



# Arizona Nuclear Power Project

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Mr. John B. Martin, Regional Administrator  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
Region V  
1450 Maria Lane, Suite 210  
Walnut Creek, CA 94596-5368

Subject: Palo Verde Nuclear Generating Station (PVNGS)  
Unit 1  
Docket No. STN 50-528 (License NPF-41)  
Special Report - Nonvalid Diesel Generator Failure  
File: 86-020-404

Dear Mr. Martin:

Attached please find a Special Report (1-SR-86-042) prepared and submitted pursuant to Technical Specifications 4.8.1.1.3 and 6.9.2. This report discusses a nonvalid diesel generator failure during troubleshooting.

If you have any questions, please contact me.

Very truly yours,

E. E. Van Brunt, Jr.  
Executive Vice President  
Project Director

EEVB/PGN/dlm  
Attachment

cc: R. P. Zimmerman (all w/a)  
A. L. Hon  
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INPO Records Center

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PALO VERDE NUCLEAR GENERATING STATION UNIT 1

Special Report 1-SR-86-042

Nonvalid Diesel Generator Failure During Troubleshooting

Docket No. 50-528

License No. NPF-41

This Special Report describes an event involving a nonvalid testing failure of an emergency diesel generator during troubleshooting. The report is provided pursuant to Technical Specifications 6.9.2 and 4.8.1.1.3, and contains the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

At 0637 on April 28, 1986, Palo Verde Unit 1 was in Mode 5 (COLD SHUTDOWN) when the train "A" emergency diesel generator started and tripped on an apparent overspeed condition prior to loading, at approximately 400 RPM. The start attempt was a troubleshooting test which was being conducted on the cylinder heads and fuel lines, in order to detect fuel leaks and jacket cooling water leaks.

The train "A" diesel generator was satisfactorily tested at 1952 on May 3, 1986. The elapsed period for which the diesel generator was unavailable after the trip was 5 days and 13 hours. During this time all applicable Technical Specifications, as related to the diesel generators, were complied with. As a result, the unavailability of the train "A" diesel generator following the trip did not adversely affect the safe operation of the plant.

Following the trip, investigation into the event determined that the trip was not caused by an actual overspeed condition. Examination of the overspeed governor, which initiates the overspeed trip when an actual overspeed condition exists, indicated that the governor was still in the normal, pre-trip position. When the overspeed governor trips, it assumes a post-trip position and must be manually reset. Therefore, since the overspeed governor was not found in the post-trip position, the diesel generator could not have tripped by an actual overspeed condition.

When an engine overspeed condition exists, the overspeed governor trips, and initiates a diesel generator overspeed trip by closing the engine air intake butterfly valve. To close the air intake valve, the overspeed governor pushes on a sheathed steel cable, which unlatches the pawl that holds the valve open. Then, electrical limit switches on the air intake valve, which are actuated when the valve closes, complete the engine overspeed trip by isolating the fuel supply to the engine.

Further investigation into the cause of the event discovered a clamp which had been temporarily installed on the sheathed steel cable. It is believed that the clamp was installed by maintenance workers who had recently installed scaffolding in the immediate vicinity, in order to prevent the cable from being damaged during the reinstallation of insulation on the diesel generator exhaust pipe.

Clamping the cable caused a decreased bend radius in the cable. As a result of the decreased bend radius, the effective length of the cable, relative to the length of the sheath, was altered. This resulted in the unexpected unlatching and closing of the air intake valve, and the subsequent trip of the diesel generator. As a corrective action, the clamp was removed, and the diesel generator was subsequently tested satisfactorily.

Prior to this event, there had been three valid diesel generator failures in the previous one hundred valid tests. As a result of this event, the number of valid diesel generator failures in the previous one hundred valid tests remains unchanged at three, and a test interval of not greater than seven days remains in effect, in accordance with Regulatory Guide C.2.d.