



MISSISSIPPI POWER & LIGHT COMPANY

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P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

PRODUCTION DEPARTMENT

December 4, 1979

United States Nuclear Regulatory Commission
Office of Inspection & Enforcement
Washington, D. C. 20555

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ATTENTION: Director, Division of Reactor Construction Inspection

Dear Sir:

SUBJECT: Grand Gulf Nuclear Station
Bechtel Job No. 9045
File: 0471/8100/1-381.0
IE Bulletin 79-15 Supplement
AECM-79/137

NRC IE Bulletin 79-15 "Deep Draft Pump Deficiencies" describes various problems encountered with the operation of deep draft type pumps and requests that certain design and operational information be provided for any pumps of this general design.

There are currently three non-NSSS pumps of the deep draft type assigned to each unit of the Grand Gulf Nuclear Station (GGNS), two Standby Service Water Pumps and one HPCS Service Water Pump. As to the information for the ECCS pump, was forwarded to you earlier in AECM-79/125, dated November 1, 1979).

All of the subject pumps are manufactured by Goulds Pumps Inc., Vertical Pump Division. The Standby Service Water Pumps are Goulds Model VITX-SD-24x30 BLC-2 rated at 12,000 GPM and the HPCS Service Water Pumps are Goulds Model VITX-SD-10x14 JHC-2 rated at 1300 GPM.

Pump dimensions are as follows:

1) Standby Service Water Pump

- a. Suction bell diameter - 2'-9"
- b. Distance from mounting flange to centerline of pump discharge flange - 1'-8"
- c. Distance from mounting flange to bottom of suction bell - 55'-0"

2) HPCS Service Water Pump

- a. Suction bell diameter - 1'-2"
- b. Distance from mounting flange to centerline of pump - 1'-0"
- c. Distance from mounting flange to bottom of suction bell - 52' - 10 1/2"

Of the deep draft pumps furnished for the GGNS, only the Unit 1 pumps have been operated. All Unit 2 pumps have received storage maintenance per the Goulds Pumps Inc. instruction manual.

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A summary of the maintenance, startup, and testing of the Unit 1 pumps is given below:

A) Routine Maintenance

1. SSW Pump "A"

- a) Visual inspection
- b) Fill with storage oil - October 25, 1977
- c) Megger motor - October 25, 1977, April 26, 1978, October 31, 1978, May 2, 1979
- d) Hookup heaters - October 25, 1977

2. SSW Pump "B"

- a) Visual inspection
- b) Hookup heaters - October 25, 1977
- c) Megger motor - October 25, 1977, April 26, 1978, October 31, 1978, May 2, 1979
- d) Fill with storage oil - October 25, 1977

3. HPCS Service Water Pump

- a) Visual inspection
- b) Fill with storage oil - October 25, 1977
- c) Hookup heaters - October 25, 1977
- d) Megger motor - October 27, 1977, October 31, 1978, May 2, 1979
- e) Rotate - August 3, 1979, November 1, 1979

B) Startup

- 1) SSW Pump "A" - Pump has been run approx. 4 hours
- 2) SSW Pump "B" - Pump has been run approx. 73 hours
- 3) HPCS Service Water Pump - Pump has not been run

C) Testing

1. SSW Pump "A"

- a) Satisfactory vibration data was taken with pump on recirc at approx. 10,000 GPM
- b) Pump performance checked against flow curve

2. SSW Pump "B"

- a) Satisfactory vibration data taken with pump on recirc at approx. 10,000 GPM
- b) Pump performance checked against flow curve

3. HPCS Service Water Pump

- a) No testing performed

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Operational problems and major repair efforts associated with the Unit 1 pumps are summarized as follows:

A) Operational Problems

1. SSW Pump "B"

- a) On initial pump run the mechanical seal failed due to improper installation.
- b) On subsequent pump run after the mechanical seal had been replaced, the new seal leaked approximately 1/4 cup/min.
- c) During additional operation of the pump the motor was drawing current above the service factor. The pump was shut down after this finding.
- d) The pump was operated while submerged in an unusually low pH volume of water (due to addition of excessive amounts of sulphuric acid) causing corrosion to various parts of the pumps. Corrosion of the lock washers under the lineshaft coupling retainer-to-drive cap screw resulted in vertical displacement of the pump lineshaft. This displacement led to the pump impeller wear ring and the lower casing wear ring fusing together.
- e) Disassembly and inspection of the pump revealed that the lower casing wear ring had fused to the impeller wear ring causing the overloading of the motor.

2. No operational problems have been experienced with the remaining pumps.

B) Major Repair Efforts - SSW Pump "B"

The pump was sent back to the factory and the pump vendor is examining it to determine the extent of repair required and the exact cause of the wear ring fusion.

A summary of the history of operation of the two Unit 1 SSW pumps is presented below:

A) Operability

1. SSW Pump "A"

- a) Has been operable since October 29, 1979
- b) Has been run 3 times since the above date
 - 1) 2.5 hours - recirc - 10,000 GPM
 - 2) 1 hour - at approx. 11,000 GPM
 - 3) .5 hour - at approx. 11,000 GPM
- c) Has not been run at rated flow

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2. SSW Pump "B"

- a) Was first operable on September 12, 1979
- b) Was run 4 times before pump failure
 - 1) 1 hour - recirc - 5,000 GPM
 - 2) 70 hours - recirc - 5,000 GPM
 - 3) 1 hour - recirc - 7,000 GPM
 - 4) 1 hour - recirc - 10,000 GPM
- c) Has not been run at rated flow

3. HPCS Service Water Pump

This pump has not been operated to date.

Yours truly,


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