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Vice President  
Nuclear Engineering & Support

April 18, 1989

U.S. Nuclear Regulatory Commission  
Mail Station P1-137  
Washington, D.C. 20555

Attention: Document Control Desk

Gentlemen:

SUBJECT: Grand Gulf Nuclear Station  
Unit 1  
Docket No. 50-416  
License No. NPF-29  
Suppression Pool Makeup  
System Initiation Setpoint  
Proposed Amendment to the  
Operating License  
(PCOL-89/05)  
AECM-89/0077

System Energy Resources, Inc. (SERI) is submitting by this letter a proposed amendment to the Grand Gulf Nuclear Station (GGNS) Operating License. The proposed changes correct the Suppression Pool Makeup System initiation setpoint and allowable value for the suppression pool water level-low trip function as well as revise the trip function's description and suppression pool bottom elevation reference as stated in the bases. On April 12, 1989 during the routine review of various Suppression Pool Makeup System design specifications, SERI discovered the trip setpoint and allowable value to be nonconservative with respect to the analytical limit. The proposed changes are the result of recalculating the trip setpoint and allowable value to eliminate the nonconservatism of the current Technical Specifications.

As an interim measure until the proposed amendment is approved, controls in the form of a Technical Specification Position Statement (TSPS) will be placed into effect to administratively raise the setpoint and allowable value as described in Attachment 3. This TSPS will be approved by the Plant Safety Review Committee and implemented prior to entry into Operational Condition 2 following the conclusion of the third refueling outage. Operational Condition 2 will be when the Suppression Pool Makeup System is first required operable by Technical Specifications.

SERI discussed the above approach with the NRC Staff on April 17, 1989.

In accordance with the provisions of 10 CFR 50.4, the signed original of the requested amendment is enclosed and the appropriate copies will be distributed. Attachment 3 provides the technical justification and discussion to support the requested amendment. This amendment has been reviewed and accepted by the Plant Safety Review Committee and the Safety Review Committee.

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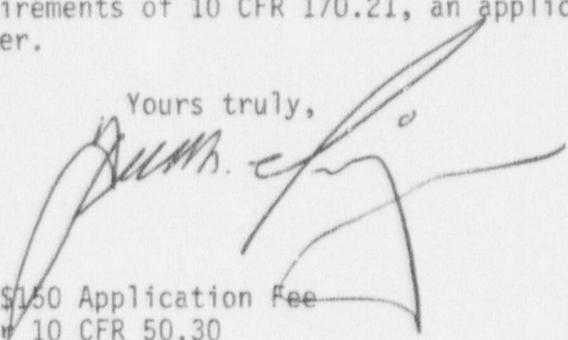
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Based on the guidelines presented in 10 CFR 50.92, SERI has concluded that this proposed amendment involves no significant hazards considerations.

In accordance with the requirements of 10 CFR 170.21, an application fee of \$150 is attached to this letter.

Yours truly,



THC:wjb

Attachments: 1. Remittance of \$150 Application Fee  
2. Affirmation per 10 CFR 50.30  
3. GGNS PCOL-89/05

cc: Mr. W. T. Cottle (w/a)  
Mr. R. B. McGehee (w/a)  
Mr. N. S. Reynolds (w/a)  
Mr. H. L. Thomas (w/o)  
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BEFORE THE  
UNITED STATES NUCLEAR REGULATORY COMMISSION

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LICENSE NO. NPF-29

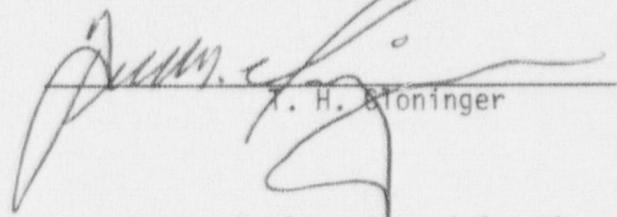
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DOCKET NO. 50-416

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IN THE MATTER OF  
MISSISSIPPI POWER & LIGHT COMPANY  
and  
SYSTEM ENERGY RESOURCES, INC.  
and  
SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION

\_\_\_\_\_  
AFFIRMATION

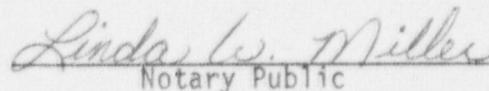
I, T. H. Cloninger, being duly sworn, state that I am Vice President, Nuclear Engineering & Support of System Energy Resources, Inc.; that on behalf of System Energy Resources, Inc., and South Mississippi Electric Power Association I am authorized by System Energy Resources, Inc. to sign and file with the Nuclear Regulatory Commission, this application for amendment of the Operating License of the Grand Gulf Nuclear Station; that I signed this application as Vice President, Nuclear Engineering & Support of System Energy Resources, Inc.; and that the statements made and the matters set forth therein are true and correct to the best of my knowledge, information and belief.

STATE OF MISSISSIPPI  
COUNTY OF HINDS

  
T. H. Cloninger

SUBSCRIBED AND SWORN TO before me, a Notary Public, in and for the County and State above named, this 18th day of April, 1989.

(SEAL)

  
Notary Public

My commission expires:

My Commission Expires Aug. 5, 1991

A. SUBJECT

1. NL 89/05 Suppression Pool Makeup System Initiation Setpoint
2. Affected Technical Specifications
  - a. Plant Systems Actuation Instrumentation, Table 3.3.8-1, Item 3.e - Page 3/4 3-106.
  - b. Plant Systems Actuation Instrumentation Setpoints, Table 3.3.8-2, Item 3.e - Page 3/4 3-108.
  - c. Plant Systems Actuation Instrumentation Surveillance Requirements, Table 4.3.8.1-1, Item 3.e - Page 3/4 3-109.
  - d. Plant Systems Actuation Instrumentation Bases, 3/4.3.8 - Page B 3/4 3-6.

B. DISCUSSION

1. Background

SERI is currently developing System Design Criteria (SDC) for selected GGNS plant systems. The SDC document is a synthesis of the various applicable design specifications for each system. During the preparation/review of the Suppression Pool Makeup (SPMU) SDC, SERI identified a discrepancy regarding the SPMU system initiation setpoints contained in Technical Specification (TS) Table 3.3.8-2. This Technical Specification was added in Amendment 13 with the current trip setpoint (16 feet 4 inches) and allowable value (15 feet 6.5 inches) apparently incorrectly calculated and nonconservative with respect to the analytical limit of 16 feet 10 inches. This could potentially lead to the suppression pool water coverage of the top drywell vent to be less than the required 2 feet post-LOCA. SERI is currently evaluating this potential in accordance with the requirements of 10CFR50.73. Figure 1 illustrates the various suppression pool water levels of interest along with references to plant elevation.

2. Description of Proposed Changes

- a. Technical Specification Tables 3.3.8-1, 3.3.8-2, and 4.3.8.1-1 Item 3.e, Suppression Pool Water Level - Low, is revised to specifically describe the signal received (Suppression Pool Water Level - Low Low).
- b. The suppression pool low-low water level trip setpoint and allowable value listed in Table 3.3.8-2, Item 3.e are changed to be greater than or equal to 17 feet 5 inches and 17 feet 2 inches, respectively.
- c. Bases 3/4.3.8 is revised to correct the reference elevation of the surface floor of the suppression pool.

C. JUSTIFICATION

1. UFSAR Subsection 6.2.7 provides a description of the SPMU and applicable transient and accident analyses. The SPMU system consists of two 100% subsystems, where each is capable of dumping the makeup volume from the upper containment pool to the suppression pool by gravity flow. The SPMU system consists of two lines which penetrate the separator end of the upper containment pool through the side walls. One line is on either side of the separator pool and then routed down to the suppression pool on opposite sides of the steam tunnel. Each SPMU line has two normally closed motor-operated butterfly valves in series. The valves in each line are of the same division. The upper pool makeup volume is dumped by gravity flow after opening the two normally closed valves in series in each line. The valves in both lines receive divisionally separate signals to open. The SPMU system is automatically initiated 30 minutes after a LOCA is detected (high drywell pressure or low-low reactor water level) or on low-low suppression pool water level following a LOCA (high drywell pressure or low-low-low reactor water level). It can also be manually initiated provided a LOCA signal is present.
2. The function of the SPMU system is to transfer water from the upper containment pool to the suppression pool after a LOCA. For a LOCA in the drywell, with ECCS injection from the suppression pool, a large volume of water can be held up in the drywell behind the weir wall. This holdup can significantly lower suppression pool water level. The water transfer from the upper containment pool insures a post-LOCA drywell vent coverage of at least 2 feet above the top of the top row vents so that long term steam condensation is maintained until the drywell atmosphere is sufficiently cooled from ECCS flow out the pipe break. The additional makeup water is used as part of the long term suppression pool heat sink. The post-LOCA delayed transfer of this water to the suppression pool provides an initially low vent submergence to minimize vent clearing loads and drywell pressurization.
3. The required upper containment pool water dump volume was determined considering the total post-LOCA drawdown volume. The total drawdown volume is the volume of suppression pool water which can be entrapped outside of the suppression pool following a LOCA due to: (1) the drywell free volume and the water volume needed to fill the reactor vessel from a condition of normal power operation to post-accident completely full up to the vessel top dome, (2) the volume in the steam lines out to the inboard MSIV for three lines and out to the outboard MSIV on one line, and (3) allowance for containment spray hold-up on equipment and structural surfaces.
4. The low-low suppression pool water level initiation signal is provided by four instrumentation channels. There are four wide range suppression pool level sensors, and four wide range suppression pool instrumentation channels, two per division. The initiation logic is one out of two. Level sensor actuation signals for suppression pool makeup in a single electrical division are parallel so that either

level sensor provides a signal to open the series valves on only the suppression pool makeup line in the same electrical division as the level sensors.

5. The four wide range level channels are used to continuously monitor suppression pool level and, at the low-low water level setpoint, will annunciate and provide a signal to actuate the suppression pool makeup flow. Each level channel consists of 1) a differential pressure transmitter, mounted locally in the auxiliary building, that senses suppression pool level via sensing lines that penetrate the containment; 2) power supply located in the control room; and 3) information and alarm outputs located in the control room.
6. The suppression pool water level low-low signal provides assurance that the water level in the suppression pool will not drop below that required to keep the drywell vents effectively covered for all LOCA break sizes. Therefore, the signal indicating low-low suppression pool water level is used to dump water from the upper containment pool into the suppression pool. It is assumed in LOCA analyses that the drywell vents remain covered during a LOCA.
7. TS 3.6.3.4 contains the requirements for the SPMU system. TS 3.3.8 gives the requirements for the SPMU system actuation instrumentation. The proposed amendment will change the current suppression pool water level low-low trip setpoint and allowable value from 16 feet 4 inches and 15 feet 6.5 inches to 17 feet 5 inches and 17 feet 2 inches, respectively. Both of these changes are overall more conservative than the current TS values since the SPMU system will actuate at a higher suppression pool water level than allowed by the current TS.
8. The operability of the SPMU system is dependent on the operability of the individual instrumentation channel trip functions. Each trip function must have a minimum number of operable channels per SPMU system trip system, with its specified trip setpoint (where appropriate) and channel response time. A trip function monitoring a process variable will have a setpoint which defines the point above or below which a channel trip will occur. The revised setpoints are determined based on operating considerations and conservative analyses. The settings are low enough to prevent inadvertent initiation of the SPMU system, but high enough to assure significant margin is maintained between the actual setpoint and the setpoint assumed in the safety analyses (analytical limit). The analytical limit for low-low suppression pool water level is 16 feet 10 inches. The method used to establish adequate margins for the instrument setpoint; including drift, inaccuracy, and calibration uncertainty; is described in the UFSAR Subsection 7.1.2.7. To account for instrument inaccuracies and calibration capability, margin to the analytical limit is used to establish an allowable value for the setpoint. The actual trip setpoint for an individual trip function has additional margin to account for the potential setpoint drift between the calibration intervals. Therefore, instrument setpoints must be adjusted to be equal to or more conservative than their specified trip setpoints at each calibration. If during a

calibration, an instrument setpoint is found to have drifted from its trip setpoint in a nonconservative direction, but not beyond the allowable value, the channel is still within the requirements of the applicable safety analysis.

9. The revised setpoint for the suppression pool water level low-low trip function is set high enough to ensure coverage of the drywell vents but low enough that normal water level fluctuations do not cause inadvertent actuation of the upper containment pool dump trip.
10. All of the events of concern resulting from a low suppression pool water level mitigated by the current TS SPMU system actuation setpoints will be mitigated just as well with the values revised as proposed. The revised values provide for actuation at a higher suppression pool water level; thereby, limiting the amount of suppression pool drawdown.
11. The revised trip setpoint and allowable value have no effect upon the consequences of inadvertent dump events because all of those analyses are done at low, normal or high suppression pool water levels. The revised trip setpoint and allowable value are below the above mentioned spectrum of suppression pool levels and are therefore bounded by the inadvertent dump analyses done at low, normal and high suppression pool water levels.
12. The proposed amendment does not change the applicability conditions, surveillance requirements, pool (suppression or upper containment) temperatures or volumes, or the rate of SPMU system actuation or dump.
13. The trip function description and suppression pool bottom reference elevation are revised to reflect the as-built plant and are administrative.
14. Based on the above, the proposed amendment does not negatively alter the SPMU systems capability to maintain proper drywell vent coverage or to supply additional longterm heat sink capacity.

#### D. NO SIGNIFICANT HAZARDS CONSIDERATIONS

The following analyses about the issue of no significant hazards consideration, using the standards of 10CFR50.92, is provided in accordance with 10CFR50.91(a).

1. No significant increase in the probability or consequences of an accident previously evaluated results from the change.
  - a. The SPMU system is used to supply the suppression pool with additional water inventory post-LOCA to maintain adequate drywell vent coverage and sufficient long-term heat sink capacity. The accidents previously evaluated that are applicable to the proposed amendment are suppression pool drawdown events associated with LOCAs and inadvertent SPMU system actuations (inadvertent dumps).

- b. The probability of a suppression pool drawdown event is not affected by the revised SPMU system trip setpoint or allowable value since the SPMU system has an accident mitigative function and not a preventive role. The revised trip setpoint and allowable value do not affect the probability of inadvertent dumps because the values are less than the spectrum of suppression pool water levels assumed in the inadvertent dump analyses and also permitted by TS in the applicable Operational Conditions.
  - c. The consequences of a suppression pool drawdown event are not increased by the revised trip setpoint and allowable value because the SPMU system will now actuate at a higher suppression pool water level providing more margin to reduce the likelihood of the drywell vents being uncovered and increasing the amount of water available as a heat sink. The consequences of an inadvertent dump are not increased because the initial suppression pool water levels assumed in the analyses for inadvertent dump events are greater than the revised trip setpoint and allowable value and the volume of water being dumped by the SPMU system remains unchanged.
  - d. The change of the trip function description and the revised suppression pool bottom elevation are being made to reflect the as-built plant and are administrative changes.
  - e. Therefore, there is no increase in the probability or consequences of previously analyzed accidents due to the proposed change.
2. This change would not create the possibility of a new or different kind of accident from any previously evaluated.
- a. The SPMU system is used to add water inventory to the suppression pool following a LOCA. LOCAs and other suppression drawdown events are already analyzed. Inadvertent SPMU system actuations have also been previously analyzed.
  - b. The proposed revision to the TS setpoint and allowable value are consistent with the assumption of the current accident analysis and are requested to correct nonconservative values currently described in the TS. Therefore, revising the trip setpoint and allowable value do not create the possibility of a new or different kind of accident from any previously evaluated.
  - c. The revised trip function description and suppression pool bottom elevation reference are being made to match the as-built plant and are administrative changes.
  - d. Therefore, the possibility of a new or different kind of accident from any previously evaluated is not created.

3. The change would not involve a significant reduction in the margin of safety.

- a. The SPMU system is used to mitigate the consequences of a LOCA event. The suppression pool low-low water level trip function is needed to actuate the SPMU system following a large break LOCA to dump additional water into the suppression pool to maintain adequate drywell vent coverage. The proposed amendment increases the trip setpoint and allowable value for this trip function. The SPMU system will actuate at a higher suppression pool water level; thereby, ensuring adequate drywell vent coverage post-LOCA. With respect

to inadvertent dump events, there will be no effect on the margin of safety since the proposed amendment does not alter the suppression pool water levels assumed in those events or the volume of water added by the SPMU system.

- b. The revised trip function description and suppression pool bottom elevation reference are being made to match the as-built plant and are administrative changes.
- c. Therefore, this proposed change will not involve a reduction in the margin of safety.

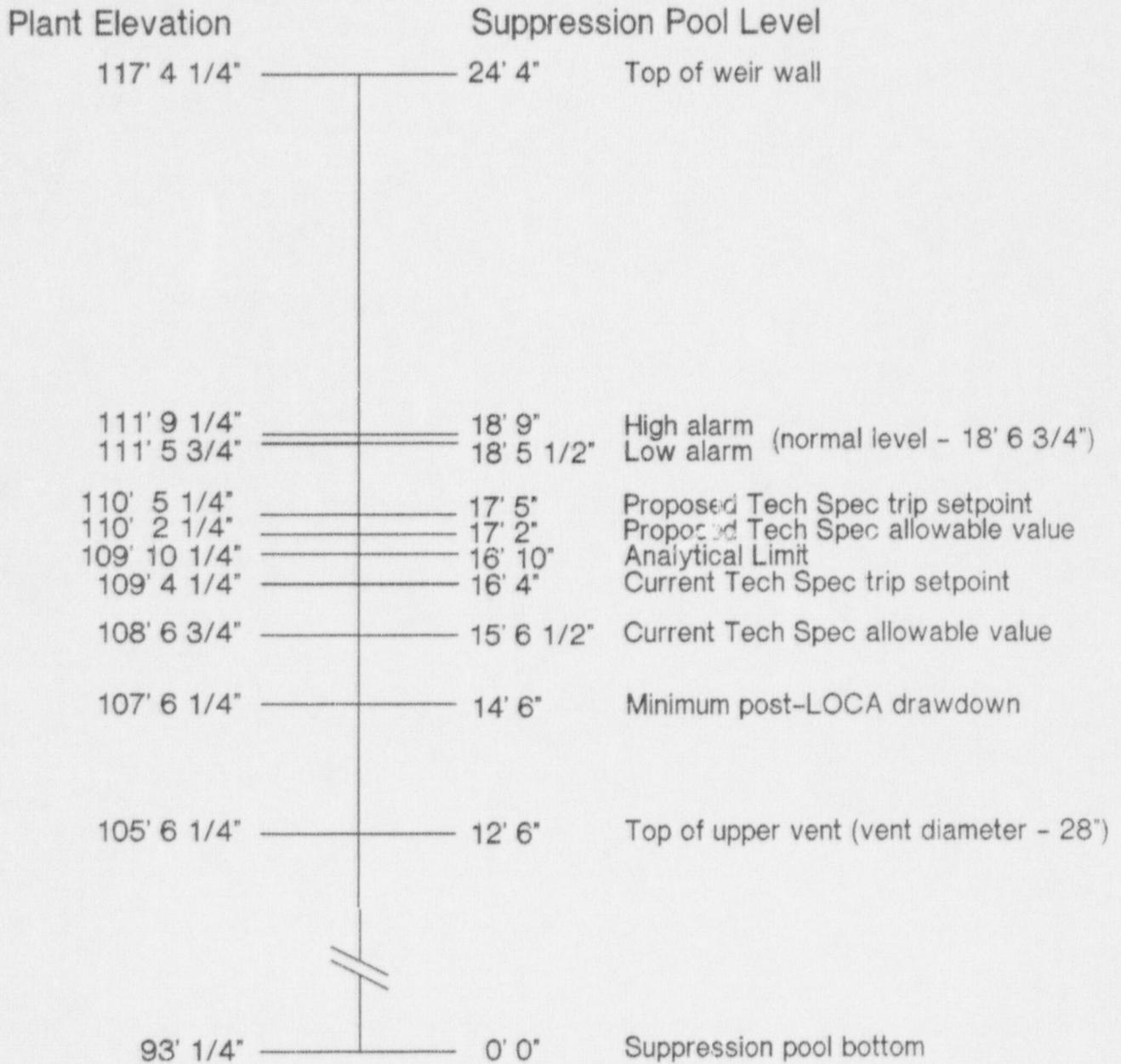


Figure 1