

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos: 50-528/87-43, 50-529/87-42, 50-530/87-45

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

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

Licensee: Arizona Nuclear Power Project
P. O. Box 52034
Phoenix, AZ. 85072-2034

Facility Name: Palo Verde Nuclear Generating Station Units 1, 2 & 3.

Inspection Conducted: December 6, 1987, through January 16, 1988.

Inspectors:

W.J. Wagner for 1/28/88
J. Ball, Resident Inspector Date Signed

W.J. Wagner for 1/28/88
G. Fiorelli, Resident Inspector Date Signed

W.J. Wagner for 1/28/88
C. Sorenson, Project Inspector Date Signed

Approved By:

W.J. Wagner for 1/28/88
S. Richards, Chief, Engineering Section Date Signed

Summary:

Inspection on December 6, 1987 through January 16, 1988, (Report Nos. 50-528/87-43, 50-529/87-42, and 50-530/87-45).

Areas Inspected: Routine, onsite, regular and backshift inspection by the two resident inspectors and one regional based inspector. Areas inspected included: review of plant activities, plant tours; engineered safety feature system walkdowns; surveillance testing; plant maintenance; verification of containment integrity; containment local leak rate testing; maintenance program implementation; design changes and temporary modifications; licensed operator training; followup licensee event reports; and review of periodic and special reports.

During this inspection the following Inspection Procedures were covered: 37700, 41701, 61715, 61720, 61726, 62726, 62700, 62703, 71707, 71707-1, 71709, 71710, 72302, 72580, 72701, 93702.

Results: Of the areas inspected, no violations of NRC requirements or deviations were identified.

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DETAILS

1. Persons Contacted:

The below listed technical and supervisory personnel were among those contacted:

Arizona Nuclear Power Project (ANPP)

- *J. Allen, Plant Manager, Unit 1
- L. Brown, Manager, Radiation Protection and Chemistry
- *F. Buckingham, Operations Manager, Unit 2
- *R. Butler, Director, Standards and Technical Support
- B. Cederquist, Manager, Chemical Services
- W. Fernow, Manager, Training
- R. Gouge, Operations Manager, Unit 3
- J. G. Haynes, Vice President, Nuclear Production
- W. E. Ide, Plant Manager, Unit 2
- J. Kirby, Director, Site Services
- R. Papworth, Director, Quality Assurance
- G. Perkins, Manager, Central Radiation Protection
- *T. Schriver, Manager, Compliance
- G. Sowers, Manager, Engineering Evaluations
- *E. E. Van Brunt, Jr., Executive Vice President
- J. Vorees, Manager, Nuclear Safety
- R. Younger, Operations Manager, Unit 1
- O. Zeringue, Plant Manager, Unit 3

The inspectors also talked with other licensee and contractor personnel during the course of the inspection.

*Attended the Exit Meeting on January 21, 1988.

2. Review of Plant Activities

a. Unit 1

Unit 1 continued the first cycle refueling outage throughout this inspection period. Major activities included completion of reactor coolant pump seal replacement and shaft replacement/repair, integrated safeguards testing, and the fill and venting of the reactor coolant system. On January 8, the unit entered Mode 4. During the subsequent heatup and pressurization of the reactor coolant system, excessive leaking was noted to be occurring from the seals of 2 of the 4 reactor coolant pumps. The unit was returned to Mode 5 on January 9 to evaluate the leakage problem. The unit remained in Mode 5 at the end of the inspection period.

b. Unit 2

Unit 2 operated essentially at 100% throughout the period.

c. Unit 3

Power ascension testing continued in Unit 3 throughout this inspection period. On December 6, the unit was restarted after having conducted a shutdown from outside the control room test. On December 17, while operating at 50 percent power, the unit experienced a reactor trip due to misalignment of 2 groups of part length control rods. The control rods became misaligned due to the failure of a logic card in the rod drive mechanism sequence while performing testing involving movement of the control rods. Following an evaluation and replacement of the failed logic card, the unit was restarted on December 19. On December 29, while escalating power from 90 to 95 percent, the unit experienced a turbine generator trip due to an erroneous high stator cooling water temperature indication. At the time of the turbine trip, the reactor cutback system was inservice such that reactor power was automatically reduced to 30 percent. After actions were completed to correct the problem with the stator cooling temperature sensor problem, the unit was resynchronized to the grid on December 30, 1987. On January 1, 1988, the unit was operated at 100 percent for the first time. By January 7, 1987, testing at the 100 percent plateau was completed. The unit remained at full power through the end of the inspection period.

d. Plant Tours

The following plant areas at Units 1, 2 and 3 were toured by the inspector during the course of the inspection:

- o Auxiliary Building
- o Containment Building
- o Control Complex Building
- o Diesel Generator Building
- o Radwaste Building
- o Technical Support Center
- o Turbine Building
- o Yard Area and Perimeter

The following areas were observed during the tours:

1. Operating Logs and Records Records were reviewed against Technical Specification and administrative control procedure requirements.
2. Monitoring Instrumentation Process instruments were observed for correlation between channels and for conformance with Technical Specification requirements.
3. Shift Manning Control room and shift manning were observed for conformance with 10 CFR 50.54.(k), Technical Specifications, and administrative procedures.



4. Equipment Lineups Valve and electrical breakers were verified to be in the position or condition required by Technical Specifications and administrative procedures for the applicable plant mode. This verification included routine control board indication reviews and conduct of partial system lineups.
5. Equipment Tagging Selected equipment, for which tagging requests had been initiated, was observed to verify that tags were in place and the equipment in the condition specified.
6. General Plant Equipment Conditions Plant equipment was observed for indications of system leakage, improper lubrication, or other conditions that would prevent the system from fulfilling their functional requirements.
7. Fire Protection Fire fighting equipment and controls were observed for conformance with Technical Specifications and administrative procedures.
8. Plant Chemistry Chemical analysis results were reviewed for conformance with Technical Specifications and administrative control procedures.
9. Security Activities observed for conformance with regulatory requirements, implementation of the site security plan, and administrative procedures included vehicle and personnel access, and protected and vital area integrity.
10. Plant Housekeeping Plant conditions and material/equipment storage were observed to determine the general state of cleanliness and housekeeping. Housekeeping in the radiologically controlled area was evaluated with respect to controlling the spread of surface and airborne contamination.
11. Radiation Protection Controls Areas observed included control point operation, records of licensee's surveys within the radiological controlled areas, posting of radiation and high radiation areas, compliance with Radiation Exposure Permits, personnel monitoring devices being properly worn, and personnel frisking practices.

No violations of NRC requirements or deviations were identified.

3. Engineered Safety Feature System Walkdowns - Units 1, 2 and 3

Selected engineered safety feature systems (and systems important to safety) were walked down by the inspector to confirm that the systems were aligned in accordance with plant procedures. During the walkdown of the systems, items such as hangers, supports, electrical cabinets, and cables were inspected to determine that



they were operable, and in a condition to perform their required functions.

Unit 1

Accessible portions of the following systems were walked down on the indicated date:

<u>System</u>	<u>Date</u>
Shutdown Cooling Operation, Train "A"	01-04-88
Emergency Diesel Generator System, Train "B"	12-15-87

Unit 2

Accessible portions of the following systems were walked down on the indicated dates:

<u>System</u>	<u>Date</u>
Emergency Diesel Generator System, Trains "A" and "B"	12-21-87
Class 1E Battery Supply Channel "B"	01-04-88

Unit 3

Accessible portions of the following systems were walked down on the indicated dates:

<u>System</u>	<u>Date</u>
High Pressure Safety Injection System, Trains "A" and "B"	01-04-88
Low Pressure Safety Injection, Trains "A" and "B"	01-04-88

No violations of NRC requirements or deviations were identified.

4. Surveillance Testing - Units 1, 2 and 3

- a. Surveillance tests required to be performed by the Technical Specifications (TS) were reviewed on a sampling basis to verify that: 1) the surveillance tests were correctly included on the facility schedule; 2) a technically adequate procedure existed for performance of the surveillance tests; 3) the surveillance tests had been performed at the frequency specified in the TS; and 4) test results satisfied acceptance criteria or were properly dispositioned.

- b. Portions of the following surveillances were observed by the inspector on the dates shown:

Unit 1

<u>Procedure</u>	<u>Description</u>	<u>Dates Performed</u>
73ST-9CL07	Local Leak Rate Test of Containment Vent Purge Isolation Valves.	12-16-87
73ST-9HJ01	Control Room Air Filtration Unit Air Flow Capacity and Pressurization Test.	12-18-87
36ST-1SB02	PPS Bistable Trip Functional Test.	12-22-87
36ST-9SB04	PPS Functional Test - PPS/ESFAS Logic.	01-04-88

Unit 2

<u>Procedure</u>	<u>Description</u>	<u>Dates Performed</u>
36ST-9SB02	PPS Bistable Trip - Functional Test	12-21-87
42ST-2EC03	Essential Chilled Water System Inoperable Surveillance	01-05-88

Unit 3

<u>Procedure</u>	<u>Description</u>	<u>Dates Performed</u>
73ST-3ZC01	Tendon Integrity.	12-14-87
43ST-3RC02	RCS Water Inventory Balance.	12-30-87

No violations of NRC requirements or deviations were identified.

5. Plant Maintenance - Units 1, 2 and 3

- a. During the inspection period, the inspector observed and reviewed documentation associated with maintenance and problem investigation activities to verify compliance with regulatory requirements, compliance with administrative and maintenance procedures, required QA/QC involvement, proper use of safety tags, proper equipment alignment and use of jumpers, personnel qualifications, and proper retesting. The inspector verified reportability for these activities was correct.

- b. The inspector witnessed portions of the following maintenance activities:

Unit 1

<u>Description</u>	<u>Dates Performed</u>
o Replacing a Cable Connector on The "D" Channel Supplemental Protection Amplifier.	12-20-87
o Troubleshooting of Spurious Trip on RU-37.	12-22-87
o Connector Reterminations on Valve SG-UV-172 Circuit Relay.	01-04-88

Unit 2

<u>Description</u>	<u>Dates Performed</u>
o Removing Steam Generator Level Channel "C" Circuit Card From Cabinet Due To Problems With Setpoint Drift.	12-21-87

Unit 3

<u>Description</u>	<u>Dates Performed</u>
o Charging Pump "A" Gear Box Replacement	12-15-87
o ESFAS Actuation Relay Replacement	12-30-87

No violations of NRC requirements or deviations were identified.

6. Verification of Containment Integrity - Unit 1

Prior to entry into Mode 4 on January 8, 1987, the inspector verified that the licensee had established containment integrity as required by Technical Specifications. The inspector:

- o Verified the operability of the containment spray system,
- o Verified that all mechanical barriers and isolation valves associated with twelve containment penetrations were in their proper position,
- o Witnessed the satisfactory completion of Procedure 73ST-9CL03, "Airlock Local Leak Rate Test".

No violations of NRC requirements or deviations were identified.



7. Containment Local Leak Rate Testing (LLRT)

The inspector reviewed the licensee's program for the conduct of LLRTs. The inspector reviewed procedure 73ST-9CLO1, "Containment Leakage Type B and C Testing", and interviewed the test engineer responsible for containment leakage testing. The inspector also examined the licensee's tracking system for LLRTs for all containment pressure boundaries and containment isolation valves, to ensure that LLRTs have been conducted at the required frequencies. Finally, the inspector reviewed a sample of work orders for work performed on containment isolation valves to ensure that LLRTs were conducted where required.

No violations of NRC requirements or deviations were identified.

8. Maintenance Program Implementation

The inspector examined the implementation of the licensee maintenance program. The inspector chose a random sample of maintenance work orders and verified the following characteristics:

- o Vendor technical manuals were controlled and kept up-to-date.
- o The instructions were adequate for the work involved.
- o Administrative approvals were obtained.
- o Functional testing was completed as necessary.
- o M&TE used was identified and in calibration.
- o Parts and materials used were identified.

Other characteristics of the work orders verified by the inspector include:

- o Procedures used conformed to the licensee's administrative requirements.
- o Post-maintenance testing was appropriate.
- o Quality Control hold points were identified.
- o The activity was described in sufficient detail.
- o Hazards such as radioactivity were considered.
- o Provisions were included for cleanliness and housekeeping.

Other attributes and characteristics were verified by the inspector, as applicable.

No violations of NRC requirements or deviations were identified.



9. Design Changes and Temporary Modifications

The inspector reviewed the licensee's design change program to ensure compliance with the minimum requirements. A sample of individual Design Change Packages (DCPs) was selected.

The inspector verified, as applicable, that the DCPs were reviewed and approved per the Technical Specifications and established Quality Assurance controls. The inspector ensured that tests were conducted to verify the acceptability of installed design changes. Also verified were procedure and as-built drawing revisions to reflect the implementation of the design change. Finally, the inspector verified that a mechanism existed to revise training programs to reflect the existence of a particular design change.

In addition, a review was conducted of the licensee's program for temporary modifications. The inspector reviewed procedure 73AC-9ZZ05, "Temporary Modification Control", and verified the following items:

- o Review and approval was in accordance with the Technical Specifications.
- o Controls required the use of work orders for installation.
- o A formal record was maintained of the status of temporary modifications.
- o Independent verification was utilized both for installation and removal.
- o Controls required functional testing.
- o Periodic reviews were conducted of active temporary modifications to ensure that they were still needed.

No violations of NRC requirements or deviations were identified.

10. Licensed Operator Training

The inspector reviewed the licensee's program for training and qualification of licensed operators. The inspector interviewed training supervisors, reviewed training records for a sample of licensed operators, and attended a training lecture. Also, procedure 82TR-9ZZ08, "Requalification Procedure for Licensed Operator Retaining" which describes the licensee's requalification training program was reviewed. The inspector noted that the licensee's training program has been INPO accredited.

Training records for a sample of licensed operators were reviewed to verify the presence of certain records required to be retained by 10 CFR 55, Appendix A. No deficiencies were noted, however, a problem was noted by the inspector with one licensed individual successfully completing the required requalification training.

The licensee's requalification program is divided into 16 separate courses taken over a two-year period (8 per year). The Unit 3 Operations Manager has received an incomplete on 2 of the last 8 courses and received an oral upgrade in another course that was failed. Further, this individual failed the yearly requalification exam.

ANSI 3.1-1978, which the licensee has committed to, requires the Operations Manager to hold an SRO license. This is even more important in Unit 3, since the new Plant Manager has little or no formal licensed operator training. Licensee representatives stated that they were aware of the problem and were taking steps to correct it.

No violations of NRC requirements or deviations were identified.

11. Followup Licensee Event Report (LER) - Units 1, 2 and 3

The following LERs associated with operating events were reviewed by the inspector. Based on the information provided in the report it was concluded that reporting requirements had been met, root causes had been identified, and corrective actions were appropriate. The below listed LERs are considered closed.

Unit 2

<u>LER NUMBER</u>	<u>DESCRIPTION</u>
87-18-L0	Spurious CREFAS.

Unit 3

<u>LER NUMBER</u>	<u>DESCRIPTION</u>
87-01-00	Spurious CREFAS
87-02-00	Spurious CREFAS

No violations of NRC requirements or deviations were identified.

12. Review of Periodic and Special Reports - Units 1, 2 and 3

Periodic and special reports submitted by the licensee pursuant to Technical Specifications 6.9.1 and 6.9.2 were reviewed by the inspector.

This review included the following considerations: the report contained information required to be reported by NRC requirements; test results and/or supporting information were consistent with design predictions and performance specifications; and the validity of the reported information. Within this scope, the following reports were reviewed by the inspector.

Unit 1

- o Monthly Operating Report for November and December, 1987.

Unit 2

- o Monthly Operating Report for November and December, 1987.

Unit 3

- o Monthly Operating Report for November and December, 1987.

No violations of NRC requirements or deviations were identified.

13. Exit Meeting

The inspector met with licensee management representatives periodically during the inspection and held an exit on January 21, 1988. During the exit meeting, the inspector discussed recent operating experiences involving personnel error emphasizing the need for greater attention to detail and management attention.