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JAMES P. McGAUGHY, JR.  
ASSISTANT VICE PRESIDENT

December 31, 1981

Office of Inspection & Enforcement  
U. S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, N.W.  
Suite 3100  
Atlanta, Georgia 30303



Attention: Mr. J. P. O'Reilly, Director

Dear Mr. O'Reilly:

SUBJECT: Grand Gulf Nuclear Station  
Units 1 and 2  
Docket Nos. 50-416/417  
File 0260/15525/15526  
PRD-81/15, Final Report, Acid  
Damage to SSW Basin "B" Pumps  
AECM-81/519

- Reference: 1) AECM-81/123, 3/27/81
- 2) AECM-81/349, 9/9/81
- 3) AECM-81/447, 11/13/81

On February 25, 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 concerns acid damage to the pumps in Standby Service Water (SSW) Basin "B".

This PRD was originally initiated because of minor corrosion damage to the Unit 2 SSW "B" Pump (Q2P41C001B-B).

It has since been determined that damage also occurred to the Unit 1 SSW "B" Pump (Q1P41C001B-B). The lube oil cooler coils for Pump (Q1P41C001B-B) as well as the associated piping and valves were also subjected to the acidic water.

Our previous report, Reference 3, stated that the lub coil cooler coils for the Unit 1 SSW "B" Pump were damaged. This was in error because at the time the report was written, the lube oil cooler coils had not been inspected. The coils have since been inspected and no damage was found.

Mississippi Power & Light has conducted an inspection to determine any damage that might have occurred to the piping and valves that were exposed to the acidic water. No corrosion damage was found.

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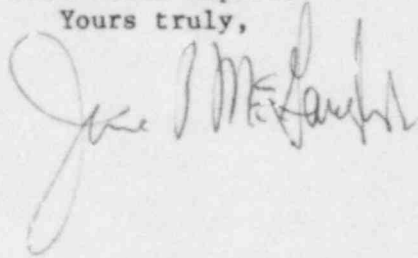
Mr. J. P. O'Reilly  
NRC

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We have determined that this deficiency is reportable under the provisions of 10CFR50.55(e) since it could have adversely affected the safety of plant operations of the nuclear power plant. It is not reportable under 10CFR21.

All details are included in our attached Final Report.

Yours truly,



MAL/KDS:scb  
ATTACHMENT

cc: Mr. N. L. Stampley  
Mr. R. B. McGehee  
Mr. T. B. Conner

Mr. Richard C. DeYoung, Director  
Office of Inspection & Enforcement  
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 TO PRD-81/15

I. Description of the Deficiency

There are two Standby Service Water (SSW) Basins for GGNS. Basin "A" is south of Basin "B". Installed in Basin "A" are the Unit 1 HPCS Service Water Pump, one of the two Unit 1 SSW Pumps and one of the two Unit 2 SSW Pumps. Installed in Basin "B" are the Unit 2 HPCS Service Water Pump, the other Unit 1 SSW Pump (Q1P41C001B-B) and the other Unit 2 SSW Pump (Q2P41C001B-B).

Sulfuric acid was added to the "B" (W) basin on September 10, 1979, in an attempt to reduce the alkalinity of the basin water. The quantity of acid to be added was calculated utilizing incorrect information as to the quantity of water in the basin. This action caused the basin water to become highly acidic, exposing all three pumps to potentially highly corrosive water.

In an attempt to recirculate and reduce local concentrations of acid, the Unit 1 SSW "B" Pump (Q1P41C001B-B) was operated sporadically from September 12, 1979 to September 16, 1979. The Unit 2 SSW "B" Pump (Q2P41C001B-B) and the Unit 2 HPCS Service Water Pump were not operated during the excess acid condition. The basin water was reduced to an acceptable acid level on September 20, 1979.

The deficiency affects portions of the Standby Service Water System (P41) within the basin and pumphouse and is applicable to both Unit 1 and Unit 2.

Originally, only corrosion damage to the Unit 2 SSW "B" Pump was reported. We have determined subsequently that the Unit 1 SSW "B" Pump, and the lube oil cooler coils for the Unit 1 SSW "B" Pump and the HPCS Service Water Pump also were exposed to this water. The Unit 1 SSW "B" Pump and the Unit 2 HPCS Service Water Pump were slightly damaged. There was no damage to the lube oil cooler coils or the associated piping and valves.

II. Analysis of Safety Implications

If the Unit 1 SSW "B" Pump had not been repaired, failure of the pump could result in the loss of cooling water to Unit 1 SSW loop "B", which provides cooling water to the RHR Heat Exchanger and Standby Diesel Generator and would prevent these components from performing their safety functions, which are essential to the safety of plant operations.

Since it could have adversely affected the safety of operations of the nuclear power plant, this deficiency is reportable under the provisions of 10CFR50.55(e). It is not reportable under the provisions of 10CFR21 as the affected components had not been turned over to MP&L at the time the sulfuric acid was added to the basin.

### III. Corrective Actions Taken

The cause of the pump corrosion was the addition of more sulfuric acid than was required to the SSW "B" basin. The acid was added in an attempt to reduce the alkalinity.

At the time of the addition of the acid, the SSW basin level transmitters were not operable and construction of the acid addition system for the SSW basin was not complete. This resulted in large quantities of acid being dumped directly into the basin, resulting in poor mixing of the acid and water and causing a high concentration of acid in various areas of the basin. Only SSW basin "B" was affected.

All three of the pumps were disassembled, inspected, and repaired as necessary.

The Unit 1 SSW "B" Pump (Q1P41C001B-B) sustained extensive damage and was returned to the manufacturer, Goulds Pumps, Inc. for repair. The Unit 2 SSW "B" Pump (Q2P41C001B-B) and the HPCS Service Water Pump sustained minimal damage, which was corrected by minor repairs. The Unit 1 SSW "B" Pump lube oil cooler coils have been replaced. The original cooler was disassembled and inspected. No damage was found.

Mississippi Power & Light conducted an investigation of the valves and piping associated with the Unit 2 SSW "B" Pump that were exposed to the acidic water. Before the inspection, appropriate acceptance criteria were formulated. All inspected equipment met the acceptance criteria and it has been determined that the existing equipment is satisfactory for its intended service.

To preclude the recurrence of an excessive amount of acid being added to the basin again, the SSW basin level transmitters have been installed and are operable, providing a positive and accurate method for determining the quantity of water in the basins.

The acid addition system has been completed and is operable. This provides a controlled method of adding acid and insures proper mixing of acid and water, ensuring a uniform mixture throughout the basin. Also, plant procedure 08-S-03-14, Rev. 0, was issued on October 12, 1981. It is entitled, "Chemistry Procedure - Chemical Additions to Plant Systems - Safety Related." This procedure provides detailed direction for calculating (and documenting) the quantity of acid to be added (manual or automatic injection) to the SSW basins.