

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-528/88-40, 50-529/88-39, 50-530/88-38

Docket Nos. 50-528, 50-529, 50-530

License Nos. NPF-41, NPF-51, NPF-74

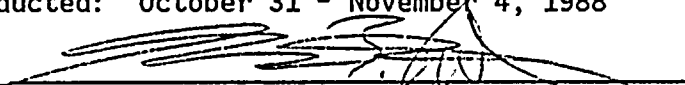
Licensee: Arizona Public Service Company
P. O. Box 21666
Phoenix, Arizona 85836

Facility Name: Palo Verde Nuclear Generating Station - Units 1, 2 and 3

Inspection at: Wintersburg, Arizona

Inspection Conducted: October 31 - November 4, 1988

Inspected by:


G. R. Cicotte, Radiation Specialist

11-23-88
Date Signed

Approved by:


H. S. North, Acting Chief
Facilities Radiological Protection Section

11/29/88
Date Signed

Summary:

Inspection during the period of October 31-November 4, 1988, (Report Nos. 50-528/88-40, 50-529/88-39 and 50-530/88-38)

Areas Inspected: Routine unannounced inspection by a regionally based inspector involving Environmental Protection, follow-up, and tours of the facility. Inspection procedures 30703, 84750, 92701, and 83726 were addressed.

Results: No violations were identified in three of the four areas addressed. In one area, a violation of Technical Specification (TS) 6.8 was identified, involving failure to follow the environmental air sample procedure (paragraph 2); the inspector also identified a concern regarding quality assurance of environmental air sample collection (paragraph 2). The licensee's program appeared capable of meeting its safety objectives in the areas inspected.

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DETAILS

1. Persons Contacted

- *J. D. Driscoll, Assistant Vice President, Nuclear Production Support
- *J. M. Allen, Unit 1 Plant Manager
- *W. E. Ide, Unit 2 Plant Manager
- *O. J. Zeringue, Unit 3 Plant Manager
- *R. M. Butler, Standards and Technical Support Director
- K. Kutner, Environmental Programs Supervisor
- *M. W. Lantz, Senior Radiation Consultant
- *J. R. Mann, Radiation Protection Standards Supervisor
- *K. R. Oberdorf, Unit 1 Radiation Protection Manager
- *A. G. Ogourek, Unit 2 Radiation Protection Manager
- *L. G. Papworth, Quality Assurance Director
- *W. F. Quinn, Safety and Licensing Director
- *A. C. Rogers, Licensing Manager
- *T. D. Shriver, Compliance Manager
- *W. E. Sneed, Unit 3 Radiation Protection Manager
- *J. M. Sills, Radiation Protection Standards Supervisor

*Denotes personnel present at the exit interview held on November 4, 1988.

In addition, the inspector met and held discussions with other licensee and contractor personnel.

2. Radiological Environmental Monitoring Program

A. Audits and Reports

The following audits and reports were reviewed for accuracy, depth of analysis, and timeliness of corrective action:

Internal Audits

PS04.01-Review of ODCM Implementation	October 27, 1988
Tech. Spec. Special Reportability of I-131 Levels in Evap. Pond No. 2	August 11, 1988
Off-Site Dose Calculation Manual Implementation	May 27, 1988
Off-Site Dose Calculation Manual	April 25, 1988
Land Use Census	January 11, 1988

Audits

Audit 87-029, Environmental Monitoring Program	November 19, 1987
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Corrective Action Reports (CARs)

CA-88-0015 (Technical Specification (TS) 6.10.2.n) February 18, 1988

CA-87-0121 (TS 6.8.1.i; 6.5.2.1; 6.5.2.4) December 17, 1987

Semiannual Radioactive Effluent Release Report (January-June 1988) (SARERR) August 29, 1988

The above reports and audits appeared to have been conducted in accordance with the applicable standards and guides. Audit No. 87-029 identified no major concerns, and responses were received and followed up. The October 27, 1988, memorandum noted above provided an update of the status of proposed corrective action. The memorandum on I-131 in Evaporation Pond No. 2 contained analyses of the source of the radioactivity. The licensee's data on influent activity, reconcentration in the cooling tower, and final activity in the pond, supported the licensee's conclusion that the major source of I-131 activity was in the influent, likely as disposed medical use isotopes.

The 1987 land use census stated that a new milk sampling location, which was identified in the 1986 land use census, was not added. The conclusion was that it was not necessary to do so, as the dose commitment was less than 20% greater for the new location, than for those currently in use. In reviewing the requirements for milk sampling, it was noted that the new location was much nearer (approximately 7.6 km) to the site. TS Table 3.12-1 reads, in part:

"Number of representative samples and sample locations...."

"... Samples from milking animals in 3 locations within 5 km distance having the highest dose potential. If there are none, 1 sample from milking animals in each of 3 areas (#50, 51, 53) between 5 and 8 km distant whose doses are calculated to be greater than 1 mrem per year...."

"... One sample from milking animals at a control location (#56), 15 to 30 km distant...."

Locations 50, 51, and 53 are greater than 8 km distant. Location 56 is much greater than 30 km distant. With no milking animals within 8 km, this would be appropriate. The inspector reminded the licensee that should a milk sample location be identified within 5 km, or between 5 and 8 km distant, its location would be considered more representative of the site environs, and thus the calculated dose commitment should not be the controlling factor in determining whether to add the location, and asked if the wording of the TS Table 3.12-1 had contributed to the licensee's decision not to add the location.

The individuals who conducted the land use census responded by stating that attempts had been made to obtain milk samples from the



new location but that the low production rate precluded obtaining sufficient sample to maintain representativeness. The inspector concluded from the size of the milk animal source that sample size was an appropriate consideration, and that only the reasoning as stated in the 1987 census was incorrect. The licensee acknowledged the conclusion, and stated that a wording change to TS Table 3.12-1 had previously been proposed, but was not implemented due to the amount of effort involved in a relatively minor change. This matter will be examined in a subsequent inspection as open item (50-528/88-40-03, 50-529/88-39-03 and 50-530/88-38-03, Open)

B. Program Implementation

A calculation of the child thyroid dose from milk ingestion at the controlling location and adult dose from noble gases at the site boundary revealed no anomalous results or procedural problems, with respect to the SARERR, noted in paragraph A, above. Representative records of environmental sampling results were reviewed. No anomalous measurements were observed.

On November 2, 1988, two multi-media environmental sampling stations, Nos. 14a and 15, were visited while weekly air sampling was in progress. The contractor who conducts sampling for the licensee had the most recent revision of the procedure available and open while collecting air samples. The procedure used was 75RP-0ZZ08, Radiological Environmental Air Sample Collection, Revision 0, dated 3-4-88. The individual removed each air sample filter and holder, noting air temperature and sample line vacuum, and momentarily installed a calibrated rotameter (S/N EG4096) to check flow before installing a new sample holder, charcoal cartridge, and filter. Station 15 read 2.0 CFM, and was not adjusted. Station 14a read 2.1 CFM, and was adjusted to 2.0 CFM.

75RP-0ZZ08 states, in part:

"1.0 Purpose

- 1.1 This procedure provides the requirements for the weekly issue and exchange of particulate air filters and charcoal cartridges as required by the ODCM and the REMP [Radiological Environmental Monitoring Program] ..."

"4.0 Responsibilities...."

"4.2 Lead Health Physicist

- 4.2.1 Shall assure that this procedure is fully implemented as specified herein...."

"4.4 Field Monitoring Personnel

- 4.4.1 Shall perform the day-to-day requirements of this instruction...."



"6.0 Instructions

6.1 Filter and Cartridge Collection...."

"6.1.3 Record the following information for each site on Air Sample Collection Data Form REMP A:"

"6.1.3.4 Flowmeter reading (If reading is 1.5 CFM no adjustments are necessary, otherwise adjust to 1.5 CFM)."

The inspector discussed sample flow with the contractor field monitor (FM). He stated that the actual flow was 1.5 CFM, but that the rotameter read 2.0 CFM. He further stated that the methodology used to make that determination was as follows:

- o The contractor had been collecting air samples for the licensee using the same methods called for in 75RP-0ZZ08, but with rotameters calibrated by their own contractor. The licensee, in an effort to improve control over quality assurance, had stipulated that the contractor use rotameters calibrated by the licensee's Measurement and Test Equipment (M&TE) group. The licensee had provided two calibrated rotameters for that purpose.
- o The FM was also the individual responsible for analysis of the samples after the licensee switched analysis contractors. The FM compared readings for the newly provided rotameters against one of the contractor calibrated rotameters at 1.5 CFM, and obtained a reading of 2 CFM. It was the FM's belief that the difference was due to the difference in motive force for flow, i.e., the old rotameters had been calibrated under vacuum conditions, under which conditions the rotameter operates in the field, and the new rotameters were calibrated under a pressure applied upstream. The FM concluded, therefore, that a reading of 2.0 CFM would correlate to an actual flow of 1.5 CFM, and performed air sample calculations with 1.5 CFM flow. This was stated to have been the practice during much of 1988.

The inspector verified the field (vacuum) and licensee calibration (pressure) conditions. The air sample data sheet, Appendix A of 75RP-0ZZ08, did not contain a line item for sample line vacuum/pressure conditions. Although 75RP-0ZZ08 does not specify a vacuum limit, the FM had stated during the observed sample collection that the sample was not considered valid if vacuum exceeded 15"Hg. The calibration data sheets for the licensee-calibrated rotameters showed corrections for ambient temperature and pressure. The sheet for the rotameter used on November 2, 1988, indicated that at a true flow of 1.69 CFM, the rotameter would read 2.0 CFM, which, corrected for ambient temperature and pressure, would be 1.97 CFM. Thus the rotameter read high by 0.28 CFM vice 0.5 CFM. At the lower flow rate of 1.5 vice 1.69 CFM, the difference would be correspondingly less. The FM stated that he had not been provided with the calibration data



sheet, and that the 2.0 CFM reading he had obtained when comparing rotameters was not documented. He further stated that he had not specifically informed the licensee that their rotameter read high by 0.5 CFM.

TS 6.8, Procedures and Programs, states in part:

"6.8.1 Written procedures shall be established, implemented, and maintained covering the activities referenced below:"

"i. Offsite Dose Calculation Manual implementation."

The failure to set flow at 1.5 CFM on environmental air sample stations, in accordance with licensee procedure 75RP-0ZZ08, appeared to be a violation of TS 6.8 (50-528/88-40-01, 50-529/88-39-01, 50-530/88-38-01).

C. Environmental Monitoring Program Quality Assurance

In reviewing the matter discussed in paragraph 2.8, above, the inspector noted that the comparison the FM made was between two rotameters calibrated using different calibration methodologies, by different facilities. The decision to accept one calibration over the other did not appear to be supported by the calibration data.

Additionally, it was noted that although the calibration data was corrected for ambient pressure, it was not corrected for internal pressure (air density). The effect of air density upon specific rotameter readings was not evaluated by the inspector, but representative manufacturer's literature and flow measurement literature indicate that air density has very little effect, that only air velocity has a discernible effect. Rotameter reproducibility and accuracy vary significantly between models of similar type. The rotameters in use at the time of the inspection were calibrated under Work Order (WO) No. 0028975, with a stated allowable tolerance of 10% of the full scale reading of 6.0 CFM.

At this tolerance of plus or minus 0.6 CFM, the variance from the specified 1.5 CFM was allowed by the calibration procedure to be off by as much as 40%, without adjustment. The inspector discussed with the licensee the two issues of the unauthorized flow adjustment by the FM, and the wide tolerance allowed in the calibration procedure. The Environmental Programs Supervisor acknowledged the inspector's observations, and stated that the licensee would evaluate the effect of the FM's actions on sample results. He further stated that it was their intent to begin using a more accurate flow measurement device for subsequent environmental air sampling.



The inspector identified the following Quality Assurance (QA) concerns:

- The FM may have used one instrument on a single point check to determine corrected flow rates on all air samples, without any record of the determination.
- The licensee used instruments of varying tolerances and accuracy, possibly without assessment of the effect upon the reliability or comparability of environmental sample data.
- The licensee's internal audit of May 27, 1988, did not identify any problems with implementation of 75RP-OZZ08.

The above was discussed with the licensee at the exit interview. The inspector requested copies of weekly air sample data sheets for the period from two calendar quarters previous to the change in rotameter calibrations, up to the time of the inspection. This matter will be considered an open item (50-528/88-40-02, 50-529/88-39-02, 50-530/88-38-02, Open).

D. Meteorology

The licensee's primary and backup meteorological monitoring equipment were observed to be in good repair and maintenance records indicated a high level of reliability (greater than 95%).

In general, the licensee's environmental program appeared capable of meeting safety objectives. One apparent violation was identified in this area.

3. Follow-up

50-528/IN-88-79, 50-529/IN-88-79, 50-530/IN-88-79 (Closed)

This refers to an information notice regarding licensee misinterpretations of TS 6.12, relative to use of flashing lights as a warning device for very high radiation areas. The licensee had received and distributed the notice in accordance with their procedures. Personnel responsible for control of the warning lights were familiar with the notice and the issues addressed therein. This item is closed.

4. Facility Tours

The licensee's facility, including all three units and the Dry Active Waste Processing (DAWP) facility, was toured. Independent radiation measurements were conducted with NRC ion chamber survey instrument Model No. RO-2, Serial No. 022906, calibrated 8-31-88 and due for calibration 11-30-88.



While touring the various units, the following radiation monitor problems were noted:

<u>Instrument No.</u>	<u>Type of Monitoring</u>	<u>Problem</u>
1-J-SQN-RU009	Auxiliary Building 100' Elevation North corner east area	Alarming unacknowledged on two separate occasions when inspector went past.
1-J-SQN-RU051	Portable continuous air/area	Communication cables strung across cable trays, etc.
1-J-SQN-RU053	Portable continuous air/area	Portable Instrument Control (PIC) left hanging with environmental caps left off PIC and RU53 - High flow light was disconnected
3-J-SQN-RU017	Sq. incore instrument area (in containment)	Decimal point on readout burned out such that reading appeared to be 42100 mR/h versus actual 421 mR/h.

In all three units, but primarily in Unit 1, numerous area radiation monitors were observed to have burned out power available lights. When the matter was discussed with the licensee, they stated that operability of the radiation monitoring system (RMS) had remained high. The inspector reminded the licensee that no specific representation as to operability was being made, only that a number of potential problems were observed.

Some work practices observed in Unit 2 were brought to the attention of the Unit 2 Radiation Protection Manager (RPM):

- o While touring the Unit 2 Radwaste Building Truck Bay Area, a Radwaste Technician (RWT) was observed to be wrapping a 250 ml plastic bottle in a piece of lead sheeting. The RWT stated that the bottle contained a spent resin sample, and measured 1 R/h on contact. The RWT proceeded to set the bottle and shielding on its side, and struck the edges with a hammer, the stated purpose of which was to crimp the edges to enclose the bottle. Another worker in the area, with whom the above was discussed, stated that efforts to locate a sample transfer container had been unsuccessful. Shortly after the crimping was completed, the sample transfer container (a lead shielded steel box with handles) was located within the posted contaminated area in the compactor room. The box was surveyed and removed. The lead wrapping was then removed from the bottle so it would fit in the box. The Unit 2 RPM later stated that work preparation and ALARA considerations were discussed with the workers, as was the inappropriateness of manufacturing shielding by the method noted above.
- o Sorting of radioactive particle waste and preparations for compaction of same were observed. The compactor room was posted as



a high radiation area and as a contaminated area. Several workers were in the room. One worker's dosimetry was not visible. When asked, the worker demonstrated that the dosimetry was inside his protective clothing. When the inspector observed that the individual's digital dosimeter (worn as a continuously integrating dose rate monitor) could not be read in that configuration, the worker indicated that he was an RPT with a dose rate instrument. It was noted that although specific Radiation Exposure Permits (REPs) prescribed digital dosimeters, RPTs typically are exempted if they carry a dose rate meter. The Unit 2 RPM stated that RPTs were reminded that if a digital dosimeter is to be worn, it should be worn where it can be read.

Work in the "A" charging pump room was observed. The licensee was preparing to weld on a moderately contaminated portion of the piping at the pump. The workers were dressed in protective clothing and had donned negative pressure full face air purifying respirators. The RPT placed the low volume (approximately 1 CFM) air sampler about five feet from where the welding was to be performed. A few minutes later, the air sampler was moved to about nine feet away prior to the start of welding. Ventilation in the room was such that air would travel slowly upward, as the exhaust vent was observed to be about 15 feet straight up from the weld area.

The inspector asked the RPT (a senior technician in accordance with ANSI 3.1, Selection, Qualification and Training of Personnel for Nuclear Power Plants) what the ventilation flow would be. The RPT stated he did not know. The RPT was then asked where the exhaust ventilation was, to which the response was again that he did not know. When the inspector expressed concern as to representativeness of breathing zone air sampling, with respect to ANSI N13.1-1969, Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities, and of RPT knowledge of ventilation effects, to the Unit 2 RPM, he stated that the matter had already been reviewed with RPTs as soon as the observation had been brought to his attention.

Tours of other portions of the facility revealed no significant problems. Radioactive waste material transfers between the units and the DAWP facility appeared to be conducted properly. The general storage conditions there were more organized than during the last inspection. The high capacity (super-) compactor area, however, appeared cluttered. The portal monitor was inoperable and the frisking station was in a 300 count per minute (CPM) field, despite the availability of a shielded frisking booth. The licensee was informed of the above at the exit interview.

In general the licensee's program in this area, although exhibiting some matters of concern, appeared capable of meeting the safety objectives.

No violations or deviations were identified.



5. Radiation Protection Manager

The inspector met with the recently appointed Site RPM and with the just-appointed Unit 2 RPM, to discuss their understanding of the organization and the responsibilities assigned to them. The Site RPM, a contractor, stated that he was appointed in order to provide a transition period while a new Chemistry/Radiation Protection Manager (C/RPM) is sought by the licensee, and to identify areas in which to improve the radiation protection program. The licensee stated that the Site RPM was not given responsibility for administrative tasks, which were temporarily assigned to other managers, in order to facilitate the program improvement aspects of his position. The licensee stated that they expected to have the problem identification/in-depth review process completed by mid-December, 1988. When the inspector met with the Unit 2 RPM, it was his first day in that position. The Unit 2 RPM had reported from the Emergency Planning/Preparedness Group. While touring Unit 2 with the inspector, his knowledge of plant procedures and of RPM responsibilities appeared consistent with his position, considering the brief time in that position.

No violations or deviations were identified.

6. Exit Interview

The inspector met with those individuals denoted in paragraph 1 at the conclusion of the inspection, on November 4, 1988. The scope and findings of the inspection were summarized. The licensee acknowledged the apparent violation described in paragraph 2. The licensee also committed to provide the air sample data as described in paragraph 2.

