

U. S. NUCLEAR REGULATORY COMMISSION
REGION V

Report Nos. 50-528/85-17, 50-529/85-19, and 50-530/85-13

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

License No. NPF-34

Construction Permit Nos. CPPR-142 and 143

Licensee: Arizona Nuclear Power Project
Post Office Box 52034
Phoenix, Arizona 85072-2034

Facility Name: Palo Verde Nuclear Generating Station Unit Nos. 1, 2, and 3.

Inspection Conducted: April 28 - June 29, 1985

Inspectors:

J. H. Miller
G. H. Hernandez, Senior Resident Inspector

7-19-85
Date Signed

J. R. Ball
J. R. Ball, Resident Inspector

7-19-85
Date Signed

Approved By:

L. F. Miller
L. F. Miller, Chief
Reactor Projects Section No. 2

7-19-85
Date Signed

Summary:

Inspection from April 28 - June 29, 1985 (Report Nos. 50-528/85-17, 50-529/85-19 and 50-530/85-13).

Areas Inspected: A routine, onsite inspection by the Construction Resident Inspectors of activities related to the as-built configuration and documentation of the Unit 2 Main Steam Supply System, observation of Unit 2 work activities related to safety related components and piping, review of quality records related to safety related components, investigation of Allegation No. RV-85-A-006 and close out of NRC Temporary Instruction No. 2512/11.

The following I.E. Manual Chapters were utilized during this inspection: Module Nos. 37501, 49065, 50074B, 50075B and 50075.

The inspection involved 468 inspector hours on site by two NRC Resident Inspectors.

Results: In the areas inspected, no deviations or violations of NRC requirements were identified.

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DETAILS

1. Persons Contacted

a. Arizona Nuclear Power Project (ANPP)

E. E. Van Brunt, Jr., Executive Vice President
J. G. Haynes, Vice President, Nuclear Production
D. B. Karner, Assistant Vice President, Nuclear Production
*J. R. Bynum, Plant Manager
W. E. Ide, Corporate Quality Assurance Manager
D. B. Fasnacht, Nuclear Construction Manager
W. F. Quinn, Licensing Manager
A. C. Rogers, Nuclear Engineering Manager
*L. A. Souza, Assistant Corporate Quality Assurance Manager
*C. N. Russo, Quality Assurance Audits/Monitoring Manager
D. E. Fowler, Quality Control Manager
T. A. Shriver, Quality Systems Engineering Manager
R. J. Burgess, Field Engineering Supervisor
S. G. Penick, Quality Assurance Monitoring Supervisor
J. C. Sherrin, Quality Document Review Group Supervisor
A. T. Ramey, Quality System Supervisor
K. R. Daley, Quality Assurance Engineer
M. L. Provost, Quality Assurance Engineer
*W. W. Montefour, Quality Assurance Engineer
D. M. LeBoeuf, Quality Assurance Engineer
H. L. Green, Quality Assurance Engineer
W. J. Gratza, Quality Assurance Engineer
*T. J. Bloom, Licensing Engineer

b. Bechtel Power Corporation (Bechtel)

W. J. Stubblefield, Project Manager
S. M. Nickell, Project Superintendent
W. G. Bingham, Project Engineering Manager
*J. L. Black, Chief Resident Engineer
T. L. Horst, Project Field Engineer
*D. R. Hawkinson, Project Quality Assurance Manager
*H. A. Foster, Project Quality Control Engineer
H. A. Mear, Assistant Project Quality Control Engineer
J. Waddington, Assistant Project Quality Control Engineer
R. Ruff, Lead Electrical/Instrumentation Quality Control Engineer
G. Griffin, Lead Civil Quality Control Engineer
*W. A. Miller, Construction Engineer
*W. P. Murphy, Project Superintendent

c. The Waldinger Corporation (TWC)

R. R. Strait, Project Engineer

*Denotes personnel attending the NRC Exit Management Meeting conducted on June 28, 1985.

The inspectors also talked with other licensee and contractor personnel during the course of the inspection.

2. Plant Status

Unit One: Testing is in progress with Unit 1 at the 20% power plateau.

Unit Two: Unit 2 is undergoing precore Hot Functional Testing. Fuel Load for Unit No. 2 is scheduled for December 1985.

Unit Three: All major components and equipment have been installed. Unit 3 has a scheduled fuel load date of March 1987. Construction completion of Unit 3 is estimated at 95% by the licensee.

3. Review of As-Built - Unit No. 2

As-Built Verification

This inspection compared the as-built condition of portions of the Unit No. 2 Main Steam Supply System, with design, installation and quality assurance documents.

A. Areas Reviewed:

1. Piping System Installation

The following documents and areas were reviewed: piping and instrumentation diagrams, piping and instrument sensing line plans and isometrics, large and small pipe installation control cards, valve installation records and completed construction inspection plans for instrumentation installations. The physical inspection of the piping and sensing line runs included location, size and configuration, support type and location, and valve location and orientation. The installation of the following pipe spools and associated pipe supports (totaling approximately 300 feet of piping for the Main Steam Supply System located in the MSSS Building) was examined:

<u>Pipe Spool Numbers</u>	<u>Description</u>
2-SGE-206-S001	28" Main Steam Line
2-SGE-207-S001	28" Main Steam Line
2-SGE-208-S001	28" Main Steam Line
2-SGE-209-S001	28" Main Steam Line
2-SGE- 95-S003 through S006	4" Main Steam Bypass Line
2-SGE-100-S003 through S006	4" Main Steam Bypass Line
2-SGE-192-NOOA through NOOD and NOAA	1" Main Steam Line Drain
2-SGE-194-NOOA through NOOD and NOAA	1" Main Steam Line Drain

The installation of the following valves was examined:

<u>Valve Numbers</u>	<u>Description</u>
2JSGE-UV-170, 171, 180, 181	Main Steam Isolation Valves
2JSGE-UV-169 and 183	Main Steam Isolation Bypass Valves
2JSGE-UV-1135A and B	Main Steam Drain Isolation Valves
2JSGE-PSV-554 through 561, 572 through 579, 691, 692, 694 and 695	Main Steam Safety Relief Valves

The installation of sensing lines for the following instruments was also examined:

<u>Instrument Tag Number</u>	<u>Description</u>
2JSGA-PT-1023A	Steam Generator #2 Pressure -Channel A
2JSGB-PT-1023B	Steam Generator #2 Pressure -Channel B
2JSGC-PT-1023C	Steam Generator #2 Pressure -Channel C
2JSGD-PT-1023D	Steam Generator #2 Pressure -Channel D
2JSGB-LT-1023B	Steam Generator #2 Wide Range Level -Channel B
2JSGB-LT-1024B	Steam Generator #2 Narrow Range Level -Channel B
2JSGD-LT-1123D	Steam Generator #2 Wide Range Level -Channel D
2JSGD-LT-1124D	Steam Generator #2 Narrow Range Level -Channel D

No deviations or violations of NRC requirements were identified.

2. Electrical System Installation

The following documents and areas were reviewed: elementary and cable block diagrams, instrument loop diagrams, cable code and cable scheme numbers, single line diagrams, cable type and identification, including separation color and cable markers 580 computer program sorts for routing, identification of cables at tray points, and size and type of cable, physical separation criteria, including raceway and tray designations, conduit and tray arrangement drawing, raceway installation cards, cable installation cards, and cable installation specifications. The physical inspection of the cable runs included a determination of size, type, routing, protection, separation, identification, loading, cable supports and cable spacing. The actual cable installation and routing was compared to the design as determined from the E580 computer program and the cable installation cards.

The installation of the following power, control and instrument cables for the Main Steam Supply System were examined:

<u>Cables</u>	<u>Equipment/Instrument</u>	<u>To Location</u>
2ESG23AC1RD	Main Steam Isolation Valve (MSIV) 2JSGE-UV-170	Main Steam and Feedwater Isolation Actuation System (MSFIS) Cabinet 2JSGAC01
2ESG23AC2RD	MSIV 2JSGE-UV-171	
2ESG23AC3RD	MSIV 2JSGE-UV-180	
2ESG23AC4RD	MSIV 2JSGE-UV-181	
2ESG23BC1RD	Main Steam Isolation Valve (MSIV) 2JSGE-UV-170	Main Steam and Feedwater Isolation Actuation System (MSFIS) Cabinet 2JSGBC01
2ESG23BC2RD	MSIV 2JSGE-UV-171	
2ESG23BC3RD	MSIV 2JSGE-UV-180	
2ESG23BC4RD	MSIV 2JSGE-UV-181	
2ESG23AC 1 to 4 RG	MSFIS Containment 2JSGAC01	Engineered Safety Features Actuation (ESFAS) Auxiliary Relay Cabinet 2JSAAC01
2ESG23BC 1 to 4 RG	MSFI Containment 2JSGBC01	ESFAS Auxiliary Relay Cabinet 2JSABC01
2ESG58AC1 XA and XE	MSIV 2JSGE-UV-170 Accumulator Pressure A-PT-229	Instrument Cabinet ZJA-C02B
2ESG58AC1 XA	MSIV 2JSGE-UV-171 Accumulator Pressure A-PT-233	"
2ESG58AC1 XB	MSIV 2JSGE-UV-180 Accumulator Pressure A-PT-231	"
2ESG58AC2 XB and XF	MSIV 2JSGE-UV-181 Accumulator Pressure A-PT-235	"
2ESG72BC1 XA and XE	MSIV 2JSGE-UV-170 Accumulator Pressure A-PT-230	Instrument Cabinet ZJB-C02A
2ESG72BC2 XA and XE	MSIV 2JSGE-UV-171 Accumulator Pressure A-PT-234	"
2ESG72BC1 XB and XF	MSIV 2JSGE-UV-180 Accumulator Pressure A-PT-232	"
2ESG72BC2 XB and XF	MSIV 2JSGE-UV-181 Accumulator Pressure A-PT-236	"
2ESG63DC1 XA and XB	Steam Generator #1 Pressure Channel D- D-PT-1013D	Electrical Penetration Assembly 2ESPDZ77I

2ESG63DC1 XA Steam Generator #2
and XB Pressure Channel D-
D-PT-1023D

No deviations or violations of NRC requirements were identified.

B. Applicable Specifications and Procedures

The following specifications and Work Plan procedures/Quality Control Procedures (WPP/QCI) governing the installation of piping, instrumentation and electrical cables were reviewed during this inspection:

. 13-PM-204	Specification for Field Fabrication and Installation of Nuclear Piping Systems
. WPP/QCI 202.0	Piping Systems Installation
. 13-EM-300	Installation Specification for Electrical Cables in Cable Trays
. 13-EM-301	Installation Specification for Electrical Cables in Conduit and Duct Banks
. 13-EM-303	Installation Specification for Electrical Cables and Raceway Identification
. WPP/QCI 251.0	Raceway Installation
. WPP/QCI 254.0	Cable Installation
. 13-JM-702	Installation Specification for Electrical Instruments and Controls
. WPP/QCI 302.0	Instrument Installation
. WPP/QCI 20.0	Field Change Request
. WPP/QCI 22.0	Design Change Package

No deviations or violations of NRC requirements were identified.

C. Findings

The inspector reviewed three design change packages (DCP's) as they related to documenting the as-built condition of the plant. The following DCP's were reviewed:

DCP 2SMSG-069	Installation of Additional Main Steam Line Drain Lines
DCP 2SJSB-021	Revised Condensate Pot Installation for Safety-Related Instrument Sensing Lines.
DCP 2SESB-033	Cable Splices inside Containment Penetrations for Post-Accident Monitoring Instrumentation

The inspector found the as-built condition of the plant did reflect the implementation of the approved changes. The inspector noted, however, that DCP 2SMSG-069 had not been reviewed by the Project Quality Assurance Engineer prior to its implementation as required. The change did affect safety-related piping and instrumentation diagrams. The licensee informed the inspector that this problem had been previously identified and corrective action was

currently being taken under Corrective Action Request (CAR) PVH52/85-09A dated April 22, 1985. The inspector stated that this corrective action appeared adequate to resolve this discrepancy.

The inspector also reviewed nonconformance reports (NCR's) and field change request (FCR's) as they related to documenting the as-built condition of the plant. Note 10 of piping isometric 13-P-SGF-155 required specific clearances be maintained around the main steam isolation valves to accommodate the thermal and seismic movements of these valves. FCR 85463-C dated November 9, 1984, was written to notch a W12x40 structural beam which was found to interfere with the movement of main steam isolation valve 2JSGE-UV181. Startup Field Report (SFR) number 25G-6014 was written May 24, 1985, and indicated that the interference still existed. FCR 91167-M was written to increase the size of the notches to alleviate this problem. Although the interference problem was eventually resolved satisfactorily, the licensee failed to document this problem using a nonconformance report. This should have been done since the installation of the valve had been accepted by Quality Control on September 9, 1983, as having been installed in accordance with piping isometric 13-P-SGF-155. The use of FCR's in lieu of NCR's has been previously addressed in NRC inspection report 50-528/84-39. The inspector reviewed the current status of the licensee's actions relating to a commitment made by the licensee to assess the current use of FCR's and the effectiveness of past corrective action (Ref. Followup Item 50-528/84-39-01). Corrective Action Request, CAR PVH 4/84-26A was written December 14, 1984, and addresses this concern over the current use of FCR's. As of this report, the above CAR remained open awaiting additional investigation into the extent of this problem and definition of corrective action which may still be required. Followup item 50-528/84-39-01 remains open until the licensee has completed actions related to close out of this CAR.

No deviations or violations of NRC requirements were identified.

4. Safety Related Components - Unit No. 2

a. Observation of Work and Work Activities

The inspector observed completed work on nine components within the reactor coolant pressure boundary and on four components located outside the reactor coolant pressure boundary. The inspection determined that the components selected met the applicable requirements for storage, handling, installation and protection after installation. The following components were selected:

1. Reactor Coolant Loop Piping and Valves.

<u>Valve Number</u>	<u>Loop Number</u>	<u>Serial Number</u>
o 2PCHEV431	009	28632
o 2PCHVAM41	520	4903AAL
o 2JCHAHV205	520	4
o 2JCHBHV203	521	3

Piping Subassembly

- o 2CH009N00A-0
- o 2CH520N00A-1
- o 2CH520N00B-1
- o 2CH520N00C-0
- o 2CH520N00A-5

2. Other Safety System Components

<u>Valve Number</u>	<u>Line Number</u>	<u>Serial Number</u>
o 2JCHAHV524	2CH-003	26978
o 2PCHEVM70	2CH-015	74379
o 2PCHEVM76	2CH-015	NAK-62
o 2PCHBV331	B259	51321

No deviations or violations of NRC requirements were identified.

b. Review of Quality Related Records

The inspector reviewed the pertinent records for these safety related components to assure that the records reflected work accomplishment consistent with NRC requirements and SAR commitments. The inspector reviewed the following records for each of these components.

- o Code Data Packages
- o Construction Inspection Plans (CIP)
- o Nonconformance Reports (NCR)
- o Modification Change Notices (MCN)
- o Certified Material Test Reports (CMTR)
- o Field Change Requests (FCR)
- o NDE Reports
- o Torquing Sheets
- o Records of Internal Cleanliness Checks
- o Receipt Inspection Records
- o Storage Inspection Records

No deviations or violations of NRC requirements were identified.

c. Review of Quality Assurance Audits

Three of the licensee's most recent audits associated with safety related components were reviewed. The following audits were examined.

- o Quality Assurance Audit Report Number 84-034
- o Unscheduled Project Quality Audit Number UA-84-56
- o Joint Bechtel/APS Audit Number 62-S-85-10

The audits were found to appropriately identify and resolve audit findings in accordance with the licensee's audit program.

No deviations or violations of NRC requirements were identified.

d. Qualification of Quality Control Inspectors

The qualification of eight mechanical, three receiving, and nine welding Quality Control Inspectors were reviewed. The records were reviewed for education, work experience prior to certification, eye examinations, training received and other pertinent data. In all cases, the qualification of the inspectors met or exceeded the qualification requirements of ANSI N45.2.6-1978.

No deviations or violations of NRC requirements were identified.

5. Safety Related Piping - Unit No. 2

Review of Quality Records

The inspector reviewed the pertinent records for the following safety related piping components to assure that the records reflect work accomplishment consistent with NRC requirement and SAR commitments.

<u>Drawing Number</u>	<u>Spool Number</u>	<u>Hanger Number</u>
13-P-SIF-103	5005	2-SI-193-H017
13-P-SIF-105	5004	2-SI-193-H007
13-P-SIF-105	5006	2-SI-240-H007
13-P-SIF-105	5007	2-SI-240-H010
13-P-SIF-201	5007	2-SI-307-H003
13-P-SIF-201	5008	2-SI-307-H014
13-P-SIF-201	5001	2-CH-424-H006
13-P-SIF-201	5009	2-SI-307-H005
13-P-SIF-201	5008	2-SI-307-H006
13-P-SIF-201	5006	2-SI-307-H002
13-P-SIF-202	5002	2-CH-425-H008
13-P-SIF-202	5001	2-CH-425-H006
13-P-SIF-202	5013	2-SI-308-H010
13-P-SIF-202	5011	2-SI-308-H008

The inspector reviewed the following records for each of the above piping component.

- o Construction Installation Plans (CIP)
- o Certified Material Test Reports (CMTR)
- o Nonconformance Reports (NCR)
- o Field Change Requests (FCR)
- o Pressure Test Records
- o NDE Reports
- o Welding Field Checklist
- o Valve Installation Checklists
- o Valve Flange Torquing Data Sheets

No deviations or violations of NRC requirements were identified.

6. Allegation No. RV-85-A-006 (Open)

Characterization:

On January 22, 1985, an alleged contacted the NRC Resident Inspector's office by telephone and related the following concerns:

- 1) During installation of the 42" Containment Purge Valves, the valves were found to exhibit rust damage due to improper storage.
- 2) During installation of a Unit No. 2 Heating, Ventilating and Air Conditioning (HVAC) safing plate, the plate was cut without obtaining the proper reviews and approvals.

On May 30, 1985, the alleged called the NRC Resident Inspector's office and related a number of concerns including that he believed that HVAC pressure tests had been falsified.

Implied Safety Significance to Plant Design, Construction or Operations:

The failure of the 42" Containment Purge valves to function as designed could cause the 10 CFR Part 100 limits to be exceeded during accident conditions. The failure to obtain the proper engineering approvals prior to cutting of the HVAC safing plate could effect the proper function of the components and may indicate a problem with personnel training and failure to follow procedural requirements. The failure of the HVAC system to function as design could effect the safe operation or the safe shut down of the plant during an emergency.

Assessment of Safety Significance:

Containment Purge Valve Allegation

In order to resolve this allegation, the inspector examined the containment purge valve receipt inspection, the storage inspection, the warehouse requisition and installation records for all three units. The inspector also examined the storage requirements as specified by the manufacturer and as contained in Specification No. 13-JM-605, and examined all Nonconformance Reports (NCR) written on discrepancies identified during the receipt, storage and installation activities.

Additionally, because the alleged had also stated that he had called the APS Hot-line on the containment purge valves on or about June 1984, the inspector examined the APS Hot-line and Special Hot-line log books dating back to the program inception, November 17, 1982 and August 28, 1984, respectively.

The inspector's investigation found that none of the Nonconformance Reports written against the containment purge valves during receipt, storage or installation concerned or addressed a problem with rust damage to the valves. The inspector's review of the APS Hot-line and Special Hot-line log determined that the APS Hot-line logs did not have a record of a concern regarding rust damage to the containment purge valves. On May 21, 1985, the inspector contacted the alleged to obtain further

information on his concerns. At this time the alleged stated he had never made a phone call to the NRC on problems with the containment purge valves or the HVAC safing plate. The alleged alleged stated his belief that somebody had apparently used his name to discredit him with the company. This individual stated that the problem with the containment purge valves occurred over four years ago and at that time the containment purge valves were requisitioned from the warehouse by Bechtel and stored next to the Waldinger lay down area for over a year. The individual reported the improper storage and rust on the valves to his supervisors. The valve problems were corrected in accordance with the licensee's procedures and the individual was satisfied with the actions.

The inspector (to further assure that containment purge valves would function as designed), reviewed the local leak rate tests for Units 1 and 2. The test date indicated that all valves were found to pass the leak tightness criteria as required by the FSAR. The local leak rate tests had not been performed on the Unit No. 3 containment purge valves, at the time of this inspection.

HVAC Safing Plate Allegation

The concern regarding the cutting of the HVAC safing plate was also alleged to be a concern of this individual, however the individual stated problem was addressed in accordance with the licensee's procedures and the individual was satisfied that everything was taken care of as required by the quality program.

To further assure that the problem had been handled in accordance with the licensee's program, the inspector reviewed the Nonconformance Report (Waldinger NCR No. 1068 F/II), the Bechtel Field Change Request (FCR No. 87.254-P), and the Supplier Deviation Disposition Request (SDDR No. 3987), which documented the craft error of trimming more of the safing plate than was allowed by the requirements. All the documents appeared to have been prepared and dispositioned in accordance with the applicable requirements.

HVAC Pressure Test Allegation

A preliminary review of the HVAC pressure tests referred to by the alleged do not indicate that the tests were improperly performed. However, the investigation into whether persons knowingly falsified the pressure tests is continuing with the aid of the NRC Office of Investigations.

Other Related Allegations (RV-85-A-034, RV-85-A-040)

The alleged in his May 30, 1985 phone call to the NRC made certain other allegations related to other licensee contractor personnel. The alleged stated that he has made Bechtel aware of all these allegations. The inspector confirmed that Bechtel is aware of all the allegations made by this alleged, and is actively pursuing resolution of these allegations.

These allegations will be reviewed during a future inspection.

Staff Position

The two allegations related to the containment purge valves and the HVAC safing plate are considered by the staff to be resolved, and are closed.

The investigation into the allegations related to HVAC Pressure Tests is continuing and will be discussed in a future inspection report.

The licensee is pursuing the other allegations and the NRC's conclusions regarding whether these allegations effect or impact on safety will be reported in a future inspection report.

7. NRC Temporary Instruction (TI) 2512/11

On February 21, 1984, the NRC issued Temporary Instruction (TI) 2512/11 to increase inspection coverage in areas of nuclear plant construction found by past experience to be in need of improved licensee performance. The areas that were targeted for increased inspection effort were Heating Ventilating and Air Conditioning (HVAC) Systems, Pipe Supports, "As-built" Systems Inspections, and Craftsmen Qualifications and Training Programs. For Palo Verde, the regional and resident inspection program has performed a number of inspections in these areas. The inspection scope and results are documented as follows:

<u>Type of Inspection:</u>	<u>NRC Inspection Report Number:</u>
o Pipe Supports	50-528/83-34, 84-38, 84-45 and 84-48
o HVAC Systems	50-528/83-34, 84-10, 84-21, 84-25 and 84-45
o As-built Systems	50-528/83-34, 84-38, 84-45, 84-48, 85-16 and 85-17
o Craftsmen Qualification and Training	50-528/85-02

Based on the above referenced inspection effort, Temporary Instruction (2512/11) is closed.

No deviations or violations of NRC requirements were identified.

8. Inspection Tour of Site

On a weekly basis, the inspector and licensee representatives tour the site to observe general housekeeping conditions, care and preservation of equipment, handling of components, tagging and identification of material.

No violations or deviations with NRC requirements were identified.

9. Exit Interview

The NRC inspectors met on June 28, 1985, with licensee management representatives denoted in paragraph 1. The scope of the inspection and inspection findings as noted in this report were discussed.