U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos.	50-528/85-40 and 50-529/85-39
Docket Nos.	50-528 and 50-529
License No.	NPF-41
Construction Permit No.	CPPR-142
Licensee:	Arizona Nuclear Power Project P. O. Box 52034 Phoenix, Arizona 85072-2034
Facility Name:	Palo Verde Nuclear Generating Station - Units 1 and 2
Inspection at:	Palo Verde Site, Wintersburg, Arizona
Inspection conducted:	October 15 through November 1, 1985

Inspectors: R. C. Sorensen, Reactor Inspector — Date Signed 11/2/85

A. Hon, Reactor Inspector — Date Signed 11/2/85

Approved By: L. F. Miller, Jr., Chief, Reactor Projects Section 2 — Date Signed 11/7/85

Summary:

Inspection on October 15 - November 1, 1985 (Report Nos. 50-528/85-40 and 50-529/85-39)

Areas Inspected: Routine, unannounced inspection by regional based inspectors of operational staffing, design changes, TMI Action Plan items, 10 CFR 55.55(e) items, NRC Circulars, licensee action on inspector identified items, and surveillance testing, all in Unit 2, with some inspections carried over into Unit 1. NRC Inspection Procedures 25401B, 92701, 35744, 35745, 92703, 30703, 92700 and 36301 were covered during this inspection. The inspection of Units 1 and 2 involved 111 inspector hours onsite by two NRC inspectors.

Results: No violations or deviations were identified.

DETAILS

1. Persons Contacted

   a. Arizona Nuclear Power Project (ANPP)

   *D. Karner, Assistant Vice-President, Nuclear Production
   W. Ide, Director, Corporate QA/QC
   *T. Shriver, Manager, Quality Systems and Engineering
   *O. Zeringue, Manager, Technical Support
   *R. Papworth, Manager, Operations Engineering
   R. Adney, Plant Superintendent, Unit 2
   J. Pollard, Day Shift Supervisor, Unit 2

   b. Bechtel Power Corporation (Bechtel)

   D. Freeland, Resident Engineer
   *L. Abrahamson, Resident Engineer
   *H. Foster, Principal Quality Control Engineer
   *D. Hawkinson, Project QA Manager

   The inspectors also talked with other licensee, contractor, and craft personnel.

   *Denotes those persons attending exit meeting of October 24, 1985.

2. Operational Staffing

   The inspector reviewed the qualifications of a random sample of Senior Reactor Operators (SROs) and Reactor Operators (ROs) assigned to Unit 2 and compared them to the guidelines of ANSI 3.1-1978. Training records and resumes were used as documentary evidence.

   All individuals reviewed met or exceeded the ANSI 3.1 experience and educational requirements.

   No violations or deviations were identified.

3. Design Changes

   The inspector chose a random sample of four Plant Change Packages (PCPs) and assessed implementation of the design change program at Palo Verde Unit 2. PCPs were the method that the licensee used to approve and implement design changes in the plant. They contained the documentation necessary to implement the design change, such as, Drawing Change Notices, Field Change Requests, Work Orders, 50.59 safety evaluations, etc.

   The inspector reviewed the PCPs for the following attributes:

   a. The design changes received proper engineering review and approval.

   b. Post-modification acceptance tests were performed.

c. Plant drawings were updated to reflect the design changes.

d. Plant procedures were updated to reflect the design change.

e. The training organization was made aware of the modification.

The inspector noted that the Change Control Group was the organization responsible for coordinating the design change and they ensured that most of the above actions had been completed for each package. This was accomplished through the use of checklists that were attached to the PCP.

Each design change was ultimately approved by the Plant Manager and verified by the system engineer after implementation. In addition, the Plant Review Board provided final approval for PCPs after implementation.

Impact Review Sheets were also distributed to various organizations whose procedures, programs or activities might be affected by the design change. These organizations determined what impact if any, the design change had and responded accordingly as documented on each Impact Review Sheet. These completed Impact Review Sheets were also included in each PCP.

The licensee appeared to have satisfactorily implemented the design change program in Unit 2 as defined in Station Manual Procedures.

No violations or deviations were identified.

4. TMI Action Plan Items

The inspector reviewed the items below which represent a portion of a comprehensive and integrated plan to improve safety following the events at Three Mile Island, Unit 2 in March 1979. (The item numbers are from Enclosure 2 of NUREG-0737)

(Closed) I.A.1.2 and I.C.3: Shift Supervisor Responsibilities

The inspector reviewed memo PVNGS-JGH-M85-01, dated October 3, 1985, from the Vice President for Nuclear Production to all PVNGS personnel.

This memo outlined the responsibilities of the shift supervisors (SS) for all three units as directed by corporate management. Also, the SS administrative duties were listed. Finally, the command function of the SS to ensure reactor safety was emphasized and was supported by Corporate Management.

The inspector concluded that the licensee has met the guidelines established in these TMI items.

These items are closed.

(Closed) II.K.3.25: Power for Cooling Reactor Coolant Pump (RCP) Seals

This TMI item involved the licensee demonstrating that RCP seals could withstand a complete loss of offsite power, which could result in a loss

of cooling water to the seals, for a period of two hours without damaging the seals. Damage to RCP seals could result in an excess loss of reactor coolant system inventory.

To address this item, Combustion Engineering (CE) performed a series of tests on a System 80 RCP, on behalf of the licensee, which demonstrated the ability of the pump seals to withstand a loss of offsite power without exceeding the pump manufacturer's maximum allowable temperatures for various pump parameters. NRR found the results of these tests to meet the intent of this item as documented in Rev. 1 to the CESSAR Safety Evaluation Report.

In addition, the inspector reviewed applicable P&IDs and confirmed that essential cooling water was provided as a backup to nuclear cooling water for cooling RCP seal coolers. Upon a loss of offsite power, nuclear cooling water pumps would fail, but essential cooling water pumps would have continued to operate from Class 1E power supplied by the emergency diesel generators. Essential cooling water could then be manually cross-connected to the RCP seal coolers.

The inspector considered this TMI item to have been adequately addressed by the licensee.

This item is closed.

(Open) II.B.1: Reactor Coolant System Vents

Two separate aspects remained to be addressed by the licensee from the inspector's last inspection (See Inspection Report 85-33).

The preoperational test results for the Reactor Coolant Gas Vent System (RCGVS) had been approved by the Test Working Group. The inspector had reviewed the procedure and results and found it acceptable, except for the Test Exception concerning the malfunctioning of vent valve HV-108. Licensee representatives informed the inspector that this Test Exception would be entered into the Master Tracking System as an item to be corrected prior to entering Mode 2 in Unit 2. The inspector found this acceptable but informed the licensee that the original commitment from the PVNGS Lessons Learned Implementation Report (LLIR) was to have the RCGVS operable prior to fuel load. Thus, if valve HV-108 was to be repaired and tested after fuel load, an LLIR change revising the original commitment must be submitted to NRR for their evaluation.

This item will remain open pending completion of repair and testing of HV-108 and submittal of an LLIR change to NRR.

(Open) II.E.1.2: Auxiliary Feedwater System Automatic Initiation and Flow Indication

The inspector verified that the necessary hardware was installed during a previous inspection (85-33).

The licensee completed the system preoperational test as part of the integrated safeguards system test. The test results were being reviewed

by the Test Working Group (TWG) for acceptance at the time of the inspection. The final test report will be reviewed during a future inspection.

II.F.1: Addition Accident-Monitoring Instrumentation

(Open) Containment Water Level Monitor

The inspector verified that the necessary hardware was installed during a previous inspection (85-33).

During this inspection, the inspector reviewed a sample of the equipment qualification records for the components and found them adequate. The system preoperational test was completed but the test results were still being reviewed by the licensee's TWG. The final test report will be reviewed during a future inspection.

(Open) Containment Hydrogen Analyzer

The inspector verified the hardware installation and reviewed a sample of the equipment qualification records and found them adequate. The system preoperational test was completed but the draft test report was still waiting for Startup Manager approval. This will be reviewed during a future inspection.

The inspector noted that the hydrogen recombiner portability test was not included in the test plan. In the FSAR submittal, the licensee proposed to share one set of hydrogen recombiners among the three units. The licensee stated in FSAR Section 6.2.5.1 that the hydrogen recombiners could be installed in 72 hours and operational in 100 hours following a LOCA. This equipment availability was the basis for the accident analysis.

To demonstrate the ability to meet the time limit, the licensee proposed to present an evaluation to estimate the time required to transport the recombiner from Unit 1 to Unit 2 and to have it operational in lieu of an actual performance test due to manpower shortage. The inspector will review the licensee's evaluation during a future inspection. This item remains open.

No violations or deviations were identified.

5. Review of 50.55(e) Items

The following potential 50.55(e) items were reviewed by the inspector for reportability and to determine the thoroughness of the licensee's corrective action. The items marked with an asterisk (*) were judged by the licensee to be reportable under the 50.55(e) criteria; the other were considered not reportable.

(Closed) *DER 85-27: Pipe Clamps Supplied by Pacific Scientific Co.

Certain snubber pipe clamps, supplied by Pacific Scientific Co., were subject to slippage circumferentially around the pipe. This was

evaluated as reportable per the requirements of 10 CFR 55.55(e) by the licensee since the associated pipe supports would not have performed their intended safety function during a seismic event.

Pacific Scientific compiled a list of 32 such pipe clamps they supplied to PVNGS as documented in letter 6000-QS-170-85 dated July 26, 1985. The action required by the vendor to correct the deficiencies was to increase the torque values of the bolts holding the clamps in place.

This was accomplished for 13 pipe clamps identified as installed in Unit 2 in accordance with Work Orders (WOs) 86098 and 87917. As described in these WOs, the bolts were torqued to new values of 180 in-lbs., left for 15 minutes, then the torque was rechecked.

Harder grades of bolts were not required as the new torque was within the proper torquing values for the type of bolts used.

The inspector examined a sample of five of the clamps and associated snubbers in Unit 2 for tightness and identified no deficiencies. None of the total 32 identified pipe clamps was installed in Unit 1.

This DER is closed for Unit 2 but will remain open for Unit 3 until the licensee completes similar corrective action. This DER also addresses the 10 CFR 21 requirements for Unit 2 concerning Pacific Scientific Company and open item 85-16-P is closed.

(Closed) DER 84-82: Improper Seating of Borg-Warner Check Valves

During disassembly of valve 3P-SIE-V11B, it was noticed that the valve disc did not mate properly with the seat. The valve body reportedly had sharp edges which could possibly have restricted the disc from closing fully. Nonconformance Report (NCR) 9279 was written to document and resolve the problem.

The vendor dispatched a representative to the site to evaluate this deficiency. He concluded that the sharp edge was actually a machining mark and that no interference existed between the seat and the disc. The inspector reviewed correspondence from Borg-Warner dated October 12, 1984, that documented this evaluation.

NCR 9279 was dispositioned use-as-is and the DER was dispositioned as not reportable.

The inspector agreed with this disposition.

This DER is closed.

(Closed) DER 84-42: Environmentally Qualified Torque Switches Replaced with Unqualified Torque Switches

Design Change Package (DCP) 10M-SI-302 was originally issued to replace unqualified torque switches on safety injection valves 1JSIA-UV-674 and -676 with environmentally qualified torque switches. This work was accomplished per WOs 23744 and 23749.

Later NCR SE 3095 was issued to troubleshoot the motor operators of these valves and the qualified torque switches were replaced with the original unqualified torque switches per Startup Work Authorization (SWA) 15370. Four days later, NCR 3179 was written to document the existence of the unqualified torque switches on the valves and DER 84-82 was initiated.

The licensee subsequently determined that the old torque switches were purposefully reinstalled to determine if the motor operator problem was in the torque switches. It was determined that the motor operator problem was not due to the torque switches themselves, but with the torque switch setpoints. The qualified torque switches were subsequently reinstalled in accordance with WO 26447.

The licensee dispositioned this DER as not reportable under the requirements of 10 CFR 50.55(e) and the inspector concurred.

This DER is closed.

No violations or deviations were identified.

6. Follow-up Licensee Response to Circulars

(Closed) Circular 81-14: Main Steam Isolation Valve (MSIV) Failures to Close

The licensee responded to this circular by reviewing the design of the instrument air system which operated the MSIVs, and by revising the applicable maintenance procedure for MSIVs.

The inspector reviewed an internal memo from the Nuclear Engineering organization which documented review of the instrument air system as it existed at PVNGS. This system utilized two redundant air purification trains. Each train consisted of various dryers, filters, and moisture detectors with associated alarms in the control room. Also, use of redundant solenoid valves and filters in the air line to each MSIV provided increased reliability.

As a result of this review, the licensee concluded that no modifications were necessary to the MSIV operating air system to improve valve reliability.

The inspector verified the piping configuration of the instrument air system by reviewing applicable P&IDs and vendor drawings. The inspector also verified that an annunciator exists in the control room that warns of instrument air/service air trouble (high moisture).

Finally, the licensee included precautions in procedure 31MT-9SG02, MSIV Disassembly and Reassembly, which warned against over tightening packing glands and to ensure valves were properly retested prior to returning to service. This procedure was properly reviewed and approved.

The inspector concluded that the licensee had satisfactorily responded to the recommendations of this Circular and it is closed for all three units.

No violations or deviations were identified.

7. Follow-up of Previously Identified Items

(Closed) Follow-up Item 50-529/85-07-01 - FSAR Change for Structure of Technical Support Department

The licensee submitted a change to Figure 13.1-6A in the FSAR to depict the actual supervisory hierarchy as it exists at the site. This was documented in letter ANPP-33314-EEVB/JKO, dated August 30, 1985 from E. E. Van Brunt to G. Knighton.

The inspector contacted the NRR Project Manager responsible for Palo Verde Unit 2 who indicated that the proposed FSAR change would be acceptable.

This item is closed.

(Open) Follow-up Item 84-48-01 "Proximate Support Gap to be Shimmed Prior to Initial Criticality"

In letter ANPP-31473-EEVB, dated December 14, 1984, the licensee committed to shim all proximate supports adjacent to rotating and reciprocating equipment to 1/16 inch gap in Unit 1 prior to initial criticality. The licensee reserved the right to analyze for the acceptability of the existing gaps on Units 2 and 3 instead of shimming.

The licensee has elected to shim the gaps in Unit 2 as in Unit 1 instead of analyzing. The licensee issued a Plant Change Package for shimming and gap measurement. However, the actual work will not be performed until sometime prior to Mode 4 entry. Therefore, this item will remain open.

(Closed) Follow-up Item 84-48-02 "Support Liftoff Study and Corrective Actions"

In a letter ANPP 31842, dated January 31, 1985, the licensee informed the NRC that:

> "A review of 100 percent of the applicable Unit 1 safety-related supports has been conducted to ensure that there are no safety significant uplift forces which would require modification to the existing pipe supports. No cases were found where stresses in the pipes exceed allowable code values. Thus no safety significant condition exists and no field modifications to existing pipe

supports are required for any of the units. The results of the analysis appear in calculation 13-MC-ZZ-547."

During a previous inspection 50-528/85-18, the inspector reviewed the calculation and found it appeared complete and supported the licensee's conclusion. Thus it was closed for Unit 1.

During this inspection, the inspector determined that this item was also closed for Unit 2 based on the above analysis being applicable to all units.

(Closed) Unresolved Item (85-33-01) IE Bulletin 84-03 "Refueling Cavity Water Seal" for Unit 1

During the previous inspection, the inspector noted that the seal installed inside Unit 1 had not been modified according to the licensee's commitment letter ANPP-32542-EEVB dated May 1, 1985. The licensee committed to send NRC an amended letter to clarify the meaning of modified "seal" and determine the safety significance of the lack of a modified seal in Unit 1.

The licensee sent a letter ANPP 33695 EEVB, dated October 10, 1985 to NRC. In this letter, the licensee clarified that there are two seals which were modified with reinforcing pins. They are onsite and interchangeable among the three units, but none of the modified seals was installed in Unit 1 containment. When defueling in Unit 1 became necessary, the equipment hatch must be opened for bringing in the multi-stud tensioner, refueling machine control console, and the rigging for lifting the seals. Thus, there is no adverse effect by not having the seal stored inside the containment. To preclude the inadvertent use of the unmodified seal, the procedure 31MT-9RC01, "Head Assembly and Disassembly" will be modified to require verification prior to installation of the seal in Unit 1.

The inspector reviewed the licensee's response and verified that the procedure change notice was issued. Thus, the licensee's response to this item was determined satisfactory and this item is closed. The licensee further committed to assure that information will be verified and complete to the extent reasonable, before presenting to the NRC to minimize misunderstandings in the future.

No violations or deviations were identified.

8. Surveillance Testing

The inspector examined implementation of the surveillance testing program in Units 1 and 2. The inspector interviewed cognizant plant personnel and reviewed schedules and pertinent procedures. Procedure 73AC-9ZZ04, Surveillance Testing, defined the overall surveillance testing program at PVNGS.

The Surveillance Procedure Control Group (SPCG) was the organization responsible for scheduling surveillance tests to be performed per the requirements of the Technical Specifications. This scheduling of

surveillance tests was accomplished through the compilation of a Monthly Master Schedule. The Monthly Master Schedule listed surveillance tests to be accomplished for a given month, responsibility, applicable modes, frequency and last performance date.

However, the inspector noted the following characteristics concerning the Monthly Master Schedule (MMS):

a. Only surveillance requirements accomplished by surveillance tests (STs) were scheduled on the MMS. Surveillance requirements fulfilled by other types of plant procedures were not listed.

b. The MMS only scheduled those ST required for the mode the unit was in or expected to be in.

c. The MMS did not include conditional surveillances.

d. Operations Engineering had taken responsibility for tracking and scheduling their own ASME Section XI valve surveillances. Several of these valve surveillances had recently been missed. The inspector discovered that several of their surveillance test procedures met surveillance requirements for large numbers of valves. One tested approximately 250 valves.

At the exit meeting, the inspector expressed the following concerns:

a. Enough manpower may not exist at present to schedule and track surveillance tests for Unit 2, in addition to Unit 1.

b. The method for scheduling and tracking surveillances for ASME Section XI valves may need improvement, as evidenced by the surveillances recently missed. The licensee indicated that they would split the larger procedures in to many smaller ones with a more manageable number of valves to test, thus enabling the SPCG to schedule and track them.

In addition, the inspector observed that a Monthly Master Schedule had not been developed for all six modes in Unit 2, and therefore, it appeared to the inspector that the plant was not ready for licensing in this regard.

Finally, the inspector needed additional information to determine whether or not the licensee's method of scheduling of surveillance tests was an acceptable activity in accordance with 73AC-9ZZ04. Therefore, the inspector considers this issue to be unresolved. (Unresolved Item 50-528/85-40-01).

No violations or deviations were identified.

9. Unresolved Item

An unresolved item is a matter about which additional information is needed to determine whether the matter is a violation, a deviation, or an acceptable activity. An unresolved item is discussed in paragraph 8 of this report.

10. Exit Meeting

The inspectors met with the licensee representatives denoted in paragraph 1 on October 24, 1985. The scope of the inspection and the inspectors' findings as noted in this report were discussed.