

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos: 50-528/84-18, 50-529/84-14

Docket Nos: 50-528, 50-529 License Nos. CPPR-141, 142

Licensee: Arizona Public Service Company

P. O. Box 21666

Phoenix, Arizona 85036

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

Inspection at: Palo Verde Site, Wintersburg, Arizona

Inspection Conducted: May 1 - June 1, 1984

Inspectors: *Talbert Young Jr. for* *6-20-84*  
R. Zimmerman Date Signed

*Talbert Young Jr. for* *6-20-84*  
G. Fiorelli Date Signed

*Talbert Young Jr. for* *6-20-84*  
C. Bosted Date Signed

Approved by: *Talbert Young Jr.* *6-20-84*  
T. Young, Jr., Chief Date Signed  
Reactor Projects Section 2

Summary:

Inspection on May 1 - June 1, 1984 (Report Nos. 50-528/84-18 and 50-529/84-14)

Areas Inspected: Routine, onsite, regular and backshift inspection by the three resident inspectors (182 hours). Areas inspected included: witnessing of preoperational activities; maintenance, control of measuring and test equipment; drawing control; procedural controls governing system transfers and turnovers; material storage control; and plant tours.

Results: Of the seven areas inspected, three violations were identified. (Failure to control plant equipment and materials - paragraph 2; failure to control nonconforming material - paragraph 3; and failure to maintain controlled P&IDs current - paragraph 5).

8407180251 840622  
PDR ADOCK 05000528  
G PDR

## DETAILS

### 1. Persons Contacted

#### a. Arizona Public Service Company (APS)

J. Allen, Operations Manager  
J. Austin, Startup Test Engineer  
R. Beecken, Startup Test Group Supervisor  
R. Burdick, Lead Startup Engineer  
J. R. Bynum, Director Nuclear Operations  
C. Churchman, Startup Test Group Supervisor  
J. Cole, Measuring and Test Equipment Supervisor  
C. Crane, Startup Test Engineer  
K. Cutler, Instrument and Control Engineer D. Davis, Maintenance Foreman  
W. Fernow, Plant Services Manager  
R. Gouge, Unit I Shift Supervisor  
S. Grier, Operations Engineering Supervisor  
J. Houchen, Transition Manager  
W. E. Ide, Corporate QA/QC Manager  
D. Johnson, System Completion Supervisor  
D. B. Karner, Assistant Vice President Nuclear Production  
J. Kirby, Unit I Startup Manager  
R. Kropp, Operations Engineering Supervisor  
A. McCabe, Project Shift Manager  
P. Moore, Quality Assurance Engineer  
S. Penick, Quality Assurance Engineer  
A. Ramey, Quality Engineering Supervisor  
G. Sullivan, Startup Test Engineer  
C. Wolfe, Startup Test Engineer  
R. Younger, Unit Operations Supervisor

#### b. Bechtel Corporation

H. Foster, Project Quality Control Engineer  
H. Huslander, Unit 1 Construction Electrical Superintendent

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

### 2. Review of Preoperational Test Activities - Unit 1

- a. Major preoperational test activities in progress during the reporting period included flushing of the Safety Injection Systems; Reactor Coolant Pump motor runs for interlock verifications and observation of performance (all four motors ran uncoupled); valve and instrumentation checkouts on portions of the Safety Injection and Chemical and Volume Control Systems; post modification testing of the 'B' Auxiliary Feedwater Pump; and Main Condenser sparger modifications.

b. During the course of the inspection, tours of the following plant areas were conducted:

- Control Room
- Auxiliary Building
- Radwaste Building
- Turbine Building
- Main Steam Support Structure
- Containment
- Yard Area and Perimeter
- Control Building (Cable Spreading Rooms and Ventilation Support Systems)

c. The following areas were observed during the tours:

- (1) Control Room logs and records. Records were reviewed for completeness and accuracy to verify conformance with administrative procedure requirements.
- (2) Equipment tagging. Selected equipment in the Gaseous Radwaste System, for which tagging requests had been initiated, was observed to verify that tags were in place and the equipment in the condition specified.
- (3) Plant housekeeping. Plant conditions were observed for conformance with administrative procedures. Storage of material and components was observed with respect to proper material control and prevention of fire and safety hazards.

The level of cleanliness in the Unit 1 Auxiliary Building and the outside areas of Unit 1 was felt to have decreased in the last month. APS and Bechtel management initiated actions to improve the conditions of the areas. Other observations included a need to relamping of numerous lights throughout the plant; several instances of damaged insulation which appeared to have been stepped on; several emergency lights which were inoperable; and an accumulation of surplus equipment and tools throughout the building which did not appear to be used and which could have been taken to proper storage.

On May 17, 1984 the inspector observed several instances where the control of components associated with safety-related equipment was not consistent with procedures and was not accomplished in a proper manner. Examples included:

- (1) An untagged pump seal stored among debris and tools in the B LPSI pump room.
- (2) Two untagged thermocouple assemblies stored on the floor among boxes of tools and miscellaneous material in the B LPSI pump room.

- (3) An unprotected pump wearing ring stored randomly among a stack of uncontrolled material on the 80' west hallway of the Auxiliary Building.
- (4) An assortment of untagged flexotallic gaskets were stored in several locations in the Auxiliary Building.

The materials observed in the B LPSI room were associated with recent pump work. This work was controlled in part by Bechtel Procedure WPP/QCI 12.0 entitled "Storage Control of Permanent Plant Items". Based on procedural requirements, disassembled components which are unattended for a period of time are required to be tagged by a Material Control Tag for the purpose of controlling the component. This had not been done even though the physical work had been completed. This matter is considered an item of noncompliance. (84/18-01)

The inspector reviewed the APS procedures governing the control of maintenance work and noted that the instructions pertaining to the control and storage of material and components at a job location where maintenance work is being done were fragmented. It was difficult to determine what specific procedure controls for components and material applied at a given maintenance work location. APS was alerted to this observation.

### 3. Control of Nonconforming Items

On April 27, 1984 the "A" High Pressure Safety Injection (HPSI) Pump inboard seal was replaced as a result of observed leakage. Following seal replacement, maintenance personnel attempted to ensure that there was no mechanical binding by turning the pump rotor by hand. The rotor failed to turn freely and the newly installed seal was removed on April 29, 1984. Initial external inspection of the seal by the pump vendor representative at the work site raised a question concerning the possibility that the seal was out-of-round. A third inboard seal was subsequently installed. The original seal was boxed and placed in a metal tool bin outside the "A" HPSI Pump Room. The second seal was boxed and moved to a millwright trailer. The inspector determined during a plant tour on May 3, 1984 that Nonconformance Reports and Hold Tags were not generated to identify and disposition the above seals as nonconforming material. The failure to generate and issue Nonconforming Reports and Hold Tags is contrary to 10 CFR 50, Appendix B and Bechtel Work Plan Procedure/Quality Control Instruction-5, and is considered a violation. (84-18-02)

In response to the inspector's concern regarding the control of nonconforming parts, Hold Tags were immediately affixed to the above seals pending further evaluation.

### 4. Material Storage Areas

- a. The inspector toured the main Bechtel warehouse and the APS procedure storage area, located in the Maintenance Building, on May 17 and May 18. The inspector observed storage area controls to

verify that requirements have been established for marking and segregating nonconforming items; personnel access to the storage areas is controlled; acceptable items are tagged/marked and stored in the appropriate level of storage to ensure adequate environmental conditions.

- b. The following observations were noted during the above tours.

Personnel access controls to both storage areas requires improvement. Storage area personnel appeared lax in assuring that only authorized individuals are allowed access. The inspector will continue to observe access controls to verify that adequate corrective measures are instituted.

Nonconforming material being returned from the APS Startup Organization to the appropriate vendors is stored in the Bechtel warehouse awaiting shipment. Although acceptable in its current condition, the inspector stated that it appeared that the nonconforming material could be better controlled by maintaining the Nonconformance Report and Hold Tags associated with the material in place until time of shipment, rather than the current method of closing the NCR and removing the Hold Tags prior to returning the equipment to the warehouse. The licensee agreed to evaluate the inspector's comments.

No violations were identified.

#### 5. Drawing Control

The Unit 1 Control Room maintains two sets of controlled piping and instrumentation diagrams (P&IDs). One set, termed the stick file, is arranged to physically locate a copy of all design changes, made to a specific system since the last drawing update, with the current revision of the P&IDs, so that an as-build system configuration is available pending issuance of the next drawing revision. The second set of controlled P&IDs are a select subset of the first drawings, and are laminated to serve as an operator aid by allowing the operating shift to manually track system status by marking such items as current valve position (open/closed) on a given print.

The inspector drew a representative sample of fifteen drawings and compared the revision of the stick and laminated diagrams to the current revision. Five of the laminated drawings were found not to be the current revision. Based on discussions with representatives of Drawing and Document Control (DDC), it was determined that for two of the five drawings in question, the laminated copy was lagging about two weeks behind the recently issued stick drawings due to mechanical equipment processing problems, and was expected to be updated in the Control room within the next several days. The failure to properly update the remaining three controlled drawings in question, listed below, is contrary to 10 CFR 50, Appendix B and Palo Verde Nuclear Generating System Manual Procedure 78AC-0ZZ04 and is considered a violation.  
(84-18-03)



<u>Drawing Number</u>	<u>Title</u>	<u>Current Rev./Date</u>	<u>Control Room File Revision/Date</u>
13M-NCP-001	Nuclear Cooling Water System	9/3-22-84	7/2-4-83
13M-RDP-001	Radioactive Waste Drain System	7/6-30-83	6/2-21-83
13M-AFP-001	Auxiliary Feedwater System	15/4-3-84	14/2-16-84

Although the availability of the stick file provided current, as-built, system configurations to personnel in the Control Room, the inspector noted during routine Control Room observations that the laminated P&ID's were used significantly as a reference by various working disciplines.

The licensee has subsequently completed a full audit of the Unit 1 Control Room laminated drawings and updated the P&ID's as needed. Additionally, the licensee plans that in the future, DDC will issue stick and laminated drawings to the Control Room concurrently to minimize the possibility of oversight or personnel error in updating the laminated file. The licensee has also committed to perform a full audit of the Unit 2 Control Room P&ID's.

#### 6. Preoperational Test Witnessing

The inspector witnessed the performance of preoperational testing to verify that the procedure in use was properly approved and adequately detailed to assure satisfactory performance; test instrumentation required by the procedure was calibrated and in use; work was performed by qualified personnel; and results satisfied procedural acceptance criteria or were properly disportioned.

The inspector witnessed the performance of portions of the following activities:

- Startup Procedure 91PE-1SI01, Safety Injection Tanks Preoperational Test, witnessed May 2.
- Startup Procedure 91FL-1SI01, Safety Injection System Proof Flush, witnessed May 16 and 18.

No violations were identified.

#### 7. Essential Cooling Water System

During a tour of Unit 1 the inspector observed that the A Essential Cooling Water Heat Exchanger tubes were being flushed. The inspector noted that debris in the form of pieces of plastic caution tag material had been removed from the shell side of the heat exchanger. Followup on this matter with responsible test engineers disclosed that the heat exchanger flushing and inspection actions were prompted by the discovery

of similar pieces of material in one of the emergency diesel generator cooling system heat exchangers. The water supply to the essential cooling water heat exchangers is also common to the diesel generator cooling system auxiliary heat exchangers. This source of cooling water is the spray pond cooling water system which is the ultimate heat sink.

Based on discussions with the test staff, the inspector was informed that startup work authorizations had been written to inspect the heat exchangers supplied by the spray pond. A formal request has been made to engineering to evaluate the current design of the spray pond intake structure and its related features designed to remove floating debris. The current design includes a stationary suction intake screen having approximately 1/4 inch square openings. An evaluation of the extent of debris which may have settled on the bottom of the pond as well as an inspection of components supplied by the spray pond is planned. Flushing programs will be developed based on inspection findings. The actions planned by the licensee are considered consistent with insuring proper equipment performance.

No items of noncompliance were identified.

8. Safeguard Pump Flow Anomaly

During recent testing of the Low Pressure Safety Injection (LPSI) Pumps and Containment Spray Pumps, the licensee noted a distinct, anomalous noise at specific flow rates. The noise is evident in the general range of 3050-3400 gpm for the LSPI pumps and 2400-2800 gpm for the Containment Spray pumps. The licensee is presently coordinating with Bechtel and Combustion Engineering representatives to evaluate the significance of the anomaly and to determine if corrective action is warranted. The inspector will follow the licensee's actions. (84-18-04)

No items of noncompliance were identified.

9. System Acceptance

The inspector reviewed the progress of the actions planned by APS in its implementation of the program related to acceptance of systems by Operations from Preoperational Testing. The program is defined in two procedures, "90 GA-OZZ04" entitled "Startup System Turnover" and "73 AC-OZZ04" entitled "Subsystem/System Acceptance by PVNGS Nuclear Operations".

These procedures govern the review, inspection, followup and tracking actions associated with the process. The startup organizational unit having responsibilities for the bulk of the effort will be staffed with approximately 35 people. The operation organizational unit performing the final review and acceptance will be staffed with approximately 10 people. To date no system of significant safety importance has been accepted by Operations. Several key features of the program include:

- a. System walk down.
- b. Documentation Reviews.

- c. Open item identification and tracking.
- d. Open temporary modification identification.
- e. Confirmation of status of startup work authorization.
- f. Formal review and approval of package documentation and system acceptance.

If implemented properly the program should provide an added level of confidence in the quality of tested systems accepted by the operations organization.

No items of noncompliance were identified.

#### 10. Measuring and Test Equipment (MTE)

The inspector confirmed that three pieces of MTE used in the calibration of plant temperature measuring instrumentation had valid calibration dates. In checking the calibration of one of the units, the inspector was able to trace its calibration to the National Bureau of Standard source. Calibration records were easily retrievable.

The MTE program incorporates the use of an out of tolerance report when measuring and test equipment are found out of calibration. The inspector observed several of these reports issued to the field I/C staff. When an out of tolerance report is received by the I/C staff, the instrument usage log (which identifies each piece of equipment which was calibrated by the out of tolerance MTE unit) is reviewed. Test packages for the calibrated equipment are pulled and reviewed for possible impact. In some cases the out of tolerance range is different than the plant instrument use range and no action is required. In cases where the plant equipment is affected, recalibrations are scheduled.

The program provides a positive control on proper calibration of plant process instrumentation.

No items of noncompliance were identified.

#### 11. System Transfers

The inspector reviewed the transfer (Construction to Prerequisite Testing) and release (Prerequisite Testing to Preoperational Testing) packages for the Unit 2 instrument air compressor subsystem and charging pump subsystem and the transfer package for the containment spray pump subsystem. The packages were noted to contain signatures and approvals required by the administrative control procedures governing the activity as well as the required documentation specified in the procedure. The documents were readily retrievable from the Drawing and Documents Control files.

Based on a review of maintenance documentation and discussions with APS maintenance staff, the inspector confirmed PM tasks for the instrument air compressors and charging pump had been established and were being



implemented. The containment spray pumps are currently being modified and no checks were made by the inspector.

No items of noncompliance were identified.

12. Unit 1 Condenser

The licensee has experienced problems with tube damage in recent months. The initial assessment of problem cause was believed to be related to mechanical damage (arc strikes) which occurred during the long term feedwater recirculation spray header modification following hot functional testing. The recent series of five damaged tubes initiated a reevaluation of cause and it has now been determined that the recent tube failures have been attributed to the proximity of the spray header tube bundle which resulted in directing high velocity streams of water on the tubes, creating forces which are believed to have damaged the tubes. A modification to the feedwater recirculation piping in the condenser has been performed. This new configuration will change the direction of flow from a direction towards the tubes to one toward the condenser wall. Reinforcement of the wall was also required. In addition to this problem, the inspector was informed that pieces of mortar had been observed in the water boxes of the condensers in Unit 1. This material was from the seams of the circulating water concrete lined piping. The seams have been inspected and repaired.

No items of noncompliance were identified.

13. Maintenance

The inspector observed a maintenance activity which was in progress at Unit 1. The task involved the repair of two gate valves in the condensate system. The inspector observed that approved work packages had been provided to the craftsman. Instrumentation, holdpoints, drawings and technical information had been provided for the work. The craftsman appeared knowledgeable of the job. Pipe openings were covered and work appeared to be controlled.

No items of noncompliance were identified.

14. Chemical Analysis

The inspector observed that three chemical analysis reports of the water used in the safety injection system piping flushes had chloride, fluoride, and pH values were within specified limits.

No items of noncompliance were identified.

15. Colored Equipment Status System

The licensee maintains a system of small color coded dots to depict the current status of individual components in the Unit 1 Control Room. The dots are affixed to particular meters and switches to provide ease in quickly determining which organization (ie; Construction, Startup) had jurisdiction. The inspector determined that the appropriate

Administrative Procedure, 40-AC-0ZZ05, is not being followed, in that the colored dot status system is no longer being maintained current in the Unit 1 Control Room. The inspector stated that although there does not appear to be any direct safety significance to the status system, the licensee should either maintain the system current or disband its use and remove the existing status dots. The licensee representative acknowledged the inspector's comments.

16. Exit Interview

On May 31, 1984, an exit interview was held with senior facility management to discuss the inspection scope and findings.