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May 1, 1992

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Subject: **Docket No. 50-206**
Amendment Application No. 204
Emergency Diesel Generators
San Onofre Nuclear Generating Station, Unit 1

This letter requests NRC approval of enclosed Amendment Application No. 204 (Proposed Change No. 253). The amendment application revises Section 4.4, "Emergency Power System Periodic Testing," of the San Onofre Unit 1 Technical Specifications (TS). It increases the allowed number of emergency diesel engine start-stop cycles between crankshaft inspections from 50 to 70. It also clarifies that load transients lasting 5 seconds or less during diesel operation are not considered a violation of existing engine load restrictions, and requests editorial changes to Section 4.4 of the TS.

Attachments 1 and 2 to the enclosure contain the existing TS requirements and the proposed TS requirements respectively.

Inspection Requirements

Section 4.4 of the TS requires that the diesel crankshafts be inspected for cracks at every refueling outage or at the end of 50 engine start-stop cycles since the previous inspection, whichever occurs first. The inspection interval of 50 was selected based on a conservative analysis performed to determine the root cause of the cracks. The analysis indicated that excessive fatigue stresses associated with repeated engine starting and stopping in the course of standby service were the root cause of the cracks. The analysis recommended that both crankshafts be inspected during plant outages at intervals of approximately 50 start-stop cycles. A summary of this analysis is presented in Attachment 3 for background.

The proposed changes retain the requirement to inspect the crankshafts at every refueling outage, but extend the number of allowed start-stop cycles between successive crankshaft inspections from 50 to 70 (using a safety factor of 4). Justification for this extension is provided by continued crack free performance of both crankshafts since the time of the original analysis.

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Additional justification is provided by the results of updated testing and analysis performed during 1990. These results are reported in Attachment 4. The proposed extension would minimize the potential for a forced plant shutdown to inspect a crankshaft once it has reached the allowed number of start-stop cycles (prior to the scheduled outage).

Consistent with the recommendations of the updated analysis, these proposed changes also require one additional journal bearing to be included in the crankshaft inspections that will be performed in the future.

Loading Requirements

Section 4.4 of the TS also requires that during monthly diesel surveillances, each diesel be synchronized and operated for at least 60 minutes at 6000 kW (+100 kW, -500 kW). The intent of restricting the nominal load to 6000 kW along with an upper limit of 6100 kW is to protect the diesel crankshafts against stress induced cracking. For the same reason, Section 4.4 also limits the total connected load on each diesel during the refueling interval surveillances to 6000 kW.

The current practice at SONGS 1, in accordance with NUREG-1216 (Safety Evaluation Report Related to the Operability and Reliability of Emergency Diesel Generators Manufactured by Transamerica Delaval, Inc.), is to consider load transients above 6100 kW lasting 5 seconds or less acceptable. The technical basis for this allowance is that the cumulative effect of short duration transients on stress induced cracking is negligible. The proposed changes would revise the surveillance requirements to explicitly allow for transients that last 5 seconds or less and would provide the technical basis for this allowance as part of Section 4.4.

Editorial Changes

This proposed change corrects a referencing error in Section 4.4 of the Technical Specifications. In addition, it contains other editorial changes.

Because of the length of the thermal shield repair outage at the end of the last fuel cycle and because the present fuel cycle (Cycle 11) may be extended, we expect to accumulate a greater than normal number of start-stop cycles on both diesels during Cycle 11. Diesel No. 1 has so far used about 30 start-stop cycles and Diesel No. 2 has used about 45 start-stop cycles. Of the total number of start-stop cycles on Diesel No. 2, approximately 10 were the result of maintenance related testing and troubleshooting performed during



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January and February of this year. In light of the existing situation, we request that the NRC approve the enclosed amendment application by June 30, 1992. This will avoid the potential for a forced plant shutdown to carry out a crankshaft inspection.

Very truly yours,

cc: J. B. Martin, Regional Administrator, NRC Region V
George Kalman, NRC Senior Project Manager, San Onofre Unit 1
J. O. Bradfute, NRC Project Manager, San Onofre Unit 1
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