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SUBJECT: Special Rept 2-SR-93-003:on 931002,thirty day period for returning loose-part detection sys channel 8 to operable status exceeded.Subj channel scheduled to be reworked & returned to svc during next outage.

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Arizona Public Service Company
PALO VERDE NUCLEAR GENERATING STATION
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192-00865-JML/BAG/PMM
October 9, 1993

JAMES M. LEVINE
VICE PRESIDENT
NUCLEAR PRODUCTION

U. S. Nuclear Regulatory Commission
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Dear Sirs:

Subject: **Palo Verde Nuclear Generating Station (PVNGS)**
Unit 2
Docket No. STN 50-529 (License No. NPF-51)
Special Report 2-SR-93-003
File: 93-020-404

Attached please find Special Report 2-SR-93-003 prepared and submitted pursuant to Technical Specification 3.3.3.7 ACTION (a) and Technical Specification 6.9.2. This report discusses the inoperability of one (1) Loose-Part Detection System channel for more than thirty (30) days.

If you have any questions, please contact Burt Grabo at (602) 393-6492.

Sincerely,

James M. Levine

JML/BAG/PMM/pm

Attachment

cc: W. F. Conway (all w/attachment)
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180046

IE22
1/1

PALO VERDE NUCLEAR GENERATING STATION UNIT 2

Loose-Part Detection System

License No. NPF-51

Docket No. 50-529

Special Report 2-SR-93-003

Initial Conditions:

This Special Report is being submitted pursuant to Technical Specification Limiting Condition for Operation (TS LCO) 3.3.3.7 ACTION (a) and TS 6.9.2 to report the inoperability of one (1) Loose-Part Detection System channel for more than thirty (30) days. The remaining seven (7) channels continue to function properly. TS LCO 3.3.3.7 is applicable in Mode 1 (POWER OPERATION) and Mode 2 (STARTUP). The thirty (30) day period for returning the channel to an operable status was exceeded at approximately 1030 MST on October 2, 1993.

System Information:

The Loose-Part Detection System is designed to detect the presence of loose parts within the Reactor Coolant System (RCS). The Palo Verde Unit 2 Loose-Part Detection System consists of eight (8) channels. Each channel consists of a piezoelectric accelerometer and associated amplification, indication, and recording circuitry. The eight (8) sensors are positioned in the following locations: two (2) mounted on the Reactor Vessel upper head (Channels 1 and 2), two (2) mounted on the Reactor Vessel lower incore nozzle (Channels 3 and 4), and one (1) on each of the two (2) Steam Generators' inlet and outlet nozzles (Channels 5, 6, 7, and 8). The accelerometer detects loose parts using acoustic signals which are generated when loose parts impact an RCS component or structure. Signals in excess of the alarm setpoint will result in an alarm condition. The alarms are the "latch on" type (i.e., the alarm will remain on when the system returns to normal and will not clear until the alarm is manually reset). There is one (1) alarm indicator in the Control Room for the eight (8) channels.

Actions Taken:

During a routine monitoring of the audio signal of the Loose-Part Detection System, the system engineer discovered that Channel 8 was inaudible. The other channels appeared to be functioning normally. During initial troubleshooting, the cables to Channels 7 and 8 were transposed and the problem switched to Channel 7. The problem with Channel 8 was determined to be originating from within Containment. At approximately 1030 MST on September 2, 1993, the Loose-Part Detection System was declared inoperable. Subsequent troubleshooting determined that the probable failure is either a hardline cable-related problem or a bad connection at the accelerometer since there is no audible sound on the channel.

Cause of the Malfunction:

The failure of Channel 8 is apparently due to vibration (i.e., the vibration caused the hardline cable-related problem or the bad connection at the accelerometer). An equipment root cause of failure analysis cannot be performed to verify or to rectify the Loose-Part Detection System channel problem due to industrial (i.e., high temperatures) and radiation safety concerns. A decision was made by PVNGS management to initiate compensatory actions (i.e., daily aural checks), enter the Technical Specification ACTION statement (i.e., prepare and submit a Special Report), and to repair the channel during the next outage.

Plans for Restoring the Channel to OPERABLE Status:

The inoperable Loose-Part Detection System channel is scheduled to be reworked and returned to service during the next outage. Channel 8 is incapable of being used to monitor for loose parts since the signal is inaudible. The remaining seven (7) channels continue to function properly at this time. During the period of inoperability, the STAs and Operations personnel will perform twice daily aural checks on Channels 1 through 8 (i.e., during dayshift and nightshift).