

OLIVER D. KINGSLEY, JR.  
Vice President  
Nuclear Operations

September 14, 1987

U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Attention: Document Control Desk

Gentlemen:

SUBJECT: Grand Gulf Nuclear Station  
Unit 1  
Docket No. 50-416  
License No. NPF-29  
Proposed Amendment to the Operating  
License (PCOL-87/06 -  
Additional Information)  
SLCS Pump Relief Valve Setpoint  
AECM-87/0149

System Energy Resources, Inc. (SERI) is submitting by this letter additional information regarding the proposed amendment to the Grand Gulf Operating License previously submitted in AECM-87/0128, dated July 6, 1987. This additional information was requested by the Staff during July 27, 1987 and August 3, 1987 telephone conversations and consists of 1) a rewording of the previously proposed change to increase the Standby Liquid Control System relief valve setpoint and 2) additional justification for the change.

In accordance with the provisions of 10 CFR 50.4 and 50.30, the signed original of the additional information on the requested amendment is enclosed and the appropriate copies will be distributed. This additional information for the amendment has been reviewed and accepted by the Plant Safety Review Committee. The Safety Review Committee reviewed the technical content and safety concerns and approved the amendment at the time of the original submittal.

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

SERI has determined that an application fee of \$150 is not required. A remittance of \$150 was attached to the original submittal on July 6, 1987.

Yours truly,

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Attachments: 1. Affirmation Per 10CFR50.30  
2. GGNS PCOL-87/06 Additional Information

cc: (See Next Page)

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cc: Mr. T. H. Cloninger (w/a)  
Mr. R. B. McGehee (w/a)  
Mr. N. S. Reynolds (w/a)  
Mr. H. L. Thomas (w/o)  
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Dr. Alton B. Cobb (w/a)  
State Health Officer  
State Board of Health  
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Jackson, Mississippi 39205

BEFORE THE  
UNITED STATES NUCLEAR REGULATORY COMMISSION

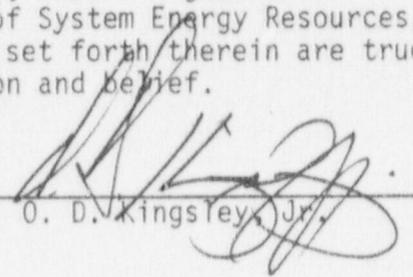
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LICENSE NO. NPF-29

\_\_\_\_\_  
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

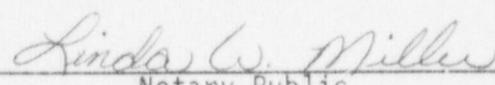
I, O. D. Kingsley, Jr., being duly sworn, stated that I am Vice President, Nuclear Operations of System Energy Resources, Inc.; that on behalf of System Energy Resources, Inc., and South Mississippi Electric Power Association I am authorized by System Energy Resources, Inc. to sign and file with the 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 Operations 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.

  
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O. D. Kingsley, Jr.

STATE OF MISSISSIPPI  
COUNTY OF HINDS

SUBSCRIBED AND SWORN TO before me, a Notary Public, in and for the County and State above named, this 14th day of September, 1987.

(SEAL)

  
  
\_\_\_\_\_  
Notary Public

My commission expires:

My Commission Expires Aug. 5, 1991

ADDITIONAL INFORMATION  
SLCS PUMP RELIEF VALVE SETPOINT CHANGE

A. BACKGROUND

1. SERI submitted a change to SLCS Surveillance Requirement 4.1.5.d.2 in a letter dated July 6, 1987. Subsequent telephone conversations with NRR staff resulted in a modification to the wording of the Technical Specification change and a request for additional information to supplement the Justification Section.

B. TECHNICAL SPECIFICATION CHANGES

1. The July 6, 1987 submittal requested that Surveillance Requirement 4.1.5.d.2 be changed to demonstrate that the SLCS pump relief valve opens at less than or equal to 1442 psig. In a July 27, 1987 telephone conversation with the NRC reviewer and the NRC Project Manager, agreement was reached to revise the proposed Surveillance Requirement. The revision is reflected on the attached Technical Specification page 3/4 1-19 markup and will demonstrate that the SLCS pump relief valve opens within 3% of the nominal valve setpoint of 1400 psig. Paragraph 2 of the Justification Section in the July 6, 1987 submittal provides the technical basis for the revision.

C. ADDITIONAL JUSTIFICATION

1. Paragraph 1 of the Justification Section in the July 6, 1987 submittal states that problems were encountered while trying to run previous system tests because the SLCS pump relief valve lifts occasionally during the running of the tests. Discussions with the NRC Project Manager raised the following questions that are answered below:
  - a. Do the problems encountered while running the SLCS test impact the present operability of the SLCS?
  - b. Does the SLCS test, while lined up to the test tank, demonstrate that the design function of the SLCS will be met when required to inject into the reactor vessel?
2. Problems encountered while running previous SLCS tests in accordance with Surveillance Procedure 06-OP-1C41-M-0001 resulted in violation 50-416/87-14 being issued to Grand Gulf in a letter dated July 1, 1987. The response to the procedural violation was documented in a letter to the NRC dated July 31, 1987. Following the June 10, 1987 performance of Surveillance Procedure 06-OP-1C41-M-0001, the procedure was revised and successful tests were performed. Changes to the procedure included the use of two valves in series to throttle SLCS pump discharge flow and the partial closing of a root block valve on the SLCS pump discharge pressure gauge to act as a pressure snubber. The use of two valves to throttle pump discharge pressure allows one valve to be used for coarse adjustment and the downstream valve for fine adjustment of pump discharge pressure. This change was needed because the use of only one valve to throttle pump discharge pressure caused overshooting of the desired 1220 psig test pressure due to

system pressure spikes when even small adjustments were made to the single throttle valve. Also, prior to snubbing the SLCS pump discharge pressure gauge, indicated pressure pulsations were approximately 100 to 150 psig making it difficult to obtain accurate gauge readings. Snubbing the root block valve to the pressure gauge significantly reduced the gauge needle swing caused by the positive displacement pump strokes and reflected pressure waves from the throttle valves. These procedural changes allowed the SLCS flow and discharge pressure tests to be performed without lifting the system relief valve. However, due to the small operating margin associated with the relief valve setpoint, a technical specification change was proposed to raise the relief valve setpoint to a nominal 1400 psig.

3. The magnitude of the pressure pulsations resulting from the positive displacement SLCS pumps had been estimated to be 100 to 150 psig above the average pressure being indicated in the system. This estimation was made while the system was in the test configuration and while attempting to read the needle swings on the pump discharge pressure gauge. In order to quantify the pressure oscillations, a test was performed on the SLCS system on July 29, 1987. The SLCS was run in the test configuration discharging to the test tank with discharge pressure maintained at an indicated 1220 psig. A high speed transducer was used to measure system pressure oscillations. Engineering evaluation of the test runs indicates that the SLCS pressure oscillations of sufficient duration for relief valve response have peaks of approximately 100 psig above the average indicated system pressure. Therefore, with a Technical Specification required minimum test pressure of 1220 psig, pressure oscillations of 1320 psig are experienced by the SLCS relief valve. The present SLCS relief valve setpoint requirement is less than or equal to 1386 psig with a nominal setpoint of less than or equal to 1379 psig. Since the tolerance on the relief valve opening is  $\pm 3\%$  of the relief valve nominal setpoint of 1379 psig, the relief valve will open no lower than 1338 psig. The present worst case operating margin to relief valve opening in the test configuration is then 1338 psig minus 1320 psig or 18 psig. Testing and engineering evaluation of the test results show that for this worst case operating margin the relief valve should not lift when experiencing average indicated system pressure of 1220 psig plus the pressure oscillations of the SLCS in the test configuration. The Technical Specification test pressure of 1220 psig is based on a maximum reactor bottom pressure of 1150 psig for SLCS injection plus system pressure losses due to the SLCS injection path piping from the pump discharge through the sparger in the reactor vessel.
4. The SLCS test configuration has been evaluated by SERI and determined to bound the SLCS injection path to the reactor vessel in terms of pressure oscillation effects because the effects will be of a greater magnitude in the test configuration. The 1220 psig discharge pressure is simulated in the test loop by throttling valves thus causing larger pressure swings due to reflected pressure waves from the throttling valves than should be observed in the open injection line to the reactor vessel. Additionally, the reactor vessel itself should act to reduce the magnitude of the reflected waves due to the

effects of steam voids and the steam in the dome of the reactor vessel. General Electric tests at another BWR facility have demonstrated that the SLCS test configuration is more severe in terms of pressure oscillation magnitude when compared to the reactor vessel injection route.

5. In summary, SERI has evaluated the SLCS and reached the following conclusions:
  - a. Test procedure changes will allow successful surveillance tests to be performed without lifting the SLCS relief valves.
  - b. Sufficient operating margin does exist with the present Technical Specification SLCS relief valve setpoint of less than or equal to 1386 psig to prevent the valve from opening when the system is needed to inject into the reactor vessel. The proposed change to increase the nominal pump relief valve setpoint to 1400 psig will provide additional margin.
  - c. The SLCS test configuration provides assurance that the SLCS will be able to meet design flows and discharge pressure requirements for injection to the reactor vessel.