

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-528/83-09, 50-529/83-06, 50-530/83-04

Docket Nos. 50-528, 50-529, 50-530

License Nos. CPPR-141, -142, -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 4-7, 1983

Inspectors:	<u>Albert Young Jr. for</u>	<u>4-14-83</u>
	L. Vorderbrueggen, Sr. Resident Inspector (Const)	Date Signed
	<u>Albert Young Jr. for</u>	<u>4-14-83</u>
	G. Fiorelli, Sr. Resident Inspector (Ops)	Date Signed
	<u>J. Burdoin</u>	<u>4/14/83</u>
	J. Burdoin, Reactor Inspector	Date Signed
	<u>A. Johnson</u>	<u>4/14/83</u>
	A. Johnson, Enforcement Officer	Date Signed
	<u>Albert Young Jr.</u>	<u>4-17-83</u>
	T. Young, Jr., Chief, Reactor Projects Section 2	Date Signed
Approved by:	<u>D. M. Sternberg</u>	<u>4/22/83</u>
	D. M. Sternberg, Chief, Reactor Projects Branch 1	Date Signed

Summary:

Inspection during the period of April 4-7, 1983 (Report Nos. 50-528/83-09, 50-529/83-06 and 50-530/83-04)

Areas Inspected: A special inspection by regional and resident inspectors of allegations made by Mr. Robert Gunderson and Mr. Wallace Royce in affidavits before the Atomic Safety and Licensing Board dated January 8, 1983 and February 25, 1983. The inspection involved 95 hours onsite by 5 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 Manager
- D. B. Fasnacht, Nuclear Construction Manager
- *W. E. Ide, Construction Quality Assurance/Quality Control (QA/QC) Manager
- *G. Pankonin, Startup Quality Assurance/Quality Control Manager
- *J. Kirby, Startup Manager
- *A. C. Rogers, Nuclear Engineering Manager
- S. Penick, QA Engineer
- B. G. Bennett, Test Group Supervisor
- W. Craig, Startup Quality Control Supervisor
- J. Kolski, Startup Quality Assurance Supervisor
- R. Remalley, Instrumentation Startup Engineer

b. Bechtel Power Corporation (Bechtel)

- W. J. Stubblefield, Field Construction Manager
- S. M. Nickell, Project Superintendent
- *R. M. Grant, Project QC Manager
- *D. R. Hawkinson, Project QA Manager
- R. Ruff, Lead, QC Engineer
- J. Pfunder, Project QA Engineer
- W. Miller, Project Field Engineer Manager
- M. Ibnaz, Resident Electrical Engineer
- W. Monson, Resident Control Systems Engineer
- R. Moody, Training Coordinator
- J. Kelly, Engineering Group Supervisor - Electrical
- D. Backholz, Electrical Testing Supervisor

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

*Management Meeting attendees.

2. Allegations of Mr. Robert D. Gunderson

The inspectors examined the affidavit of Mr. Robert D. Gunderson, dated January 8, 1983 and filed in the matter of ARIZONA PUBLIC SERVICE COMPANY, et al. (Palo Verde Nuclear Generating Station, Units 1, 2 and 3) Docket Nos. STN 50-528, 50-529, 50-530, before the Atomic Safety and Licensing Board of the U.S. Nuclear Regulatory Commission. Mr. Gunderson worked as an electrician while employed at the Palo Verde Nuclear Generating Station Unit No. 1.

In addition to the information reported in Region V's inspection report no. 50-528/83-10, the following information was obtained and is reported below in paragraph 3-15:

3. Allegation-One-Bolt Lugs

This item is considered closed. See Inspection Report No. 50-528/83-10.

4. Allegation - Unauthorized Changing of Brackets

Allegation is not specific enough to be inspected, an attempt will be made to recontact Mr. Gunderson for more specific information. This item remains open (83-09-01).

5. Allegation - E. E. Van Brunt's Daughter

E. E. Van Brunt, Jr., is an APS Vice President and the Nuclear Projects Manager and ANPP Project Director directly in charge of construction of the Palo Verde plants. I have been informed by another Bechtel worker that his daughter is a quality assurance ("QA") manager for Bechtel. I understand that she is responsible for the turnover of systems from the constructor, Bechtel, to APS. I believe that a close familial tie such as this between the APS Project Director and Bechtel QA department undermines the independence of the QA program and is in violation of NRC regulations.

Finding:

Ms. Van Brunt first worked for Bechtel as a summer hire during 1980. On May 26, 1981, she was hired as a clerk, and since that time she has been promoted to "Senior Clerk" in the QC welding section. Ms. Van Brunt's job discription is as follows:

Maintain all logs and welding manuals, act as secretary to LWQCE, keep welding files and film up to date (pulling cuts), copy and file all QC welding NCR's, general review of incoming welding documentation, and performs all aspects of general office work.

The supervisors above Ms. Van Brunt are as follows:

- L. Bowles, Lead Welding QC Engineer
- M. Rosen, Assistant Project QC Engineer
- R. Grant, Project QC Engineering Manager

Ms. Van Brunt does not work in Quality Assurance Engineering and has absolutely no responsibility for the turnover of systems from the constructor, Bechtel, to APS.

6. Allegation - Unauthorized Six Four-Inch Pipes

In addition, I was told that NRC inspectors/investigators found six four-inch pipes running from the Auxiliary Building to the main steam building, which did not appear on the design drawings. Evidently, they

were installed at Palo Verde on an ad hoc basis and the basic design drawings were not changed to reflect their installation.

Finding:

All of the inspectors/investigators participating in the inspections/investigations at the Palo Verde site were interviewed by the section chief. All stated that they had not found anything like the six four-inch pipes in the allegation. All stated that if they had, it would have been documented in a report.

7. Allegation - Wrong Size Cables in DC Control Panels

I also observed that the cable pulled for Unit 1 DC Control panels is the wrong size. They did not allow for the voltage drop when the size of cable was determined, $\frac{K \times I \times L}{CM} = \text{Voltage Drop}$. Instead of 24 volts at the device it would only have 15 volts (not enough to operate the device properly). Rather than repair the system they wrote new specifications to solve the problem. I believe this is an emergency shutdown system.

Finding:

The plant protection system consists of the reactor protection system (RPS), the engineered safety feature actuation system (ESFAS), and the supplementary protection system (SPS). In an emergency, the RPS trips the reactor and the ESFAS functions to initiate safety equipment to control the consequences of an accident. The SPS augments the RPS to trip the reactor.

The three systems were reviewed and only the SPS utilizes a 24 volt dc system. This 24 volt system is utilized only internally within the cabinet and not transmitted for any appreciable distance. Further review was conducted, and it was determined that #16 AWG cable is the smallest size cable used in instrumentation transmission at the Palo Verde site. The SPS is a 4-20 milliamp. system. A transmission length from the containment to the control room could run approximately 750 feet. This could result in a voltage drop of approximately 0.13 (1/8) volts in a two wire system (resistance of #16 AWG is 4.10 - 4.26 OHMS/1000 ft.); $V_d = .00426 \times d \times i$.

The ESFAS initially utilized a 28 volt dc system. However, the manufacturer (Electro-Mechanics, Inc.) identified re-energization problems and recommended upgrading the system voltage to 36 volts dc. This modification is presently in process.

The RPS utilizes a 12 volt dc system which like the SPS is not used for the transmission on any instrumentation signals.

Based on the above review, there is no support for the concern of a nine volt drop in a 24 volt dc system of the plant protection system at Palo Verde Unit 1 which will result in failure of device operation.

8. Allegation - Region V Personnel Informed Bechtel of Allegations

The Regional staff has requested that the "Office of Inspector and Auditor" investigate this allegation.

9. Allegation: High and Low Pressure Pumps

"Among the new allegations I made to the NRC was that there were no supports for the QC cables which ran to the high-pressure and low-pressure pumps. In addition, these cables should be placed so that there is no more than 18 inches of free air between them. Instead, there was at least 20 feet of space between the box on the motor for the pump and the last wire support for the cable. This problem should have been detected by quality assurance in October or November 1981, when the work was completed. The electricians who did the work complained about the problem when they hitched up the motors."

Finding:

The cables that the allegor is apparently referring to are those which supply 4.16KV power to the motors which drive the two Containment Spray Pumps. These are two redundant pumps and each motor is supplied by a 3-conductor, 5KV rated cable which is approximately 2½ inches in diameter. The 4.16KV motors driving the two High Pressure Safety Injection Pumps and the two Low Pressure Safety Injection Pumps are supplied by similar cables but, for each of those motors, the cable is fully supported in an expanded metal raceway for its entire run inside the pump room. The raceway in each case ends approximately 15 to 18 inches from the cable connector fitting mounted on top of the motor terminal box.

For the Containment Spray Pump motors, however, the Engineer (Bechtel) identified a different method for supporting the cables. This support system design had not been finalized when the cable terminations at the motor terminals were made (December 3, 1981 for Train A pump and December 7, 1981 for Train B pump).

On June 17 and July 2, 1982, the assigned Quality Control Engineer performed the acceptance inspection of the installations and identified the incomplete support situation. This was documented on Nonconformance Reports (NCR) No. E-A-2118 for Train A pump and No. E-A-2166 for Train B pump, in accordance with the provisions of the approved QA program. On the following day (in each case) the QC inspector affixed his completed red Hold Tag to the cable support structure above each pump motor, also as specified by the QA program. These hold tags were present on October 23, 1982, when the allegor accompanied the NRC personnel into the pump rooms, at which time he voiced his concern about the supports. (The NRC Resident Inspector climbed up and read aloud the recorded NCR number on both red Hold Tags to the allegor to make sure he understood that the "problem" had been identified, was not being ignored, and was being resolved).

Each NCR identified and quoted the relevant specification requirement, i.e., Paragraph 1.10 of Drawing 13-E-ZAC-050, Rev. 13, Conduit & Tray Notes, Symbol & Details. Paragraph 1.10 states:

"The maximum distance for unsupported cable (excluding manholes) in free air shall be 18 inches horizontally and 24 inches vertically, total distance shall not exceed 24 inches when more than one direction is involved unless raceway design drawings specify a larger unsupported span."

Both NCR's were dispositioned by Bechtel Field Engineering by means of Field Change Request (FCR) No. 42.456E and No. 42.444E, both dated July 9, 1982. The FCR's were given final approval by the Bechtel Resident Engineer on July 19, 1982. Each FCR provides for additional unistrut hardware and clamps to meet the engineering functional requirements. At the time of the alleged's visit to the plant on October 23, 1982, the FCR identified rework of the supports had not yet been started. However, the work has since been accomplished. Based on the facts and circumstances in this matter, this allegation has no particular substance and is without merit.

10. Allegation: Pipe Brackets in Control Room Building

"Another allegation I made to the NRC in October 1982 was that the seal-tight for pipe brackets in the Control Room Building were carrying the weight of pipes in the place of a real support for the pipes. The workers had put in cosmetic brackets instead of raising the pipe to the real brackets to take the weight of the pipes off the seal-tight. The electricians had terminated the wires when the pipe was down. Therefore, when the pipe was pushed back up, our electrical work was ruined."

Finding:

On October 23, 1982 the alleged led the NRC representatives into the Unit 1 Control Building and identified the location of the alleged problem. The location was at the 100 ft. elevation (ground floor) and the identified equipment was cubicle no. S048 of 4.16KV switchgear-Train B. This cubicle houses the circuit breaker which connects power from Diesel Generator B to the Train B switchgear. The "pipes" to which the alleged refers are the three 4 inch conduits which carry the "wires" (9 - single conductor, 500 KCM size power cables) into the cubicle. The "seal-tight" referred to is the trade term given to the short (approximately 24 inches), plastic conduit segment which provides the desired flexible connection between each rigid conduit and the switchgear structure.

When the alleged and the NRC representatives examined the installation on October 23, 1982, the three 4 inch conduits were observed to be temporarily supported from the building structure overhead by the use of portable chain hoists. It was also obvious that work had been started on the installation of the permanent support (not a "cosmetic" support) at the end of the horizontal portion of the conduit run. The vertical segment of the run just above the switchgear entry also was required by specification to have a permanent support; it was not present on October 23, but has since been installed. Another factor to be considered is the

minimal compressive strength of the seal-tight flexible conduit and its consequent inability to provide any substantial support for the 4 inch conduit. A conservative calculation demonstrates that, in the absence of any support for the conduit and enclosed cables after the last permanently installed support, a vertical weight of approximately 400 pounds would be imposed on the flexible conduit. It is not possible for the flexible conduit to accommodate this loading and would compress under the imposed weight.

Disregarding the foregoing considerations, the allegation states that "when the pipe was pushed back up, our electrical work was ruined." The facts are that the nine cables were connected to the terminals (terminated) during the period June 12-19, 1981, and there has been no rework performed on them since that time. Final acceptance inspection by the assigned QC Engineer was performed on April 14, 1982. In addition, the NRC inspector had the cubicle cover removed and examined the cable terminations on April 6, 1983: the workmanship appeared most satisfactory and there was no evidence of the cables having moved upward after they were terminated. Also relevant to this matter is the fact that these cables have been satisfactorily energized at the rated 4.16KV during the currently on-going Unit 1 preoperational check-out program. Based on the foregoing facts, this allegation has no substance and is without merit.

11. Allegation - Core Drill Hole Thru Concrete Wall Struck Pipe

This item is considered closed. See Inspection Report No. 50-528/83-10.

12. Allegation - Unqualified QA/QC Personnel

From November 1981 to February 1982 Bechtel hired unqualified QA/QC personnel from Brown & Root at the South Texas plant. They brought these employees, including engineers, to Palo Verde. After two to four months Bechtel sent them back to South Texas as Bechtel workers and told the NRC they were qualified QA/QC personnel. I believe that the only training given these employees was to have them walk around the Palo Verde site with other engineers to see how work was being done at Palo Verde.

Finding:

The Project QC engineer was interviewed and he had no knowledge of QC personnel coming to this site during that time frame.

The Project QA engineer was interviewed and he also had no knowledge of QA personnel hired from the South Texas Project and returning two to four months later. He stated that during the time frame in question two or three QA engineers were hired from the South Texas Project but they never went back and are still working at the Palo Verde site.

The Field Construction Manager was interviewed about the allegation and the personnel records were reviewed. This effort revealed that five graduate engineers were hired from Brown & Root and were sent to Palo Verde on a six month temporary assignment. Three of the engineers were subsequently returned to the South Texas project and the two remaining at

Palo Verde were assigned to Project Field Engineering. Approximately 30 engineers from Brown and Root were interviewed by Bechtel but only five hired and sent to Palo Verde. The inspectors were informed that this was the time frame that Bechtel took over the South Texas Project from Brown & Root.

13. Allegation - Signing of Termination Cards

This item is considered closed. See Inspection Report No. 50-528/83-10.

14. Allegation - QC Did Not Review Work but Signed Cards

Some quality control inspectors would not actually review the work they were assigned to review. If they knew you or your work, you could bring them a large stack of cards and they would sign them all without reviewing the work itself. The turnover of quality control inspectors was very high.

Finding:

The turnover of electrical quality control inspectors can best be understood by examining the number of inspectors employed during the year and the number that terminated. The monthly average inspectors employed during 1981 and 82 were 24.5 and 29.25 respectively. Four inspectors terminated during 1981 and seven during 1982. Terminations on percentage basis for the year amounts to 1.4% for 1981 and 2.0% for 1982. These figures do not support the statement that, "The turnover of quality control inspectors was very high."

The licensee's procedures for terminating cable is described in QC instruction 255.0. The cable termination process is as follows: The termination cards (the control & tracking device) arrive in the field through the field termination engineer (TE) and the termination foreman. The TE provides technical guidance and surveillance during the cable termination process. While the terminations are in process, the QC Inspector makes periodic surveillances of the termination work. Upon completion of the termination work, the cards are returned through the foreman to the field termination engineer. The TE indicates complete acceptance of the work with his signature and dates the acceptance card. The QC inspector upon receipt of the termination cards from the TE, makes a final one hundred percent acceptance inspection of the terminations. Final acceptance of class I terminations is signified by the QC inspector's signature and date. A final review of the termination cards is made by the lead QC inspector who also signs and dates the cards.

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.

This item remains open (83-09-02).

15. Allegation - NRC Resident Inspector Statement

The NRC resident inspector told me that two Bechtel senior QA managers told him that he should listen to my allegations because I knew what I was talking about.

Finding:

The resident inspectors were interviewed by their section chief. Each stated that he had never made such a statement to Mr. Gunderson. Each stated that no Bechtel senior QA manager had ever made such a statement to him.

16. U. S. Department of Labor Action, Case No. 83 - ERA-3

Subsequent to Bechtel Power Corporation terminating the employment of Mr. Wallace Royce on November 18, 1982, Mr. Royce filed a complaint with the U. S. Labor Department, pursuant to the Energy Reorganization Act of 1974 42 U.S.C. 5851 and regulations in 29 CFR Part 29. This action was initiated after a discussion of the matter with an NRC employee who advised Mr. Royce of the roles and authorities of the Department of Labor and the Nuclear Regulatory Commission in matters involving alleged discrimination against employees who informed the NRC of activities on matters involving a possible adverse safety consideration in the construction, testing or operation of a nuclear reactor.

Following a determination by the Employment Standards Administration, Department of Labor that Mr. Royce was entitled to relief, and, thus should be reinstated to his former job, Bechtel Power Corporation requested a formal hearing on the matter which was held on January 27, 28 and 31, 1983.

In the matter of Wallace Royce, Complainant, vs Bechtel Power Corporation, Respondent, Petitioner, before the U. S. Department of Labor, Office of Administrative Law Judge, Washington D.C. 20036, the Honorable Judge Reno E. Bonfonti found that (1) Complainant was an employee of Respondent for purposes of the protected conduct provisions of the Act, (2) Complainant was engaged in protective activity at the time of his discharge, and (3) the Respondent has sustained his burden of persuasion that termination would have occurred even in the absence of the protective conduct. The recommended order of the Judge dated March 24, 1983 is that the complaint of Wallace Royce be dismissed with prejudice. This recommended order should shortly become the order of the U.S. Secretary of Labor. After entry as a final order, the Complainant has 60 days to seek relief in the U.S. Court of Appeals.

17. Allegations of Mr. Wallace R. Royce

The inspectors examined the affidavit of Mr. Wallace R. Royce, dated February 25, 1983 and filed in the matter of ARIZONA PUBLIC SERVICE COMPANY, et al. (Palo Verde Nuclear Generating Station, Units 1, 2 and 3) Docket Nos. STN 50-528, 50-529, 50-530, before the Atomic Safety and Licensing Board of the U.S. Nuclear Regulatory Commission. Mr. Royce performed prerequisite electrical tests while employed at the Palo Verde Nuclear Generating Station Unit No. 1.

In addition to the information reported in Region V's inspection report No. 50-528/82-32, attached to Mr. Royce's affidavit, the following information was obtained and is reported below:

a. Prerequisite and Preoperational Test Programs

A description of the separate prerequisite and preoperational test programs being implemented at the Palo Verde Nuclear Generating Station have been described in the APS and Bechtel program documents. The purposes of the separate areas follows:

b. Prerequisite Test Program

Prerequisite testing encompasses all testing activities commencing at the completion of construction and ending with the system release to Arizona Public Service (APS) for preoperational testing. These tests consist of, but are not necessarily limited to, initial instrument calibration, flushing, cleaning, wiring continuity checks, hydrostatic pressure checks and functional tests of components. The tests essentially verify that construction activities associated with the respective structures, systems and components have been satisfactorily completed and make ready the various systems for preoperational testing by APS.

c. Preoperational Test Program

Preoperational testing is performed by APS to demonstrate that the plant structures, systems, and components (SSC) operate in accordance with the design operating modes and throughout the full operating ranges in so far as is practicable and under prevailing conditions. Where necessary, artificial signals or other inputs are utilized to simulate the predicted conditions to which the SSC will be expected to respond, and under which the SSC may be expected to function. As required, integrated component testing is performed on selected groupings of components to ensure proper correlation of integrated functions prior to actual preoperational testing. Testing is sequenced on a system or sub-system basis in a manner that precludes reliance upon supporting or auxiliary systems untested or unproven capabilities. As tests are completed, test results are analyzed to verify that SSC are capable of performing satisfactorily, or if not, to provide the basis for recommended corrective action(s). The NRC inspection program primarily relies upon satisfactory performance of the SSC's preoperational tests to verify that SSC's will operate and function as described in the

licensee's Safety Analysis Report which provides the basis for issuance of an operating license for the plant.

18. Training

The following information was obtained from a review of training records:

- a. Records indicated that Mr. Royce had completed the following program and administrative control procedures reading assignments:

ANSI 45.2.6 - 1978 Qualifications of Inspection,
(AD 109) Examination and Testing Personnel for
Nuclear Power Plant

10CFR 21, Rev. 2 Report of Defects and Noncompliance
and QA Standard 7.8 (Bechtel
procedure)

10 CFR 50 Appendix B Quality Assurance Criteria for Nuclear
18 Point Criteria Power Plants
(AD 125, 126)

10 CFR 50.71 Maintenance of Records, Making Reports
(AD 117)

Final Safety Analysis Startup and Test Program
Report 14.2, Vol. 10

AD 100 Prerequisite Test Program

AD 101 Startup Activities Interface

AD 108 Prerequisite Testing

AD 102 Prerequisite Test Program Procedure Preparation Review and
Approval

AD 103 System Turnover

AD 123 Testing Release

AD 112 Measuring and Test Equipment

AD 105 Startup Work Permits

AD 116 Review Evaluation and Approval Test Results

AD 117 Document Control

AD 104 Clearances

AD 120 Equipment Interchange

AD 115 Temporary Modification

AD 110 Startup Nonconformance
 AD 113 Startup Field Reports
 AD 118 Cleanliness Verification and Control
 AD 127 System Cleanliness Verification
 AD 128 Startup Cleanliness Program
 AD 107 Scheduling
 AD 114 Scoping
 AD 125 Quality Control Program
 AD 126 Startup Quality Inspection
 AD 111 Design Change Packages
 AD 106 Master Tracking System
 AD 119 Vendor Monitoring
 AD 121 Maintenance and Repair

The individual shown as Mr. Royce's Supervisor and who has signed Mr. Royce's reading list is no longer at the site. However, he was contacted by telephone and informed the inspectors that he had never directed anyone to sign off on any training records unless the training had been completed.

- b. Records indicated that Mr. Royce had received personal instruction or attended the following technical and administrative control course sessions:

EG 204.1 AC Motor Testing
 EG 203.2 MCC Cubicle Test
 EG 212.1 Battery System Checkout
 EG 208.1 Agastat Time Delay Relay Test
 EG 211.4 Control Circuit Initial Functional Test, 13.8/4.16 KV
 Switchgear (twice)
 EG 211.1 Control Circuit Initial Functional Test, 480 V Load Centers
 EG 211.1 (REV. 1) Control Circuit Initial Functional Test, 480 V
 Load Centers
 EG 201.3 Low Voltage Breaker Testing Frame Size 225 thru 600

EG 205.1 Motor Operated Valve Test for Limitorque Rotork and EIM Valves

EG 214.1 Meter Test (Voltmeter - Ammeter)

EG 203.1 Switch Gear, Load Center, and AC/DC Motor Control Center Bus Physical Checkout

EG 200.2 (Rev. 1) Control & Power Cable Installation Verification

EG 202.2 Liquid Gas Insulated Power Transformers

AD 112 (Rev. 2) Measuring & Test Equipment Control

AD 104 (Rev. 2) Clearance Procedure

AD 117 (Rev. 2) Document Control

AD 115 Temporary Modification Controls

AD 113 Startup Field Report

AD 110 Startup Nonconformance Report

The inspector discussed Mr. Royce's training with his previous supervisor Mr. D. Buckholz, Mr. Buckholz informed the inspector that he recalls Mr. Royce as having expressed problems on a couple of technical procedures. His approach to helping in situations like this was to have him get together with a test engineer who was familiar with the procedure and to work together on the individual's problems. Mr. Buckholz stated there were other test directors who were treated in this manner. Mr. Buckholz emphasized that he did not tell Mr. Royce to sign procedures if he was not capable of doing a test.

A review of eighteen prerequisite tests completed by Mr. Royce disclosed that except for two, the tests had utilized procedures for which records indicate Mr. Royce had received individual or group instruction. The test exception utilized two test procedures "Control Circuit Initial Functional Test" similar to two other procedures in such records indicate he had received instruction.

- c. A roster of 60 electrical prerequisite test directors brought on the project by Bechtel during the period of September 15, 1982 showed all as having been certified as required by procedure. The inspector was informed that those electrical test directors still on site had completed reading assignments of program and administrative control procedures even though the records of individuals were not available on file (a fifth mechanical prerequisite test director's reading assignment also was not on file). The inspector was informed by the training coordinator that these individuals had been contacted and they had stated that they had completed their reading assignments. The inspector contacted four of the individuals who in turn stated to the inspector that each had completed the required

reading assignments. Their records are assumed to have been lost and will be replaced. In addition to the reading assignments all had received course instruction on some of the administrative controls and technical procedures, however, the courses varied with individuals. The applicant stated that in the future, minimum instructions in administrative controls would be better defined and new hires would be required to receive classroom and/or on the job training on these courses prior to directing any testing. In addition the applicant will review training histories of test personnel on site and confirm that either the individual received course or on the job training or that he was familiar with the defined required administrative controls.

19. Royce Concern of November 16, 1982

The inspector contacted Mr. Buckholz in connection with comments made by Mr. Royce which were related to a test he was involved with on November 16, 1982. This test was associated with a functional check of a single 5 wire power supply circuit to the plant remote multiplex power system, a nonsafety related system. A review of Mr. Buckholz's daily shift report shown the prerequisite test as having been assigned to Mr. Pai earlier in the month. On November 16 it appeared as a test in Mr. Royce's test inventory list.

The total system is a very complex computer system which primarily functions to monitor and relay signals to the 13.8KV system in the switch yard from the control room. It has other nonsafety functions and had given considerable problems during initial testing. As a result the designer, Teledyne, was called in to conduct the testing of the system. Because of this, previously conducted functional tests were voided. The inspector also contacted APS QA/QC about the November 16, 1982 matter. APS QA/QC representatives recall having been contacted by Mr. Royce in connection with his concern at about that time. At the time Mr. Royce's concern dealt with the possibility of underrated cabling and incomplete cable installation associated with a test package having been worked on by Mr. Pai who is no longer on the project. APS QA/QC representative stated that the followup of the matter included a check of the design requirements for the cable rating and inspection of the cable installation. They concluded that the circuit was properly rated and complete and could have been tested. An APS representative stated he contacted Mr. Royce by phone and informed him of the findings and planned to meet with Royce, however, Mr. Royce's employment had been terminated before the meeting could be held.

20. Exit Interview

The inspectors met with the licensee representatives denoted in paragraph 1 on April 7, 1983. The scope of the inspection and the inspector's findings as noted in this report were discussed.