

Quarterly Status Report for  
Quarter Ending March 31, 1984

"Degraded Core Accident  
Hydrogen Control Program"

Grand Gulf Nuclear Station  
Units 1 and 2  
Docket Nos. 50-416 and 50-417

Mississippi Power & Light Company

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Quarterly Status Report - March 31, 1984

"Degraded Core Accident Hydrogen Control Program"

1.0 Introduction

This quarterly status report is submitted to comply with a requirement in Supplement Number 4 to NUREG-0831, Safety Evaluation Report related to the Operation of Grand Gulf Nuclear Station Units 1 and 2. This requirement specifies that Mississippi Power & Light (MP&L) should provide quarterly reports outlining the status of the on-going research program to address degraded core hydrogen control requirements. This report covers the first calendar quarter of 1984 ending March 31, 1984.

This report includes brief summaries of the submittals made by MP&L during this quarter along with summaries of meetings between the NRC staff and MP&L. MP&L is participating in the Hydrogen Control Owners Group (HCOG) which is conducting generic research and completing generic analyses to resolve the degraded core hydrogen control issue. Since the work completed by HCOG complements the MP&L program to resolve this issue, this report also includes summaries of meetings between the HCOG and the NRC. The summaries of these meetings included in this report do not reflect a formal HCOG position with respect to any issue and represent only the MP&L interpretation of the meetings.

2.0 Summary of MP&L Submittals

AECM-84/0066, February 9, 1984

MP&L letter number AECM-84/0066, dated February 9, 1984, provided information to respond to an informal NRC staff's inquiry to evaluate the containment and penetrations for negative internal pressure due to hydrogen combustion. The results of MP&L's evaluation indicated that the containment, liner, and penetrations were capable of withstanding a 5 psid negative internal pressure.

AECM-84/0099, February 9, 1984

MP&L letter number AECM-84/0099, dated February 9, 1984, transmitted the first quarterly report in response to a NRC requirement identified in the Safety Evaluation Report Supplement (SSER) No. 4 indicating the status of the "Degraded Core Accident Hydrogen Control Program." This report covered the period from issuance of the SSER (May, 1983) through September 30, 1984.

AECM-84/0060, February 22, 1984

MP&L letter number AECM-84/0060, dated February 22, 1984 transmitted the quarterly report for the status of the "Degraded Core Accident Hydrogen Control Program." This report covered the period from October 1, 1983 through December 31, 1983.

AECM-84/0080, February 22, 1984

MP&L letter number AECM-84/0080, dated February 22, 1984, provided a formal response to NRC staff's inquiry dated February 13, 1984 (MAEC-84/0054) to evaluate the containment and penetrations for negative internal pressure due to hydrogen combustion. This information was identical to that transmitted in AECM-84/0066, dated February 9, 1984. MP&L's evaluation indicated that the containment, liner, and penetrations were capable of withstanding a 5 psid negative internal pressure.

AECM-84/0091, March 9, 1984

MP&L letter number AECM-84/0091, dated March 9, 1984, identified which of the NRC's Requests for Additional Information (RAI), transmitted to the Hydrogen Control Owners Group (HCOG), would be answered by MP&L.

#### 2.1 Planned Future Submittals

MP&L intends to submit responses to the RAI's that were sent to HCOG but concerned previous MP&L submittals.

### 3.0 Summary of Meetings

HCOG and NRC Meeting on March 2, 1984

The HCOG met with the NRC on March 2, 1984 to review the status of the 1/4 scale test facility and to present preliminary responses to the NRC RAI's regarding the 1/4 scale test facility. Formal responses to these RAI's will be submitted later by HCOG.

#### 3.1 Planned Future Meeting with NRC

MP&L anticipates meeting with the NRC under the auspices of HCOG to discuss the planned 1/4 scale tests. This discussion will cover the test matrix and the overall status of the 1/4 scale test program.

### 4.0 Test Program Status

The summaries and status of the HCOG test programs as stated here do not reflect the HCOG position with respect to any test program and represent only a MP&L interpretation of these programs.

#### 4.1 1/20 Scale Test Program Status

The final 1/20 scale test reports were sent to the NRC:

- (1) Volume I: "Facility Description and Results Summary"
- (2) Volume II: "Test Data and Supplementary Information"

#### 4.2 1/4 Scale Test Program Status

- o Shop fabrication of vessel parts is 60% complete.
- o Field construction of vessel was initiated and is continuing. The first three rings of the outer shell are now in place and the bottom ring of the inner shell has been fitted to the conical assembly.
- o Instrumentation procurement is 60% complete.
- o Design concept for the hydrogen supply system has been finalized.

##### 4.2.1 Planned Activities for the 2nd Quarter of 1984

Continue construction of test facility. Continue instrumentation and equipment procurement. Continue to develop 1/4 scale test matrix.

#### 4.3 Ignition Effectiveness Test in Rich Hydrogen-Air-Steam Mixture

Tests to measure the ignition effectiveness of the GMAC 7G Glow Plug in rich hydrogen air-steam mixtures have been completed at the AECL's Whiteshell Nuclear Research Center. Supplementary Tests investigating the ignition limits associated with steam condensation have also been completed.

##### 4.3.1 Planned Activities in the 2nd Quarter of 1984

The final report for the Ignition Effectiveness Test in Rich Hydrogen-Air-Steam Mixtures (including the condensation testing) will be issued.