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August 20, 1981

Mr. R. H. Engelken, Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Region V
Suite 202, Walnut Creek Plaza
1990 North California Boulevard
Walnut Creek, California 94596



SEP 24 1981

RECEIVED

Dear Mr. Engelken:

Subject: Docket Nos. 50-361 and 50-362
San Onofre Nuclear Generating Station, Units 2 and 3

In a letter to your office dated June 22, 1981 we identified a condition involving loss of diesel generator output due to the unit tripping out on spurious high crankcase pressure signals. We considered this condition to be potentially reportable in accordance with 10CFR50.55(e). On July 20, 1981 we notified you by letter that investigation of the condition was not complete and requested an extension of reporting time to August 21, 1981. The contributing factors of this condition are still under review.

Enclosed in accordance with 10CFR50.55(e) are twenty-five (25) copies of an interim report entitled, "Interim Report on Diesel Generator High Crankcase Pressure Signals, San Onofre Nuclear Generating Station, Units 2 and 3." A final, summary report will be submitted on or before September 21, 1981.

If you have any questions regarding this report, we would be pleased to discuss this matter with you at your convenience.

Very truly yours,

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Enclosures

cc: Victor Stello (NRC, Director I&E)
R. J. Pate (NRC, San Onofre, Units 2&3)

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INTERIM REPORT ON
DIESEL GENERATOR HIGH CRANKCASE PRESSURE SIGNALS

San Onofre Nuclear Generating Station, Units 2 and 3

INTRODUCTION

This interim report is submitted pursuant to 10CFR50.55(e)(3). It describes a condition discovered during preoperational testing wherein spurious diesel generator trips occurred with "high crankcase pressure" on several of the engines. This report includes a description of the situation, an analysis of the safety implications, and a summary of corrective actions taken to date. By letter dated June 22, 1981, Edison confirmed notification to the NRC of this potentially reportable condition. In a letter dated July 20, 1981, Edison reported that the investigation was incomplete and requested an extension on reporting time to August 21, 1981.

BACKGROUND

During the diesel-generator (D/G) preoperational test program, frequent high engine crankcase pressure alarms and trips were encountered on engines of both D/G sets. Diagnostic tests were conducted which determined the trips were spurious and did not reflect a true high pressure condition. A subsequent investigation revealed several causes and contributing factors. Some potential contributing factors are still under review by the D/G vendor.

DISCUSSION

The following discussion is responsive to 10CFR50.55(e)(3).

Description of the Deficiency

These spurious trips were found to occur under a number of conditions: (a) trips occurred randomly during engine operation, (b) trips occurred when the switches or mounting panel received any shocks or substantial vibration, and (c) trips occurred after engine shutdown and would not clear to allow a restart. The investigation of the problem revealed several causes and contributing factors:

- (a) The installed switches were found to be of an incorrect model and pressure range.

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- (b) The sensing line was found to have low points which became filled with engine oil and caused erroneous input signals to the switches.
- (c) The repeatability of the switches was not within specification.

The D/G vendor, Stewart & Stevenson Services, Incorporated of Houston, Texas, is still investigating the switch mounting and panel for proper support.

Analysis of Safety Implications

The diesel generators start automatically on either a Loss of Voltage Signal (LOVS) or Safety Injection Actuation Signal (SIAS). The "high crankcase pressure" trip is bypassed when a SIAS is present. However, spurious "high crankcase pressure" trips during a LOVS condition without SIAS could trip one or both of the redundant diesel generators and preclude manual restart until the trip clears. Thus, the diesel generators could be disabled during a loss of offsite power for events which do not result in a SIAS.

Corrective Action

The corrective action in progress to date includes the following:

1. The correct pressure switches have been installed and calibrated.
2. The sensing line size has been increased from 1/4 inch to 1/2 inch to preclude blockage and any capillary action. The line was rerouted to avoid pockets and sloped to the engine to prevent oil entering the line.
3. The panel and switch support is presently being reviewed for adequacy by Stewart & Stevenson.

A final summary report will be provided on or before September 21, 1981.