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Director, Office of Nuclear Reactor Regulation
Attention: G. E. Lear, Director
PWR Project Directorate No. 1
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Subject: Docket No. 50-206
Comments on Draft Safety Evaluation Report on Transamerica Delaval, Inc. (TDI) Diesel Generators
San Onofre Nuclear Generating Station
Unit 1

This is regarding your transmittal dated March 14, 1986, of the draft Safety Evaluation Report (SER) addressing the technical resolution of the generic TDI diesel generator issue. Per your request, Southern California Edison (SCE) has reviewed the draft SER and is providing the enclosed comments for your consideration in revising the SER prior to its issuance.

SCE believes that the NRC's concerns regarding Phase I and Phase II components can be effectively resolved through implementation of the TDI Diesel Generator Owner's Group maintenance and surveillance (M/S) program. The Owner's Group and its participating organizations have demonstrated that a technical basis exists to qualify the TDI diesel engines for nuclear service. In addition, the San Onofre Unit 1 diesel engines have a long history of safe and reliable performance. However, this program should remain completely independent of the San Onofre Unit 1 Technical Specifications. Furthermore, none of the M/S items should be a license condition. The comprehensive scope of the M/S program provides the primary assurance that degraded conditions will be detected, corrected and, where necessary, reported to the NRC. Making selected M/S items license conditions will not significantly increase the effectiveness of the M/S program.

If you have any questions regarding our comments, please call me.

Very truly yours,

M. O. Medford

cc: R. Dudley, NRC/NRR San Onofre Unit 1 Project Manager
F. R. Huey, NRC Senior Resident Inspector, Units 1, 2 and 3
J. B. Martin, NRC Region V, Regional Administrator
D. E. Broeils, Duke Power (TDI D/G Owner's Group)

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Enclosure

COMMENTS ON DRAFT SER

SER Section Number/Subject	SCE's Comments
2.1.3.1 (Connecting Rod Bearing Shells)	SCE will comply with PNL recommendations. These recommendations will be implemented by inclusion in the Maintenance and Surveillance (M/S) program update for San Onofre Unit 1. The M/S program will include an inspection of the connecting rod bearing shells at 5 year intervals on a sampling basis. A complete inspection will be made at 10 years. Based on positive results, the interval will then be extended to 10 years. This will be consistent with Owner's Group (OG) and TDI revised recommendations.
2.1.3.2 (DSRV Connecting Rods)	SCE will comply with PNL recommendations. These recommendations will be implemented by inclusion in M/S program update for San Onofre Unit 1. A specific license condition is not necessary. The M/S program will include an inspection of the connecting rods at 5 year intervals on a sampling basis. A complete inspection will be made at 10 years. Based on positive results, the interval will then be extended to 10 years. This will be consistent with OG and TDI revised recommendations.
2.1.3.3 (Crankshafts - All TDI Models)	NRC staff clarifications described here are incorporated in SCE's procedures and are being currently implemented.
2.1.3.7 (Crankshafts, DSRV-20)	The SER states that the NRC will request SCE "to commit to a program to correct the root cause of the (crankshaft) cracking problem and will negotiate a suitable schedule for completing this effort." SCE's position is that a suitable method to fully resolve the crankshaft cracking problem should be investigated. SCE is presently exploring with TDI the feasibility and merits of various alternative solutions and will negotiate with the NRC a schedule for completion of the investigation and associated corrective actions to reduce crankshaft stresses. However, it is our position that the current recommended periodic inspections will fully ensure the continued safety and reliability of the San Onofre Unit 1 diesels until suitable corrective modifications have been completed or other agreements reached with the NRC.

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	During the present refueling outage, DG No. 1 and No. 2 crankshafts were inspected. No new cracks were found. DG No. 1 was loaded to 6000 kW during testing that followed crankshaft repairs performed in the previous outage. The steady state stresses on the crankshafts are within conservative limits and are not a safety issue for San Onofre Unit 1. For these reasons, the contingency inspection referred to on p. 19 of the SER should not be required for accidental loading beyond 4500 kW + 5%.
	The periodic inspections recommended by PNL in Section 4.8.5.6.2 of PNL-5600 are acceptable, with the exception of the inspection relating to the bolts and the mating faces of the coupling between the flywheel and the generator of each engine. The PNL recommendations should not be a specific license condition for San Onofre Unit 1. For the flywheel to generator coupling, SCE proposes a visual inspection of the accessible flywheel areas at 5 year intervals. In addition, it is proposed that the mating faces of the coupling be inspected if a disassembly is required for reasons such as misalignment, excessive vibration or web deflection problems. The flywheel bolts of DG No. 1 and No. 2 were recently retorqued. No loose bolts were found prior to the retorquing.
	Proposed Change No. 147, dated February 14, 1985, to the San Onofre Unit 1 Technical Specifications, limits all diesel generator surveillance test loads to 4500 kW $\pm$ 5%. NRC's approval of this proposed change is pending. Operations personnel have been instructed to limit the surveillance test load to 4,500 kW $\pm$ 5% and to not exceed 4500 kW + 5% (4725 kW) under emergency conditions.
	Engine "slow start" characteristics are currently under review with Failure Analysis Associates, the Owner's Group consultant on torsiograph analysis. It is noted that a time delay permissive included in the start circuitry may preclude a 24 second start without some hardware modification. SCE will advise the NRC further regarding our proposed method of "slow start" and any needed justification.
2.1.3.8 (Engine Block)	SCE's position is that the safety function of the engine block can be fully assured by implementing the Owner's Group recommended inspections. SCE will comply with the final version of the Owner's Group M/S update.

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	Even though DG No. 1 right block has moderate Widmanstaetten graphite, it has been in operation for 9 years. The unit test loading is now restricted to 4500 kW ± 5%. Recent inspection of the top of the right block with all heads and four cylinder liners removed failed to show any cracks. The additional PNL recommendations in Section 4.9.5.2 of PNL-5600 (daily block top inspection under intense light, camshaft gallery inspection, cylinder liner bore inspection) will not significantly enhance block safety and reliability. If future block inspections reveal cracks, SCE will promptly notify the NRC. However, SCE's position is that the engine should not be considered inoperable until SCE has completed an evaluation and determined that the cracks compromise engine performance.
2.1.3.9 (Cylinder Heads)	SCE currently implements periodic air rolling of the engine with cylinder cocks open to check for presence of water. However, this should not be a license condition. The PNL recommendations will be considered in the M/S Program update.
2.1.3.10 (Engine Base-All Models)	SCE agrees with the PNL-5600 recommendations, which will be incorporated in the M/S update. The engine bases at San Onofre Unit 1 are not suspected of being cracked or overstressed and no cracks were found during the recent engine base inspections. For these reasons, checking of the engine bases for Widmanstaetten graphite is not necessary.
2.1.3.11 (Fuel Oil Injection Tubing	During the present refueling outage, the tubing was 100% inspected and no cracks found. The tubing on DG No. 1 has seen in excess of 10^7 cycles and our position is that the tubing on both diesels is fully qualified.
2.1.3.13 (Piston Skirts-Modified Type AF)	PNL recommendations are acceptable, but should not be made license conditions. SCE will review the advisability of gradually replacing modified Type AF pistons with Type AE pistons.
2.1.3.14 (Turbochargers)	The M/S program update will consider all PNL-5600 recommendations. SCE will comply with the final M/S update. It is not necessary to designate individual recommendations as license conditions. San Onofre Unit 1 Elliott 65G turbochargers do not have a history

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	of cracked or missing vanes and therefore a vane change out to a modified design is not necessary, nor advisable in that the modified design has not proven superior.
2.3 (M/S Program)	On p. 33 of the SER, it is stated that the M/S program committed to by the licensee should be made a Technical Specification requirement. Our position is that the M/S program should be independent of the Technical Specifications. Any future revisions to the M/S program should be made with appropriate reviews under existing NRC guidelines.
Appendix A (Connecting Rods)	The M/S program will include an inspection of the connecting rods at 5 year intervals on a sampling basis. A complete inspection will be made at 10 years. Based on positive results, the interval will then be extended to 10 years. This will be consistent with OG and TDI revised recommendations. The statement regarding "zero" clearance between the link pin and the link rod should be revised to say that there should be "no measurable" clearance.
Appendix A (Cylinder Blocks)	SCE agrees that if a future cylinder block inspection reveals cracks, the NRC will be notified promptly. However, the decision to declare the diesel inoperable should be deferred until SCE has completed its evaluation, in view of the marginal significance of early cracking indications with respect to engine performance.
Appendix A (Turbochargers)	SCE proposes that the nozzle ring components and inlet guide vanes be visually inspected at the frequency of one turbo per engine per refueling outage. The San Onofre Unit 1 turbochargers do not have a history of cracked nozzle rings or inlet guide vanes. Pre-turbine exhaust temperature monitoring is presently not available at San Onofre Unit 1. Cylinder exhaust gas temperatures are monitored and are well below the TDI recommended limit of 1200^{o}F.

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