

December 9, 1986

Docket No.: 50-416

Mr. Oliver D. Kingsley, Jr.
Vice President, Nuclear Operations
Mississippi Power & Light Company
Post Office Box 23054
Jackson, Mississippi 39205

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Dear Mr. Kingsley:

SUBJECT: TDI DIESEL GENERATOR MAINTENANCE AND SURVEILLANCE REQUIREMENTS

RE: GRAND GULF NUCLEAR STATION, UNIT 1

The Commission has issued the enclosed Amendment No. 26 to Facility Operating License No. NPF-29 for the Grand Gulf Nuclear Station, Unit 1. This amendment consists of changes to License Condition 2.C.(25)(B) "Diesel Generator Reliability" in response to your application dated September 12, 1986, as supplemented November 7, 1986.

This amendment changes License Condition 2.C.(25)(b) by adding maintenance and surveillance requirements for the Transamerica Delaval, Inc. (TDI) emergency diesel generators.

A copy of our Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

~~Original Signed by~~

Lester L. Kintner, Project Manager
BWR Project Directorate No. 4
Division of BWR Licensing

Enclosures:

- Amendment No. 26 to License No. NPF-29
- Safety Evaluation

cc w/enclosures:
See next page

*Previously concurred:

PD#4/LA	PD#4/PM
*MO'Brien	*LKintner:ca
12/02/86	12/02/86

~~not required~~
 FOB/D
 DVassallo
 1/186

check SECY and STATE before issuance
with noted revisions to SE
 OGC/ly
 Young
 12/14/86
 PD#4/D
 WButler
 12/19/86
 B

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 PDR ADOCK 05000416
 P PDR

Handwritten initials



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

December 9, 1986

Docket No.: 50-416

Mr. Oliver D. Kingsley, Jr.
Vice President, Nuclear Operations
Mississippi Power & Light Company
Post Office Box 23054
Jackson, Mississippi 39205

Dear Mr. Kingsley:

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RE: GRAND GULF NUCLEAR STATION, UNIT 1

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Sincerely,

A handwritten signature in cursive script that reads "L. L. Kintner".

Lester L. Kintner, Project Manager
BWR Project Directorate No. 4
Division of BWR Licensing

Enclosures:

1. Amendment No. 26 to License No. NPF-29
2. Safety Evaluation

cc w/enclosures:
See next page

Mr. Oliver D. Kingsley, Jr.
Mississippi Power & Light Company

Grand Gulf Nuclear Station

cc:

Robert B. McGehee, Esquire
Wise, Carter, Child, Steen and Caraway
P.O. Box 651
Jackson, Mississippi 39205

The Honorable William J. Guste, Jr.
Attorney General
Department of Justice
State of Louisiana
Baton Rouge, Louisiana 70804

Nicholas S. Reynolds, Esquire
Bishop, Liberman, Cook, Purcell
and Reynolds
1200 17th Street, N.W.
Washington, D. C. 20036

Office of the Governor
State of Mississippi
Jackson, Mississippi 39201

Mr. Ralph T. Lally
Manager of Quality Assurance
Middle South Services, Inc.
P.O. Box 61000
New Orleans, Louisiana 70161

Attorney General
Gartin Building
Jackson, Mississippi 39205

Mr. Larry F. Dale, Director
Nuclear Licensing and Safety
Mississippi Power & Light Company
P.O. Box 23054
Jackson, Mississippi 39205

Mr. Jack McMillan, Director
Division of Solid Waste Management
Mississippi Department of Natural
Resources
Bureau of Pollution Control
Post Office Box 10385
Jackson, Mississippi 39209

Mr. R. W. Jackson, Project Engineer
Bechtel Power Corporation
15740 Shady Grove Road
Gaithersburg, Maryland 20877-1454

Alton B. Cobb, M.D.
State Health Officer
State Board of Health
P.O. Box 1700
Jackson, Mississippi 39205

Mr. Ross C. Butcher
Senior Resident Inspector
U.S. Nuclear Regulatory Commission
Route 2, Box 399
Port Gibson, Mississippi 39150

President
Claiborne County Board of Supervisors
Port Gibson, Mississippi 39150

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

Mr. Ted H. Cloninger
Vice President, Nuclear Engineering
and Support
Mississippi Power & Light Company
Post Office Box 23054
Jackson, Mississippi 39205

Mr. J. E. Cross
Grand Gulf Nuclear Station Site Director
Mississippi Power & Light Company
P.O. Box 756
Port Gibson, Mississippi 39150

Mr. C. R. Hutchinson
GGNS General Manager
Mississippi Power & Light Company
Post Office Box 756
Port Gibson, Mississippi 39150



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MISSISSIPPI POWER & LIGHT COMPANY
MIDDLE SOUTH ENERGY, INC.
SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION
DOCKET NO. 50-416
GRAND GULF NUCLEAR STATION, UNIT 1
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 26
License No. NPF-29

1. The Nuclear Regulatory Commission (the Commission) has found that
 - A. The application for amendment by Mississippi Power & Light Company, Middle South Energy, Inc., and South Mississippi Electric Power Association, (the licensees) dated September 12, 1986 as supplemented November 7, 1986, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, Facility Operating License NPF-29 is amended as follows:
 - A. Change paragraph 2.C.(25)(b) to read as follows:
 - (b) MP&L shall comply with the TDI emergency diesel generator requirements specified in Attachment 2 to this license.

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3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed by

Walter R. Butler, Director
BWR Project Directorate No. 4
Division of BWR Licensing

Attachment:
Attachment 2 to
the License

Date of Issuance: December 9, 1986

PD#4/AB
MD
12/2/86

JK
PD#4/PM
LKintner:ca
12/2/86

check STRE & SEEP before issuance
OGC
M Young
12/4/86
PD#4/D
WButler
12/9/86
WB

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Walter R. Butler, Director
BWR Project Directorate No. 4
Division of BWR Licensing

Attachment:
Attachment 2 to
the License

Date of Issuance: December 9, 1986

Attachment 2

Transamerica Delaval Inc. (TDI) Diesel Generator

Maintenance and Surveillance Requirements

(NUREG-1216, August 1986)

1. Maintenance and Surveillance Program

MP&L shall implement and maintain in effect the provisions of the maintenance and surveillance program for the TDI emergency diesel generators at GGNS Unit 1 as identified in the MP&L letter dated July 18, 1986 (AECM-86/0172) and as approved in the staff's Safety Evaluation Report attached to the NRC letter dated December 9, 1986, subject to the provisions of paragraphs 2 and 3 below.

2. Changes

MP&L may make changes to the approved maintenance and surveillance program without prior approval of the Commission provided the changes do not adversely affect the operability or reliability of the diesel generators or involve changes in the Phase 1 Surveillance requirements of paragraph 3 below or otherwise change license conditions or Technical Specifications or result in an unreviewed safety question as defined in 10 CFR 50.59. MP&L shall maintain in auditable form, a current record of all such changes, including an analysis of the effects of the change on diesel generator operability and reliability, and shall make such records available to NRC inspectors upon request. All changes to the program shall be reported annually to the Director of the Office of Nuclear Reactor Regulation, along with the FSAR revisions required by 10 CFR 50.71(e).

3. Phase 1 Component Surveillance Requirements

MP&L shall comply with the following requirements:

3.1 Connecting Rods

Connecting rod assemblies shall be subjected to the following inspections at each major engine overhaul*:

- a. The surfaces of the rack teeth shall be inspected for signs of fretting. If fretting has occurred, it shall be subject to an engineering evaluation for appropriate corrective action.

* The frequency of the major engine overhauls referred to in these requirements shall be consistent with Section IV.1. "Overhaul Frequency" in Revision 2 of Appendix II of the Design Review/Quality Revalidation report which was transmitted by MP&L letter dated July 18, 1986.

- b. All connecting-rod bolts shall be lubricated in accordance with the engine manufacturer's instructions and torqued to the specifications of the manufacturer. The lengths of the two pairs of bolts above the crankpin shall be measured ultrasonically pre and post-tensioning.
- c. The lengths of the two pair of bolts above the crankpin shall be measured ultrasonically prior to detensioning and disassembly of the bolts. If bolt tension is less than an equivalent of 2400 ft-lbs, the cause shall be determined, appropriate corrective action shall be taken, and the interval between checks of bolt tension shall be re-evaluated.
- d. All connecting-rod bolts shall be visually inspected for thread damage (e.g., galling), and the two pairs of connecting rod bolts above the crankpin shall be inspected by magnetic particle testing (MT) to verify the continued absence of cracking. All washers used with the bolts shall be examined visually for signs of galling or cracking, and replaced if damaged.
- e. A visual inspection shall be performed of accessible external surfaces of the link rod box to verify the absence of any signs of service induced distress.
- f. All of the bolt holes in the link rod box shall be inspected for thread damage (e.g., galling) or other signs of abnormalities. In addition, the bolt holes subject to the highest stresses (i.e., the pair immediately above the crankpin) shall be examined with an appropriate nondestructive method to verify the continued absence of cracking. Any indications shall be recorded for engineering evaluation and appropriate corrective action.
- g. If the diesel generators are operated in excess of 5740 KW steady state, all connecting rods shall be disassembled and inspected at an interval of approximately 5 years coincident with the end of a fuel cycle, except that connecting rod disassembly and inspection is not required for limited post maintenance testing over 5740 KW for the purpose of seating new piston rings as described in the MP&L letter dated December 6, 1985 (AECM-85/0395).

3.2 Cylinder Blocks

- a. Cylinder blocks shall be inspected for "ligament" cracks, "stud-to-stud" cracks and "stud-to-end" cracks as defined in a report by Failure Analysis Associates, Inc. (FaAA) entitled, "Design Review of TDI R-4 and RV-4 Series Emergency Diesel Generator Cylinder Blocks" (FaAA report no. FaAA-84-9-11.1) dated December 1984.** (Note that the FaAA report specifies

** Transmitted to H. R. Denton, NRC from C. L. Ray, Jr., TDI Owners Group, by letter dated December 11, 1984.

additional inspections to be performed for blocks with "known" or "assumed" ligament cracks). The inspection intervals (i.e., frequency) shall not exceed the intervals calculated using the cumulative damage index model in the subject FaAA report. In addition, inspection method shall be consistent with or equivalent to those identified in the subject FaAA report.

- b. In addition to inspections specified in the aforementioned FaAA report, blocks with "known" or "assumed" ligament cracks (as defined in the FaAA report) shall be inspected at each refueling outage to determine whether or not cracks have initiated on the top surface exposed by the removal of two or more cylinder heads. This process shall be repeated over several refueling outages until the entire block top has been inspected. Liquid-penetrant testing or a similarly sensitive nondestructive testing technique shall be used to detect cracking, and eddy current shall be used as appropriate to determine the depth of any cracks discovered.
- c. If inspection reveals cracks in the cylinder blocks between stud holes of adjacent cylinders ("stud-to-stud" cracks) or "stud-to-end" cracks, this condition shall be reported promptly to the NRC staff and the affected engine shall be considered inoperable. The engine shall not be restored to "operable" status until the proposed disposition and/or corrective actions have been approved by the NRC staff.

3.3 Cylinder Heads

The following air roll test shall be performed as specified below, except when the plant is already in an Action Statement of Technical Specification 3/4.8.1, "Electric Power Systems, A.C. Sources":

The engines shall be rolled over with the airstart system and with the cylinder stopcocks open prior to each planned start, unless that start occurs within 4 hours of a shutdown. The engines shall also be rolled over with the airstart system and with the cylinder stopcocks open after 4 hours, but no more than 8 hours after engine shutdown and then rolled over once again approximately 24 hours after each shutdown. (In the event an engine is removed from service for any reason other than the rolling over procedure prior to expiration of the 8-hour or 24-hour periods noted above, that engine need not be rolled over while it is out of service. The licensee shall air roll the engine over with the stopcocks open at the time it is returned to service.) The origin of any water detected in the cylinder must be determined and any cylinder head which leaks due to a crack shall be replaced. The above air roll test may be discontinued following the first refueling outage subject to the following conditions:

- a. All cylinder heads are Group III heads (i.e, cast after September 1980.)
- b. Quality revalidation inspections, as identified in the GGNS Design Review/Quality Revalidation Report, Revision 2, have been completed for all cylinder heads.
- c. Group III heads continue to demonstrate favorable leakage performance. This should be confirmed with TDI prior to deleting air roll tests.

3.4 Turbochargers

Periodic inspections of the turbochargers shall include the following:

- a. The turbocharger thrust bearings shall be visually inspected for excessive wear after 40 non-prelubed starts since the previous visual inspection.
- b. Turbocharger rotor axial clearance shall be measured at each refueling outage to verify compliance with TDI/Elliott specifications. In addition, thrust bearing measurements shall be compared with measurements taken previously to determine a need for further inspection or corrective action.
- c. Spectrographic and ferrographic engine oil analysis shall be performed quarterly to provide early evidence of bearing degradation. Particular attention shall be paid to copper level and particulate size which could signify thrust bearing degradation.
- d. The nozzle ring components and inlet guide vanes shall be visually inspected at each refueling outage for missing parts or parts showing distress. If such are noted, the entire ring assembly shall be replaced.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 26 TO FACILITY OPERATING LICENSE NO. NPF-29

MISSISSIPPI POWER & LIGHT COMPANY

MIDDLE SOUTH ENERGY, INC.

SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION

GRAND GULF NUCLEAR STATION, UNIT 1

DOCKET NO. 50-416

1.0 INTRODUCTION

By letter dated September 12, 1986, Mississippi Power & Light Company (the licensee) requested an amendment to Facility Operating License No. NPF-29 for the Grand Gulf Nuclear Station (GGNS), Unit 1. The proposed amendment would change License Condition 2.C.(25)(b) to incorporate maintenance and surveillance requirements for the Transamerica Delaval, Inc. (TDI) emergency diesel generators developed by the TDI Owners Group and endorsed by the licensee.

As discussed in the staff's Supplement No. 6 to the GGNS Safety Evaluation Report, License Condition 2.C.(25)(b) was imposed to ensure that Grand Gulf, Unit 1, will continue to meet General Design Criterion 17, "Electric Power Station Systems," in Appendix A to 10 CFR 50 beyond the first refueling outage. Specifically, this license condition requires "Final evaluations and recommendations from the TDI Owners Group Program applicable to GGNS, Unit 1, and MP&L's actions in response to this program for the standby diesel generators shall be submitted for NRC review and approval prior to startup following the first refueling outage."

By letter dated June 26, 1986, the NRC staff transmitted to the licensee its generic safety evaluation report (SER) entitled, "Safety Evaluation Report Related to the Operability and Reliability of Emergency Diesel Generators Manufactured by Transamerica Delaval, Inc.," NUREG-1216. The staff concluded that the implementation of the maintenance and surveillance program identified in the SER will provide an acceptable resolution of the concerns regarding the performance of TDI emergency diesel generators for service at nuclear plants. The staff requested MP&L to provide its plans for implementation at GGNS, Unit 1 of the programs identified in the generic SER. As described in the staff's generic SER, the TDI Owners Group program for resolution of the concerns consisted of the following major elements:

- (1) Phase I: Resolution of 16 known generic problem areas intended by the Owners Group to serve as an interim basis for the licensing of plants;

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- (2) Phase II: A design review/quality revalidation (DR/QR) of a large set of important engine components to assure that their design and manufacture are adequate; and
- (3) Expanded engine tests and inspections to support Phase I and II.

The staff has required that any future revisions to the maintenance and surveillance program be subject to requirements similar to those for FSAR changes in 10 CFR 50.59 in view of the importance to this program in ensuring the operability and reliability of the engines. Furthermore, as described in the staff's generic SER, there are certain components that warrant special emphasis in terms of maintenance and surveillance actions to assure their adequate service. The staff requested MP&L to submit these maintenance and surveillance actions in the form of proposed license conditions as recommended by the generic SER.

By letter dated July 18, 1986, MP&L provided its plans for implementation of the programs identified in the staff's generic SER for resolving the TDI reliability concerns. Specifically, MP&L plans to implement Phase I and II as discussed in the generic SER and the maintenance and surveillance recommendations developed by the TDI Owners Group in Appendix II, Revision 2, of the DR/QR report for GGNS. Future TDI recommendations would be evaluated by MP&L and would be implemented as appropriate.

By letter dated September 12, 1986, the licensee proposed changes to License Condition 2.C.(25)(b) to add maintenance and surveillance requirements for the TDI diesel generators. During its review of the proposed license condition, the staff questioned the need for certain parenthetical expressions intended to clarify the applicability of the requirements to Division II emergency diesel generator inspections. The licensee agreed that the parenthetical expressions were not necessary and by letter dated November 7, 1986 proposed that they be deleted from the license condition. The notice of consideration of issuance of this license amendment was published in the Federal Register before the licensee's November 7, 1986 submittal. The deletion of the parenthetical expressions did not change the proposed license condition described in the notice. Therefore, the notice accurately described the license amendment request and the deletion does not affect the substance of the requested amendment.

2.0 EVALUATION

The NRC staff has reviewed the licensee's plans as submitted July 18, 1986. The licensee's plans are consistent with the elements that constitute an acceptable maintenance and surveillance program as outlined in the staff's generic SER and are, therefore, acceptable. As required by GGNS, Unit 1 Technical Specifications, the licensee will continue to operate its TDI diesel generators at less than or equal to 82% of rated load as recommended also in the generic SER. However, testing over 82% of rated load is a TDI requirement for seating new piston rings. The staff finds such post

construction testing to be infrequent, of short duration and, therefore, acceptable. Because the licensee has acceptably responded to the recommendations from the TDI Owners Group, the staff concludes that License Condition 2.C.(25)(b) has been satisfied.

The NRC staff has also reviewed the proposed new license conditions which add requirements for surveillance and maintenance of TDI diesel generators. The proposed license conditions as submitted by the licensee's letters dated September 12 and November 7, 1986 are consistent with the model license conditions included as Appendix A to staff's generic SER (NUREG-1216). The licensee has proposed to use the 10 CFR 50.59 process to evaluate changes to the maintenance and surveillance program identified in the license condition with the exception of the specific requirements for Phase I components applicable to the GGNS, Unit 1 TDI diesel engines which are included as specific license conditions. Because the proposed new license conditions are consistent with Appendix A to NUREG-1216, the staff concludes they are acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change to a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes to the surveillance requirements. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

4.0 CONCLUSION

The Commission made a proposed determination that the amendment involves no significant hazards consideration which was published in the Federal Register (51 FR 36097) on October 8, 1986, and consulted with the state of Mississippi. No public comments were received, and the state of Mississippi did not have any comments.

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and

(2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and the security nor to the health and safety of the public.

Principal Contributors:

A. Notafrancesco, Plant Systems Branch, DBL
L. Kintner, Project Directorate No. 4, DBL

Dated: December 9, 1986