

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-528/83-17

Docket No. 50-528

License No. CPPR-141

Licensee: Arizona Public Service Company
P. O. Box 21666
Phoenix, Arizona 85036

Facility Name: Palo Verde Nuclear Generating Station Unit 1

Inspection at: Palo Verde Construction Site, Wintersburg, Arizona

Inspection conducted: May 2-6, 1983

Inspectors: Talbert Young Jr. for 5-23-83
P. P. Narbut, Reactor Inspector Date Signed

Talbert Young Jr. for 5-23-83
J. F. Burdoin, Reactor Inspector Date Signed

Approved by: Talbert Young Jr. 5-23-83
T. Young, Chief, Reactor Projects Section No.2 Date Signed

Summary:

Inspection during the period of May 2-6, 1983

Areas Inspected: Special inspection by regional-based inspectors of allegations associated with the electrical activities and coatings activities. The inspectors also examined licensee action on previous inspection findings. The inspection involved 78 inspector-hours on site and nine inspector-hours in office by two NRC inspectors.

Results: No items of noncompliance or deviations 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 (QA) Manager
- *W. E. Ide, Site QA Supervisor
- L. A. Souza, QA Engineer and Audit Supervisor
- *B. S. Kaplan, Quality Systems Supervisor
- P. J. Moore, QA Engineer
- K. Anderson, QA Engineer
- *A. Carter Rodgers, Nuclear Engineering Manager
- *D. B. Fasnaught, Nuclear Construction Manager
- *H. W. Reilly Jr., Nuclear Engineering Mechanical Engineer
- K. Jones, Licensing Engineer
- D. Hansen, Operations Engineer
- *J. T. Barrow Jr., Electrical Engineering Supervisor
- *S. G. Pennick, QA Engineer

b. Bechtel Power Corporation (Bechtel)

- *R. M. Grant, Project Quality Control (QC) Supervisor
- *D. R. Hawkinson, Project QA Supervisor
- W. A. Miller, Project Field Engineer
- S. M. Nickell, Project Superintendent
- I. W. Williams, Maintenance Field Engineer
- J. E. Pfunder, Quality Assurance Engineer
- C. O'Neill, Lead QC Engineer Coatings
- D. Crespo, Field Engineer Coatings
- J. Black, Resident Engineer
- H. Fredy, Assistant Resident Engineer
- K. Jones, Group Supervisor, Pipe Supports and Pipe Stress
- D. H. Borger, Senior Construction Engineer (Elec.)
- M. L. Alexander, Lead Discipline FLD Engineer (Elec.)
- W. L. Saylor, Electric Group Supervisor
- R. Ruff, Lead, QC Engineer

In addition, various other crafts, QC, and engineering personnel were contacted.

*Denotes those attending exit meeting on May 6, 1983.

2. Licensee Action on Previous Inspection Findings

a. (Open) Follow-up-Item (50-528/81-02-04) Maintenance Program Requirements

This item was examined in Report 50-528/83-11. Two specific items were identified in that report as requiring resolution:

- o detailing, on maintenance cards, the specific visual inspections required.

- ° resolving the instance of a discipline engineer providing verbal instructions to change the maintenance requirements.

The licensee was not complete with actions on these matters, however, additional information was obtained.

In regards to the issue of verbal instructions, the maintenance engineer indicated he did not consider the instructions received to be verbal. The maintenance group had initiated changes to the Class 1E switchgear maintenance (deleting the requirement to have heaters energized for switchgear installed in the units) on the basis of nonconformance report (NCR) ET 2668 dated January 31, 1983. Although the NCR was written only against non Class 1E switchgear, the answer applied to all switchgear since it quoted the applicable procedure, WPP/QCI 28.0 paragraph 8.4.2. which states heaters need not be energized unless directed to do so by the PFE or his designee (where switchgear is stored in a building which meets Level B storage requirements of ANSI N45.2.2-1972).

Further examination by the inspector determined a problem exists with adherence to an FSAR commitment.

In section 1.8 of the Palo Verde FSAR the licensee commits to observe the requirements of ANSI N45.2.2-1972 for storage of items for nuclear power plants. The standard defines levels of storage for various items. Paragraph 2.7.2 requires switchgear to be stored in Level B buildings, and additionally paragraph 6.4.2 requires that space heaters be energized.

The licensee's procedure WPP/QCI 28.0 was changed by PCN No. 6 dated June 25, 1979 to allow heaters not energized if the item is stored in a Level B condition. This change was not in accordance with the FSAR commitment. The licensee representatives were not able to demonstrate an FSAR change had been initiated.

The inspector examined Bechtel letter IOM-E-8917 MOC 150746 dated May 29, 1981, which provides a technical position that equipment stored in Level B storage areas do not require energization of space heaters except where the vendor specifically requires it, and any area provided with uniform heating and temperature control is considered to meet Level B storage requirements.

At the exit interview, the inspector discussed the need to identify whether heaters were deenergized in the warehouses or the units, for how long and the technical consequences of those actions.

This item remains open pending resolution of the two items identified in report 50-528/83-11 and the additional item identified above regarding the FSAR commitment.

b. (Open) Enforcement Item (50-528/83-02-01) Installation of an Unauthorized Undocumented Weld in the Radioactive Floor Drain System

The licensee responded to the item of noncompliance in letters ANPP-23414-BSK/JAR and ANPP-23583-BSK/JAR dated April 4 and 22, 1983 respectively. The letters state that a six-inch length of pipe containing the weld was removed and replaced as documented on nonconformance report number WA-673. The letters also state that this was considered an isolated case, and that the item would be discussed with all welder foremen.

The inspector examined the replacement pipe and verified the unauthorized weld had been removed.

Discussions were held with responsible licensee personnel and the inspector noted that no evidence had been presented in the inspection report indicating the foreman was aware of the unauthorized weld. Therefore the corrective action of discussing the occurrence with foreman only did not appear adequate. The licensee produced a Bechtel letter dated April 5, 1983, W. J. Stubblefield to the Area General Superintendents and Craft Supervisor which discussed the occurrence. The licensee also produced training session reports for Unit 3 fitters and welders dated April 12, 1983 to April 19, 1983, in which the occurrence was a subject of training. The training was given not only to pipe fitters and welders but also instrumentation welders, civil welders, structural welders, electrical welders, milwrights, and boilermakers.

The licensee had not collected the craft training records for Units 1 and 2 at the time of inspection.

The licensee's response that this was an isolated incident was inferred from the inspection report narrative. At the exit interview licensor management committed to provide rationale to justify identifying the occurrence as an isolated incident.

This item is considered open pending verification of Units 1 and 2 craft training and the provision of rationale to justify identifying the occurrence as an isolated one.

c. (Open) Follow-up Item (50-528/83-02-03) Excessive Force was used to Fitup Piping for Welding

This item was identified as a result of an allegation. The licensee had committed to perform analysis for possible detrimental effects to the piping and heat exchanger resulting from the cold springing (and subsequent release) of the piping. The licensee also committed to assess the degree of confidence they have in general craft adherence to cold springing requirements. The licensee was also requested to assess the degree by which his stress analysis accommodated field cold springing of pipe.

The licensee had not completed his assessments during the time of the inspection. However, at the exit interview, the licensee presented the assessments to the inspector for his review. The information is contained in APS QA document numbers 83-S-86 dated May 5, 1983 and 83-S-83 dated May 2, 1983.

The inspector reviewed this information during the week of May 9, 1983.

1) Analysis for Detrimental Effects to Piping and Heat Exchanger

The licensee's information is provided in Bechtel letter B/ANPP-E-100716, MOC 247660 dated April 4, 1983. The letter states that computer analysis showed the cold springing applied to line EW-001-HBCB-20" produced a stress in the pipe close to the code allowable stress and since the cold springing was relaxed no detrimental effects remain in the piping. The letter also states the stress at the heat exchanger nozzle was well below yield stress and no residual effects remain in the heat exchanger.

On the basis of the information provided the inspector concurs that the piping and heat exchanger are satisfactory in the as left (relaxed) condition.

2) Craft Adherence to Cold Springing

The Bechtel letter states that since the occurrence of such events (cold springing beyond specification allowables) has been relatively small there is a high confidence level that construction is adhering to cold springing requirements.

The APS letters state that a review of APS and Bechtel surveillances and a review of nonconformance reports and a review of allegations received by Bechtel (investigated by APS) led to the conclusion that pipe installation at PVNGS is performed in accordance with approved procedures.

The inspector examined the surveillance reports and nonconformance reports provided. The surveillance reports, covering a period from April 1980 to February 1983, demonstrate that both Bechtel and APS quality assurance personnel had performed approximately monthly surveillances of piping fitup and welding.

No cold springing problems were identified in the reports.

The APS letters state that 4685 nonconformance reports were reviewed and 34 were identified that addressed possible cold springing. The inspector examined the thirty-four nonconformance reports (NCR's) and determined that 24 dealt with items such as pipe misalignment due to weld pull in the process of welding or cold springing observed and reported while in progress. Ten of the NCR's, however, dealt with cold

springing which was inadvertently discovered due to such work as cutting weld joints for modifications, unbolting flanged joints or hanger removal. These ten examples are considered to represent a sample of the conditions that exist undiscovered in other portions of the piping systems.

The inspector noted the 7 of the 10 examples were safety-related.

The safety-related NCR's were PA 4194, PG 3495, PC 3308, PG 3278, PA 2591, PA 2076, and PC 2269.

It was not clear in all cases whether the specification requirements for cold springing were in fact exceeded or whether the QC engineer was simply reporting the cold spring for evaluation. In four cases it can be inferred that the specification was exceeded since the NCR disposition required cutting and rewelding.

The inspector discussed the seven safety-related NCR's with the licensee by telephone on May 13, 1983. The licensee committed on May 18, 1983 to evaluate these NCR's further and to determine any necessary action. The inspector considers that the licensee needs to determine the effects on system operability if the cold springing had not been inadvertently discovered or to demonstrate what other established programs would have discovered the detrimental conditions prior to operation.

Additionally, in regards to craft adherence to cold springing requirements, two aspects of the information provided to the inspector indicated a need for additional craft training. First, the number of incidents of cold springing as demonstrated by the NCR's indicates additional training is warranted. Secondly the interviews of craftsmen conducted by APS as a result of the allegations made to Bechtel show that, of four people asked whether more force was applied than normal, the three mechanics answered more than normal while the foreman considered the force normal.

The fact that the APS and Bechtel letters did not address a need for additional craft training was discussed with the licensee by telephone on May 13, 1983. The licensee committed on May 18, 1983 to consider additional training of craft.

3) Cold-Springing Considerations in Pipe Stress Analysis

The licensee's information is provided in Bechtel letter of April 4, 1983 addressed above. The letter states that the limitations on cold springing placed in the field fabrication specification were based on a closure stress of approximately 1,500 psi for strain-sensitive piping and 3,000 psi for other piping.

This item remains open pending resolution of the analysis of NCR's and completion of craft training discussed in paragraph 2.c.(2) above.

d. (Open) Enforcement Item (50-528/83-02-04) Failure to Provide Pipe Supports for Radioactive Floor Drain Piping

The licensee's response to this item of noncompliance was provided in APS letter ANPP-23414 BSK/JAR dated April 4, 1983. The letter states that pipe supports have been designed and added to the drain lines in Unit 1 and design change packages have been assigned to install the supports in Units 2 and 3. The letter also states that this was an isolated case and, to prevent a similar occurrence, all future piping design changes are being supplied to the pipe stress and pipe support group and are evaluated for the need for pipe supports. From the previous inspection (50-528/83-02) the inspector understood that the pipe support group had not reviewed the cited piping change because they were not involved in the original drawing generation (there were no pipe supports because the majority of floor drain piping is buried in concrete). Therefore, the stated change in review policy appears adequate.

The inspector examined the added pipe supports in Unit 1 for compliance to the design change package, ISS RD 013. The inspector noted two missing welds but further examination revealed the weld omission had been properly authorized on field change request number 57.137 P dated March 7, 1983.

The inspector observed the majority of pipe support material was not specified as ASME SA material as is required for ASME NF supports. Licensee representatives provided the design specifications for nuclear pipe supports. Specification Number 13-PM-209 Revision 6 dated July 18, 1979 which states:

"A member or an assembly of members which is framed between or cantilevered from buildings structural members shall be defined as supporting structure and considered an extension of that building structure and outside the jurisdiction of ASME Section III"

However, the ASME Code, NF-1110, states that supports are:

"those metal supports which are designed to transmit loads from the pressure retaining barrier of the component to the load carrying building structure, whether concrete or structural steel"

The inspector had further questions regarding the Bechtel application of the boundaries of code jurisdiction. These were resolved by telephone contact with NRC, NRR. The NRR representative stated that the Bechtel Code jurisdictional boundary definitions have been the subject of continuing discussion with NRR, ASME and AISC but that there was no basis for disagreement with the Bechtel

position at this time. Therefore the inspector considers his observation resolved.

The inspector requested to see the design calculations for the support and the piping. The licensee committed to obtain and provide the calculations for review.

This item remains open pending review of the piping and support design calculations.

e. (Open) Follow-up Item (50-530/83-03-02) Water Spray used on Welds

This item was identified in report 50-528/83-08 and was examined further in report 50-528/83-11. The licensee had not completed the study committed in report 50-528/83-11. The procedure change committed in report 50-528/83-08 had been completed. General Welding Standard GWS-SN Revision 4 Amendment No. 2 was issued March 25, 1983 and transmitted to the site on April 29, 1983. The change specifies the water quality to be used for cooling stainless steel welds. Therefore, this aspect of the follow-up item is considered closed.

The item remains open pending completion of the study of water spray used on carbon steel welds.

f. (Closed) Follow-up Item (50-528/83-09-02) QC Inspector did not Review Work but Signed Cable Termination Cards

The inspector had previously examined the licensee's procedure for terminating cable as described in QC instruction 255.0. It was determined that assurance for quality of termination work is achieved through separate periodic surveillances of work in process and final inspections of the completed work, required of both the field termination engineer and the QC inspector.

Six electrical QC inspectors were interviewed with regard to any knowledge they had concerning the signing of electrical cable termination cards without first inspecting the terminations. Five of these inspectors had been working at the Palo Verde station at the time the topic of the allegation was to have taken place. A series of questions (prepared in advance of the interviews) was asked of each inspector to determine the step-by-step process they follow in inspecting Class 1E cable terminations, and to determine if they were aware of situations which support the allegation. The interviews determined that the inspectors were well acquainted with the procedures for terminating Class 1E cable as prescribed in the licensee's QC instruction 255.0 and the QC requirements for inspecting cable termination. The additional information learned from these interviews did not support the allegation.

The procedure (QC instruction 255.0) for terminating of cables, including the requirements that both the termination engineer and QC inspector make final acceptance inspections of termination work and attest to such inspections by signing and dating the termination

card, is considered adequate. Based on the above and the fact that the information learned from the interviews of six electrical QC inspectors did not support the allegation, this allegation has not been substantiated; and therefore, is closed.

g. (Closed) Follow-up Item (50-528/83-10-03) Regarding Use of Improper Insulation on High Voltage Terminations

It was alleged that Scotchfill 2200 was used on the insulation of the terminal connections of the power cable to the following pump motors; High Pressure Safety Injection (HPSI), Low Pressure Safety Injection (LPSI), Circulating Water (CW), and the emergency pumps for water intake at the cooling towers. It was further alleged that Scotchfill 2200 is rated at 600 volts and that the Scotchfill 2200 tends to squeeze out of the heat shrink tubing.

1. Background

Normally Scotchfill 2200 (a plyable insulating material) is used as a filler material when insulating an electrical connection. The filler material is used to fill in the void spaces caused by the mechanical connector. The filler material gives shape and smooth contour to the insulated connection. Two half-lapped layers of electrical tape applied over the Scotchfill maintains it in place. Heat shrink tubing pulled over the tape and shrunk in place constitutes the final process of insulating the connection.

2. Findings

The manufacturer of Scotchfill 2200 stated in a telegram; "the dielectric strength of Scotch 2200 vinyl mastic is 225 volts per mil and can be used in 5 Kv applications with no deleterious effects to the materials." The licensee maintains that the Scotch 2200 provides no insulating function but is only a void filler in the insulated 4160 volt connections. Two layers of HVTM tubing (dielectric strength is 140 Kv per centimeter measured at 3 millimeters thickness) and the air spacing provides the insulation.

The allegation indicated that the Scotchfill 2200 was squeezing out of the heat shrink tubing due to the high ambient temperatures. Scotchfill 2200 has a temperature rating of 80 C (176 F). Engineering representatives stated that when this issue came to light in the summer of 1981, Specification Change Notice (SCN) 2826 was issued (September 10, 1981) to change the cable termination procedure, substituting Scotch brand tape 130-C or equal as electrical grade filler. This change replaced Scotch 2200 as insulation filler with Scotch brand tape 130C which has a normal temperature rating of 90 C (194 F) and short duration (overload) temperature rating of 130 C (266 F). Occasionally Scotch 23 self-fusing corona-resistant insulating tape is used as a substitute for Scotch brand tape 130C. Scotch 23 tape has a temperature rating of 90 C (194 F).

The power cable connections for the safety-related pumps; HPSI, LPSI and essential cooling water pump motors were inspected in the field. All of these pumps/motors are located indoors; the HPSI and LPSI pumps are in the basement of the Auxiliary Building and the essential cooling water pumps are in the intake structure building at the spray pond (ultimate heat sink). The circulating water pumps and plant cooling water (PCW) pump are located outdoors at the cooling tower intake and were not inspected because they are not safety-related. The insulation of the connections for the safety-related pump/motors were completed in a good workmanship like manner; the contour of the insulated connections were smooth and without any abrupt irregularities, the shrink tubing was properly shrunk in place, and the ends of tubing were properly sealed. The QC termination record cards for these connections indicate that all of the connections were reinsulated in November/December 1981 or during 1982. This indicates the insulation was done in accordance with the new insulating requirements of SCN-2826 utilizing Scotch brand tape 130C or equal as filler material rather than Scotchfill 2200.

3. Conclusions

It was found that the safety class pump motors for the HPSI, LPSI and essential cooling water (spray pond) systems did not utilize Scotch 2200 as filler material in the insulation of the power cable connections (even though the use of this filler material on these indoor pumps would have been satisfactory). As the use of Scotch 2200 for filler on indoor motors is not identified as a problem, the Scotchfill 2200 with a temperature rating of 80 C (176 F) is felt to represent a problem only when used on outdoor pumps/motors which are subject to the direct rays of the sun. It is conceivable where the ambient temperature can reach 122 F (recorded in 1979) that steel structures/equipment, exposed to the direct rays of the summer sun can rise to 140 F. At this temperature it is reasonable to believe that Scotchfill 2200 might tend to loose its shape and flow.

As identified above, the circulating water and plant cooling water pumps located at the cooling towers intake structure are non-safety-related equipment. However, it was determined that circulating pump motors A and C, and PCW pump motor B were terminated under the revised termination specification which requires the use of Scotch brand tape 130C or equal as filler material in the insulation of the power cable connections at the pump motors.

Based on the above findings the allegations concerning the use of Scotchfill 2200 in the insulating of pump motor cable terminations was substantiated in part. However, it was determined that these finding do not have any safety significance, therefore, this item is closed.

h. (Closed) Follow-up Item (50-528/83-10-04) Regarding Improper Training and Qualification of QC Inspectors

The inspector had previously examined the licensee's training program for qualifying QC inspectors who performed inspections of electrical and instrumentation installations during the construction phase of nuclear power plants.

Ten electrical QC inspectors were interviewed with regards to their qualifications, the on-the-job training they had received, and the types and frequency of classification examinations required for their level of inspection. An agenda of questions (prepared in advance) was asked of each of the ten inspectors interviewed. The agenda questions determined the inspectors level of knowledge with the various codes, standards, specifications and procedures that are used in electrical inspection work. Also the functional work responsibilities for the various levels of inspectors was determined. The interviews determined that the inspectors were well trained and possessed technical training and knowledge to execute the function responsibilities for their assigned level of inspection.

Based on a review of the licensee's training program and the information learned from the interviews of ten electrical QC inspectors, this allegation has not been substantiated, and therefore, is closed.

i. (Open) Follow-up Item (50-528/83-10-02) Improper Splicing of Quality Class Safety-Related Cables

This item was identified in report 50-528/83-10 and was examined in part during the period of the reported inspection, the licensee has committed to assembling a history on all NCR's which deal with the splicing of cables during the cable pulling period for this plant.

This item remains open pending review and evaluation of this history on cable splicing NCR's.

j. (Open) Follow-up-Item (50-528/81-09-01) Seismic Mounting of Battery Room Lighting Fixtures

This item was identified in report 50-528/81-09. The licensee has supplied seismic review/evaluation which demonstrated that pendent mounted lighting supports will not collapse in the event of a safe shutdown earthquake. The licensee has committed to furnish additional information evaluating the consequences of the pendent type fixture swinging and striking an adjacent building structural member during an earthquake.

This item remains open pending review and evaluation of this additional information.

3. Preservice Examination of Welds

As discussed in report 50-528/83-02 the inspector had observed that none of the Class 2 welds from the Safety Injection Tanks to the first check valve in the 14-inch stainless steel piping had been ground smooth in preparation for ultrasonic examination which is required for preservice examination. At that time, the licensee demonstrated that a relief request had been submitted to NRC, NRR.

The NRC response to the relief request was provided by Knighton to Van Brunt letter dated March 25, 1983, which stated that preservice examination of the ECCS piping welds are required to be performed in accordance with the Summer 1975 Addenda of ASME Section XI.

In follow-up to the apparent disapproval of the relief request for ECCS systems, the inspector questioned the licensee's plans for weld examination. The licensee representatives stated that they did not consider the NRC letter required examination of the welds between the SIT tank and the first check valve.

The issue was discussed in a telephone conference call between NRC, NRR, Region V and the licensee on May 17, 1983. The licensee committed to resolve the issue and provide a course of action.

The item is considered open and will be examined in a future inspection. (Follow-up Item 50-528/83-17-01)

4. Safety Injection Tank, Nozzle to Safe-end Weld Radiographs

On May 4, 1982, Combustion Engineering notified the NRC that the welds between the safety injection tank discharge nozzle and safe end were radiographed prior to heat treatment rather than after heat treatment as required by code. Palo Verde Units 1, 2 and 3 as well as WNP-3 and other facilities were affected.

On June 4, 1982, the Washington Public Power Supply System submitted a report to the NRC dealing with unacceptable radiographic film indications on film accepted by Combustion Engineering for the Safety Injection Tanks (SIT's), Reactor Coolant Pump Volutes and Reactor Coolant Pump Motor Supports. The problems reported included improper radiographic technique, process and documentation.

On July 13-15, 1982, NRC Region IV performed an inspection of Combustion Engineering radiographic technique and reported in Inspection Report No. 99900259/82-01 that a review of Combustion Engineering radiographs showed the radiographs and procedure met the requirements of the Code.

The inspector discussed the status of the Palo Verde re-radiographs of the SIT nozzle to safe-end welds and the WNP-3 findings regarding technique with licensee management.

Licensee management informed the inspector on May 6, 1983, that a CE re-review of reactor coolant pump girth welds revealed a linear

indication in or near the weld. The licensee was in the process of evaluating the development and its reportability.

The status of the Palo Verde safe-end weld re-radiography was provided in a CE to APS letter dated May 6, 1983, which states Units 1 and 2 welds had been re-radiographed, reviewed and accepted. Unit-3 SIT tank number 1 was complete and tank 2, 3 and 4 remained to be done.

At the exit interview the inspector informed the licensee that the completion of Unit 3 SIT nozzle to safe-end weld re-radiography would be carried as a follow-up item. Additionally, the licensee committed to consider action to review CE radiographic technique. (Follow-up Item 50-528/83-17-02)

5. Core Support Barrel Lower Forging

The inspector informed licensee management of a problem developing at WNP-3. The Combustion Engineering Core Support barrel lower forging (flex membrane forging) supplied by Standard Steel was found to have linear indications in the flexible membrane which were inadvertently discovered during liquid penetrant examination of an adjacent weld.

The licensee representatives stated that Palo Verde had the same forgings and committed to determine if reexamination of the forgings is required at PVNGS.

This item will be examined further in a future inspection. (Follow-up Item 50-528/83-17-03)

6. Allegations Regarding Coatings (Paint) Records

Background On July 1, 1982, while conducting interviews regarding other allegations, the Office of Investigation investigators received an allegation regarding coating records. This was brought to Region's attention on April 13, 1983. The allegor was recontacted by Region V personnel on May 3, 1983 to clarify the allegation.

Allegation The allegor originally stated that he was concerned whether or not records of coatings for Unit 1, all got placed into the vault. He stated these were all safety-related records. During the reinterview the allegor stated that the coatings field engineer rather than QC was the last person to have the inspection documentation and transfer it to the vault. He did not know of any specific case where documentation was lost. The time frame the allegor was addressing was about 1979.

Findings The allegation was not substantiated.

Discussion The inspector examined the Specifications and Procedures applicable to coatings. The Specification 13AM-314 Revision 4 dated August 5, 1981, "Installation Specification for Surfacing Coating Systems for Concrete" and Procedure WPP/QCI No. 60.0, Revision 9 dated September 10, 1982 "Field Coating" were examined in detail.

The coatings record's requirements are specified in WPP/QCI 60.0 and include special inspection forms for coatings on concrete, coatings on ferrous metal, paint storage records and adhesion test reports. The procedure is not absolutely specific regarding who maintains the inspection forms (CIP's) or who forwards them to the vault. The procedure, Appendix I, Section E states that the CIP shall be maintained by the AFE (field engineer) until final acceptance of block 8.9 is completed. "Block 8.9" is the adhesion test inspection signoff which is signed by QC last. The procedure further states the original of completed CIP's for Quality Class "Q" coating applications shall be forwarded to DCC (the vault) for file. The procedure does not state whether the AFE or QC will do this forwarding.

The inspector obtained a copy of the 1979 version of WPP/QCI 60.0 (Revision 3 dated February 21, 1979) and verified that the documentation instructions in that version were basically the same.

The inspector interviewed the coatings field engineer and lead coatings quality control engineer. Both have been involved in coatings at Palo Verde from the time in question until the present time. Both stated the CIP's were maintained by the field engineers until the final signoff by QC. QC then forwarded the original to the vault. The field engineer stated that he maintained a file of copies of the CIPs in his trailer but that the originals were in the vault.

The inspector observed that the information copies of CIP's were maintained by painting area in the engineers file. The vault copies are maintained by coating type and by date of performance.

The inspector determined that to verify that all original CIPs for a given area were present in the vault would be difficult and not necessarily worthwhile. The nature of coatings application is that areas are coated as they become available, but exceptions such as temporarily inaccessible areas are listed to be coated later. Additionally completed areas sometimes require rework due to modifications including core drilling in coated concrete. Therefore the coatings group depends on area walkdowns to determine the degree of completion of coatings. Walkdowns are required in procedure WPP/QCI 31.0 "Subsystem Transfer/Area Release" Revision 12 dated February 24, 1983. As of the date of the inspection, the Unit 1 "Q" area turnovers have not been accomplished. Therefore, sampling an area for completion would be premature.

In light of the absence of identified examples of missing records by the allegor and the failure of the inspection to identify any indication of missing records this allegation is considered closed.

7. Allegation Regarding Adequacy of Raychem Splicing Kits in Very Hot Arid Conditions at Palo Verde

a. Allegation

"The Raychem Splicing Kit is not adequate to splice under the very hot, arid conditions in which it must be used at Palo Verde."

- b. NRC Findings The allegation was not substantiated.

The Raychem cable splicing kits are being purchased under current Arizona Public Service Purchase Order 10407-13-EM-106B, Revision 3.

The following specified service conditions are identified in the purchase order:

"All cable termination material shall be capable of continuous operation at 90 C (194 F) conductor temperature in a 50 C (122 F) ambient temperature at 100 percent relative humidity with a service life expectancy of 40 years. If 5 and 15 Kv material cannot be qualified for 40 years, then Supplier shall have ongoing qualification program and recommend a maintenance procedure."

The environmental qualification test results for the Raychem splices on file in the licensee's file (as Log No. 13-10407-E106 B-7) are for splices purchased under Purchase Order No. 10407-13-EM-106B. These test results state that:

1. Raychem has performed environmental qualification type testing in accordance with the guidelines of IEEE Std. 323-1974 and IEEE Std. 383-1974 to qualify cable terminations for use on nuclear safety-related (Class 1E) electrical systems for environmental conditions outside the containment building of nuclear generating stations. This qualification package correlates the Raychem environmental test data for high voltage terminations to the specification requirements of the Palo Verde Nuclear Generating Station, Units 1, 2 and 3.
2. The test reports in of this package document testing performed by Raychem on the N-HVT product. The testing documented is submitted to verify the adequacy of the NHVT materials for use on Class 1E circuits outside the containment where the environmental requirements are 40 year life, 90 C (194 F) conductor temperature, 50 C (122 F) maximum ambient temperature, 10-100 percent relative humidity, and a maximum radiation dose over 40 years of 1×10^6 rads.

Upon reviewing the above findings, the allegor was contacted to determine the bases of his allegation. The allegor stated that his allegation was based on the use of Scotchfill 2200 as filler material with the Raychem splicing kits. The use of Scotchfill 2200 as a filler material has already been addressed in paragraph 2g of this report.

Based on the above findings including those findings included in paragraph 2g above (on Scotchfill 2200 used as filler material), the allegation has not been substantiated, and therefore, is closed.

8. Allegations Regarding Prestressing Tendon Installation

Concurrent with the items described in this report, allegations related to prestressing tendon installation were examined and discussed at the

exit interview with licensee management. Due to internal work scheduling, these items will be documented and reported in a separate report.

9. Exit Interview

The inspectors met with the licensee representatives denoted in paragraph 1 on May 6, 1983. The scope of the inspection and the inspectors findings as noted in this report were discussed.