U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION V

Report No. 50-528/81-07, 50-529/81-07, 50-530/81-07

Docket No. 50-528, 50-529, 50-530 License Nos. CPPR-141, CPPR-142, CPPR-143

Licensee: Arizona Public Service Company

P. O. Box 21666

Phoenix, Arizona 85036

Facility Name: Palo Verde Nuclear Generating Station - Units 1, 2, and 3

Inspection at: Palo Verde Construction Site, Wintersburg, Arizona

Inspection Conducted: April 1 - 10 and May 4 - 29, 1981

Inspectors: _____ 6/26/81
L. E. Vorderbrueggen Date Signed
Senior Resident Inspector

Approved By: _____ 6/26/81
J. H. Eckhardt, Acting Chief Date Signed
Reactor Projects Section 1

Summary: Inspection on April 1 - 10 and May 4 - 29, 1981
(Report Nos. 50-528/81-07, 50-529/81-07, and 50-530/81-07

Areas Inspected: Routine, unannounced inspection by the resident inspector of construction activities associated with: pressurizer and safety injection tanks; diesel generator oil storage tanks and control panel; protection of installed reactor vessels; reactor vessel internals; spray pond structure; reactor coolant pressure boundary and other safety related piping; containment liner penetrations and crane support brackets; care and preservation of equipment; and general activities in progress at the plant site. The inspection involved 96 inspector hours on-site by one NRC inspector.

Results: No deviations or items of noncompliance were identified.

DETAILS

1. Persons Contacted

   a. Arizona Public Service Company (APS)

   * 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

   b. Bechtel Power Corporation (Bechtel)

   * W. J. Stubblefield, Field Construction Manager
   * S. M. Nickell, Project Superintendent
   * A. K. Priest, Project Field Engineer
   * D. R. Hawkinson, Project QA Supervisor
   * R. M. Grant, Project QC Engineer
   * J. E. Pfunder, QA Engineer
     O. Ostereich, Welding Engineer - Unit 2
     E. Stone, Welding Engineer - Unit 3
     R. Hoak, QC Engineer
     G. James, QC Engineer
     J. Mathias, QC Engineer

   c. Combustion Engineering (CE)

   S. Mager, Site Manager
   P. DeGreef, Internals Installation Superintendent

   Other persons contacted during the inspection period included construction craftsmen, inspectors and supervisory personnel.

   * Management meeting attendees.

2. Pressurizer and Safety Injection Tank Grouting

   The inspector observed the placement of grout under the Unit 2 pressurizer support skirt flange. The grout was noted to be of uniform consistency, free of lumps and flowed readily from the pump discharge hose into the formwork. It was verified to be the non-shrink type specified in Section 17.2 of governing specification 13-CM-365. The workmen followed standard placement techniques, and appropriate supervisory and inspection personnel were present during the entire operation.

   The inspector also examined the completed grout placement under the support ring of Unit 2 safety injection tank No. 1B. The grouting operation had just been completed and was in the curing process. Water saturated burlap was in place and it appeared that the formwork had satisfactorily retained the grout in place.

No deviations or items of noncompliance were identified.

3. Unit 2 Diesel Oil Storage Tanks

Placement of the 84,000 gallon oil storage tank for the train "B" emergency diesel engine was observed by the inspector. The tank sits adjacent to the train "A" tank on compacted sand with the tank bottom located 25 ft. below grade elevation. The excavation for the two tanks was in previously undisturbed soil. The inspector observed that the excavation was dry, and the sides and floor showed no indications of seismic faults, fractures, or discontinuities. The equipment used for handling the tank was adequate and the workmen exercised appropriate care and diligence to protect it from damage. Surveyors were on station to guide the workmen in locating the tank in the specified position. Adequate supervision and QC inspection also were evident. The tank was installed level and plumb, with the coordinates of the access hatch within the specified tolerance ($\pm$½"); the final tank elevation, however, was 1½ inches below that specified. Although the connecting piping can accommodate this elevation discrepancy, nonconformance report No. M-Y-791 was prepared and issued for engineering resolution of the matter. The governing documents were Specification 13-MM-510 and Drawing 12-P-ZYA-027.

No deviations or items of noncompliance were identified.

4. 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 those which are authorized. When there is no work activity inside the vessel, a plastic protective cover is kept in place over the vessel flange to prevent the entry of foreign objects and debris.

Nozzle welding operations have been completed on the Unit 2 reactor vessel. Work platforms and ladders inside the vessel were metallic or of treated wood so as to minimize fire hazards. The top of the vessel was covered to prevent the accidental entry of foreign objects and debris.

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

5. Reactor Vessel Internals Units 1 and 2

During this reporting period the Unit 1 upper guide structure was set into and aligned with the core support barrel, the vessel head was set in place and aligned with the core support barrel keyway, and the flow baffle was welded into position in the bottom of the vessel. These operations were performed in accordance with Sections 6.7, 6.8, and 6.9 of CE Instruction Manual No. IG-14273-RCE-400 and the referenced procedures therein. The components are kept covered and protected when work activities are not in progress in order to prevent the entry of dust and debris. Clean room

type procedures are followed when work is being performed. It appeared to the inspector that the procedures for installation and protection of the Unit 1 vessel internal components were being followed.

The inspector also observed the 2-crane lift of the Unit 2 core support barrel (100 tons) and its placement on the transport trailer for movement from the outdoor storage yard to the containment building. The operation was performed in accordance with procedure WPP/QCI No. 15.0 and CIF No. 150-39. The required rigging drawings, calculations and checklists were examined and found to be in order. The rigging crew was adequately supervised and exercised appropriate care throughout the operation. The assigned QC inspector was present and followed the progress of the work.

No deviations or items of noncompliance were identified.

6. Unit 2 Spray Pond

Activities associated with reinforcing steel placement and concrete curing were examined. The floor slab reinforcing steel in the north pond segment which encompasses support pad lines S5 through S9, inclusive, was observed to be the specified size and grade and was properly spaced. Bar overlap at splice points exceeded the minimum allowable distance, and the bars were clean, free of rust, and adequately tied. The construction joint preparation at the end of the segment was as specified. The burlap covering the concrete that had been placed on the adjacent floor slab segment was soaked with water for proper curing. The vertical wall segment making up the southeast corner of the pond had been placed and was undergoing water cure. The forms were still tightly in place, the exposed top surface was adequately covered with water soaked burlap, and wet burlap shading curtains were in place on both sides of the vertical forms. The governing specifications were 13-CM-365 and -375. The applicable drawings were 13-C-SPS-375, -378 and -379.

No deviations or items of noncomplaince were identified.

7. Reactor Coolant Pressure Boundary and Safety Related Piping Installation

a. Component Installation Activities

Various work activities associated with handling and installation of components in the Unit 2 containment building 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 1A, main feedwater to steam generator No. 2, and the reactor coolant system. 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.

No deviations or items of noncompliance were identified.

b. In-process Welding Activities

The inspector examined three in-process welds in Unit 2 containment building in the systems identified above 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:

1. Weld W-001 joining spool No. 001 to check valve V-235 in line No. 2-SI-E207-14".

2. Weld W-001 joining spool No. 001 to reactor coolant pump 2B discharge nozzle in line No. 2-RC-093-30".

3. Weld W-013 joining spools No. 008 and No. 009 in line No. 2-SG-R005-24".

For the first weld, the applicable drawing was No. 13-P-SIF-103. Fit up, tack welding, and the first SMAW hot pass were observed. The appearance of the TIG tack welds on both diameters of the pipe exemplified excellent workmanship as did the SMAW groove welding.

For the second weld, the applicable drawing was No. 13-P-ZCG-103. Joint fit up required the removal, by hand, of a segment of the pipe spool approximately ¼-inch thick, and then grinding the 3-inch wall thickness to the specified weld preparation dimensions. When completed, these fit up operations displayed excellent workmanship. Before the pump was moved to the final fit up position, the inspector observed the pipe and pump nozzle interior surfaces, and the weld joint surfaces, being cleaned with the prescribed solvent. Subsequently, the inspector observed a portion of one weld pass at about ¼ wall thickness which was being done by the simultaneous use of two independently operated automatic welding machines. The machine settings for voltage, current, travel speed, filler metal wire feed speed, oscillation frequency and amplitude were verified to be within the ranges listed on the welding procedure specification (P1-G2-T-I-O-ITP). At one point while the inspector was observing, one of the machines lost the argon cover gas flow and a porosity defect resulted. Welding was stopped in order to repair the equipment and grind out the defect. Following the grinding operation, the ground area appeared to the inspector to be free of any weld imperfections.

The applicable drawing for the third weld was 13-P-SGF-119. The weld was approximately 75% complete and the workmanship was of good quality. Close control of welding current was being exercised by the workmen.

For all three welds a properly filled out Field Welding Check List (WR-5 Form) was present at the work location. The forms had hold-points and NDE call-outs specified. The weld identification, material specification, shielding gas flow rate, and interpass temperature were in accordance with the requirements specified on the WR-5 Form. The inspector verified that WR-5 provisions were in accordance with the requirements of the ASME Code,

Section III, 1974 edition. Interpass cleaning was being performed with stainless wire brushes. Filler metal issue slips and 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 applicable specification was 13-PM-204, Field Fabrication and Installation of Nuclear Piping Systems. WPP/QCI 101.0, Welding Control, and WPP/QCI 202.0, Piping System Installation were the controlling work plan and inspection documents for the three welds.

No deviations or items of noncompliance were identified.

8. Unit 3 Containment Liner Welding

The weld joining the 4-inch thick flang plate of the lower personnel air lock to the 1½-inch thick penetration sleeve was examined for conformance with the applicable specification, code, and procedural requirements. The weld had just been completed and was being cleaned of any remaining slag or other surface conditions that would interfere with the scheduled magnetic particle examination. Good workmanship was in evidence throughout the approximately 10 feet (30%) of the weld that the inspector examined. The flange plate displayed evidence that electric blankets had been attached to maintain the required minimum preheat of 200°F. It was verified that the welding had been performed by qualified welders using the specified welding procedure specification (PI-A-LH). The governing documents were Drawing No. 13-C-ZCS-212, Specification No. 13-CM-370 and WPP/QCI No. 61.0. The Field Welding Check List and the Filler Material Withdrawal Authorization forms were found to be in order.

Work activities associated with installation of polar crane support brackets were also observed by the inspector and welds on several of the completely welded brackets were examined. The specific brackets and activities observed were:

1. No. 3RPCB-1-7 at azimuth 80° - flame cutting of the opening in the liner plate.

2. No. 1CPCB-1-20 at aximuth 170° - fitting up of the bracket in preparation for tack welding to the backing bar.

3. No. 3RPCB-1-21 at azimuth 280° - placement and welding in position in the liner opening.

The work was proceeding in accordance with the scheduled sequence and under an appropriate degree of supervision. The quality control inspector was observed to be functioning as required. The completed welds that were examined (Nos. 3RPCB-1-4, -8, -13, -14, and -16) displayed the proper contour and generally good workmanship. The governing documents were those specified above and, in addition, Drawings 13-C-ZCS-214 and -215.

No deviations or items of noncompliance were identified.

9. Diesel Generator Control Panel

The installation of the control panel for Unit 2 train "A" diesel generator was observed. This included crane pickup from the transport trailer, placement on rollers outside the diesel generator building, and positioning and welding to the floor imbeds inside the building. The electricians performing the operation were adequately supervised and appropriate care was given to protect the panel from damage. The assigned field engineer and QC inspector were present and followed the progress of the work. The qualifications of the welder were subsequently verified. The work was in accordance with procedure WPP/QCI No. 15.0. The applicable drawing was 13-C-ZGS-100.

No deviations or items of noncompliance were identified.

10. 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.

No deviations or items of noncompliance were identified.

11. Management Meetings

Management meetings were held on May 19 and June 2, 1981. Licensee and Bechtel representatives in attendance at the meetings are identified in paragraph 1. During the meetings the inspector summarized the scope of the inspection activities and reviewed the inspection findings as described in this report.