U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No.	50-528/84-64			
Docket No.	50-528	License No.	CPPR-141	
Licensee:	Arizona Public Service C P. O. Box 21666 Phoenix, Arizona 85836	ompany		
Facility Name:	Palo Verde Nuclear	Generating Stat:	ion - Unit	1
Inspection at:	Palo Verde Site - W	/intersburg, Ari:	zona	
Inspection cond	lucted: December	13-18, 1984		
Inspector:	<u>GPUhoa</u> C. Sherman, RadiationSp	ecialist		<u>1/8/85</u> Date Signed
Approved By:	G. P. Yuhas, Chief Facilities Radiological	Protection Sect	ion	<u>1/8/85</u> Date Signed
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Summary:

Inspection during the period of December 13-18, 1984 (Report No.50-528/84-64)

<u>Areas Inspected:</u> Routine unannounced inspection of preoperational tests, completion of work on and calibration of the radiation monitoring system; inspection of NUREG-0737 items II.B.3 and II.F.1; follow-up on inspector identified items; and final review of readiness for operation.

<u>Results:</u> Of the areas inspected, no items of noncompliance or deviations were identified.

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DETAILS

1. Persons Contacted

Arizona Public Service (APS)

- *D. Yows, Site Emergency Planning Supervisor
- *R. Hamilton, Quality Monitoring
- *G. Perkins, Manager, Radiological Services
- *J. Cederquist, Manager, Chemical Services
- *L. Brown, Manager, Radiation Protection and Chemistry
- *T. Bloom, Licensing Engineer
- *W. Fernow, Manager, Plant Services
- *R. Page, Manager, Emergency Planning
- *C. Russo, Manager, Quality Audits and Monitoring
- *J. Allen, Operations Manager
- *J. Mann, Corporate Health Physics Supervisor
- *R. Kimmel, Transition ANPP
- *J. Rowland, I&C Supervisor
- J. Ong, Radiological Engineer
- E. Griswold, Senior Radiation Protection Technician
- M. Halpin, Operations Shift Supervisor
- F. Riedel, Operations Shift Supervisor
- D. Strey, Control Operator
- K. Oberdorf, Radiation Protection Supervisor, Unit 1

Contractor Personnel

- F. Semper, I&C Engineer, Volt
- *J. Smith, Compliance Engineer
- *M. Moon, Radiological Engineer, NuManCo
- D. Brown, Radiological Engineer, IRM
- J. Balash, I&C Engineer, CAL Test

*Denotes those individuals participating in the exit interview on December 18, 1984.

2. Licensee Action on Previous Inspection Findings

Inspector Identified Items

(<u>Closed</u>) (83-12-15) Main steam line monitor correction factor calculations. As indicated in NRC Inspection Report 50-528/84-49, a verified and approved calculation package documenting derivation of these correction factors was necessary to close this matter. The inspector reviewed this package and while the basic technique appeared acceptable, additional errors were identified. The licensee has committed to resolve these problems and issue a procedure change within two weeks from the date of the exit meeting, thus resolving the inspectors concerns.

This matter is considered closed.

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(Open) (83-12-19, - 20) Post Accident Sampling System (PASS) requirements. This item remains open until an anticipated license condition requirement is completed. The PASS inspection findings are described in Section 3.

(Closed) (84-12-16) Previously closed (84-49) inspector identified item regarding health physics guidance in Emergency Procedures. Procedure EPIP-27, Revision 3 was reviewed and found adequate with the following exception:

Steps 4.3.4, 4.3.2 appear to indicate that dose limits for PASS operation are 5 rem whole body and 75 rem extremity. These are the guidelines of 10 CFR 50 GDC 19. The dose limits stated are not correct. The proper limits are given in 10 CFR 20.101. This was brought to the licensee's attention. The Manager, Radiological Services stated that the point will be reviewed.

(Closed) (83-14-30) Procedures for the effluent monitoring program. The PVNGS Radiation Monitoring Program for effluent releases was examined. While the '75PR' Programmatic Procedures do not provide specific details on control of radioactive gaseous effluent releases, an administrative control procedure 75AC-92Z02, <u>Gaseous Radioactive Effluent Release</u> <u>Administration Control</u> has been established. This document outlines responsibilities of various supervisors including the operations Shift Supervisor and radiation protection personnel. Areas covered by this procedure include:

- administrative control over release authorization;
- release permit approval;
- verification of calibration;
- investigation of unplanned releases;
- compliance with technical specification dose and dose rate limits

The inspector examined this procedure. Based on this examination, the following items were noted:

- Step 5.1.4 does not provide a procedural reference when RU-12 is inoperable.
- Step 5.1.10 provides for verification of effluent monitor calibration by reference to 75RP-92289.
- Step 5.2.4 provides for projecting offsite doses per procedure 75RP-9ZZ92.
- Step 5.2.12 provides for notifications and reports in accordance with 75AC-9ZZ14 if LCO's are exceeded.
- Section 5.4 implements the technical specification dose and dose rate limits.

The licensee has also established procedure, 75RP-92289, <u>'Radiation</u> Monitor Alarm Setpoint Procedure.' This procedure implements gaseous

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effluent channel setpoints as defined by the ODCM as well as setpoints for particulate and iodine channels and the waste gas decay tank monitor.

Also provided is a calculational technique for setting the alarm point for the containment atmosphere noble gas and particulate channels. This procedure also establishes methodology for setting the area radiation monitors and the noble gas process monitors. In the case of step 6.5.1, it was noted that the technique specified for setting the alarm point was not consistent with the FSAR described function of monitor RU-8, the auxiliary building exhaust monitor. Step 6.7 of this procedure provides for verification of calibration of effluent monitors as suggested by Regulatory Guide 1.68. The inspector reviewed the licensee's procedure and found that it provides an acceptable basis for setting alarm points and for verifying calibration of effluent monitors.

Based on the inspector review of procedures and discussion with cognizant individuals, this matter is considered closed.

3. Post Accident Sampling System (PASS)

PASS status has been described in Inspection Reports 50-528/83-12, -28, -30, 84-34, -49.

Based on testing performed and analysis of the vendor demonstration test results, the licensee determined that additional hardware modifications would be necessary to make the system operate as desired and to provide the dissolved gas capabilities in a backup system. The licensee has submitted several documents describing their plans to implement the requirements of NUREG-0737 and Regulatory Guide 1.97 Revision 2. At the time of the inspection, the licensee was in the process of modifying the system so that the above stated requirements could be met prior to exceeding five percent of rated power. The licensee intends to implement the system using a modified remote grab sampler with laboratory chemical analysis and to implement the inline capabilities at a later date.

Based upon the licensee's plans to implement the PASS and the issuance of a license condition controlling this capability, additional inspection effort in this area was deferred until the system is required.

No violations or deviations were identified.

4. Radiation Monitoring System Test Program

Completion of the licensee's test program to meet the FSAR commitment of Chapter 14, test 14.B.26 was examined. Performance of the test program for the RMS has been examined and documented in previous NRC Inspection Reports (50-528/84-34, -49).

The inspector examined completed test packages for the RMS to verify the tests were conducted in conformance with the licensee's program and NRC requirements. In addition, a system walkdown was conducted to verify selected aspects of the design, installation and operability of the system.

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Based on this review, the inspector concluded that the system was tested in a satisfactory manner, test exceptions were documented and resolved, and the system was substantially complete and operable. Several test exceptions were transferred to the plant for retest or minor rework. Completion of outstanding work for technical specification required monitors is expected by the licensee to be completed shortly. The licensee has committed in writing to complete this work in accordance with Technical Specification mode restraints prior to first entry into the required mode.

No violations or deviations were identified.

5. Radiation Monitoring System (RMS)

a. Programs

Program requirements for maintaining, operating and surveillance testing of the RMS were examined. The licensee's program for controlling the release of radioactive material was examined. Procedures implementing these programs are required by NRC Regulatory Guide 1.33 and Technical Specifications. The licensee has procedures in place for operation, repair and testing of the RMS. These procedures were examined by the inspector and found to be generally adequate. As described under open item 50-528/83-14-30, Section 2 of this report, the licensee has established a program for administrative control of radioactive releases. Based upon selective examination of aspects of the program, the inspector found that procedural controls in this area were generally adequate.

In the area of training of radiation protection personnel on operation of the radiation monitoring system and in implementing procedures to generate release permits and recognize emergency conditions, the inspector found that some additional training was needed. The licensee representative responsible for this area recognized that additional training was necessary and stated that this training would be provided after the Technical Specifications had been finalized. The licensee's commitment to complete additional training was considered by the inspector to be an acceptable proposal.

Based on the review of procedures, programs and training, the licensee's established programs are considered adequate to meet regulatory requirements.

No violations or deviations were identified.

b. Calibration

10 CFR 20 requires that licensee's make measurement of radioactive releases; for noble gas effluents, these measurements are typically performed with continuous effluent monitors. The normal range noble gas monitors installed at PVNGS contain beta scintillation detectors operating in a gross count acquisition mode.

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In order to relate gross count rates to activities of specific isotopes released by the plant, the monitor must have a known energy response function, be calibrated, and the approximate isotopic mix (source term) must be known. The licensee will establish the isotopic mix from grab samples. The energy response function is provided by the vendor. Requirements for calibration are described by NRC regulatory guides and industry standards. The licensee's vendor, Kaman Instrumentation provides for calibration using a two step transfer calibration process rather than a direct primary isotopic calibration performed at the site on the installed instrumentation.

The transfer calibration technique compares the absolute efficiency of a prototype detector at the factory to the absolute efficiency of the production units by using a series of solid source sets.

Traceability to the primary calibration is established by control over sources and measurement technique. The technique used by Kaman has been examined in detail and found acceptable. Although the technique is acceptable and should provide assurance that the detectors are accurately calibrated, there is no direct relationship established between the response of the production detector to a primary standard, i.e., radioactive gas supplied by a vendor participating in the National Bureau of Standards Measurement Assurance Program (MAP).

As evidenced at other licensed facilities, systematic errors could affect the calibration process, therefore, the inspector encouraged the licensee to either perform primary calibrations or to verify the calibration factors by comparing monitor response from actual releases to that determined from gamma spectral analysis of grab samples at the earliest possible opportunity. The licensee has chosen the latter approach. This technique is specified in Regulatory Guide 1.68. The licensee's program to establish the veracity of the effluent monitor calibrations as implemented in procedure 75RP-92Z89, <u>Alarm Setpoint Determination</u> has been examined and found acceptable.

The inspector also verified by independent calculation, the methodology used by the licensee to establish calibration factors for the gaseous effluent and liquid process channels and verified that these factors had been installed into the radiation monitor software data bases.

Based on the inspection findings to date, and the licensee's program to verify calibration, this area is considered acceptable for power operation.

No violations or deviations were identified.

c. Additional Items

The licensee committed to complete repair of the RMS control room display and control unit audible alarm prior to receipt of the

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operating licensee. The licensee was not able to complete work to provide an RMS print out capability. The licensee has committed to complete work on providing this capability prior to the first entry into Mode 2 (initial criticality).

The licensee had completed a review of RMS effluent channel sensitivities in order to demonstrate that sensitivities described in the FSAR could be met with installed equipments. Additional effort in this area on process channels is in progress.

A walkdown of the RMS system was conducted with the system engineer, principal startup engineer and a radiation protection technician accompanying the inspector. This tour did not identify any significant problems with the system.

During this walkdown, the inspector noted that several low sample flow alarm setpoints had not been established. This matter was brought to the licensee's attention.

No violations or deviations were identified.

6. Licensed Operator Training

NRC regulations contain requirements for declaration of emergency conditions and for prompt notification to the NRC. In some cases, these declarations are based on radiation monitor readings, radiation levels at the site boundary or exceeding technical specification release rate limits. In as much as the operations Shift Supervisor has the responsibility to make these declarations, the inspector attempted to determine licensed operator and Shift Supervisor knowledge in the areas of RMS display capability, system design, monitor location and alarm response procedures. Based on discussion with licensed control operators and Shift Supervisors, the following observations were noted.

- Training on the PVNGS simulator did not provide adequate familiarity with the RMS display and control unit (DCU) as a different system had been implemented on the simulator.
- Licensed personnel had not received training on the control room DCU or the qualified safety parameter display system (QSPDS) which contains radiation monitor information.
- Licensed personnel were not fully knowledgeable on functions and use of the RMS DCU, but were able to obtain some display information.
- Licensed personnel were not knowledgeable of the relation between radiation monitor alarms and emergency action levels as implemented at PVNGS.
- Licensed personnel were not aware that certain "Class 1E" radiation monitors had strip chart recorder outputs outside the main control room.

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In addition, the inspector examined the operators alarm response procedure, "41AL-1SQ01" and determined that it was inadequate in that:

- it provided guidance primarily of a generic nature;
- did not direct the alarm acknowledger to inform the Shift Supervisor;
- did not indicate the possibility of being in a plant emergency condition;
- did not direct the operator to the appropriate EPIP;
- did not provide clear specific direction as to how an alarm should be verified.

As a consequence of these findings a conference call was initiated between the licensee and Region V Operator Licensing and Facilities Radiation Protection Section Chiefs. The licensee proposed to revise 41AL-1SQ01 to resolve the identified deficiencies and to provide training of licensed operators in RMS system usage and recognition of emergency action levels based on radiation monitor readings prior to the first time these monitors are required by technical specification. The licensee's proposal was incorporated in a formal written commitment subsequent to the inspection.

No violations or deviations were identified.

7. Exit Interview

The scope and findings of the inspection were discussed on December 18, 1984 with the individuals denoted in paragraph 1.

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