



# MISSISSIPPI POWER & LIGHT COMPANY

*Helping Build Mississippi*

P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

J. B. RICHARD  
SENIOR VICE PRESIDENT - NUCLEAR

July 31, 1984

U. S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, N.W.  
Suite 2900  
Atlanta, Georgia 30323

Attention: Mr. J. P. O'Reilly, Regional Administrator

Dear Mr. O'Reilly:

SUBJECT: Grand Gulf Nuclear Station  
Units 1 and 2  
License No. NPF-13  
Docket Nos. 50-416/417  
File 0260/15525/15526/16694.4  
PRD-81/17, Final Report for  
Units 1 and 2, Flow Rate in  
SSW System Loops A & B and  
Loss of SSW Basin Transfer  
Capability  
AECM-84/0341

References: (1) AECM-81/362, 9/23/81  
(2) AECM-81/494, 12/15/81  
(3) AECM-82/62, 2/15/82  
(4) AECM-82/156, 4/15/82  
(5) AECM-82/232, 5/24/82  
(6) AECM-84/0311, 6/8/84

On March 3, 1981, Mississippi Power & Light Company notified Mr. P. A. Taylor, of your office, of a Potentially Reportable Deficiency (PRD) at the Grand Gulf Nuclear Station (GGNS) construction site. The deficiency concerned a lower measured flow rate in the Standby Service Water (SSW) System Loops A & B than was required by the drawings.

This deficiency concerning the low flow condition had been determined to be reportable under the provisions of 10CFR50.55(e) for Unit 1. MP&L has since determined that interim corrective actions as stated in our referenced responses (1) through (5) and implemented for Unit 1 were inadequate and that the deficiency is also reportable under 10CFR21 for Unit 1. Mr. Paul Fredrickson, of your office, was notified of the additional information on June 5, 1984, and a supplemental report was submitted in reference (6).

For Unit 2 MP&L has determined that the low flow condition is reportable under 10CFR50.55(e), but the lack of transfer capability is not. Mr. Bob Carroll, of your office, was notified of the Unit 2 reportability on July 13, 1984.

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Member Middle South Utilities System

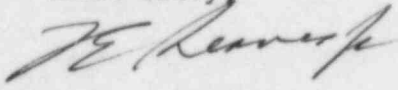
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The supplemental report submitted in Reference 6 stated that "MP&L has further evaluated the above condition for plant operation below 5% power and finds that an adequate (30 day) water supply exists even with the 107'0" minimum water level." This evaluation for 5% power was performed using less conservative but realistic assumptions than those noted in the FSAR. These assumptions are identified as follows:

1. Credit for basin water mixing was taken. The FSAR analysis did not consider basin water mixing.
2. Credit for lower drift losses was taken. The FSAR analysis considered drift losses at 0.02 percent of the SSW flow rate. This amounts to 93,200 gallons for unit 1 only operation. However, test data from the vendor show that drift losses are actually 0.00018 percent of the flow rate, which amounts to 840 gallons only. For this evaluation, the drift losses were conservatively taken at 5,000 gallons.
3. The FSAR analysis considered the initial basin water temperature at 79°F. However, the initial basin water temperature for this evaluation was considered at 72°F, since the basin water temperature has always been below 72°F.

This 30 day inventory at 5% power with the above realistic assumptions is achieved using a single basin only.

Yours truly,

  
For J. B. Richard

KDS:dr

cc: Mr. R. B. McGehee  
Mr. Nicholas S. Reynolds, Esq.  
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Mr. Richard C. DeYoung, Director  
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U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Mr. G. B. Taylor  
South Miss. Electric Power Association  
P. O. Box 1589  
Hattiesburg, MS 39401

FINAL REPORT FOR PRD-81/17

1. Name and address of the individual ... informing the commission:

J. B. Richard  
Senior Vice President, Nuclear  
P.O. Box 1640  
Jackson, Mississippi 39205

2. Identification of the facility ... which ... contains a deficiency:

Grand Gulf Nuclear Station (GGNS) Unit 1  
Port Gibson, Mississippi 39150

The lack of transfer capability is reportable under 10CFR21 for Unit 1 only.

The low flow condition is reportable under 10CFR50.55(e) for Unit 2.

3. Identification of the firm ... supplying the basic component which ... contains a deficiency:

Supplied to Grand Gulf by the Bechtel Power Corporation,  
Gaithersburg, Maryland.

4. Nature of the deficiency ... and the safety hazard which ... could be created by such a deficiency ...:

A. Description of the Deficiency

The two Standby Service Water (SSW) basins (A & B), Ultimate Heat Sinks, are designed to remove heat from plant auxiliary systems that are required for a safe reactor shutdown and to provide a means of flooding the drywell and containment if required, during the post LOCA period.

The SSW basins are common for Units 1 and 2. Basin "A" contains the Unit 1 and 2 SSW "A" pumps, and basin "B" contains the Unit 1 and 2 SSW "B" pumps. However, only the Unit 1 pumps are operational at this time.

Per the FSAR, the combined capacity of the SSW basins was determined adequate to provide sufficient cooling for at least 30 days without makeup, to mitigate the effects of an accident in one unit, and to simultaneously permit safe shutdown of the other unit. Our A/E has determined that for operation of Unit 1 alone, the combined capacity of the two basins above elevation 107'0" will provide the 30 day inventory for post-LOCA operation. The minimum usable water level at 107'0" was set as a result of PRD-81/17 "SSW System Flow Rate", to overcome the higher than anticipated frictional pressure drops through some of the component loops with the existing SSW pumps.

When the 107'0" level is reached in the inservice basin, it becomes necessary to either replenish the water from the other basin, or to operate the SSW system associated with the other basin.

However, this cannot be accomplished with a single active failure (loss of a division) and loss of offsite power.

B. Analysis of Safety Implications

In the event of a LOCA coincident with a loss of offsite power, and a single active failure (loss of a division), the ability to transfer water from the basin associated with the failed division is lost.

The loss of transfer capabilities could result in an insufficient SSW system flow (heat transfer capacity) through the SSW components that remove heat from plant auxiliaries. The reduction in the heat transfer capacity (cooling) could cause the plant auxiliaries not to perform their intended safety function, and/or become inoperable.

MP&L has evaluated the safety implication below 5% power and finds that an adequate (30 days) water supply exists even with the 107'0" minimum water level. Therefore, for less than 5% power operation this condition is not a safety hazard. This evaluation uses less conservative (but realistic) assumptions than those noted in the FSAR, as stated in the cover letter.

5. The date on which the information of such deficiency ... was obtained.

Mississippi Power & Light received information of the original deficiency on February 27, 1981. We notified Mr. P. A. Taylor, of your office, on March 3, 1981.

We received information of the deficient condition with regard to the transfer capabilities on May 14, 1984. The evaluation for substantial safety hazard on Unit 1 was completed on June 4, 1984, and Mr. Paul Fredrickson, of your office, was notified on June 5, 1984.

6. In the case of the basic component ... the number and location of all such components.

There are two Standby Service Water basins at Grand Gulf. We do not have knowledge of similar design deficiencies at any other plants.

7. The corrective action which has been taken ... the name of the individual ... responsible for the action; and the length of time that has been ... taken to complete the action.

A. Corrective Actions Taken

For the low flow condition on Unit 1, permanent larger capacity pumps are to be installed during the first refueling outage. For the lack of transfer capabilities on Unit 1, a Design Change Package (DCP) #84/5006 has been implemented which installed a permanent siphon line to provide a mechanism for transferring water between SSW Basins A & B.

For the Unit 2 low flow condition our Architect/Engineer revised the necessary drawings to increase the supply piping size.

B. Responsible Individual

J. B. Richard  
Senior Vice President, Nuclear  
Mississippi Power & Light Co.

C. Length of Time to Complete Actions

Permanent corrective actions for Unit 1 will be completed during the first refueling outage for the low flow condition.

Drawing revisions for Unit 2 have been completed.

The siphon line installation and testing has been completed.

8. Any advice related to the deficiency ... that has been, is being, or will be given to purchasers or licensees:

As the deficiency did not originate with MP&L, we have no advice to offer.