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SUBJECT: Special Rept 2-SR-88-009:on 881209,radiation monitoring unit
 inoperable for greater that 72 h.

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JAMES M. LEVINE
VICE PRESIDENT
NUCLEAR PRODUCTION

192-00642-JML/TRB/RKR
April 2, 1990

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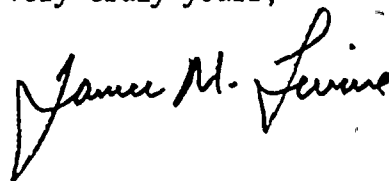
Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 2
Docket No. STN 50-529 (License No. NPF-51)
Supplement to Special Report 2-SR-88-009
File: 90-020-404

Attached please find Supplement Number 2 to Special Report 2-SR-88-009 prepared and submitted pursuant to Technical Specifications 3.3.3.8 and 6.9.2. This report is submitted to provide updated information and revise the modification schedule from the original report.

If you have any questions, please contact T. R. Bradish, (Acting) Compliance Manager at (602) 393-2521.

Very truly yours,



JML/TRB/RKR/kj

Attachment

cc: W. F. Conway (all with attachment)
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PALO VERDE NUCLEAR GENERATING STATION

Radiation Monitoring Unit Inoperable for Greater Than 72 Hours

License No. NPF-51

Docket No. STN 50-528

Supplement Number 2 to Special Report 2-SR-88-009

This Special Report is submitted in accordance with Technical Specifications 3.3.3.8 ACTION 42(b) and 6.9.2 for an event in which the Condenser Vacuum Pump/Gland Seal Exhaust High Range Effluent Monitor (RU-142) and Plant Vent High Range Effluent Monitor (RU-144) were inoperable for greater than 72 hours. The 72-hour limit for operability was exceeded at approximately 0700 MST and 0630 MST respectively on December 9, 1988.

At approximately 0630 MST on December 6, 1988, with Palo Verde Unit 2 in Mode 1 (POWER OPERATION) at approximately 100 percent power, the Condenser Vacuum Pump/Gland Seal Exhaust low and high range monitors (RU-141 and RU-142) were declared inoperable to perform corrective maintenance on the low range monitor. At approximately 0700 MST on December 6, 1988 the Plant Vent Monitor (RU-143 and RU-144) were also declared inoperable to perform corrective maintenance on the low range monitor. Both low range monitors were exhibiting intermittent spiking; however, this condition did not cause the monitors to be inoperable.

In each case the monitors work as a pair with RU-141 and RU-143 as the low range monitors and RU-142 and RU-144 as the high range monitors. Normal configuration consists of the low range monitors operating with the high range monitors in standby. When the low range monitors reach a predetermined setpoint, the high range monitors start and the low range monitor goes to standby. The high range monitors are provided for tracking radioactive effluents during postulated accident scenarios. The high range monitors must be declared inoperable when the low range monitors are inoperable.

Pursuant to Technical Specification 3.3.3.8 ACTION 37, the Preplanned Alternate Sampling Program (PASP) was initiated at approximately 0712 MST and 0645 MST respectively on December 6, 1988. The PASP continued until the radiation monitors were returned to service. RU-143 and RU-144 were returned to service at 1117 MST on March 22, 1989. RU-141 and RU-142 were returned to service at 0935 MST on June 23, 1989.

The term "spiking" as used in this report is defined as an apparent rise in current level which is causing the radiation level to appear to increase although no actual rise in radiation exists.

APS has been experiencing these spikes since licensing of the units. In each previous case, actions were taken to troubleshoot and correct the problems as they occurred. Additionally, overall recommendations were made, and plant changes instituted on the basis of the spiking being caused by a grounding problem. When incorporated into the units, these plant changes have not fully resolved the spiking problem.

On December 6, 1988, a decision was made to leave RU-141 and RU-143 inoperable for an extensive testing program to determine the root cause of the spiking. The testing program was initiated on December 20, 1988.

The low range monitors use beta scintillation detectors to monitor the process and generate an electrical pulse that is proportional to the particular type of radiation being monitored, i.e. particulate, gas, or iodine. The detector's outer housing is metal and is connected to plant ground by its mounting arrangements. The detectors's preamplifier is referenced to an independent Radiation Monitoring System (RMS) instrument ground bus rather than plant ground. Due to the potential differences between the detector preamplifiers' signal ground and the detector's grounded outer housing, parasitic capacitance coupling exists between the preamplifier's signal ground and the detector's grounded outer housing. Noise on the plant ground is able to couple into the detector's preamplifier through these parasitic capacitance paths. These stray capacitances provide a feedback path from output to input of the preamplifier. Thus, noise occasionally couples into the preamplifier and forces the preamplifier into oscillation due to the capacitive feedback path. This can result in the detector generating spurious output pulses of sufficient magnitude that the amp/discriminator circuit in the microcomputer treats them as valid signals resulting in the generation of spurious high readings.

These spurious output pulses will be prevented by eliminating the capacitive feedback path. This will be accomplished by isolating the detectors' housing from plant ground and connecting it to the preamplifiers' signal ground. This eliminates the capacitance feedback path.

This modification has been implemented by temporary modification on radiation detectors RU-141, RU-143 and RU-145 in Unit 1, radiation detectors RU-141 and RU-143 in Unit 2, and radiation detectors RU-141 and RU-143 in Unit 3. The radiation detectors have not experienced any spiking since completion of the temporary modification. The temporary modification is expected to be completed for radiation detector RU-145 in Unit 2 and radiation detector RU-145 in Unit 3 by June 30, 1990.

A plant change request has been initiated to make the temporary modification a permanent design change. This modification will be incorporated on Units 1, 2, and 3 radiation monitors RU-141, RU-143, and RU-145. Only these radiation monitors are being modified because beta scintillation detectors are significantly more sensitive than the detectors used in other radiation monitors. Development of this design change is expected to be completed by May 30, 1990. This design change is expected to be implemented in Units 1, 2, and 3 within 90 days of materials receipt.

