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Report No	50-528/81-15 REGION V 50-529/81-12 50-530/81-12			
Docket No Licensee:	50-528, 50-529, License No. CPPR-141. CPPR- 50-530 Arizona Public Service Company	afeguards Group		
	P. O. Box 21666			
÷	Phoenix, Arizona 85036	*		
Facility Nam	e: Palo Verde Nuclear Generating Station -	Units 1, 2, and 3		
Inspection a	t: Palo Verde Construction Site, Wintersburg	g, Arizona		
Inspection c	conducted: August 3 - September 4, 1981			
Inspectors:	L. E. Vorderbrüeggen Senior Resident Inspector	<u>12-4-81</u> Date Signed		
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A Boved By:	1. W. I asul	12-4-81		
• 1 1	Reactor Projects Section 1	Date Signed		
Summary:	Inspection on August 3 - September 4, 1981 81-15, 50-529/81-12, and 50-530/81-12)	(Report Nos. 50-528/		
Areas Inspected: Routine, unannounced inspection by the resident inspector of construction activities associated with containment electrical penetrations; Unit 1 containment post-tensioning; in- strumentation components; protection of installed reactor vessels Units 1 and 2; reactor vessel internals - Units 1 and 2; reactor coolant pressure boundary and other safety related piping; safety related pipe supports; electrical cables; Unit 3 containment structure; main coolant pump lateral supports; care and preser- vation of equipment; follow-up of licensee action on previous inspection findings; and general activities in progress at the plant site. The inspection involved 74 inspector-hours on-site by one NRC inspector.				
	<u>Results</u> : No items of noncompliance or devia	tions were identified.		

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DETAILS

1. <u>Persons Contacted</u>

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Arizona Public Service Company (APS) а. *E. E. Van Brunt, Jr., Vice President, Nuclear Projects Management *J. A. Roedel, Corporate Quality Assurance Manager *D. B. Fasnacht, Site Construction Manager *W. E. Ide, Site QA Supervisor *R. J. Kimmel, Field Engineering Supervisor G. Pankonin, QA Engineer R. Forrester, QA Engineer L. Souza, QA Engineer *D. E.Fowler, QA Engineer *C. N. Russo, Operations QA Manager *J. C. Solakiewicz, Operations QA Engineer b. Bechtel Power Corporation (Bechtel) *S. M. Nickell, Próject Superintendent *A. K. Priest, Project/Field Engineer *D. R. Hawkinson, Project QA Supervisor *R. M. Grant, Project QC Engineer *M. A. Rosen, QC Engineer A. Robertson, QC Engineer R. Robinson, Pipe Hanger Engineer-Unit 2 Western Concrete Structrues, Inc. с. غي ود ع K. Guffey, Site Superintendent T. Hick, QC Engineer Other persons contacted during the inspection period included construction craftsmen; inspectors and supervisory personnel. *Management Meeting attendees. Licensee Action on Previous Inspection Findings ¥ 4. 41 1 1 1 An inspection was made of licensee actions pertaining to the following items: (Closed) Follow-up Item (50-528/79-11/01): Steam Generator а. Shim Movement This item was held in an open status pending completion of the licensee's review for 50.55(e) reportability. That review is documented on Deficiency Evaluation Report (DER)

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No. 79-11 dated August 17, 1979, The licensee concluded that the topic was not reportable. This item is considered closed.

b. (<u>Closed</u>) Follow-up Item: (50-529/80-02/02 and 50-529/80-14/01): Edge Curvature Distortion on Containment Dome Liner Segments

Inspection activity on this item was addressed in paragraph 6 of I/E Inspection report 50-529/80-17 dated November 21, 1980. This item is closed.

c. <u>(Open) Noncompliance Item (50-529/81-05/01): Welder's Identi-</u> fication Symbol Missing From Weld

The licensee representatives were informed that their response to this item of noncompliance as described in their letter dated July 8, 1981 was considered to be incomplete. This is because the reindoctrination program on welder symbol application requirements was not given to the Units 1 and 3 Pipefitter Welders. This item will remain open.

3. Containment Electrical Penetrations - Units 1, 2, and 3

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During a tour of the facility, the inspector observed that the pressure gages on several installed penetrations were not indicating a positive pressure. . Subsequent discussion with licensee personnel disclosed that the subject of maintaining continuous nitrogen pressure on the penetration seals had been identified as an audit finding and was documented on Quality Assurance Finding (QAF) No. SF-81-14 and SF-81-15, both dated April 8, These QAD's were issued because existing maintenance 1981. practices were not in accordance with the seal pressurization provisions in the manufacturer's (Conax Company) instruction manual. Both QAF's and their supporting documentation, along with the Conax instruction manual were reviewed by the inspector. The issue appears to focus on vagueness of the Conax manual in regard to the necessity for pressurization after penetration installation. The documentation package included Bechtel correspondence with Conax requesting clarification of the matter. The inspector concluded that the licensee's actions were properly addressing this situation.

Each penetration assembly is fitted with a small valve called an integration valve. Its function is to isolate the pressurization system from the area between the two "O" ring grooves which provide the penetration/building seal when the assembly is installed. This permits the assembly to maintain an internal



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positive pressure during shipment and storage prior to installation. A leak test is required on each penetration assembly upon completion of installation." "For this leak test, the integration valve must be opened in order to verify the adequacy of the "O" ring seals. The inspector checked the position of the integration valve on several penetrations at the 120 foot-level in Units 1 and 2. Of the sixteen (16) valves checked in Unit 1, two (2) were found in the closed position. Of the eight (8) valves checked in Unit 2, one (1) was tightly closed and two (2) could not be confirmed as being open. The normal procedure is to leave the integration valve open after the leak test; however, since installation inspection checklist does not require a signoff for valve position during pressurization, the actual position during leak testing appears uncertain. Since there may be various reasons for closing the valves some time subsequent to the leak test, the inspector concluded that finding certain valves closed did not necessarily indicate failure to follow test procedures. The lack of specificity in the checklist was identified to the licensee. This matter will remain open pending resolution of the pressurization matters with the Conax Corporation (50-528/81-15/01).

No items of noncompliance or deviations were identified.

4. <u>Containment Post-Tensioning - Unit 1</u>

Tensioning of vertical tendon No. V-51 in the tendon gallery was observed to ascertain compliance with WCS procedures PTP-8 and QCP-6. The tendon traverses over the containment dome from gallery azimuths 139 and 331 degrees. Although hampered by hydraulic equipment difficulties, the tensioning crews managed to complete the operation satisfactorily. Communications between the two tensioning crews was adequate. The measured elongation at the specified 80 degrees of ultimate tendon strength was within the tolerance range (5 percent) of the calculated value.

No items of noncompliance or deviations were identified.

5. <u>Instrumentation Components - Unit 1</u>

The installation of components associated with the plant protection functions listed below were selected for examination to verify compliance with requirements:

Functions	Protection	Channel	<u>Instrument</u> R	lack
Pressurizer Pressure Pressurizer Pressure Steam Generator #1 Pressur Steam Generator #1 Level	A B C D		SBA-A01 'SBA-A01 SBC-A03 'SBD-A03	



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Work had proceeded only to the extent that the instrument mounting racks had been installed; no transmitters had yet been mounted and the sensing lines were in the very early stage of installation. The governing documents were Specification 13-JM-702, Drawing 13-J-ZCF-004, and WPP/QCI 302.0. The inspector noted that several of the work platforms had accumulations of dirt and trash; this was identified to the licensee and prompt remedial action was initiated.

No items of noncompliance or deviations were identified.

6. Protection of Installed Reactor Vessels (Units 1 and 2)

Guarded access control to the Unit 1 reactor pool area continues to limit the entry of personnel, equipment, tools and materials to only those authorized. Work continued on the installation of the cooling equipment for the control element drive mechanisms (CEDM) and the vessel head was kept in place to prevent the entry of dirt or foreign objects. The inspector observed generally poor housekeeping practices in the work areas surrounding the CEDM cooling equipment. Since the refueling pool area is directly below this equipment and is susceptible to falling debris and dirt, this condition was made known to the licensee and action was promptly taken to correct the situation.

The Unit 2 reactor vessel has a heavy structural cover across the vessel flange to keep out foreign objects and debris. The work platforms and ladders inside the vessel are metallic or made of treated wood to minimize fire hazards.

The inspector verified that the procedures for protection of the installed reactor vessels were being implemented.

No items of noncompliance or deviations were identified.

7. Reactor Vessel Internals - Units 1 and 2

For Unit 1, work continued on the installation of the vibration monitoring instrumentation on the internals components in the refueling pool area. The components are kept fully draped with heavy plastic sheeting to prevent the entry of dust and debris. Clean room type procedures are followed when work is being performed.

The Unit 2 vessel internal components remained in storage in the refueling pool storage areas. The inspector verified that the protective covers for the components were in place. It appeared to the inspector that the procedures for protection of the vessel internals were being followed.





No items of noncompliance or deviations, were identified.

- 8. <u>Reactor Coolant Pressure Boundary and Safety Related Piping</u> <u>Installation</u>
 - a. <u>Component Installation Activities</u>

Various work activities associated with handling and installation of piping components in the Unit 2 containment building and spray pond were observed to ascertain compliance with specification 13-PM-204, the ASME code, and PSAR requirements. The systems involved were the safety injection piping from tank 1B, and the stainless steel piping in the spray pond. Particular attention was given to the handling and supporting of system components, correctness of configuration, control of welding records in the work area, use of specified materials, control of weld filler metal, absence of defects on component surfaces, and inspection performance by qualified personnel.

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No items of noncompliance or deviations were identified.

b. <u>In-Process Welding Activities</u>

Two welds in the Unit 2 systems identified above were examined to ascertain compliance with the requirements of specification 13-PM-204, the ASME code (Section III-1974 edition) and Bechtel installation/inspection procedures WPP/QCI 100.0, 101.0 and 202.0. The welds were:

- Weld W-002 joining spool S-001 to motor operated valve UV-644 in 14-inch outlet (line SI-E-223) from safety injection tank 1B.
- (2) Weld W-007 joining spools S-006 and S-007 in 14-inch spray pond header SP-B-022.

For weld No. 1, the applicable drawing was 13-P-SIF-103 and the welding procedure specification was P8-AT-AG(4). The inspector observed the fitup, tack-welding and approximately half of the root-pass. Workmanship was very good.

For weld No. 2, the applicable drawing was 13-P-ZYA-062 and the welding procedure specification was P8-T-AG(2). Several weld layers had been deposited and the workmanship appeared very good.

For both welds, a properly filled out Field Welding Check List (WR-5 form) was present at the work location, and the

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welding machine settings of current and woltage were seen to be within the specified ranges. Filler metal issue records (WR-6 Form) which identified the welders were also present. The WR-5 Forms identified the weld number, the system, and the applicable drawing number. Also specified were the welding procedure to be used, the material specification and filler metal to be used, preheat and interpass temperatures, and NDE requirements. The inspector verified that the WR-5 provisions were in accordance with the requirements of the ASME Code, Section III, 1974 edition. The qualification records of the welders involved were examined and found to be acceptable. The inspector observed that quality control inspection and supervisory surveillance were being performed to an appropriate degree.

The inspector also observed fit-up efforts on spools S-001 and S-002 for weld W-002 in the same 14-inch spray header SP-B-022. Difficulty was (encountered because one of the spool ends, was oval-shaped causing a misalignment considerably in excess of the 3/32-inch allowed by the ASME Code and the Bechtel General Welding Standard. The craftsmen were using a heavy, chain-type clamp to "squeeze" the oval-shaped pipe end into position to satisfy the 3/32-inch allowance for welding. This appeared to the inspector to be a form of cold-working and it was not apparent that controls had been established, or that guidance for the field piping engineers had been provided, by Bechtel engineering in the installation specification for a situation of this nature. This matter was discussed with the licensee. This item is considered unresolved pending engineering clarification (Unresolved item No. 50-529/81-12-01).

No items of noncompliance or deviation were identified.

c. <u>Postweld Stress Relieving</u> - Unit 2

Stress relieving operation() on Weld W-003 in reactor cooling system line RC-073 was examined for compliance with approved contract specifications, procedure and code requirements. The weld being heat treated joins spools S-002 and S-003 in coolant pump No. 2A suction line from steam generator Eight thermocouples (T/C) had been attached to the No. 2. pipe around the circumference of the weld, and all T/C's were observed to be properly reading on the temperature re-The calibration of the recorder was verified to be corder. current. At the time of the inspection the weld was approximately 45-minutes into the specified 2 1/2-hour soaking time at 1150-degrees F. The manually-recorded temperature data on the subcontractor's log 'showed that the rate of temperature rise above 800-degrees F. did not exceed the specified maximum of 110-degrees F. per hour. It was later verified that

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the holding time and cool down rate were within the specified time limits. The heat treatment and associated inspection were performed in accordance with procedures PHT-501 and WPP/QCI-103.0.

No items of noncompliance or deviations were identified.

9. Safety Related Pipe Supports

Spring hanger No. 2 supporting spool S-001 in 24-inch main feedwater line 2-SGE-205 in the Unit 2 main steam support structure was previously examined while it was being installed (IE Report 50-529/81-05). The hanger was not completed at that time because of an ambiguity on the drawing in regard to the stiffener gusset plates on the main horizontal member. During a walk-through of this area the inspector noticed that the hanger had not yet been completed, so an inquiry was made of its current status. The hanger document "package" in the custody of the hanger engineer was in the active file and contained an approved FCR which clarified the gusseting requirements. One discrepancy was apparent, however, in that also present in the package was the hanger drawing with a stamp indicating that the work was complete. It could not be determined who had affixed the completion stamp or why it had not been voided. This item was reviewed with licensee representatives. Since the package was still in an active status, and the FCR requires a documented QC inspection for its closure, the inspector concluded that the situation was under adequate However, the proper completion of this hanger will control. be verified by the inspector (follow-up item No. 50-529/81-12/02).

No items of noncompliance or devieations were identified.

10. Electrical Cable Installation

The pulling of five-500 MCM power feeder cables in the Unit 2 Auxiliary Building was observed by the inspector to ascertain compliance with specification 13-EM-301 and WPP/WCI 254.0 require-The cables were labeled SBOINC2FB and run in conduit ments. A2DNRF62 between generator control panel SFN-C02B and circuit breaker cubicle SBB-C03. The cables provide power for control element drive mechanism groups B and D. A tugger and currently calibrated torque indicator were used to pull the cables. The cable pull card was properly filled out and signed off, and showed the calculated maximum allowable pulling force to be 5290 pounds. During the pull, the inspector observed the torque indicator and noted that the highest indication was 1500 foot-pounds which was equivalent to a pulling force on the cables of approximately 3000 pounds. The quality control inspector was present throughout the installation. The craftsmen exercised appropriate care to protect the cable insulation and were under adequate supervision.



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No items of noncompliance or deviations were identified.

11. Unit 3 Containment Structure

Installation of reinforcing steel and tendon sheathing for placement 3C110, Elevation 176 to 186-feet, was examined. The bar size, grade and spacing were observed to be as specified, and the bars were free of scale or other surface materials that would interfere with concrete bonding. Tendon sheaths that had been put in place were clean, free of damage, and securely fastened to the reinforcing steel. Sheath splices and the junctions of the sheaths with the buttress trumpet extensions were taped sufficiently to prevent the entrance of mortor. The preparation, assembly, and firing of a No. 18 cadweld splice was observed. This cadweld was the first production splice of a newly qualified ironworker; he proceeded knowledgibly and confidently with the operation and the completed cadweld was subsequently found acceptable by the quality control inspector.

A P The governing specifications are 13-CM-371, Post-Tensioning Trumplate Assemblies "and Sheathing, and 13-CM-375, Placing of Reinforcing Steel. The applicable drawings are 13-C-ZCS-114 through 119, Containment Building-Wall Reinforcing-Section and Details.

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No items of noncompliance or deviations were identified. 5g 10 - 1 ar ar ar ar

12. Main Coolant Pump Lateral Supports

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Work activities in progress for the installation of the Unit 3 upper lateral supports for pumps 2A and 2B were examined by the inspector. The bolts and their anchor plates were firmly fixed in position and the exposed threaded ends were appropriately covered to afford adequate protection. The bolts were 3-inch diameter, ASTM A540, Grade B-22, class 4 and it was verified that their physical and chemical attributes were within the limits specified in the ASTM standard. The governing documents for the installation were specification 13-CM-125 and drawing 13-C-ZXS-603.

No items of noncompliance or deviations were identified.

13. Inspection Tours of Plant Site

At various times during this inspection period, the inspector toured the plant site in order to observe general housekeeping conditions, care and preservation of equipment, handling of heavy components, tagging and identification of materials, adequacy of caps over pipe openings not being worked on, and presence of cribbing under stored pipe spools, valves and other components. No welding electrode stubs were observed lying around the various work areas.

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t. N No items of noncompliance or deviations were identified. `**,** * 1 -

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14. Unresolved Items

Unresolved items' are matters about which more information is required to ascertain whether they are acceptable items, items of noncompliance or deviations. An unresolved item disclosed during the inspection is discussed in Paragraph 8.b.

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15. Management Meetings

A meeting was held on August 21, and September 3, 1981. Licensee and Bechtel representatives in attendance at the meeting are identified in paragraph 1. During the meeting the inspector summarized the scope of the inspection activities and reviewed the inspection findings as described in this report.



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