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions of operation will be met." The staff reviewed the proposed TS changes against these 10 CFR 50.36 requirements to ensure that there is reasonable assurance that the systems affected by the proposed TS changes will perform their required safety functions.

3.1.3 In 10 CFR 50.49(b)(1)(ii), design basis events are defined as conditions of normal operation, including AOOs, DBAs, external events, and natural phenomena for which the plant must be designed to ensure functions (b)(1)(i) (A) through (C) of 10 CFR 50.49.

3.1.4 General Design Criterion (GDC) 10, "Reactor design," of Appendix A, "General Design Criteria for Nuclear Plants," to 10 CFR Part 50, requires in part that the reactor protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during any condition of normal operation, including the effects of AOOs.

3.1.5 GDC 13, "Instrumentation and control," of Appendix A to 10 CFR Part 50, requires that the instrumentation be provided to monitor variables and systems and that controls be provided to maintain these variables and systems within prescribed operating ranges during normal operation, AOOs, and accident conditions. Specifically, the staff reviewed the proposed TS changes and the affected instrument setpoint calculations and plant surveillance procedures to ensure proper operation of the HPCS/RCIC systems.

3.1.6 GDC 20, "Protection system functions," of Appendix A to 10 CFR Part 50, requires in part that the protection system be designed to initiate automatically the operation of appropriate systems including the reactivity control systems, to assure that specified acceptable fuel design limits are not exceeded as a result of AOOs. The staff evaluated the LAR to ensure that the proposed TS change will still protect the fuel design limits and plant SLs specified in GGNS TS 2.0 and that these SLs will not be exceeded under plant transient, AOOs, and accident conditions.

3.2 Regulatory Guidance:

3.2.1 Regulatory Guide (RG) 1.105, Revision 3, "Setpoints for Safety-Related Instrumentation," issued December 1999 (ADAMS Accession No. ML993560062), describes a method acceptable to the NRC staff for complying with the agency's regulations for ensuring that setpoints for safety-related instrumentation are initially within and remain within the TS limits. GGNS is committed to using the guidance in RG 1.105. The RG endorses Part I of Instrument Society of America (ISA)-S67.04-1994, "Setpoints for Nuclear Safety Instrumentation," subject to the NRC staff clarifications. The staff used this guide to establish the adequacy of the GGNS setpoint calculation methodologies and the related plant surveillance procedures.

3.2.2 NRC Regulatory Issue Summary (RIS) 2006-17, "NRC Staff Position on the Requirements of 10 CFR 50.36, 'Technical Specifications,' Regarding Limiting Safety System Settings during Periodic Testing and Calibration of Instrument Channels," dated August 24, 2006 (ADAMS Accession No. ML051810077), addresses the 10 CFR 50.36 requirements on LSSSs assessed during testing and calibration of instrumentation. This RIS discusses why compliance to the AVs in the TSs during testing or calibration alone is not sufficient to ensure that

the SLs will be protected until the next periodic surveillance. RIS 2006-17 also suggests (1) verifying that the change in the measured trip setpoint (TSP) during testing or calibration is within predefined limits (acceptable as-found and as-left tolerances) and (2) taking appropriate actions if the TSP is outside these limits, as a method that meets the requirements of 10 CFR 50.36. However, it is recognized in RIS 2006-17 that other methods and approaches may also be acceptable. The NRC staff used RIS 2006-17 to evaluate the effects of the proposed TS changes on the plant SLs, the acceptability of the setpoint calculation methodology, and the adequacy of the proposed TS changes to meet the requirements of 10 CFR 50.36.

RIS 2006-17 provides guidance for identifying functions on which SLs have been placed to meet the requirements of 10 CFR 50.36(c)(1)(ii)(A). RIS 2006-17 specifically refers to Standard Technical Specifications Section 2.1.1, "Reactor Core SLs." GGNS TS 2.1.1.3 states, "Reactor vessel water level shall be greater than the top of active irradiated fuel," without mentioning any limitation on the TS mode or applicable condition.

RIS 2006-17 addresses the NRC staff position on LSSSs assessed during periodic testing and calibration of instrumentation. This RIS discusses issues that could occur during testing of LSSSs and which, therefore, may have an adverse effect on equipment operability.

3.2.3 Letter from Patrick L. Hiland, NRC, to NEI [Nuclear Energy Institute] Setpoint Methods Task Force, "Technical Specification for Addressing Issues Related to Setpoint Allowable Values," dated September 7, 2005 (ADAMS Accession No. ML052500004). RIS 2006-17 is complementary to this letter and the NRC staff used this letter to evaluate the adequacy of the proposed TS changes to meet the requirements of 10 CFR 50.36.

4.0 TECHNICAL EVALUATION

4.1 Proposed Changes to the TSs

In its application, the licensee proposed changes to the AVs for the CST level-low functions for the operation of the HPCS system and RCIC system in TS Tables 3.3.5.1-1 and 3.3.5.2-1, respectively. These are the setpoints for the transfer of the HPCS and RCIC suction flow paths from the CST to the suppression pool. The licensee stated that the changes are necessary to correct an error in the original plant design in that the current TS values are non-conservative.

The licensee proposed to change the current AV (1) for the HPCS system in TS Table 3.3.5.1-1 from -3 inches to 4.7 feet, and (2) for the RCIC system in TS Table 3.3.5.2-1 from -3 inches to 3.7 feet. The licensee is not proposing to change any other requirement in these two TS tables. There are no changes to the surveillance requirements (SRs), the LCOs, applicable modes, or the action conditions for the remedial actions if an LCO is not met.

In explaining the basis for the proposed changes, the licensee stated that the current CST level-low signals for the HPCS and RCIC systems are initiated through two safety-related

transmitters, with either transmitter being able to affect the automatic suction transfer. These transmitters are connected to the HPCS/RCIC suction line inside the Auxiliary Building and, thus, are not connected to the CST. It was discovered that these transmitters may not be capable of providing the CST level-low trip that would transfer the HPCS/RCIC suction from the CST to the suppression pool under all conditions because the transmitters have an uncorrected static head between the transmitters and top of the suction piping. This static head is normally offset by the inverted HPCS/RCIC suction nozzle inside the CST; however, this would not be the case if a seismic or other event were to occur that resulted in a failure of the non-safety-related portion of the HPCS/RCIC suction piping. Revision of the CST low-level suction transfer AVs resolved this issue by raising the minimum water level in the CST above the top of the HPCS/RCIC suction piping. With this change, in the event of a failure of the HPCS/RCIC piping, the licensee stated that an automatic transfer from the CST to the suppression pool will occur.

4.2 Analysis of SL-Related Criteria

Paragraph 50.36(c)(1)(ii)(A) of 10 CFR Part 50 states that where an LSSS is specified for a variable on which a safety limit has been placed, the setting must be so chosen that the automatic protective action will correct the abnormal situation before an SL is exceeded. These LSSSs are designated SL-related LSSSs. Appendix A to 10 CFR Part 50 defines AOOs as those conditions of normal operation that are expected to occur one or more times during the life of the nuclear power unit.

GGNS TS 2.0 specifies the SLs for the plant. The NRC staff evaluated the CST level-low setpoints for HPCS and RCIC to determine if they should be considered as SL-related. The SL of concern is TS 2.1.1.3 which requires that the reactor vessel water level shall be greater than the top of active irradiated fuel (TAF). UFSAR Section 6.3.1.1.1.d states that the HPCS system is provided for maintaining the water level above the top of the core.

In the letter dated February 14, 2008, the licensee stated that the CST suction transfer to the suppression pool has the potential to impact long-term inventory source for the HPCS and RCIC systems following an AOO and, therefore, could potentially impact the TAF SL. The licensee stated that a review of the AOOs discussed in the UFSAR showed that the loss-of-feedwater flow (LOF) event is the AOO representing the greatest challenge to reactor inventory. The licensee concluded that since the CST level-low setpoint is not required in this AOO to prevent the TAF SL from being exceeded, the allowable values for these functions are not SL-related. The licensee further stated that if the water contribution from the operating control rod drive pump is ignored, the makeup requirements for the AOO are essentially the same as the makeup requirements following a Station Blackout (SBO) event. The CST required inventory is greater than the makeup requirements for the SBO event for a coping period of 4 hours and, thus, neither the RCIC nor HPCS systems will automatically attempt to transfer suction from the CST to the suppression pool. Therefore, the licensee concluded in the February 14, 2008, letter that the automatic transfer from the CST to the suppression pool is not needed to protect the reactor water level (RWL) SL.

The NRC staff reviewed the LOF event evaluated in Chapter 15 of the GGNS UFSAR. The analysis in the UFSAR does not explicitly simulate HPCS and RCIC flow but it projects the makeup flow to be available for injection to the vessel at approximately 43 seconds after the

feedwater pump trip. The UFSAR also states that high pressure makeup flow is necessary to restore and maintain water level. HPCS and RCIC are normally aligned to the non-safety grade CST for suction; however, the safety-grade source of water credited in the accident analysis is the suppression pool. The function that ensures the availability of safety-grade suction source is the CST level-low transfer function.

The NRC staff reviewed the licensee's rationale and finds that the analysis is not complete. The NRC staff finds that the CST level-low setpoint would not be required for LOF, as suggested by the licensee, only if the non-safety-grade CST is available. The licensee states that high pressure makeup systems will not attempt to transfer for 4 hours. However, this statement implies that the non-safety-grade CST is credited for the duration. In accordance with 10 CFR 50.2 and 50.49, AOOs analyses should credit only safety-grade systems for event mitigation. The NRC staff believes that the licensee's rationale, which claims the transfer is not necessary, implicitly credits the CST level-low function to mitigate the LOF. If the non-safety-grade CST were not credited, then the CST level-low setpoint would be required to ensure the availability of safety-grade suction source.

Based on the above, for the use of HPCS in accordance with 10 CFR 50.2 and 50.49, the NRC staff concludes that the automatic transfer from the CST to the suppression pool is required for the HPCS system to comply with the plant design basis. Therefore, on this basis, the NRC staff has concluded that the HPCS AV for this automatic transfer is SL-related. This is consistent with the statement in UFSAR Section 6.3.1.1.1.d that the HPCS system is provided for maintaining the water level above the top of the core.

The RCIC system is not an engineered safety feature system and no credit is taken by the licensee in any DBA for RCIC system operation. Hence, the automatic transfer function of the RCIC system from the CST to the suppression pool is not credited in any design basis event requiring safety-related SSCs. Therefore, the NRC staff concludes that the AVs for the automatic transfer function for the RCIC system, from the CST to the suppression pool, are not SL-related.

4.3 Applicable Staff Position on Technical Specifications

The TSs use the definition of operability to establish the LCO requirements in accordance with 10 CFR 50.36(c)(2)(i). According to the definition of operability, TS-required equipment shall be operable or have operability when it is capable of performing its safety function(s). The HPCS and RCIC CST level-low instrumentation safety function is to transfer the HPCS and RCIC systems suction line to the suppression pool from the CST upon detection of a low inventory level in the CST, thus ensuring an adequate supply of makeup water to the reactor. The plant design uses the automatic operation of the HPCS system to respond to accidents, AOOs, and transients.

The CST AV is the current specified TS LCO for instrument channel operability during performance of channel surveillance testing. However, the CST level-low limiting trip setpoint (LTSP) is the limiting channel setting value calculated by the licensee's setpoint methodology using the analyses of record, which will ensure that the necessary quality of systems and components is maintained, that facility operation will be within SLs, and the LCOs will be met.

The AV is related to the LTSP, but only as the maximum value, above which (i.e., in the non-conservative direction) the channel is inoperable. If during testing a channel setpoint is found to be less conservative than the channel setpoint AV, then the immediate operability determination of this degraded condition must conclude the channel is inoperable. However, there are other conditions related to testing the LTSP which may find that the channel does not exceed the AV, yet the channel is not functioning as required in accordance with the setpoint methodology. The GGNS instrumentation setpoint methodology calculates acceptable as-found values (deviation band from the as-left setting) and as-left values (reset band) for the LTSP. These values are found in procedures and are used during testing to determine whether the instrument channel is functioning as required, and therefore operable. If during testing, an instrument channel is discovered to be non-conservative with respect to the as-found band, but conservative with respect to the AV, then the instrument channel is operating beyond its predefined limits. The licensee must make an immediate determination of operability and document the findings in the plant corrective action program. Additionally, channel predefined limits would also not be met if following testing a channel cannot be reset to within the as-left band because the channel would not be functioning as required.

Thus, if the plant TSs relied solely on the AV to establish that an instrument channel is operable, then periodic testing would be inadequate to ensure that the channel is operable because compliance with the TS could be met with the channel set (or left) to any value, up to and including the AV. If a channel is set to any value other than the LTSP as-left band (or nominal trip setpoint (NTSP), if margin is added to the LTSP) during a channel test, then, there would be no assurance that the HPCS or RCIC system would be capable of performing its specified safety functions credited in the analyses of record.

RIS 2006-17 proposed that one measure to ensure instrument operability is for the licensee to ensure during testing or calibration that the change in the measured TSP since the last test or calibrations is within predefined limits and to take appropriate action if the change is outside these limits.

The NRC staff letter dated September 7, 2005, which is addressed in Section 3.2 of this evaluation, provides acceptable footnotes to be added to the TSs for SL-related setpoint changes and the associated plant procedures to be followed by the licensee. The two footnotes in this letter read as follows:

Note 1: If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined as-found acceptance criteria band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable.

Note 2: The instrument channel setpoint shall be reset to a value that is within the as-left tolerance of the [Limiting Trip Setpoint, or a value that is more conservative than the Limiting Trip Setpoint]; otherwise, the channel shall be declared inoperable. The [Limiting Trip Setpoint] and the methodology used to determine the Limiting Trip Setpoint, the predefined as-found acceptance criteria band, and the as-left setpoint tolerance band are

specified in the UFSAR [or Bases] [or a document incorporated into the UFSAR such as the technical requirements manual].

The above words "Limiting Trip Setpoint" are generic terminology for the setpoint value calculated by means of the plant-specific setpoint methodology documented in the UFSAR, or Bases, or a document incorporated into the UFSAR such as the technical requirements manual. The nominal Trip Setpoint (field setting) may use a setting value that is more conservative than the Limiting Trip Setpoint, but for the purpose of TS compliance with 10 CFR 50.36, the plant-specific setpoint term for the Limiting Trip Setpoint must be cited in Note 2. The brackets indicate plant-specific terms may apply, as reviewed and approved by the NRC staff.

In addition, the September 7, 2005, letter defines the operability of instruments as follows:

1) If the as-found TSP is found to be non-conservative with respect to the AV specified in TSs, the channel is declared inoperable and the associated TS action statement must be followed.

2) If the as-found TSP is found to be conservative with respect to the AV, and outside the as-found predefined acceptance criteria band, but the licensee is able to determine that the instrument channel is functioning as required and the licensee can reset the channel to within the setting tolerance of the limiting TSP, or a value more conservative than the limiting TSP, then the licensee may consider the channel to be operable. If the licensee cannot determine that the instrument channel is functioning as required, the channel is declared inoperable and the associated TS actions must be followed.

3) If the as-found TSP is outside the as-found predefined acceptance criteria band, the condition must be entered into the licensee's corrective action program for further evaluation.

To ensure compliance with 10 CFR 50.36(c)(2), the TSs must either include the values of the LTSP (or NTSP), the as-found acceptance criteria band, and the as-left setpoint tolerance band or provide reference to the documents where these values can be found because these settings ensure that the automatic safety system functions will perform their safety functions as required by the plant analyses of record. By not having the LTSP as the TS-required setting value, the plant could operate in an unanalyzed condition. The staff position explained in the RIS 2006-17 and the NRC staff letter dated September 7, 2005, is an acceptable method for meeting the requirements of 10 CFR 50.36 for SL related TS changes.

The NRC staff finds that the licensee has not provided adequate information in the TSs on how the proposed TS changes will prevent the RWL SL from being exceeded and meet the regulatory requirements in 10 CFR 50.36(c)(1)(ii)(A), 10 CFR 50.36(c)(2)(i), and 10 CFR 50.36(c)(3), which are listed in Section 3.0 of this safety evaluation.

Because the AV by itself can not be used to determine the operability of the instrument, the AV is required to be supplemented by LTSP settings as addressed in RIS 2006-17 (the two footnotes discussed above) or by some other means in the TSs. The licensee, however, is proposing to control operability of safety-related equipment (HPCS and RCIC in this case) by

plant procedures rather than by the TSs. This approach does not meet the requirements of 10 CFR 50.36.

4.4 Analysis of Licensee's Setpoint Calculations:

In its letter dated September 5, 2007, the licensee provided setpoint calculations applicable to the proposed TS changes. The NRC staff reviewed the setpoint calculation methodologies and found that the licensee calculated (1) the NTSP by adding total loop uncertainty (TLU) to the analytical limit (AL), and (2) the AV by adding loop uncertainty (LU) to the AL. To calculate TLU and LU, the licensee used the square root of the sum of the squares (SRSS) of the random variables and the summation of the independent variables. The licensee calculated TLU by adding SRSS of all drifts to LU.

The licensee used the new AL of 3 feet. The previous AL was based on the level of the vortex breaker of the suction piping. However, the portion of the suction piping that connects to the CST is non-safety related. To account for the suction pipe failure, the licensee used the top of the suction pipe as the AL in the revised setpoint calculations.

For CST level-low instrumentation for the HPCS system in TS Table 3.3.5.1-1, the licensee proposed to increase the AV from "≥ - 3 inches" to "≥ 4.7 ft." In calculation JC-Q1E22-N654-1 the licensee calculated TLU to be 1.995 feet and LU to be 1.606 feet, based on which the licensee selected the NTSP to be 5 feet and the AV to be greater than or equal to 4.7 feet.

For CST level-low instrumentation for the RCIC system in TS Table 3.3.5.2-1, the licensee proposed to increase the AV from "≥ - 3 inches" to "≥ 3.7 ft." In calculation JC-Q1E51-N635-1 the licensee calculated TLU to be 0.947 feet and LU to be 0.601 feet, based on which the licensee selected the NTSP to be 4 feet and the AV to be greater than or equal to 3.7 feet. In the letter dated September 5, 2007, the licensee stated that GGNS has specified 0.25 percent of the span as the as-found and as-left tolerances in the plant surveillance procedures for the affected instruments. Based on vendor data, the licensee used a reference accuracy of 0.25 percent of the span in calculating the TLUs and LUs. For a 40-feet span, this 0.25 percent equates to 0.1 foot. The NRC staff finds that the as-found and as-left tolerances are reasonably small (0.1 foot) compared to the TLU and LU tolerances, and the AVs are reasonably close to the NTSPs (NTSP – AV = 0.3 foot).

The NRC staff compared the as-found and as-left tolerances to the guidance provided in the RIS 2006-17 and determined that the licensee's as-found and as-left values are conservative and consistent with the guidance in the RIS 2006-17. The staff also found that the GGNS setpoint calculation methodology is consistent with the guidance in RG 1.105.

Based on this and on Section 4.1 of this evaluation, the NRC staff concludes that the proposed changes to the AVs for the CST level-low setpoints for the automatic transfer to the suppression pool are acceptable. This is because the change in AVs will ensure that the suppression pool, which is the credited safety-related makeup water source, will be available to mitigate AOOs and postulated accidents. Based on this, the NRC staff also concludes that the proposed changes to the AVs also meet 10 CFR 50.36. Therefore, the NRC staff further concludes that the proposed changes to the TS Tables 3.3.5.1-1 and 3.3.5.2-1 are acceptable.

However, although the setpoint values and calculation methodologies are consistent with regulatory guidance, the NRC staff concluded that the RCIC/HPCS AVs for the CST level-low setpoint does not comply with the regulatory requirements that there be reasonable assurance that the instrumentation for the automatic transfer from the CST to the suppression pool is operable and there is an adequate SR on the instrumentation. This is based on the license for the plant not containing the requirements specified in the two notes in Section 4.2.2 of this evaluation. Based on this, the NRC staff concludes that the proposed AVs for this transfer do not meet the regulatory requirements in 10 CFR 50.36(c)(2)(i) and 10 CFR 50.36(c)(3).

4.5 Conclusion Regarding SL-Related LSSSs

Based on the above evaluation in Section 4.2 and because the licensee has not proposed to add the footnotes to the TSs for the proposed HPCS AV for GGNS, the NRC staff concludes that the HPCS AV does not meet the regulatory requirements in 10 CFR 50.36(c)(1)(ii)(A), 10 CFR 50.36(c)(2)(i), and 10 CFR 50.36(c)(3).

5.0 CONCLUSION

Although the proposed changes to the AVs for the automatic transfer of the RCIC and HPCS systems from the CST to the suppression pool correct errors in the TSs, the licensee did not propose to add the two footnotes, in Section 4.3 of this evaluation, to the AV for the HPCS system. After a number of conference calls with the licensee to clarify the issues related to this LAR and in the supplemental letter dated February 14, 2008, the licensee maintained its position that the proposed TS changes for CST level-low instrumentation in TS Tables 3.3.5.1-1 are not SL-related. Consequently, the licensee does not intend to establish additional TS requirements for the HPCS transfer function from the CST to the suppression pool, such as the trip setpoint, as-found and as-left values, and requirements to reset to the limiting trip setpoint as recommended in RIS 2006-17, to ensure compliance with 10 CFR 50.36. Nor did the licensee provide an alternative method to comply with the requirements of 10 CFR 50.36(c)(1)(ii)(A), 10 CFR 50.36(c)(2)(i), and 10 CFR 50.36(c)(3). These 10 CFR 50.36 requirements are addressed in Section 3.0 of this evaluation.

Because the NRC staff has concluded that the HPCS AV is SL-related in Section 4.3 of this evaluation, the two footnotes are required such that there is reasonable assurance that the instrumentation for the automatic transfer is operable and has the proper AV to prevent the RWL SL from being exceeded. Because the two footnotes were not proposed to be added to the license, the NRC has concluded that the proposed amendment for the proposed HPCS AV does not meet the regulatory requirements in 10 CFR 50.36(c)(1)(ii)(A), 10 CFR 50.36(c)(2)(i), and 10 CFR 50.36(c)(3). Based on this, the NRC staff concludes that the proposed HPCS AV is not acceptable without the footnotes addressed in Section 4.3 of this evaluation and, therefore, a denial of this proposed change in the application is justified.

Principal Contributors: Subinoy Mazumdar
Tony Nakanishi
Carl Schulten

Date: November 5, 2008

If you have any questions, please contact Jack Donohew at 301-415-1307 or via e-mail at jack.donohew@nrc.gov.

Sincerely,
/RA/

Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-416

Enclosure:
As stated

cc w/encl: Distribution via Listserv

DISTRIBUTION:
PUBLIC
LPLIV r/f
RidsAcrsAcnw_MailCTR Resource
RidsNrrDorlLpl4 Resource
RidsNrrLAJBurkhardt Resource
RidsNrrPMJDonohew Resource
RidsOgcRp Resource
RidsRgn4MailCenter Resource
RidsNrrDeEicb Resource
RidsNrrDssSrxb Resource
RidsNrrDirsItsb Resource

** Based on meeting held on 10/31/08.
ADAMS Accession No: ML082490768

OFFICE	NRR/LPL4/PM	NRR/LPL4/LA	NRR/DE/EICB/BC	NRR/DIRS/ITSB/BC
NAME	JDonohew	JBurkhardt	WKemper** WEK	RElliott**
DATE	11/5/08	11/5/08	10/31/08 11-5-08	10/31/08
OFFICE	NRR/DSS/SRXB/BC	NRR/LPL4/BC	NRR/LPL4/PM	
NAME	GCranston**	MMarkley	JDonohew	
DATE	10/31/08	11/5/08	11/05/08	

OFFICIAL AGENCY RECORD