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SUBJECT: Suppl to Special Rept 1-SR-85-010:on 850509,re failure of diesel generators A & B to attain required voltage.

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192-00409-JGH/TDS/JEM
September 12, 1988

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

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station
Unit 1
Docket No. STN 50-528 (License NPF-41)
Supplement to Special Report 1-SR-85-010
File: 88-020-404

Attached please find Supplement 1 to Special Report 1-SR-85-010 prepared and submitted pursuant to Technical Specification 4.8.1.1.3 and 6.9.2. This report is submitted to provide updated information from the original report.

If you have any questions, please contact T. D. Shriver, Compliance Manager at (602) 393-2521.

Very truly yours,

J. G. Haynes
Vice President
Nuclear Production

JGH/TDS/JEM/kj

Attachment

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IE22
1/1

PALO VERDE NUCLEAR GENERATING STATION UNIT 1

Supplement to Special Report 1-SR-85-010

Nonvalid Diesel Generator Test

Docket No. STN 50-528

License No. NPF-41

This supplement to Special Report 1-SR-85-010 provides updated information of the events of May 9, 1985, in which Emergency Diesel Generators (EDG) "A" and "B" failed to attain the required voltage, frequency and speed within ten (10) seconds. This report is written in accordance with Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August, 1977.

At approximately 1418 MST on May 9, 1985 Palo Verde Unit 1 was in Mode 3 (HOT STANDBY) when the "B" EDG failed to attain the required voltage, frequency and speed within ten (10) seconds on three (3) successive start attempts. As a result of the EDG "B" start failures, the EDG was declared inoperable. Pursuant to Technical Specifications, which require that an EDG be demonstrated operable when the other becomes inoperable, an attempt was made to start EDG "A". However, EDG "A" failed to attain the required voltage, frequency and speed within ten (10) seconds. As a result of this start failure, EDG "A" was also declared inoperable.

Failure of the DGs to start within 10 seconds has been traced to inadequate design of the Heater Control System for the intake air header (turbocharger manifold). The purpose of the Heater Control System is to help ensure quick starting and smooth acceleration of the EDGs.

Heater Control of the intake air header is performed by heat exchanger coils in the heater/intercooler. When the temperature of the air into the heater/intercooler is less than 105°F, the heater temperature control valve opens allowing warm engine jacket water to heat the intake air header.

The heater temperature control valve is an air operated valve. To fully modulate, the temperature control valve may require 20 minutes. However, it is possible for the temperature control valve to modulate indefinitely in an intermediate position. During the time that the temperature control valve is in an intermediate position, it vents air continuously to the atmosphere. Continuous venting of the temperature control valve results in a degraded control air pressure.

The air supply to the temperature control valve also supplies air to the pneumatic fuel rack control valves. The fuel racks allow fuel to be delivered to the EDG. As a result of the continuous venting of the temperature control valve, inadequate air pressure was available to quickly actuate the pneumatic fuel rack control valves. The slow actuation of the pnuematic fuel rack control valves resulted in the slow EDG start times.

The pneumatic fuel rack control valves are bypassed in the emergency operating mode. In actual emergency mode operation the fuel rack is controlled by 125 VDC solenoid operated valves. Since the pneumatic fuel rack control valves are bypassed in the emergency operating mode, these failed starts have been reclassified as nonvalid tests. This is in accordance with Position C.2.e(2) of Regulatory Guide 1.108, Revision 1, August 1977.

As immediate corrective action the air lines to the temperature control valves were plugged to eliminate degraded control air pressure and slow EDG start times due to venting heater control valves. A modification to replace the temperature control valves has now been implemented in all three Units. The new valves do not vent to atmosphere as they change position; therefore, control air pressure remains constant.

At the time of this event there had been one (1) valid EDG failure in previous 12 valid tests for Palo Verde Unit 1 EDGs. However, a test interval of 14 days had been implemented due to the improper classification of these EDG start attempts as valid failures.

EDG "B" was returned to service at approximately 2023 MST on May 9, 1985. EDG "B" was unavailable for 6 hours and 5 minutes. EDG "A" was returned to service at approximately 1942 MST on May 11, 1984. EDG "A" was unavailable for 49 hours and 55 minutes.