MISSISSIPPI POWER & LIGHT COMPANY
Helping Build Mississippi
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August 2, 1984

NUCLEAR LICENSING & SAFETY DEPARTMENT

U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D. C. 20555

Attention: Mr. Harold R. Denton, Director

Dear Mr. Denton:

SUBJECT: Grand Gulf Nuclear Station
Units 1 and 2
Docket Nos. 50-416 and 50-417
License No. NPF-13
File: 0260/L-860.0
Diesel Generator Turbochargers
AECM-84/0388

This transmittal confirms our communication with Mr. Emmett Murphy of your staff on August 1, 1984, regarding the Mississippi Power & Light Company (MP&L) schedule to provide turbocharger inlet temperature information to the NRC. This information was requested by NRC consultants during a recent meeting between MP&L and the NRC staff. The primary concern expressed to MP&L personnel was that the turbine inlet temperature may be sufficiently high to cause accelerated intergrannular stress corrosion cracking (IGSCC) of turbocharger nozzle ring bolts.

A summary of the GGNS turbocharger nozzle ring bolt experience is provided below for your information. Even though fractured nozzle ring bolts were found in the Division I turbochargers during the recent June, 1984 inspection, the engines performed satisfactorily. Initially, the primary cause of the fracture was attributed to IGSCC in the nozzle ring bolts. A subsequent inspection and metallurgical examination of the Division II turbochargers showed no evidence of incipient fracture or IGSCC even though the turbochargers had nearly twice as many operating hours.

A final metallurgical report, submitted as an attachment to our letter AECM-84/0373, dated July 20, 1984, concluded that the primary cause of failure of the Division I bolts was bolt sensitization due to improper heat treatment and that the environmental conditions had little, if any, contribution to the bolt sensitization.

However, in response to your request, MP&L will install temperature indicators which will provide additional data by which inlet temperatures can be determined within reasonable tolerances. Test data from an equivalent DSRV-16 engine have also been obtained from TDI and reviewed by MP&L. The TDI data recorded engine cylinder average temperature, average turbine inlet temperature, and turbine exhaust (stack) temperature at engine loads up to 220 BMEP. From a review of the TDI data

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and past GGNS operating data, it can be conservatively concluded that the turbocharger inlet temperatures are less than the design temperature of 1200°F at an engine tested load of 225 BMEP (7,000 kw). The estimated inlet turbocharger temperature at the design GGNS LOP/LOCA load of 158 BMEP is even less at 1045°F. Therefore, typical expected turbine inlet operating temperatures are well within design limits. Based on MP&L's evaluation of the bolt failure, the turbocharger inlet temperature is considered to have little or no impact on the integrity of the nozzle ring bolts.

The installation of temperature measuring instrumentation and data retrieval and evaluation will be completed by late August 1984. Baseline temperature data will be recorded and evaluated at 25%, 50%, 70% and 82% load. Results of this evaluation will be submitted to the NRC within 30 days of the date of this letter. The ability of the turbochargers to operate satisfactorily has been fully demonstrated over hundreds of hours of engine operation. Consequently, it is MP&L's position that the subject measurements are confirmatory in nature and are not necessary to ensure the satisfactory operation of the TDI diesel engines.

Yours truly,

L. F. Dale
Director, Nuclear Licensing & Safety

cc: Mr. J. B. Richard
Mr. R. B. McGehee
Mr. N. S. Reynolds
Mr. G. B. Taylor

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