U.S. NUCLEAR REGULATORY COMMISSION
REGION V

Report Nos: 50-528/84-63, 50-529/84-42

Docket Nos: 50-528, 50-529

License Nos: NPF-34; CPPR-142

Licensee: Arizona Public Service Company
P. O. Box 21666
Phoenix, AZ. 85036

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

Inspection Conducted: December 15, 1984 - January 31, 1985

Inspectors: _____ 2-21-85
R. Zimmerman, Senior Resident Inspector — Date Signed

_____ 2-21-85
J. Crews, Senior Reactor Engineer (January 28-29) — Date Signed

_____ 2-21-85
G. Fiorelli, Resident Inspector — Date Signed

_____ 2-21-85
C. Bosted, Resident Inspector — Date Signed

Approved By: _____ 2-21-85
L. Miller, Chief, Reactor Projects Section 2 — Date Signed

Summary:

Inspection on December 15, 1984-January 31, 1985
(Report Nos. 50-528/84-63 and 50-529/84-42)

Areas inspected: Routine, onsite, regular and backshift inspection by three resident inspectors and a member of Region V staff (Unit 1 - 374 hours; Unit 2 - 142 hours). Areas inspected included: review of plant activities, initial fuel loading, surveillance testing, plant maintenance, preoperational testing activities, IE Bulletin followup, startup field reports, quality assurance of startup testing activities and actions by licensee to enhance operational readiness.

Results: Of the nine (9) areas inspected, no violations or deviations were identified.

DETAILS

1. Persons Contacted:

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

Arizona Public Service Company (APS)

R. Adney,	Operations Superintendent, Unit 2
*J. Allen,	Operations Manager
C. Anderson,	Lead Nuclear Instructor
L. Auterino,	Nuclear Steam Supply System Test Supervisor, Unit 2
R. Bernier,	Operations Support Supervisor
*J. R. Bynum,	PVNGS Plant Manager
J. Donahue,	Shift Test Director Supervisor
*W. Fernow,	Plant Services Manager
R. Gouge,	Operations Supervisor, Unit 1
M. Halpin,	Shift Supervisor, Unit 1
F. Hicks,	Training Manager
*W. E. Ide,	Corporate Quality Assurance Manager
*D. B. Karner,	Assistant Vice President, Nuclear Production
D. Nelson,	Operations Security Manager
*R. Nelson,	Maintenance Manager
J. Pollard,	Operations Supervisor, Unit 2
*C. Russo,	Quality Audits Manager
T. Shriver,	Quality Systems and Engineering Manager
L. Souza,	Assistant Quality Assurance Manager
R. Vallely,	Shift Supervisor, Unit 1
*E. E. Van Brunt, Jr.,	Vice President, Nuclear Production
P. Wiley,	Licensed Operator Training Supervisor
R. Younger,	Operations Superintendent, Unit 1
*O. Zeringue,	Technical Support Manager

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

*Attended the Exit Meeting on February 7, 1985.

2. Review of Plant Activities

a. Overview

Throughout the reporting period, the inspector reviewed plant activities in progress. Unit 1 was issued an Operating License on December 31, 1984; entered Mode 6 on January 7; completed the initial fuel loading on January 12; and entered Mode 5 on January 27, 1985. The unit is expected to remain in Mode 5 for several weeks to perform required surveillance testing and complete planned maintenance/modification activities.

Unit 2 continued to perform preoperational tests and prepared for the Integrated Leak Rate Test scheduled for February 1, 1985.

b. Loss of Headset During Fuel Load Activities

On January 7, 1985, after loading the first two fuel assemblies, an operator's headset came apart while the operator was on the Spent Fuel Machine above the transfer canal in the Unit 1 Fuel Building. Two plastic washers (1/4" and 1 1/16" diameters) and a 1/4" stainless steel screw were unaccounted for, following several searches by the licensee, both prior to and following draining the canal. The licensee was unable to determine whether the above parts were in place prior to the operator's use of the headset, or were already missing. The licensee evaluated the consequences of the missing parts, assuming these became lodged in a fuel assembly that was loaded into the reactor vessel, and concluded that no thermodynamic or chemistry problems would result. Potential fretting wear to a fuel rod by the metal screw was determined to result in less than the 1% failed fuel assumption in the Final Safety Analysis Report. The Plant Review Board subsequently determined that the missing items did not constitute an unreviewed safety question.

Inspector review of the engineering evaluation is not completed. (O/I 50-528/84-63-01)

c. Spurious Actuations

On January 19, 20, and 21, 1985, spurious actuations were received at Unit 1 from the Control Room Essential Ventilation Actuation System (CREVAS), Containment Purge Isolation Actuation System (CPIAS), and Fuel Building Essential Ventilation Actuation System (FBEVAS).

Attempts to duplicate the actuations during licensee trouble-shooting of the radiation monitors which initiated the above signals were unsuccessful. Actuations were received from both spurious high radiation signals and spurious auxiliary equipment failure signals. The licensee and vendor continued to troubleshoot the problem.

On January 31, 1985, Unit 1 experienced an inadvertent actuation of the Control Room Essential Ventilation System, Containment Purge Isolation Actuation System, and the Fuel Building Essential Ventilation System due to a loss of power to the Essential 4160 Volt AC Train A bus. The bus was de-energized accidently when an operator tripped a 13.8 KV breaker that was being supplied power from the SO3 Startup Transformer. When the breaker tripped, it de-energized one complete train of power. The Radiation Monitoring System Remote Indicating Cabinet (RIC) was also de-energized, causing an actuation of the Essential Ventilation Systems. The "A"

Diesel Generator started, and loaded the "A" 4160 Volt vital bus. The Control Room operator re-energized the non-essential loads from the SO1 Startup Transformer. An Engineering Evaluation Request has been submitted to investigate the feasibility of changing the power supply of the RIC to a non-interruptible type power source.

d. Plant Tours

The following plant areas were toured by the inspector during the course of the inspection:

- o Auxiliary Building
- o Chemical Storage Areas (Unit 2)
- o Containment Building
- o Control Complex Building
- o Diesel Generator Building
- o Radwaste Building
- o Spray Pond Pump Building (Unit 2)
- o Technical Support Center
- o Turbine Building

The following areas were observed during the tours:

1) Operating Logs and Records. Records were reviewed against Technical Specification and administrative 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 by plant lineup procedures for the applicable plant mode. This verification included routine control board indication reviews and conduct of partial system lineup verifications of the Unit 1 Low Pressure Safety Injection and Containment Spray Systems on January 22 and 23, respectively.

5) Equipment Tagging. Selected equipment, for which tagging requests had been initiated, were observed to verify that tags were in place and the equipment was in the condition specified.

6) Fire Protection. Fire fighting equipment and controls were observed for conformance with Technical Specifications and administrative procedures.

7) Plant Chemistry. Chemical analysis results were reviewed for conformance with Technical Specifications and administrative procedures.

8) Security. Activities were observed for conformance with regulatory requirements, implementation of the site security plan, and administrative procedures. Activities observed included vehicle access, personnel access, protected area integrity, and vital area integrity.

Several security computer failures of short duration occurred during the inspection period. The inspector verified that the required contingency measures were initiated.

During a plant tour of Unit 1 on January 25, 1985, the inspector observed a vital area barrier which, although still capable of performing its intended function, was degraded by an adjacent maintenance activity. No work was in progress, nor were personnel in the area at the time of the observation. The inspector contacted Security supervision to determine whether they were aware of the maintenance activity, and had evaluated its affect on the barrier. Security supervision had not been aware of the maintenance activity; however, upon review they concluded the barrier was still adequate. The inspector stated that a review of plant controls appeared warranted, to ensure that maintenance activities on or in the vicinity of equipment which could affect plant security, were not initiated without the prior knowledge of Security. The licensee representative acknowledged the inspector's comment and committed that by February 20, 1985, the applicable Maintenance Department Instruction would be revised to include the notification of Security prior to start of work activities which could impact on plant security. (O/I 50-528/84-63-02)

9) Plant Housekeeping. Plant conditions and material/equipment storage were observed to determine the general state of cleanliness, housekeeping and adherence to fire protection requirements.

The overall cleanliness of the units was considered by the inspector to be acceptable; however, on several occasions items were brought to the licensee's attention which required corrective action.

a) A Class 1E 4160V breaker that was stored in the Unit 1 Essential Train A Switchgear Room was found stored among a pile of debris. During meetings with members of licensee management, the inspector was informed that the breaker storage condition had been noted by APS QA during its weekly walkdown, which was completed the day before the NRC inspector had made his observation. Further the inspector was informed that QA had contacted the Maintenance Department about the same time that the inspector had contacted them. The breaker was returned to the Electrical Warehouse, cleaned, refurbished, inspected and recertified as Class 1E by the vendor. The inspector reviewed the APS QA inspector's observation report, and concluded the inadequate breaker field storage controls represented a licensee identified violation (10 CFR 2, Appendix C) of the licensee's administrative control procedures governing material control, housekeeping and cleanliness.

In addition to assessing material control and housekeeping adequacy during upcoming QA plant tours, QA is adding this event to its deficiency trending program.

b) Tours of various equipment rooms in the Unit 1 Auxiliary and Radwaste Buildings identified that a substantial amount of miscellaneous tools such as ladders, welding cable, temporary lights, mops and buckets, etc. are presently stored in areas which, following development of a fission product inventory in the near future, will probably be radiation, high radiation and/or contaminated areas. The licensee representative committed that prior to initial criticality a thorough walkdown of plant spaces will be conducted and equipment storage locations will be determined in accordance with ALARA and radioactive waste volume reduction considerations. (O/I 50-528/84-63-03)

c) Several spare Control Element Assemblies (with poison rods not attached) located in the Unit 1 Fuel Building were noted to be bagged in yellow plastic bags. The inspector discussed the matter with Health Physics supervision and stated that use of a yellow bag customarily signified that potential or actual radioactive material was contained within the bag.

The inspector noted that Health Physics procedures did not address the use of color coded bags. Although not a concern prior to initial criticality, the inspector stated that without a definitive policy, the task of minimizing the spread of contamination and control of radioactive material could be more difficult. The licensee representative acknowledged the inspector's comments and stated that the Radwaste Department was reviewing the need for controls addressing the use of color coded bags. The licensee committed to proceduralize the necessary controls prior to initial criticality (O/I 50-528/84-63-04). The inspector

reviewed a draft revision to Radiation Protection Procedure, 75RP-9ZZ61, "Radioactive Material Storage and Control" and considered it acceptable.

d) The housekeeping conditions in Unit Two Containment, Auxiliary and Diesel Generator Buildings were noted to have deteriorated, principally due to debris which had been allowed to accumulate. This matter was brought to the attention of APS's management. In response, regularly scheduled weekly walkdowns of Unit Two areas by a team of Bechtel and APS management representatives have been initiated.

Inspector review of these areas will continue to be performed as part of the routine inspection program.

No violations or deviations were identified.

3. Initial Fuel Load Witnessing - Unit 1

The licensee entered Mode 6 on January 7, 1985. The initial fuel loading was witnessed by the inspector to verify that the activities were performed in conformance with Technical Specifications and plant procedures. The inspector observed fuel loading activities from the Spent Fuel Machine in the Fuel Building, Refueling Machine in Containment, and the Control Room. The activities were compared to the requirements of procedure 72IC-1RX01, "Initial Fuel Load" and to the Technical Specifications.

The inspector verified that:

- On a sampling basis, the prerequisite Mode 6 and the "At all Times" Technical Specifications had been completed prior to the start of fuel handling.
- The Crew complement was staffed with qualified personnel in accordance with Technical Specifications.
- The Senior Reactor Operator in charge of fuel handling was in constant communication with the Control Room.
- The inverse multiplication plots were being calculated and plotted by the Reactor Engineering Group.
- The boron concentration was being sampled and analyzed every two hours.
- A Fuel Management Control Board was set up to identify the location of each fuel assembly as it moved from the Fuel Building to the Reactor Vessel. The Test Director was supervising the fuel movements from the Control Board location.

The inspector also reviewed each test exception (TE) and verified that licesee management was aware of the TEs and that the TEs had been documented in accordance with procedural requirements.

No violations or deviations were identified.

4. Surveillance Testing - Unit 1

a. Surveillance tests, required to be performed by the Technical Specifications, 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 Technical Specifications; and, 4) Test results satisfied acceptance criteria or were properly dispositioned.

The following completed surveillance tests were reviewed:

41ST-1ZZ16	"Routine Surveillance Daily Midnight Log"
36ST-9SE04	"Excore Nuclear Instrumentation Functional Tests"
36ST-9SO01	"Radiation Monitoring System Functional Test"
36ST-9SE05	"Boron Dilution Functional Alarm Check"
41ST-1CH02	"Boron Injection Flowpaths - Shutdown"
41ST-1DG01	"Emergency Diesel Generator A Start and Load"
41ST-1DG02	"Emergency Diesel Generator B Start and Load"
41ST-1SE01	"Source Range Flux Monitor Channel Checks"
41ST-1CH06	"Charging Pumps Operability Test"

b. Portions of the following surveillance tests were observed to verify that; 1) testing was being accomplished by qualified personnel in accordance with approved, technically adequate procedures; 2) the system was properly returned to service; and 3) measuring and test equipment satisfied calibration requirements.

36ST-9SB02	"Plant Protective System Functional Test"
36ST-9SB03	"Plant Protective System Calibration"
36ST-9SE01	"Excore Safety Channel Log Calibration"
36ST-9SV02	"Vibration and Loose Parts Monitoring System Calibration Test"

No violations or deviations were identified.

5. Plant Maintenance - Units 1 and 2

a. During the inspection period, the inspector observed 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, and personnel qualifications. The inspector verified reportability, as required by Technical Specifications for these activities, was correct.

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

- o Packing adjustment on a containment isolation valve (V402) for the Nuclear Cooling Water System, Unit 1.
- o Troubleshooting Reactor Protection System, Channel D, Unit 1.
- o Troubleshooting inadvertent actuation of the CREVAS, CPIAS, FREVAS, Unit 1, documented in paragraph 2.c
- o Disassembly and reassembly of the Train B High Pressure Safety Injection System suction valve, Unit 2.
- o Preventative maintenance of the Essential Cooling Water pumps and motors, Unit 2.

No violations of deviations were identified.

6. Review of Preoperational Testing Activities - Unit 2

a. Major Test Activities

The major preoperational test activities in progress during the reporting period were the local leak rate tests conducted on containment penetrations, isolation valves and containment airlocks. Other tests conducted were associated with the Fuel Handling Equipment, Diesel Generator Fuel System, Pressurizer Level And Pressure Control, and the Essential Cooling Water System.

b. Preoperational Test Procedure Review

The inspector reviewed the following preoperational test procedures:

91PE-2CH02 - "Containment Normal HVAC"
91PE-2NC01 - "Nuclear Cooling Water System"
91PE-2EW01 - "Essential Cooling Water System"
91PE-2RC01 - "Pressurizer Pressure and Level Control System"

The inspector verified the procedures were formally reviewed and approved, formatted, and contained the information required by Administrative Control Procedure 90AC-0ZZ14, "PVNGS Startup Procedures, Preparation, Review and Approval". A sample of acceptance criteria contained in the procedures was compared with design documents. The inspector verified the design values and required equipment performance were consistent.

c. Preoperational Test Witnessing

The inspector witnessed portions of the following tests:

91PE-2FH08 - "10 Ton New Fuel Handling Crane"
91PE-2CH07 - "Reactor Makeup Water - Boric Acid Makeup Volume Control Tank"
92PE-2RC01 - "Pressurizer Pressure and Level Control"

The inspector verified that approved procedures were used, test personnel were knowledgeable of the test requirements, and data was properly collected. Procedure changes and test exceptions were identified and significant events were recorded in the test log. Other test related activities such as the use of calibrated M&TE and completion of test prerequisites were also verified to have been accomplished in accordance with administrative control procedures.

d) Preoperational Test Results Review

The results of the following preoperational tests were reviewed by the inspector:

91PE-2CH01 "Purification Filters and Ion Exchangers Preoperational Test"

91PE-2CH04 "Chemical Volume and Control System Charging Test"

91PE-2CH05 "Boric Acid Batching Test"

91PE-2CH06 "Chemical Addition Test"

91PE-2CH13 "Reactor Coolant Pump Seal Injection Test"

91PE-2SI04 "Low Pressure Safety Injection Test"

91PE-2SI06 "Containment Spray Test"

91PE-2SI07 "Containment Spray Nozzle Air Test"

The inspector verified that activities such as test exception resolution, test data acquisition, test report issuance, test modifications and acceptance criteria verification had been accomplished in accordance with procedures.

No violations or deviations were identified.

7. Temporary Instruction - TI 2515/49 "Inspection Requirements To Review Licensee Actions Taken In Response To IE Bulletin 81-01, Surveillance Of Mechanical Snubbers" - Units 1 and 2 (Closed)

This Temporary Instruction references IE Bulletin 81-01 which specified visual examination and functional testing requirments for mechanical snubbers. The Bulletin was issued prior to the incorporation of mechanical snubber examinations and functional testing requirement in the Technical Specifications of facility licenses, as is the case with Palo Verde Unit One.

The inspector reviewed Surveillance Test Procedures 31ST-9ZZ01, "Snubber Visual Examination" and 31ST-9ZZ02, "Snubber Functional Test" and verified that the examination and functional testing requirements of the facility Technical Specifications were included in the procedures. Several comments related to procedure clarification were provided to the licensee, who stated that the comments would be incorporated in the next revision of the procedures.

The inspector also verified that the initial examination and testing actions had been scheduled as required by the facility Technical Specifications. This TI is closed.

No violations or deviations were identified.

8. Startup Field Reports -Unit 2

The inspector reviewed 25 Startup Field Reports (SFRs) for the purpose of assessing the quality of the technical resolutions of problems identified by Startup engineers. The SFRs were randomly selected from nine quality related plant systems. In each case the inspector concluded the resolution was reasonable and would technically correct the problem. SFRs which involved Combustion Engineering (CE) equipment were evaluated by CE as well as Bechtel.

No violations or deviations were identified.

9. Quality Assurance (QA) Of Startup Testing Activities - Units 1 and 2

Since the reorganization of the QA group in May 1984, approximately 2600 Test Monitoring Reports covering testing observations, building tours and testing related activities were issued by APS QA. The inspector reviewed several of the Test Monitoring Reports issued, and observed that generic check sheets identifying specific types of checks are used to monitor testing and testing related activities. The inspector noted that Corrective Action Reports (CARs) had been written based on some of the monitoring findings. A system for monitoring status of CARs is maintained by the Test Monitoring Group. A review of three (3) CARs was made by the inspector who noted that the corrective actions were reviewed by QA.

No violations or deviations were identified.

10. Actions by Licensee to Enhance Operational Readiness Unit 1

By letter dated December 26, 1984, the Licensee committed to several actions to enhance the operational readiness of Unit 1. Verification of those actions, as discussed below, was accomplished by inspector examination of facility records, discussions with licensee personnel and observation during the current inspection period.

a. Utilization of Management and Supervisory Advisors

The licensee has obtained a commitment from the Southern California Edison Company (SCE) to provide four additional management or supervisory personnel to serve as advisors to APS upper management as well as PVNGS plant management and supervision. All such individuals were previously experienced in operations including the startup of San Onofre Units 2 and 3. Two of these individuals are Senior Licensed Operators who will undergo plant specific certification training at PVNGS and subsequently serve as Shift Advisors to an operating crew. Training and certification of these individuals is to be completed prior to initial criticality.

Two additional individuals experienced in operation of San Onofre Units 1, 2 and 3 are to serve as advisors/consultants to APS. One of these individuals has extensive experience at both the corporate management and site management levels (currently Site Manager at San Onofre) with SCE. This individual, who commenced participation as an advisor/consultant to APS upper management and the PVNGS Site Manager during the week of January 14, 1985, will spend approximately 25% of his time (at least one week per month) in this capacity.

The second individual, who will devote a similar period of time as advisor/consultant to PVNGS plant management, will commence participation in this capacity on or about February 1, 1985. He has extensive experience in the management and supervision of operating activities (currently Assistant Operations Manager) at San Onofre Units 1, 2 and 3.

The above arrangements with SCE, when implemented, will satisfy fully the commitments by the Licensee to the utilization of advisors during initial operation.

b. Supplemental Training of Plant Operators

The Licensee committed to additional classroom and simulator training of plant operators in the low power physics test procedures prior to initial criticality of Unit One.

A review of the current training schedule revealed that this training commenced as part of the current six-week requalification training cycle for all crews during the week of Janaury 7, 1985. Three procedures covering isothermal temperature coefficient, control element assembly worth and critical boron concentration measurements were included in the current training cycle. The procedure for initial criticality is scheduled for a subsequent training cycle prior to initial criticality.

In addition to this training, discussions were held by the Unit 1 Operations Superintendent and/or Day Shift Supervisor with each shift supervisor, and in turn by each shift supervisor with licensed operators assigned to their crew, to assure awareness of applicable Limiting Conditions for Operation (LCOs) and specific procedures applicable to Mode 6 (Refueling) operations.

A review of the records of this training revealed that a compilation of all LCOs applicable to Mode 6, to "All Modes," and to "At All Times," had been prepared for review with all shift supervisors and licensed shift personnel.

When examining training records, the inspector initially observed that attendance records were not available for five of six shift supervisors and one of six operating crews who participated in the required training. These records were subsequently located, or duplicates prepared, during the current inspection.

The inspector concluded that these actions fully satisfied the commitments by the licensee in their letter of December 26, 1984, regarding supplemental training of plant operators prior to initial fuel loading and low power physics testing.

c) Emphasis and Evaluation of Effective Communications and Adherence to Procedures

A review of training records revealed that communications, use of procedures and Technical Specifications, were specific factors, used in the training and evaluation reports of individual opertors by the PVNGS Training Department.

The records also included, in draft form for review and comment, a Training Department Guideline "Evaluation Standardization of the PVNGS Simulator Evaluation Report". This document includes criteria for judging the acceptable performance of operators in each of the factors covered by the evaluation report, including communications and use of procedures and Technical Specifications.

In addition to these steps, the PVNGS Training Department has requested that the APS corporate Training Department prepare a course in communications tailored to the Control Room environment for use in the training of plant operators. The licensee has, through discussion with other facilities, identified and is obtaining a copy of a training program procedure relating to communications. This procedure will be evaluated for applicability at PVNGS.

The above actions, when completed, will satisfy fully the commitments by the licensee in its letter of December 26, 1984, regarding emphasis and evaluation of communication and adherence to procedures during operator training.

No violations or deviations were identified.

11. Exit Meeting

The inspectors met with licensee management representatives periodically during the inspection and held an exit on February 7, 1985. The scope of the inspection and the inspector's findings, as noted in this report, were discussed and acknowledged by the licensee representatives.