



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

Docket

January 6, 1984

Docket No. 50-206

Mr. K. Baskin, Vice President  
Nuclear Engineering  
Licensing and Safety Department  
Southern California Edison Company  
2244 Walnut Grove Avenue  
Post Office Box 800  
Rosemead, California 91770

Dear Mr. Baskin:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING TRANSAMERICA  
DELAVAL EMERGENCY DIESEL GENERATORS - SONGS 1

Emergency Diesel Generators manufactured by Transamerica Delaval, Inc. (TDI) have been installed and in service at San Onofre, Unit 1 (SONGS 1), since 1976. As a result of a series of recent failures of TDI engines at other nuclear power plants, the staff's level of confidence in the ability of all TDI engines to properly perform their function has been reduced. In an effort to reestablish a higher level of confidence, a group of nuclear power plant owners of TDI engines has been formed. Mr. J. P. McGaughy of Mississippi Power & Light has been named chairman of the owners group.

The enclosed letter (Enclosure 1) from Mr. T. M. Novak to Mr. McGaughy contains a series of questions that the staff has developed regarding TDI diesel generators. Notwithstanding the attention being directed by the owners group to these questions, we request that you ensure that they are answered specifically for your TDI engines. This may be done by reference to an owners group report or a plant-specific report. The list was drawn up with reactor operating license applicants in mind, so some questions may not be directly applicable to SONGS 1.

For owners who have a significant amount of operating experience, including SCE, the staff has developed an additional list of questions (Enclosure 2). The answers to these questions will help broaden our data base of TDI diesel generator experience.

We request that you provide a response to the questions in Enclosure 2, and a schedule for responding to the questions in Enclosure 1, within 30 days of your receipt of this letter.

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Mr. K. Baskin

- 2 -

January 6, 1984

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P. L. 96-511.

Sincerely,

Original signed by

Dennis M. Crutchfield, Chief  
Operating Reactors Branch #5  
Division of Licensing

Enclosures:

1. Ltr. from T. Novak to  
Mr. McGaughy dated 12/27/83
2. List of questions

cc w/enclosures  
See next page

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Mr. K. Baskin

cc

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c/o U.S. NRC  
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San Clemente, California 92672

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San Clemente, California 92672

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Docket Nos. 50-416/417

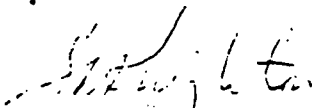
Mr. J. P. McGaughy  
Vice President  
Nuclear Production  
Mississippi Power & Light Company  
P. O. Box 1640  
Jackson, Mississippi 39205

Dear Mr. McGaughy:

Subject: Delaval Diesel Owners Group Activities

Based on my discussion with you on December 22, 1983, in your capacity as chairman of the owners group for providing a unified response to concerns that have arisen regarding Transamerica Delaval emergency diesel generators, I am enclosing a list of NRC staff questions concerning Delaval diesels. We would expect that the majority of these questions address generic concerns which the Owners Group could most efficiently answer. Plant-specific questions should be addressed by individual applicants. Copies of these questions will also be sent to all affected utilities for their response.

Sincerely,

  
T. M. Novak, Assistant Director  
for Licensing  
Division of Licensing

Enclosure:  
As stated

cc w/enclosure:  
See next page

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ENCLOSURE 1

Grand Gulf

Mr. J. P. McGaughy  
Vice President  
Nuclear Production  
Mississippi Power & Light Company  
P. O. Box 1640  
Jackson, Mississippi 39205

cc: Robert B. McGehee, Esquire  
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Mr. J. F. Fager, Senior Vice President  
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Mr. Larry Dale  
Mississippi Power & Light Company  
P. O. Box 1640  
Jackson, Mississippi 39205

Mr. R. W. Jackson, Project Engineer  
Grand Gulf Nuclear Station  
Bechtel Power Corporation  
Gaithersburg, Maryland 20760

Mr. Alan G. Wagner  
Resident Inspector  
Route 2, Box 150  
Port Gibson, Mississippi 39150

REQUESTS FOR ADDITIONAL INFORMATION  
DELAVAL DIESEL GENERATOR EVALUATION

1. Provide a copy of the procurement specifications to which the standby diesel generators (DG) were ordered.
2. Provide the performance specification and inspections performed upon receiving the DGs to show that the procurement specifications were met.
3. Identify the materials used in the design of the DGs at your plant (specifically limiting components such as crankshafts, camshafts, pistons rocker arms, bearing materials, cylinder blocks, cylinder heads, pumps, turbochargers, etc.). Discuss how you assured yourself that design materials used in the manufacture of your DGs were as stated and in accordance with materials described in the TDI proposal, purchase specifications, and conformance to industry standards.
4. Does TDI have a program where parts/components, etc., are modified (such that design margins are reduced) in order to improve operability and DG reliability? Does this apply to any DG parts at your plant? Provide a list of product improvements made by TDI on your model DG and identify and justify which of these were not incorporated on your diesels.
5. If applicable, provide responses to all NRC open items on standby DGs at your plant.
6. Identify each of your DGs by model number and rating (continuous duty and short time overload) as purchased and discuss all tests (including torsional and other design proof tests) performed on the DGs that were observed (also those not observed) by you at the manufacturer's facilities.
7. In addition to qualifications tests that were performed in accordance with regulatory guides 1.9 and 1.108, and IEEE Std. 387, describe all other onsite tests performed on your DGs.
8. In addition to any deficiency reports already provided to the NRC, summarize and describe problems encountered and resolved during installation and preliminary operation of the DGs. During this period, were any unusual or abnormal operations observed such as excessive vibration, noise, etc., and how were these conditions corrected? Provide a detailed summary of the complete operating histories of your DGs.

9. Tabulate, compare and discuss differences in present actual DG loading to estimated loads included in the procurement specifications. Identify the magnitude of the increased load (if any) on the DGs and describe how the increased loading affects the DG capability with regard to reserve margin.
10. If DG loading has increased from that specified in the procurement specifications, has it been necessary to upgrade the standby DGs to meet the new load requirements? If DG upgrading has been performed, provide a detailed description of the upgrading accomplished on your DGs? What is the revised manufacturer's rating for each upgraded unit for normal continuous duty and short time overload conditions? Is the DG built-in design margin (after upgrading) still within the recommendations of IEEE Std. 387? What is the reserve load carrying capability (margin) of your upgraded DGs?
11. In light of the problems that have been identified to date with Delaval diesels, discuss your plans to perform an internal visual inspection of each standby DG with regard to potential crankshaft and/or web cracks as identified at the Shoreham Station and provide a detailed discussion of your plans to perform any non-destructive testing (NDT) such as dye penetrant testing, etc., as deemed appropriate to assure absence of cracks at these locations or at any other locations where cracks may have been observed. Discuss schedules for such testing.
12. Justify that the standby DGs at your plant are sufficiently reliable that there will be reasonable assurance that the facility can operate without undue risk to the health and safety of the public. Your justification should include, but not be limited to the following: (1) quality assurance program conducted by you during procurement, manufacturing and receipt of your DGs, (2) your assessment of the TDI manufacturing process, inspection, and quality assurance program conducted during manufacture of your DGs, (3) your assessment of TDI responsiveness to problems that have occurred with your engines during installation and preliminary operation including assessment of TDI performance, (4) comparison of your DGs with all other TDI emergency DG models now in use or to be used in other nuclear generating stations (and other non-nuclear facilities) to show that the conditions and/or failure modes present at Shoreham will not occur at your plant and at other nuclear plants; provide any supporting information that may be obtained from non-nuclear installations, (5) independent review or verification of any TDI design calculations for critical components of your DGs, and/or other means used to assure that your DGs are designed to DEMA standards and applicable industry codes and standards, and (6) your overall assessment of the DGs at your plant with regard to TDI system design, operating experience to date, and system

dependability, availability and reliability to warrant operation of your plant.

13. Provide a tabulation of the number of times ( including each date of occurrence) voltage was lost at the emergency bus(es) requiring operation of the DG(s) including a brief description of each incident. In the above tabulation, also identify the loss of emergency bus voltage due to loss of offsite power.
14. Shoreham has identified connecting rod bearing materials are not in accordance with design specifications on their engines. This condition may also exist on all other TDI diesels. Provide assurance that correct bearing design and materials have been used in your engines. Should you find that improper bearings have been used in your diesels, state how and when you propose to correct this problem.
15. Most of the piston skirts in the Shoreham diesels were cracked. Because of a common cylinder design for all TDI diesels, it is presumed that this condition potentially exists on all other TDI diesels. Discuss your plans, including internal inspection or other means to determine the potential or actual existence of such cracking. In your response, indicate whether the design and materials are identical to those in the Shoreham units; if not identify differences. Identify any corrective actions you have taken to date or plan to take.

The staff understands that TDI has a piston design modification to correct the above problem. Are you aware of this and has TDI transmitted this service information to you?

16. What maintenance and/or operating practices have you developed to assure optimum reliability of your diesel generators at your plant?
17. What surveillance practices in addition to those required by plant technical specifications have you instituted to assure optimum reliability of your diesel generators at your plant?



### TDI EDG RELIABILITY SURVEY QUESTIONS

In order to compare the reliability of the Delaval DGs with an industry-wide average reliability of LWR DGs, it is necessary to have reasonably complete information on DG failures on all Delaval DGs currently installed at OL and OR plants, not just selected failure incidents. Further, because the experience with the Delaval DGs is very limited, it is important that the data provided by the utilities be of good quality in order to permit a meaningful reliability assessment. This information should include data on:

1. Numer of failures to start on demand and number of failures to run (i.e., achieve equilibrium under rated speed, voltage and load conditions);
2. Total number of demands made leading to either a successful startup and run or to a failure, and when (date) the tests were run;
3. The time interval between the periodic tests of the DGs;
4. Information on the number of times diesel generators were found in a failed state by means other than testing (e.g., visual inspection), and the nature of such failures;
5. If any failures were censored from the data base, complete information on these failures should be provided;
6. Information on failure causes and fixes (in terms of changes in manufacturing, design, procedures or training) and on the specific model of Delaval DG; and
7. Information on how many failures occurred during pre-operation and how many after operation started.

We request that the above-specified data be obtained from the operators of plants using Delaval DGs. In this connection, it would be useful to explore whether such data can be made available from the Kuosheng (Taiwan) plant. In addition, we would like to review the results of any DG reliability analyses performed by the relevant utilities and to be informed of the status of the design or procedural changes made which may impact the availability of Delaval DGs.