Entergy

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September 22, 1998

U. S. Nuclear Regulatory Commission
Document Control Desk, OP1-37
Washington, DC 20555

Attention: Document Control Desk

Subject: River Bend Station - Unit 1
Docket No. 50-458
License No. NPF-47
License Amendment Request (LAR) 98-07
Proposed Operating License Amendment to Revise TDI Diesel Engine Inspection Requirements

File Nos.: G9.5, G9.42

RBEXEC-98-094
RBF1-98-0180
RBG-44562

Ladies and Gentlemen:

Entergy Operations, Inc. (EOI) proposes to delete license conditions associated with its Transamerica Delaval, Inc. (TDI) emergency diesel generators (EDGs). These license conditions prescribe certain inspection requirements depending on various overload conditions experienced by the EDGs. The removal of these license conditions is consistent with industry initiatives for diesel generators of this type and class of service. Also, the NRC has issued a generic Safety Evaluation Report granting approval to remove the license requirements associated with NUREG-1216 from utilities' licenses. EOI has reviewed the applicable owners group report and the NRC SER and finds that the conclusions reached are applicable for River Bend. In accordance with 10 CFR 50.92, EOI has concluded that the proposed change does not involve a significant hazards consideration.

Discussion

The license requirements in RBS Operating License Attachment 3 were issued as a result of concerns with the reliability of large bore, medium speed, standby diesel generators manufactured by TDI. NUREG-1216[1] called for extensive periodic engine tear-downs as the major part of a maintenance and surveillance program for the TDI engines. Inspections performed to date have shown no unusual wear patterns that would cause engine failure. The condition of the majority of the components inspected during these tear-downs is periodically assessed by monitoring and/or trending of operational parameters. The TDI Owners Group Topical Report[2] contains technical justification and suggested submittals to remove the NUREG-1216 requirements.

On March 17, 1994, the NRC issued a generic Safety Evaluation Report (SER)[3] granting approval to remove the license requirements associated with NUREG-1216 from utilities' licenses. The NRC wrote, "It is intended that the attached SE be referenced by affected licensees in proposals for changes to facility licenses to the extent specified under the limitations delineated in the licensee submittals and the associated NRC evaluation. The evaluation defines the basis for the approval of the reports and is applicable to the eight Owners' Group licensees: ... Grand Gulf Utilities [sic] for River Bend ..." EOI agrees that the owners group submittals and the generic SER are representative of the design and operation of the TDI engines at RBS, and further agrees that the license conditions may be removed from the RBS Operating License.

EOI currently inspects and maintains the EDGs on a periodic basis. The periodicity of the inspections is based on a program of planned inspection "in accordance with procedures prepared in conjunction with the manufacturer's recommendations for this class of standby service." This periodicity is defined in the Technical Requirements Manual (TRM) as surveillance requirement TSR 3.8.1.21, and thus controlled under 10 CFR 50.59. The next routine tear-down inspection of the Division II EDG is scheduled for completion during RF-9. Similarly, the Division I EDG is scheduled for its next routine tear-down inspection during RF-8.

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(1) NUREG-1216, "Safety Evaluation Report Related to the Operability and Reliability of Emergency Diesel Generators Manufactured by Transamerica Delaval, Inc.," dated August 1986.

(2) Generic Topical Report TDI-EDG-001-A, "Basis for Modification to Inspection Requirements for Transamerica Delaval, Inc., Emergency Diesel Generators," approved by the U.S. NRC on March 17, 1994.

(3) J.A. Norberg letter to R.C. Day, "Safety Evaluation, Inspection Requirements for Transamerica Delaval, Inc. Diesel Generators," dated March 17, 1994.

As required by the current RBS Operating License Attachment 3, which prescribes certain actions following various overload conditions, a non-routine inspection for the Division II EDG is currently scheduled for RF-8. EOI experienced a brief overload condition on the Division II EDG during RF-7. On October 8, 1997, the EDG was loaded in excess of 3200 kW for approximately 19 seconds (0.0053 hours), but did not exceed 3500 kW. Accordingly, License Condition, Attachment 3, 2.(c), is applicable, for which a crankshaft inspection of crankpin journal numbers 5, 6, and 7 and the two main journals in between using nondestructive examination techniques is to be performed at the next refueling outage. The basis for the license condition is to monitor for fatigue cracks caused by torsional stresses. Upon recognition of the short duration (0.0053 hours) operation in an overloaded condition, RBS performed an engineering evaluation which concluded that the crankshaft will continue to support EDG operability through the next scheduled routine tear-down inspection. This evaluation was completed on October 8, 1997, and is documented in accordance with the site corrective action program. The result of deleting Operating License Attachment 3 is that RBS will not perform the non-routine inspection/tear-down of the Division II EDG during RF-8. As concluded in the NRC SER industry experience has shown that inspections of this type have not resulted in findings of component degradation and therefore, deletion of TDI related license conditions is appropriate.

Conclusion

Attachment 2 of this letter provides a description of the proposed changes, associated justification, and the No Significant Hazards Considerations basis for the change to the Operating License. Attachment 3 is a copy of the marked-up pages. These attachments serve to justify the change to the Operating License.

This amendment request has been reviewed and accepted by the Facility Review Committee and the Safety Review Committee. In addition, other licensees with TDI EDGs have removed their license conditions with similar justification. (*see* U.S. NRC letter to C.R. Hutchinson, "Issuance of Amendment No. 114 to Facility Operating License No NPF-29 - Grand Gulf Nuclear Station, Unit 1," dated January 4, 1995; *also* U.S. NRC letter to D.C. Shelton, "Amendment No. 74 to Facility Operating License No. NPF-58 - Perry Nuclear Power Plant, Unit No. 1," dated November 16, 1995).

Should the Staff have any questions concerning this matter, please contact Brian Thumm at (504) 381-3771.

Sincerely,

Randall K. Edington

Randall K. Edington
Vice President - Operations

RKE/RJK/bft
attachments
1. Affirmation per 10CFR50.90
2. RBS LAR 98-07
3. Mark-up of Affected Pages

cc: U. S. Nuclear Regulatory Commission
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ATTN: Administrator

BEFORE THE

UNITED STATES NUCLEAR REGULATORY COMMISSION

LICENSE NO. NPF-47

DOCKET NO. 50-458

IN THE MATTER OF

ENTERGY GULF STATES, INC.

AND

ENTERGY OPERATIONS, INC.

AFFIRMATION

I, Randall K. Edington, state that I am Vice President - Operations of Entergy Operations, Inc. at River Bend Station; that on behalf of Entergy Operations, Inc., I am authorized by Entergy Operations, Inc. to sign and file with the Nuclear Regulatory Commission this River Bend Station License Amendment Request (LAR) 98-07, "Proposed Operating License Amendment to Revise TDI Diesel Engine Inspection Requirements;" that I signed this letter as Vice President - Operations of Entergy Operations, Inc. at River Bend Station; and that the statements made and the matters set forth herein are true and correct to the best of my knowledge, information, and belief.

Randall K. Edington

STATE OF LOUISIANA
PARISH OF WEST FELICIANA

SUBSCRIBED AND SWORN TO before me, a Notary Public, commissioned in the Parish above named, this 22nd day of September, 1998.

(SEAL)

Claudia F. Hurst
Notary Public

ATTACHMENT 2

ENTERGY OPERATIONS, INC.
RIVER BEND STATION
DOCKET 50-458/LICENSE NO. NPF-47
LICENSE AMENDMENT REQUEST 98-07

Licensing Document Involved

This proposed change affects the following Operating License sections:

- License Condition 2.C.8, "TDI Diesel Engines"
- Attachment 3 to NPF-47, "TDI Diesel Engines Requirements"

Discussion

The TDI Owners Group was formed in late 1983 as a result of the failure of a crankshaft at the Shoreham Nuclear Plant. The crankshaft failure at Shoreham raised questions about the overall suitability of the TDI engines for nuclear service. In response to these concerns, the owners developed a detailed plan to review the design and validate the acceptability of the TDI engines for nuclear service. This program, the Design Review/Quality Revalidation (DR/QR) program, was reviewed by the NRC and endorsed as NUREG-1216. The DR/QR program served the purpose for which it was intended, that being to ensure the TDI engines were suitable for nuclear service. It is on the basis of the following information and the NRC's Safety Evaluation Report dated March 17, 1994, that removal of the requirements of NUREG-1216 from the RBS Operating License is requested.

The Owners Group submittals included data from past engine tear-downs and reliability and availability data for all the TDI engines currently in nuclear service. It is Entergy's position that the TDI Owner's Group submittals cover the entire spectrum of design, operation, and maintenance issues for the TDI engines.

Entergy Operations views the NRC's Generic Safety Evaluation as a positive step in improving both reliability and availability of the TDI engines. However, one point of the SER requires clarification. The SER on page 9, paragraph 5, implies that all licensees are committed to implement slow starts. Entergy agrees that slow starts reduce stress and wear on internal engine components. Our experience, however, has shown that fast starts have not adversely affected engine performance or resulted in excessive or rapid engine wear when proper pre-lubrication procedures are used prior to planned engine starts. Our operating procedure controls require pre-lubrication of the diesel with the Pre-Lube Oil Pump immediately prior to engine start. This

method has proven very effective in maintaining very low wear rates on internal engine components and turbocharger thrust bearings. We believe that our pre-lubrication controls are equivalent to slow starts in addressing the underlying concerns associated with cold fast starts.

Justification

The following information provides the justification for LAR 98-07.

1. The Owners Group submittals contained in Reference 1 provided data from tear-downs and inspections of all the TDI engines currently in nuclear service. This data did not reveal any unusual or abnormal wear patterns for the components inspected. Given past inspection results and the better than required average reliability for these machines, it is no longer necessary to subject the TDI engines to a program of strict time based tear-downs that are more stringent than requirements for other manufacturer's engines. RBS will, however, continue to perform routine tear-down inspections of the engines as currently scheduled in accordance with vendor recommendations.

2. The tear-downs called for in the RBS Operating License (i.e., non-routine tear-downs required following certain overload conditions) require a significant amount of time to perform. During these inspections, the diesel generator is not available to perform its design function of supplying emergency power.

3. As pointed out in the NRC Safety Evaluation Report for the owners group generic submittal, research (Reference 3) has indicated the potential negative consequences of intrusive inspections (engine tear-downs) on engine reliability. This study showed a marked decrease in reliability immediately following intrusive inspection. After the components of the engine are broken in (wear-in period) there is an extended period of increased reliability lasting until the machinery reaches the end of its lifetime.

4. The Owners Group report envelops River Bend design and operation.

No Significant Hazards Consideration

In accordance with 10 CFR 50.92, EOI has reviewed the attached proposed change and has concluded that it does not involve a significant hazards consideration. The basis for this conclusion is that the three criteria of 10 CFR 50.92(c) are not compromised. The proposed change does not involve a significant hazards consideration because the change will not:

1. Involve a significant increase in the probability or the consequences of an accident previously evaluated:

   Diesel generators are not accident initiating equipment. Elimination of the non-routine tear-downs and inspections will not adversely effect on the probability of an accident occurring. Regular maintenance programs (which may include periodic tear-downs and inspections) in lieu of this specific license condition would decrease the consequences of an accident because the availability of the engines will increase as a result of the less frequent tear-downs. (See Generic Topical Report TDI-EDG-001-A, "Basis for Modification to Inspection Requirements for Transamerica Delaval, Inc., Emergency Diesel Generators") Additionally, the high average reliability of the TDI engines will not be negatively affected due to this change. NRC research has shown there is a period of decreased reliability immediately following intrusive tear-downs (break-in period), followed by a long period of high reliability. Continued monitoring and maintenance as implemented by Technical Requirements Manual (TRM) surveillance's will contribute to continued high reliability of the EDGs.

2. Create the possibility of a new or different kind of accident from any previously evaluated:

   The proposed amendment does not affect the design or function of any plant structure, system, or component, nor does it change the way plant systems are operated. The proposed amendment will not cause any physical change to the plant or the design or operation of the diesel units. This change will only affect the frequency of tear-down inspections of the EDGs, and not the physical activities performed during such inspections. Therefore, the removal of the existing condition from the operating license will not create the possibility of a new or different kind of accident from any previously evaluated.

3. Involve a significant decrease in the margin of safety.

   The proposed amendment does not affect parameters which would result in a significant reduction in margin of safety. Operating experience and data have shown increased reliability can be achieved by eliminating unnecessary tear-down inspection, such as those prescribed by this license condition. Maintenance of the EDGs is presently scheduled in accordance with the vendor's recommendations. The RBS corrective action program provides a means to evaluate future operational events and take the appropriate actions. Therefore, the proposed amendment does not involve a significant decrease in the margin of safety.

References

1. Transamerica Delaval, Inc. Emergency Diesel Generators Owners Group, Generic Topical Report, TAC-M85325, "Basis for Modification to Requirements for Transamerica Delaval, Inc. Emergency Diesel Generators," dated April 28, 1994.

2. NRC Safety Evaluation Report, "Operability and Reliability Review of Emergency Diesel Generators Manufactured by Transamerica Delaval Inc." dated March 17, 1994.

3. NUREG/CR-5057, K. R. Hoopingarner and F. R. Zaloudek, "Aging Mitigation and Improved Programs for Nuclear Service Diesel Generators," Pacific Northwest Laboratory, PNL-6397, December 1989.