

U. S. NUCLEAR REGULATORY COMMISSION  
REGION V

Report Nos: 50-528/85-21, 50-529/85-22  
Docket Nos: 50-528, 50-529 License Nos: NPF-41; CPPR-142  
Licensee: Arizona Nuclear Power Project  
P. O. Box 52034  
Phoenix, AZ. 85072-2034  
Facility Name: Palo Verde Nuclear Generating Station Units 1 & 2

Inspection Conducted: June 3 through July 31, 1985

Inspectors:

J. Miller for  
R. Zimmerman, Senior  
Resident Inspector

8-8-85  
Date Signed

J. Miller for  
G. Fiorelli,  
Resident Inspector

8-8-85  
Date Signed

J. Miller for  
C. Bosted,  
Resident Inspector

8-8-85  
Date Signed

Approved By:

J. Miller  
L. Miller, Chief,  
Reactor Projects Section 2

8-8-85  
Date Signed

Summary:

Inspection on June 3 - July 31, 1985 (Report Nos. 50-528/85-21 and 50-529/85-22)

Areas Inspected: Routine, onsite, regular and backshift inspection by the three resident inspectors (Unit 1 - 326 hours; Unit 2 - 233 hours). Areas inspected included: review of plant activities; surveillance testing; plant maintenance; preoperational testing activities; fire team training and staffing; Unit 1 license commitment followup; engineered safety features configurations; microbiological corrosion inspection; IE Information Notice followup; Temporary Instruction 2515/67 followup; Generic Letter 85-05 followup; 10 CFR Part 21 followup; in-office Licensee Event Report review; periodic and special report review and plant tours.

During this inspection the following Inspection Procedures were covered: 30703, 41700, 61700, 61726, 62703, 70304, 70306, 70308, 70312, 70314, 70325, 70349, 70437, 70438, 70441, 70447, 70449, 70450, 70451, 70549, 70553, 71302, 71707, 71710, 97012, 90713, 92701, 92704, 92705, 93701, 93702, 94703.

Results: Of the fourteen areas inspected, one violation was identified. (Failure to submit a Licensee Event Report within thirty days of event discovery - paragraph 8).

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## DETAILS

### 1. Persons Contacted:

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

#### Arizona Nuclear Power Project (ANPP)

R. Adney, Operations Superintendent, Unit 2  
J. Allen, Operations Manager  
J. R. Bynum, PVNGS Plant Manager  
J. Donahue, Shift Test Director Supervisor  
W. Fernow, Plant Services Manager  
J. Haynes, Vice President, Nuclear Production  
R. Gouge, Operations Supervisor, Unit 1  
\*Hicks, Training Manager  
\*W. E. Ide, Corporate Quality Assurance Manager  
\*D. B. Karner, Assistant Vice President, Nuclear Production  
\*R. Meyer, Fire Protection Supervisor  
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  
E. E. Van Brunt, Jr., Executive Vice President  
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 July 12, 1985.

### 2. Previously Identified Items

- a. (Closed) Inspector Followup Item (50-528/84-18-04): Low Pressure Safety Injection (LPSI) and Containment Spray (CS) anomalous noise at specific flow rates.

A low frequency "rumbling" noise was detected when flow was throttled through the LPSI pumps in the 3000 - 3400 gpm range and CS pumps in the 2400 - 2800 gpm range. An engineering evaluation was performed by the licensee to determine the cause of the noise and whether a potential problem existed.

The results of the licensee's evaluation were submitted to the NRC staff by letter dated September 26, 1984. After reviewing the engineering evaluation the staff concurred with the licensee that the LPSI and CS pumps were capable of carrying out their intended safety functions without requiring any modifications. Further details are documented in the Safety Evaluation Report, Supplement 7, related to the operation of Palo Verde Nuclear

Generating Station; Units 1, 2 and 3, dated December 1984, (pages 14.5 and 14.6).

This item is closed.

- b. (Closed) Inspector Followup Item (50-528/84-63-01): Loss of headset parts during fuel loading activities.

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. An Engineering Evaluation Report (EER) was prepared by the licensee in which the potential damage was assessed in the event that the missing parts were transported into the RCS while loading a fuel assembly.

The inspector reviewed EER 85-FH-005 which determined 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.

This item is closed.

- c. (Closed) Inspector Followup Item (50-528/84-63-03): Radwaste reduction through housekeeping.

During previous tours of various equipment rooms in the Unit 1 Auxiliary and Radwaste Buildings, prior to initial criticality, a substantial amount of miscellaneous tools and equipment such as ladders, welding cable, temporary lights, mops, and buckets were stored in areas which would soon be in the Radiological Controlled Area (RCA), and become a potential radwaste problem.

During the current inspection period, the inspector verified by routine tours in the above areas, and through discussions with Radiation Protection management, that the rooms in the Fuel, Auxiliary, and Radwaste buildings had been cleaned, all nonrequired materials had been removed, and radiation protection personnel had been instructed to report any future miscellaneous equipment to Radiation Protection management.

This item is closed.

- d. (Closed) Inspector Followup Item (50-528/84-63-04): The licensee committed to proceduralize color coded bag control prior to initial criticality.

The inspector verified that prior to criticality, a Radwaste Department instruction had been written, implemented, and was in effect, requiring the use of colored bags for radioactive contaminated materials.

At the close of the current inspection period, a plant policy on waste segregation had been proposed, written and was in the final stages of implementation. The policy formalized the practice of using yellow colored poly bags for radioactive contaminated material and green colored bags for non-contaminated materials.

The inspector reviewed the proposed plant policy and observed the proper use of the colored bags during plant tours.

This item is closed.

### 3. Review of Plant Activities Units 1 and 2

#### a. Unit 1

At the start of the reporting period, Unit 1 was in Mode 2 performing low power physics testing. This was completed on June 4, 1985. On June 6, 1985, the plant entered Mode 1 for the first time. On June 14, the reactor tripped from 20% power on high pressurizer pressure following a manual turbine trip and a main feedwater pump (MFP) trip on low suction pressure. The MFP trip was determined to be caused by one of the operating main condensate pumps tripping from a loose condensate pump valve position switch. This caused a low feed pump suction pressure because the mini-recirculation valve on the operating condensate pump failed to close down as total condensate flow decreased. These problems were corrected, and power was returned to 20% for the completion of the 20% power plateau testing. Power was increased to 30% and then 40% as the next plateau of 50% was approached.

On July 1, 1985, the reactor again tripped on high pressurizer pressure from 42% power, following a loss of a main feedwater pump and a manual turbine trip. The MFP tripped on low suction pressure during a feedwater perturbation. Further trouble shooting revealed that the low suction pressure condition was aggravated by construction filters in the MFP suction lines which had 40-50 psid across the filters. The filters were removed and changed. The plant subsequently achieved 50% full power on July 6, 1985.

On July 11, 1985 at 8:30 AM an Unusual Event was declared in accordance with plant procedures, when efforts to locate a calculated reactor coolant system leakage in excess of Technical Specification 3.4.5.2 proved unsuccessful, and a plant shutdown to Mode 3 was initiated in accordance with the associated Technical Specification Action Statement. The calculated unidentified RCS leak rate was a constant 1.2 gpm. Technical Specification 3.4.5.2 limits unidentified leakage to 1.0 gpm. The unit entered Mode 3 at 1:31 PM and efforts continued unsuccessfully to identify the source of leakage. The Unusual Event was terminated at 9:28 PM when unidentified leakage was calculated to be .88 gpm. No apparent explanation for the decrease in RCS unidentified leakage was evident. With the plant remaining in Mode 3, steps were taken on July 12 and 13 to refine the method of calculating the water balance inventory for the RCS. Additionally, instrument accuracies used in

the water balance calculation were verified and system walkdowns to identify RCS leakage paths continued with no problems identified.

On July 14 at 10:00 PM the unit was taken critical after successive RCS leakage calculations confirmed Technical Specification compliance. Power was restored to the 50% testing plateau on July 16. On July 17 at 3:40 PM a reactor trip occurred when a faulty memory load in Control Element Assembly Calculator #2 generated erroneous penalty factors to the Core Protection Calculator.

On July 18 at 10:10 PM, the reactor was taken critical, and power was again restored to the 50% testing plateau on July 19.

On July 22 at 7:05 AM, a circulating water leak into the main condenser was observed by increases in conductivity and hotwell level. A load reduction to Mode 2 (2-3% power) was begun at 8:30 AM for steam generator chemistry considerations. On July 23 at 2:00 AM, with the plant in Mode 2, RCS unidentified leakage was again calculated to exceed the Technical Specification limit (1.16 gpm). The licensee was unable to identify the source of leakage and a reactor shutdown was commenced with the unit achieving cold shutdown on July 24, 1985, at 6:54 AM.

Licensee inspection of the "A" Main Condenser identified a cracked baffle at the heater drain tank return to the condenser, which resulted in mechanically damaging two condenser tubes, and unrelated damage to the 2A low pressure heater shroud. The cause of the problem is believed to have been from steam impingement at high recirculation flow rates back to the main condenser from the heater drain tank and feedwater systems. Repairs were ongoing at the conclusion of the inspection period.

Licensee efforts to locate the source of the RCS unidentified leakage while in Mode 5 determined that the predominant source appeared to be packing leakage from the "A" Charging Pump to the non-engineered safety features (ESF) sump located in the Auxiliary Building and associated with the liquid radwaste system. The packing was replaced and the licensee intends on performing the required RCS leakage surveillances in accordance with Technical Specifications prior to returning to power operation. The unit remained in Mode 5 at the end of the inspection period.

b. Unit 2

Hot Functional Testing was on going throughout the inspection period. Details are documented in paragraph 10.

c. Plant Tours - Units 1 and 2

The following plant areas at Units 1 and 2 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

d. 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 by plant lineup procedures for the applicable plant mode. This verification included routine control board indication reviews and conduct of partial system lineups. Details as provided in paragraphs 4 and 10c.
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. Fire Protection. Fire fighting equipment and controls were observed for conformance with Technical Specifications and administrative procedures. Results of inspector review in the area of fire team staffing and training are documented in paragraph 8.
7. Plant Chemistry. Chemical analysis results were reviewed for conformance with Technical Specifications and administrative control procedures.
8. 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.
9. Plant Housekeeping. Plant conditions and material equipment storage were observed with respect to the prevention of fire and safety hazards as well as the general state of cleanliness. Housekeeping was also evaluated with respect to controlling the spread of surface and airborne contamination.

No violations or deviations were identified.

4. Engineered Safety Feature Systems Walk Down - Unit 1

Selected engineered safety feature systems 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 condition to perform their required functions. The inspector also verified that the system valves were in the required position, and locked as appropriate. The local and remote position indication and controls were also confirmed to be in the required position and operable. Portions of the following systems were walked down on June 4, 7 and 27, 1985.

High Pressure Safety Injection Trains "A" and "B"  
 Low Pressure Safety Injection Trains "A" and "B"  
 Containment Spray Systems Trains "A" and "B"  
 Diesel Generator Trains "A" and "B"  
 Auxiliary Feedwater Systems "A" and "B"

No violations or deviations were identified.

5. 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:

37ST-9PM01	Seven Day Surveillance of Station Batteries, performed May 15 and 22, 1985.
36ST-9GR02	Gaseous Rad Waste Explosive Gas Monitoring System Calibration, performed May 22, 1985.
36ST-9SE05	Boron Dilution Alarm Functional Check, performed April 12, 1985, and May 17, 1985.
36ST-9SE01	Quality Safety Parameter Display System, performed May 6, 1985.
36ST-9SB13	Supplemental Protective System Functional, performed May 15, 1985.
41ST-1ZZ18	Routine Surveillance Mode 1-4 log, performed June 12 and 13, 1985.

- 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.

41ST-1ZZ18	Routine Surveillance Mode 1-4 log, observed June 7, 14, and 25, 1985.
36ST-9SE02	Excure Linear Power Sub-Channel Calibration, observed June 20, 1985.
41ST-1ZZ23	CEA Position Data Log, observed June 24, 1985
36ST-9SB02	Monthly Functional Check of PPS, observed June 25, 1985.

No violations or deviations were identified.

6. 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 Troubleshooting on main turbine electro-hydraulic control system on June 21, 1985.
  - o Trouble shooting on "B" Plant Protective System Sub-Channel on June 21, 1985.
  - o Repairs on main steam lines, following a steam leak on the main turbine header on June 24, 1985.
  - o Preventative maintenance under work order W087619 on instrumentation loop for Control Room Heating, Ventilation and Air Conditioning normal chill water supply on June 25, 1985.
  - o Trouble shooting on reactor regulating system on June 27, 1985.
  - o Maintenance on main turbine electro-hydraulic oil leak on July 8, 1985.
  - o Trouble shooting on variable over power spurious trips on July 9, 1985.



- o Replacement of the "B" Nuclear Cooling Pump Motor (Unit 2) on July 9 and 10, 1985.

No violations or deviations were identified.

#### 7. Licensee Event Reports (LERs)

The inspector reviewed the following LERs to verify that the details of the event were clearly reported, the description of the cause was accurate, and adequate corrective action was taken. The inspector also determined whether further information was required, and whether generic implications were involved. The inspector further verified that the reporting requirements of Technical Specifications had been met; and that continued operation of the facility was conducted within Technical Specification limits.

##### LER 85-32 (Closed): Fuel Building Ventilation Flow Monitor Misalignment

On April 23, 1985, prior to initial criticality, a radiation protection technician discovered during a routine sample media change out, that the exiting particulate and charcoal sampling media in the Fuel Building Ventilation Monitor (RV-145) had not been in the sample flow path. Sample flow can be routed through either of two parallel channels. Licensee investigation determined that on April 19, a technician placed a particulate and a charcoal cartridge into Channel 1; however, the individual failed to realize that Channel 1 was isolated and flow was passing through Channel 2. The technician who made the error was counseled on verifying proper valve lineups and ensuring sampling media is maintained in both channels. During the time RV-145 was inoperable, a portable monitor was sampling for particulates, but not iodine, as required by Technical Specification 3.3.3.9.b. The corrective measures associated with LER 85-32 were considered acceptable and technically close this LER; however, during the inspector's review it was noted that although the event was discovered on April 23, 1985, a report was not submitted to the NRC until June 14, 1985. Failure to submit a LER within thirty days after discovery of a condition prohibited by Technical Specifications is contrary to Technical Specification 6.6.1.a and 10 CFR 50.73. (528/85-21-01)

In addition, the inspector noted that recently submitted LER 85-34 also exceeded the thirty day requirement. The failure to submit LER 85-34 within the required time frame was license identified; however, the LER did not include any reference to corrective action to assure timely submittals. Both examples of late LERs were discussed with licensee management, who stated that corrective action to assure timely submittals would be taken by the licensee.

#### 8. Fire Team Training Record Review

A review of the training records for the fire team members was conducted to verify that the requirements of 10 CFR 50, Appendix R, Section III and plant procedure 83TR-0ZZ07, "Fire Team Training," were being properly implemented.

The following observations were made during the above review:

- o Training records did not accurately reflect the current status of fire team members, which made it difficult for the inspector and licensee representatives to determine which personnel were qualified and could be considered available to be part of the five member fire team required by Technical Specification 6.2.2.1.e to be on site at all times. The licensee took immediate action to update the training records and ensure that only qualified personnel were being credited as fire team members.
- o The inspector noted several instances where individuals had not attended 1) periodic retraining sessions, and 2) meetings to address changes in the PVNGS fire protection program, at least every 92 days as required by procedure 83TR-0ZZ07. With regard to retraining sessions, the inspector noted that the above procedure was more restrictive than 10 CFR Part 50, Appendix R, which only requires that periodic refresher training repeat the initial class room training over a two-year period. The inspector was informed by Fire Protection supervision that a decision had been made as a result of this inconsistency to submit a procedure change to make the retraining frequency statement in 83TR-0ZZ07 consistent with Appendix R.

With regard to the 92 day meeting interval to discuss program changes, Fire Protection supervision stated that there had been no changes to the fire protection program which warranted a meeting. The supervisory staff did state; however, that the fact that the meetings were overdue was not known until the inspector raised questions on the adequacy of the training records. The licensee has subsequently held the meetings on program changes and used the opportunity to highlight certain fire team training topics. The inspector concluded that although meetings to discuss plant changes had not been held within the prescribed time frame, the fact that no changes occurred, indicated solely an administrative problem with no safety significance to the finding.

- o A sample review of records maintained in the Unit 1 Control Room Log confirmed that fire team staffing and qualifications (training and medical) were acceptable, with one exception of an individual whose respirator fit test had lapsed. In this instance, the problem had been identified by the licensee and the individual removed from the qualified list of available fire team members. The inspector's log review also identified that on mid-shift for the dates of June 19 and 20, respectively, (only) three and four fire team members were logged for the respective shifts. Further inspector review determined that five qualified fire team members were present on the above shifts, but their names were not logged. The inspector stated that greater attention to proper logging of fire team personnel appeared necessary including improvements in the spelling of members' names. The licensee representative acknowledged the inspector's comment, and a night order was written to alert the operators to the need for improved log keeping regarding fire team staffing.

The above problem relating to the difficulty in determining fire team member qualification due to training records not being maintained current is similar to discrepancies identified in emergency planning training records and documented in NRC Region V Inspection Report 50-528/85-10. This issue was discussed with licensee management, who indicated that steps were underway to improve overall training record status.

Additional inspection in the area of fire team training and staffing will be conducted during a future NRC inspection. This review will also include inspector verification that no fire protection program changes had occurred, as stated above. (528/85-21-02)

9. Unit 1 Operating Licensee Commitment Followup

Facility Operating license NPF-34, item 2c(12), required the licensee to install and satisfactorily test the auxiliary feedwater pump compartment flood protection seals prior to initial criticality.

The inspector reviewed the following Design Change Packages (DCPs) and Work Orders (WOs) associated with the installation and testing of the auxiliary feedwater pump compartment flood protection seals. The following documentation was reviewed for completeness, and the suitability of the sealant was verified:

o	DCP 15A-ZM-011	WO 67749
o	DCP 10A-ZM-015	WO 85462
o	DCP 10A-ZM-800	WO 77249
o	DCP 10A-ZY-147	WO 86121

The inspector did not identify any discrepancies with the DCPs or WOs. During a tour of the auxiliary feedwater pump compartments, several seals were examined with no discrepancies noted.

No violations or deviations were identified.

10. Review of Preoperational Testing Activities - Unit 2

a. Major Test Activities

The major preoperational test activities in progress during the reporting period were associated with the conduct of the precore Hot Functional Test (HFT). Systems tested included the auxiliary feedwater system, steam generator main steam isolation system, steam bypass control system, chemical and volume control system, and the reactor coolant system.

On July 8, 1985, during the conduct of the precore HFT, the control room operators noted a unexplained drop in pressurizer pressure, and received several annunciator lights indicating changes in equipment status. The plant was operating at a temperature of 565 degrees F and a pressure of 2250 psig. Equipment indicating abnormal operation were a pressurizer auxiliary spray valve, two safety injection tank vent valves, the steam supply valve to the auxiliary feedwater turbine, four atmospheric dump permissive valves, two

auxiliary feedwater isolation valves, and the isolation valve on the reactor coolant pump seal return line to the volume control tank. The control room operators responded quickly to the event and were able to regain control of the primary coolant pressure without a significant decrease in pressure (250 psig). The problem was diagnosed as originating from the remote shutdown panel and operating staff were dispatched to the area. An inspection of the equipment revealed that switches in this area had been used to operate the equipment listed without the permission of the operating staff.

APS is conducting an investigation into the incident. Law enforcement authorities were notified by APS. Security measures during the conduct of the remaining portion of HFT have been strengthened. The inspector will follow the licensee's actions (529/85-22-01).

b. Preoperational Test Procedure Review - Unit 2

The inspector reviewed the following preoperational test procedures:

90HF-2ZZ01 - Precore Hot Functional Controlling Document  
 93PE-2SA01 - Integrated Test of Engineered Safety Features  
 91HF-2RC05 - Reactor Coolant System Leak Rate Measurement

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 - Unit 2

The inspector witnessed portions of the following tests:

91PE-2SG04 - Steam Generator Isolation  
 91PE-2AF01 - Auxiliary Feedwater System  
 91PE-2SG03 - Atmospheric Dump Valve Test  
 92HF-2ZZ01 - Instrument Correlation  
 90HF-2ZZ01 - Precore Hot Functional Controlling Document  
 93PE-2PE01 - Diesel Generator Electrical Tests  
 91HF-2RC02 - Pressurizer Performance  
 91HF-2SF03 - Turbine Bypass Control System  
 91HF-2SI01 - Safety Injection Check Valve Test  
 91HF-2AF01 - Precore Emergency and Auxiliary Feedwater System Test  
 91HF-2RC05 - Reactor Coolant System Leak Rate Measurement  
 91HF-2CH01 - Boration Dilution  
 91HF-1CH01 - CVCS Integrated Test

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 measuring and test equipment, and completion of test prerequisites were also verified to have been accomplished in accordance with administrative control procedures.

In addition the inspector verified on a sampling basis that valve and electrical equipment alignments were also accomplished in accordance with procedures or instructions. These checks were performed in conjunction with the testing of the following equipment:

- o Reactor Coolant System
- o Shutdown Cooling System
- o Chemical and Volume Control System
- o Auxiliary Feedwater System
- o Essential Cooling Water System

d. Preoperational Test Results Review

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

- 92PE-2SB10 - Plant Protection System (Channel A)
- 92PE-2SB11 - Plant Protection System (Channel B)
- 92PE-2SB12 - Plant Protection System (Channel C)
- 92PE-2SB13 - Plant Protection System (Channel D)
- 91PE-2FH03 - New Fuel Elevator
- 91PE-2FH07 - 150/15-Ton Cook Handling Crane
- 91PE-2FH08 - 10-Ton New Fuel Handling Crane
- 91HF-2RC05 - Reactor Coolant System Leak Rate Measurement

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.

11. Followup of Information Notice 85-23: Inadequate Surveillance and Post Maintenance/Post Modification System Testing - Units 1 and 2

This notification discusses several nuclear plant problems which resulted because of inadequate post maintenance/post modification testing. A review of APS work procedures by the inspector confirmed that formal controls have been developed for the testing of equipment following maintenance or modifications in both the startup and operational phases. These controls are identified in procedure 30AC-9ZZ01 entitled "Work Control" and require formal documented reviews. Retesting is identified by generic test procedures, surveillance test procedures, or portions of preoperational test procedures which have already been developed to meet the startup test program acceptance criteria/design performance or Technical Specification requirements.



Based on this review and plant performance to date, the inspector concluded that the licensee's program incorporates adequate controls to include proper retesting following post maintenance/modification work. This item is closed.

12. 10 CFR Part 21 Report: Brown Boveri Inc. Voltage Balance Relay (ITE-60) - Units 1 and 2

By letter dated October 29, 1984, Brown Boveri, Inc. submitted a 10 CFR Part 21 to the NRC documenting slow operation of Model ITE-60 voltage balance relays, used predominately in emergency diesel generator protection schemes. Based on a review conducted by Bechtel Engineering at the request of APS, this type of relay is not used at the Palo Verde site. This item is closed.

13. Corrosion by Microbiological Organisms - Unit 2

An inspection of the Unit 2 "A" Essential Cooling Water Heat Exchanger (ECWHX) and the "A" Diesel Generator Jacket Cooling Water Heat Exchanger was conducted by APS and Bechtel as part of the commitment made by ANPP to the NRC in its letter to the NRC dated May 30, 1985. The inspector independently observed the condition of the ECWHX. Heat exchanger tubes were boroscoped and no evidence of microbiological corrosion was observed. The corrosion phenomenon is further discussed in NRC inspection report 529/85-10.

No violations or deviations were identified.

14. Temporary Instruction 2515/67: Survey of Licensee's Response to Selected Safety Issue - Unit 1 (Closed)

This instruction was to determine the actions that licensees of operating reactors have taken to address a selected sample of safety issues. Two issues were identified: 1) potential steam bindings of auxiliary feedwater pumps due to back leakage, and 2) procedural changes and operator training to identify and cope with mispositioned control rods.

The inspector verified that the piping of the Auxiliary Feedwater pumps was not hot to the touch during normal plant operating conditions and that the auxiliary operators are routinely monitoring the piping and pump temperatures. These temperature checks were recorded on the auxiliary operators' shift log. The check valves were being tested once every 92 days per 36ST-9MT01 Examination of Stop, Control and Intercept Valves.

The inspector also verified that procedures 41AO-1ZZ10 "Immovable Control Rod" and 41AO-1ZZ11 "Dropped or Slipped Control Element Assembly" were adequate to define the steps necessary for recovery from a mispositioned control rod or to identify rod position when one form of normal indication is lost. Operator training in proper movement of control rods, consequences of improper movement of control rods, and the consequences of operation with a mispositioned control rod, was also reviewed to verify that the operators were initially trained, and that these subjects were covered in requalification training. This item is considered closed.

15. Generic Letter 85-05: Inadvertent Boron Dilution Events - Unit 1

The purpose of this letter was to inform each licensee of operating pressurized water reactors of the staff position resulting from the evaluations of Generic Issue 22, "Inadvertent Boron Dilution Events" regarding the need for upgrading the instrumentation for detection of boron dilution events. The letter contained no requirements or actions, other than an urging of each licensee to assure themselves that adequate protection against boron dilution events was in effect at their plants.

A boron dilution alarm from the startup range nuclear instrumentation was being used to provide alarm indication for a 1/3 of a decade increase in shutdown neutron level. The inspector verified that procedures which addressed a boron dilution accident were available, and through discussion with several operators of the required actions upon a possible inadvertent boron dilution alarm, verified that the operators have been trained in the use of these procedures.

This item is closed.

16. Review of Periodic and Special Reports

The monthly operating report for May, 1985 was reviewed. The report contained the information required to be reported by NRC requirements, and the report appeared valid.

No violations or deviations were identified.

17. Exit Meeting

The inspector met with licensee management representatives periodically during the inspection and held an exit meeting on July 12, 1985. The scope of the inspection and the inspector's findings, as noted in this report, were discussed and acknowledged by the licensee representatives.