6.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CALIFORNIA 94596

SEP 16 1983

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

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

Attention: Mr. E. E. Van Brunt, Jr., Vice President
Nuclear Projects Management

Gentlemen:

Subject: Proprietary Review of Information Requested by a Public Group

As discussed in our letter dated August 18, 1983, the NRC has received a Freedom of Information Act (FOIA) request for information within the agency files dealing with the recent reactor coolant pump problems at Unit 1. The FOIA request number is 83-448.

We have identified additional records in the possession of an inspector who was out of the office at the time of our earlier request. These records include the following:

- A portion of a drawing showing a cutaway view of a reactor coolant pump (copy enclosed).
- A drawing showing the reactor coolant thermowell and nozzle arrangement (copy enclosed).
- Photographs of RCP components taken by the inspector during an inspection in July, 1983 (copy enclosed).
- Information regarding thermowell failures, dated June 21, 1983 (copy enclosed).
- A copy of CE-KSB Drawing E-8000-101-2000 Revision 4, obtained at the site by the inspector during a recent inspection (copy not enclosed).

Please review the above drawings and advise this office within 20 days whether they include any proprietary information or other category of exempted material as defined in 10 CFR 2.790(a). If not considered proprietary, we also request consent to reproduce the CE-KSB drawing listed above (markings on the drawing indicate that it is not to be reproduced without agreement by CE-KSB).

8402080064 831116
PDR FOIA
QARDE83-609 PDR

83-294

If you feel that any of the drawings involves proprietary information, a written request to withhold the information should be submitted to this office within 30 days. If submitted, such application must be consistent with the requirements of 2.790(b)(1).

A copy of this letter and the attached sketches is being sent to C.E. per the telephone discussion between our Mr. Johnson and your Mr. Ide on September 13, 1983.

Sincerely,

Kirsch for:

T. W. Bishop, Director
Resident, Reactor Projects &
Engineering Programs Division

Enclosure:
As Stated

cc w/attachments:
Mr. Charles Ferguson
Project Manager
Combustion Engineering, Inc.
1000 Prospect Hill Road
Windsor, Conn. 06095

bcc: P. Johnson

RV DK
P. Johnson for T. Young T. Bishop
9/16/83 9/14/83 9/14/83

If you feel that any of the drawings involves proprietary information, a written request to withhold the information should be submitted to this office within 30 days. If submitted, such application must be consistent with the requirements of 2.790(b)(1).

A copy of this letter and the attached sketches is being sent to C.E. per the telephone discussion between our Mr. Johnson and your Mr. Ide on September 13, 1983.

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for T. W. Bishop, Director
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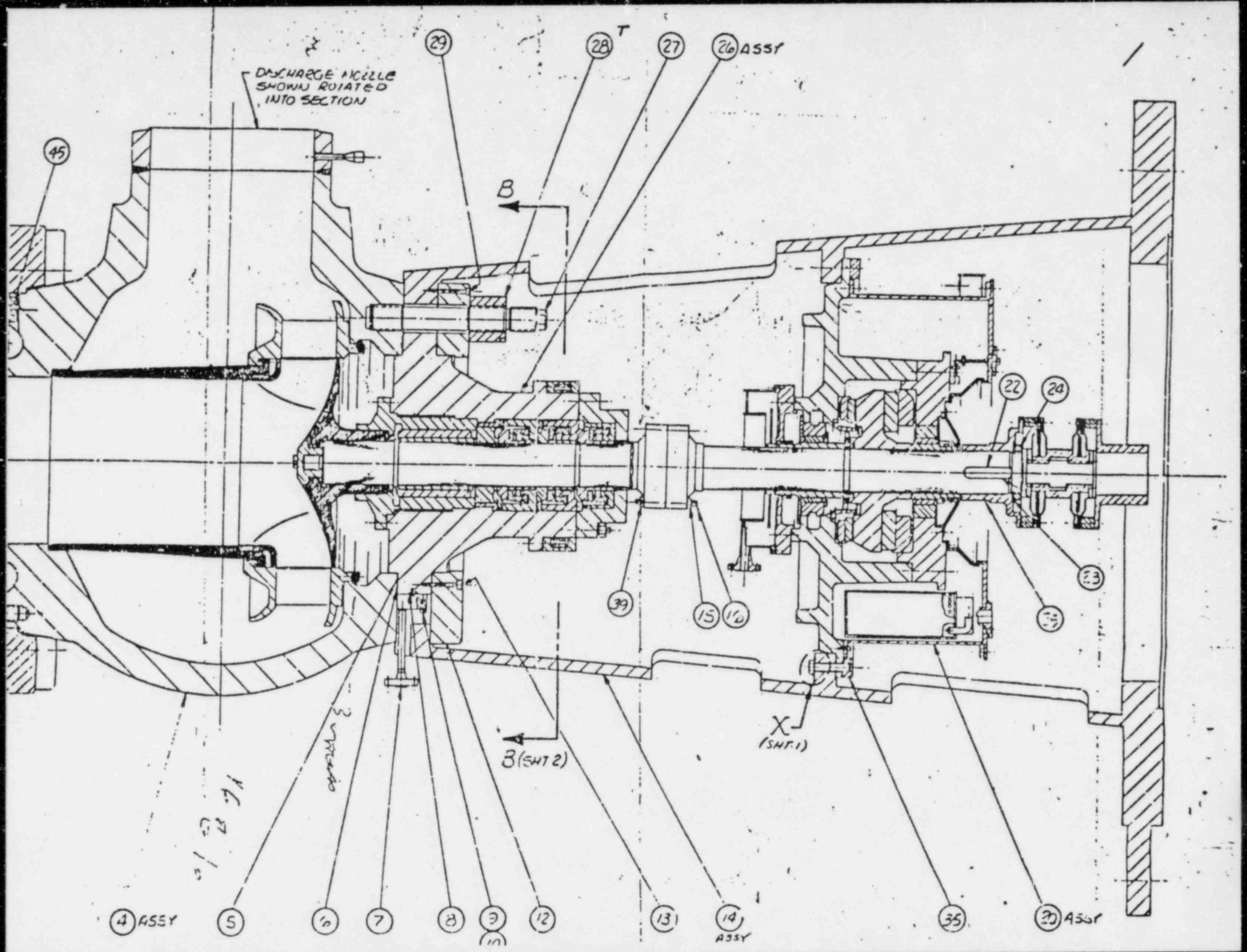
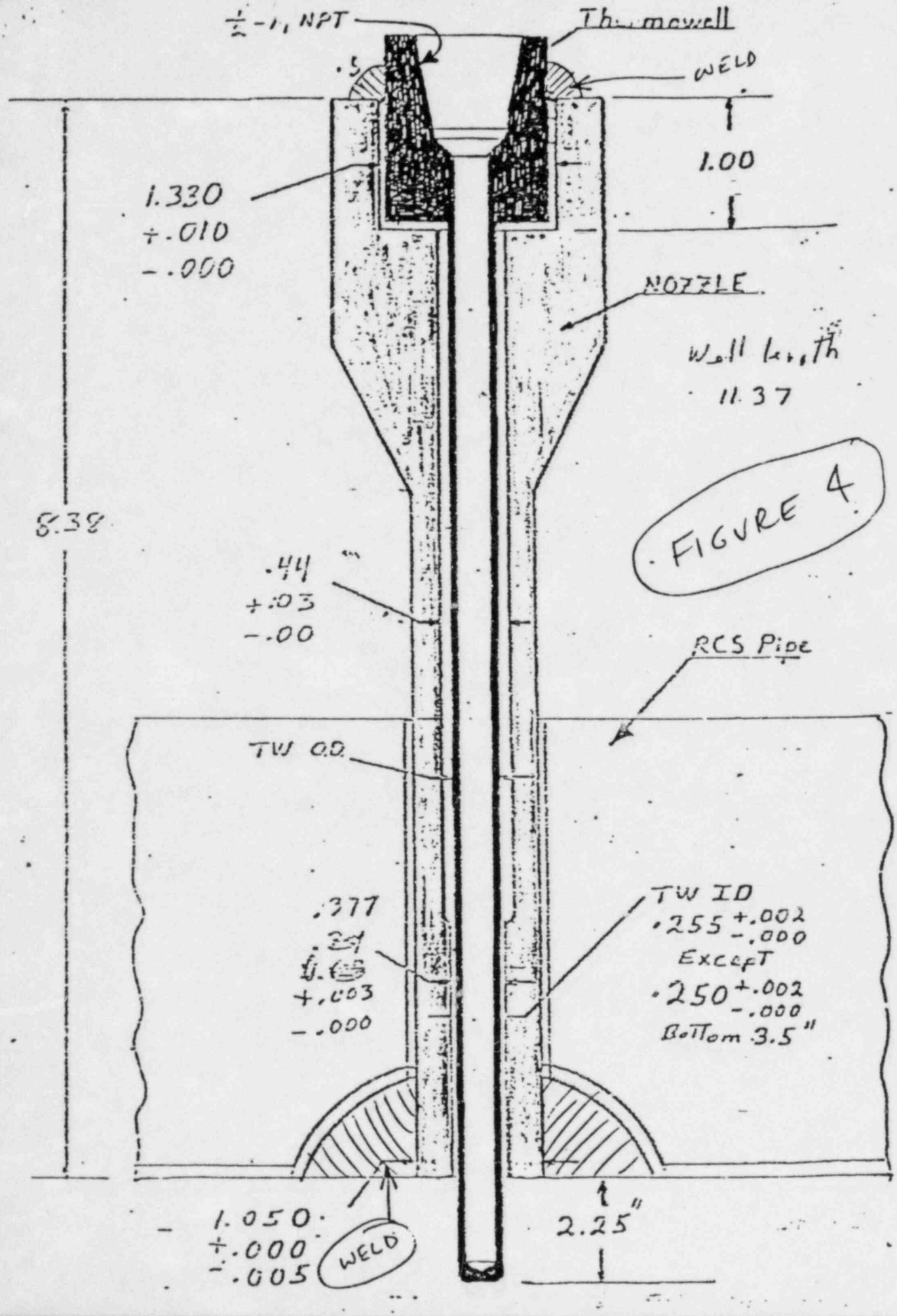
Engineering Programs Division

Enclosure:
As Stated

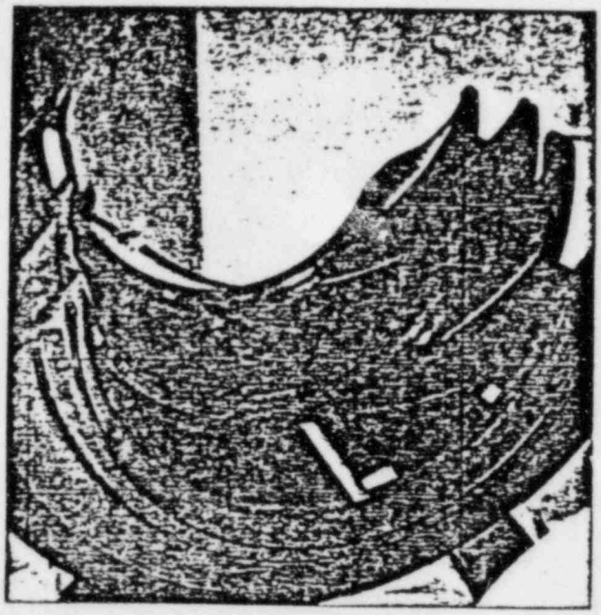
cc w/attachments:
Mr. Charles Ferguson
Project Manager
Combustion Engineering, Inc.
1000 Prospect Hill Road
Windsor, Conn. 06095


DISCHARGE NOZZLE SHOWN ROTATED INTO SECTION
29
28
27
26 ASSY
45
B
22
24
23
39
15
16
A
B (SHT 2)
X (SHT 1)
4 ASSY
5
6
7
8
9
10
12
13
14 ASSY
35
20 ASSY

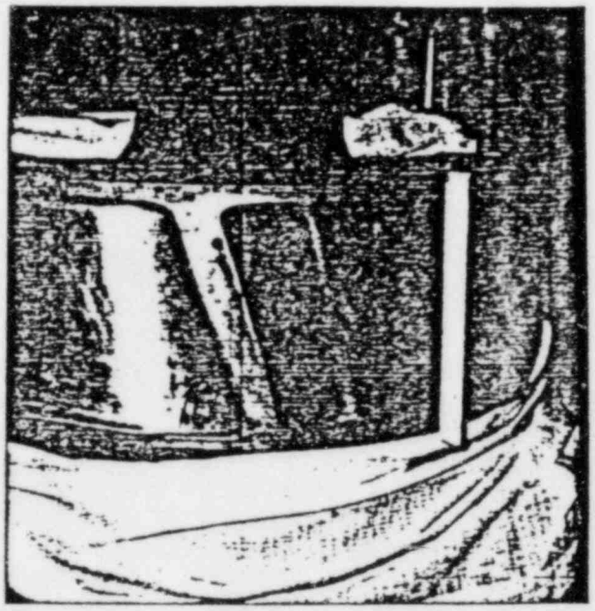


½-1, NPT
Thermowell
WELD
1.00
1.330
+.010
-.000
NOZZLE
Well length
11.37
8.38
.44
+.03
-.00
RCS Pipe
TW O.D.
.377
+.003
-.000
TW ID
.255 +.002 -.000
Except
.250 +.002 -.000
Bottom 3.5"
1.050
+.000
-.005
WELD
2.25"

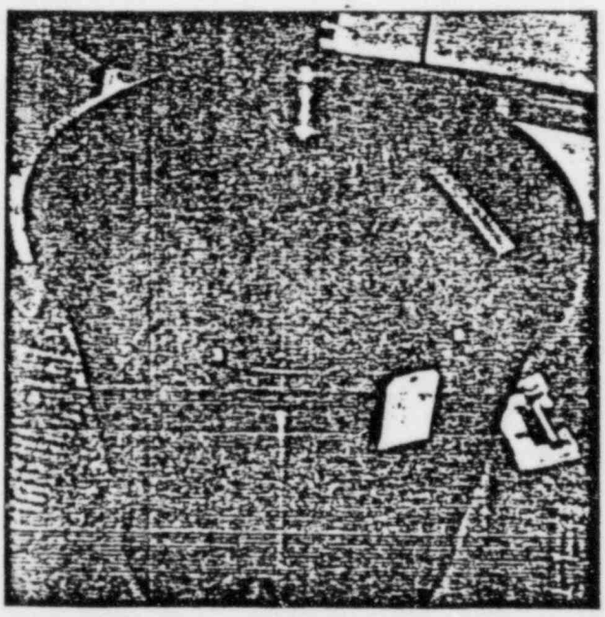
FIGURE 4



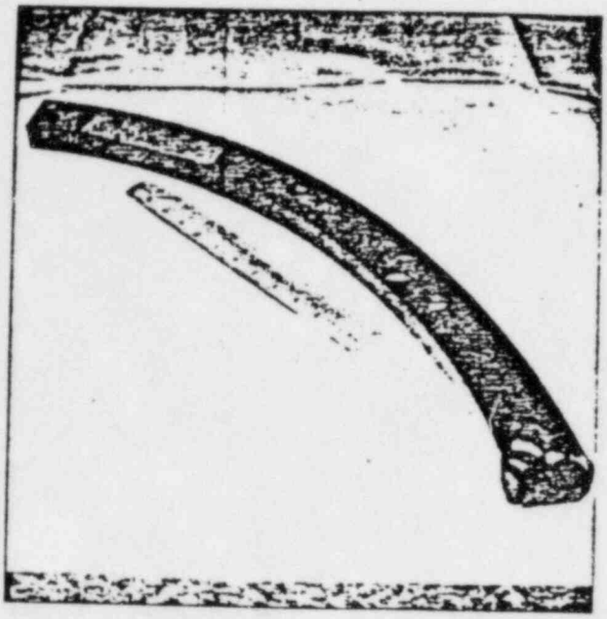
1B Diffuser



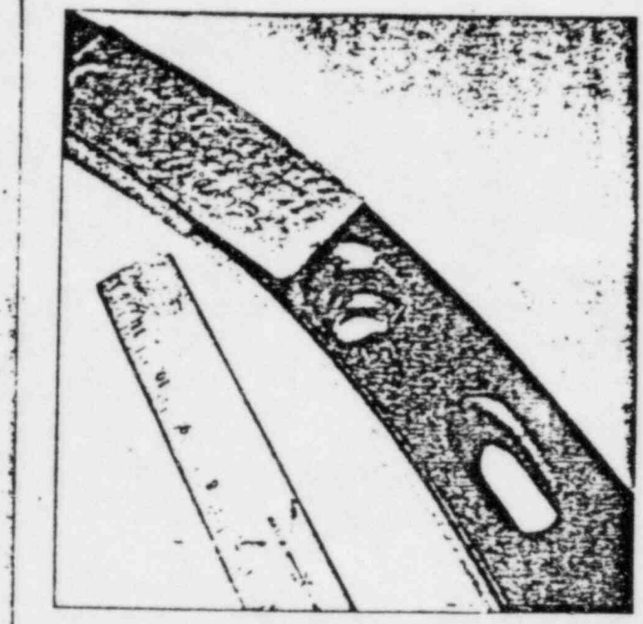
1B Impeller



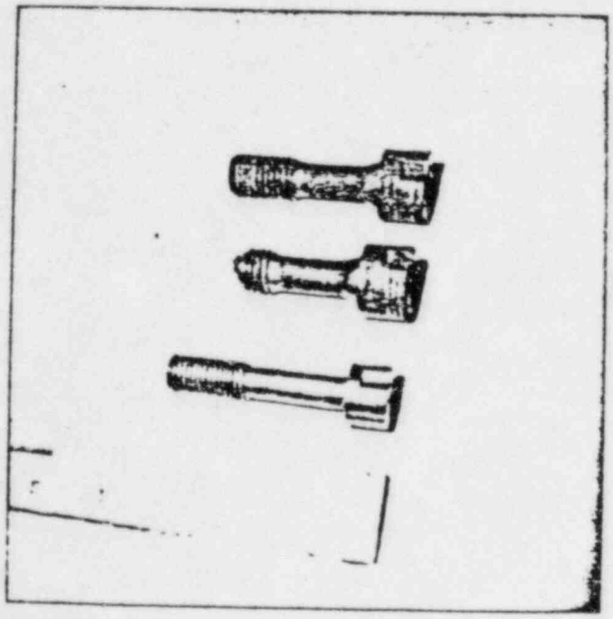
1A Suction Pipe



1A Diff. Clamp

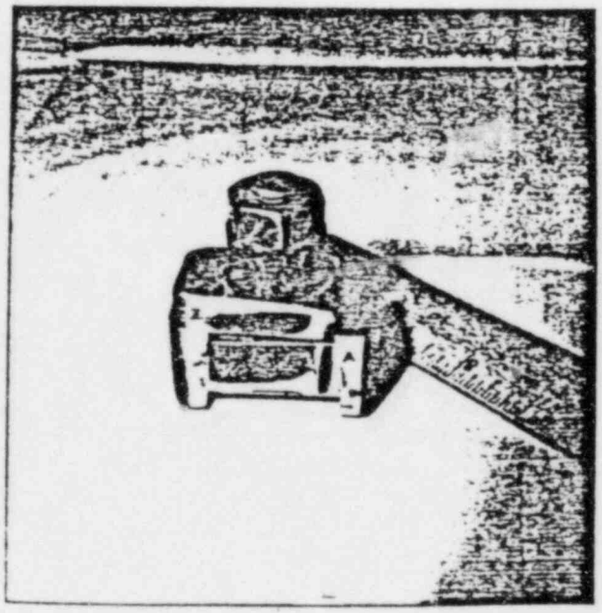


1A Diff. Clamp

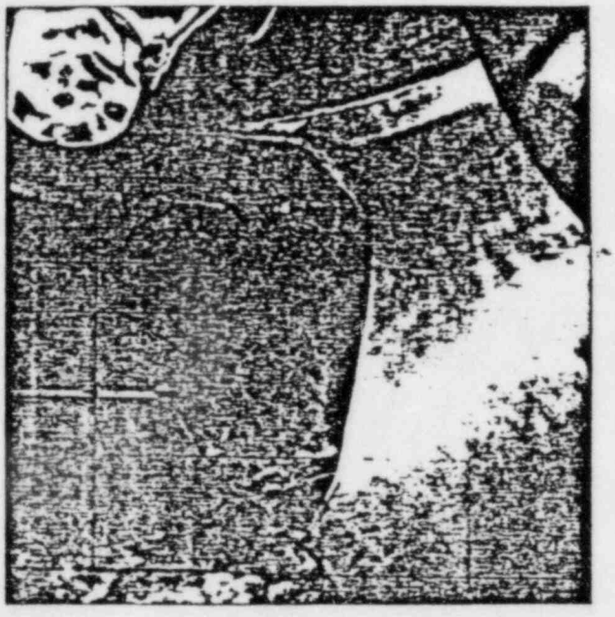


Bolts

Diffuser Clamp Bolt (Top)
Broken Diffuser Clamp Bolt
Suction Pipe Bolt (bottom)



1A Wedge Assy



1B Impeller

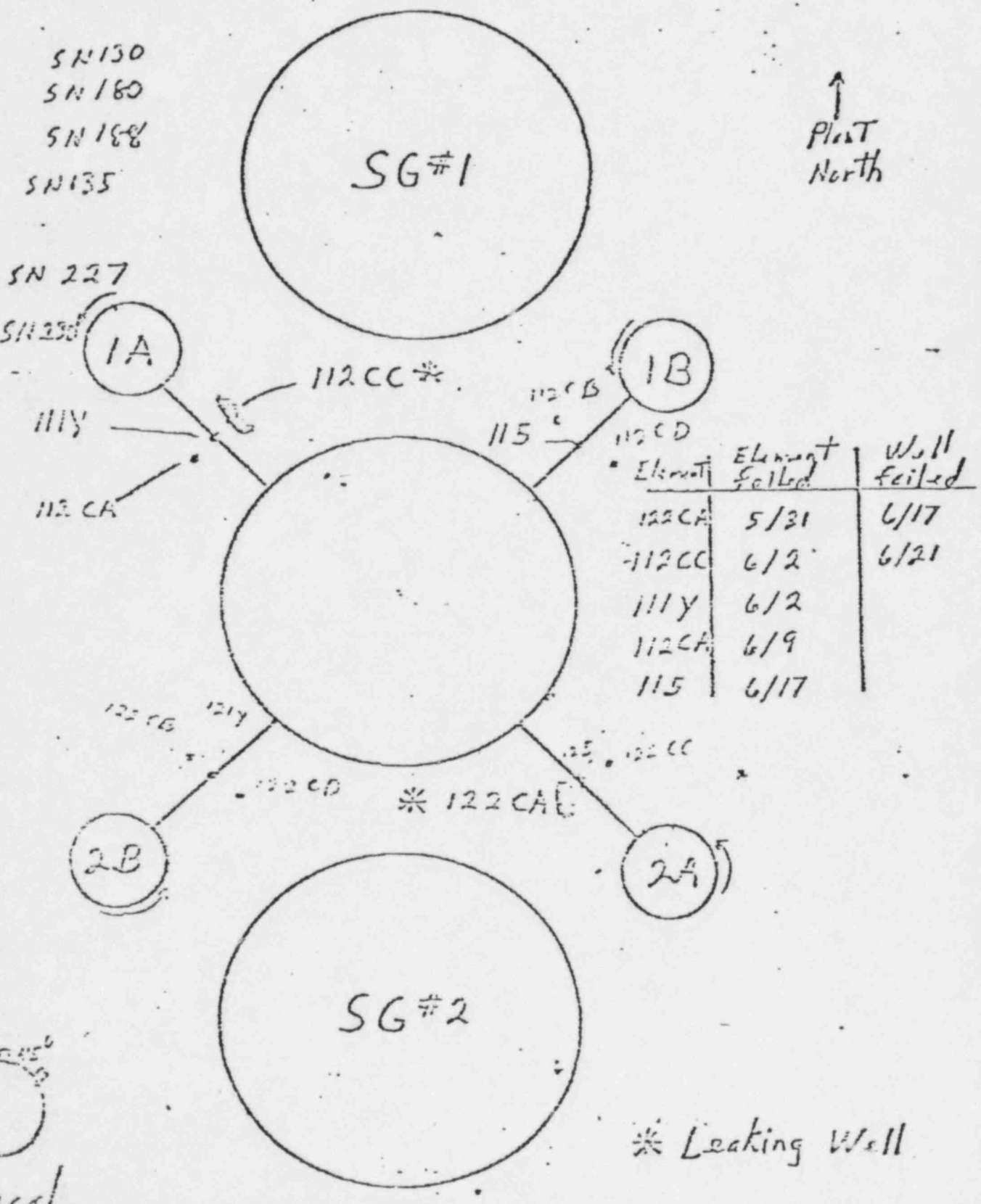
1B Impeller

B 5015

To Glen McCoy Fm Phil Parker

6/21/83

112 CA SN 130
112 CC SN 160
112 CD SN 188
122 CB SN 135
122 CA
111 Y SN 227
115 SN 230



Element	Element failed	Well failed
122CA	5/31	6/17
112CC	6/2	6/21
111Y	6/2	
112CA	6/9	
115	6/17	

Plant North

* Leaking Well

Typical Cantic

	LOOP	Failed Element	Failed Well	Plugged Well	Elements Repaired	Single Dual	Bent Well VCE-20303	
112 CA	1A	X		X	X	D		CFR 189
112 CC	1A	X	X	X	X	S		CFR 187
111 Y	1A	X		X	X	S		
112 CB	1B					D		
112 CD	1B			X	X	S		
115	1B	X		X	X	S		CFR 185
122 CA	2A	X	X	X	X	D		
122 CC	2A					S		
125	2A					S		
122 CB	2B			X	X	D		
122 CD	2B					S		
121 Y	2B					S		
112 HA	1					D	X	
112 HB	1					D		
112 HC	1					S		
112 HD	1					S		
111 HA	1					SPARE WELL		
111 HB	1						X	
111 HC	1						X	
111 HD	1							
111 X	1					S		
122 HA	2					D	X	
122 HB	2					D		
122 HC	2					S		
122 HD	2					S	X	
121 HA	2					SPARE WELL		
121 HB	2							
121 HC	2						X	
121 HD	2							
121 X	2					S		

RECEIVED
NRC

1983 JUN 23 AM 10:54

REGION V

LOG

NUCLEAR EVENT NOTIFICATION FORM

SUMMARY OF ACTIONS TAKEN:

SPECIFIC TIME LOG:

Time	Action			
0840	Notified DOE	444-7381	[illegible]	
0843	"	NWS	486-6083	[illegible]
0840	"	EPA	[illegible]	[illegible]
0846	"	6th USA	7415-561-5671	Cpt [illegible] Tech
0847	"	DOT	[illegible]	Crater
[illegible]	"	NRC	[illegible]	[illegible]
0848	"	FEMA [illegible]	[illegible]	(EST [illegible])
0851	"	Wash DES	[illegible]	([illegible])
[illegible]	[illegible]			
[illegible]				

7.

Arizona Public Service Company
P.O. BOX 21666 • PHOENIX, ARIZONA 85036

September 21, 1983
ANPP-27852-BSK/RQT

U. S. Nuclear Regulatory Commission
Region V
Creekside Oaks Office Park
1450 Maria Lane - Suite 210
Walnut Creek, CA 94596-5368

Attention: Mr. D. M. Sternberg, Chief
Reactor Projects Branch 1

Subject: Time Extension for Report - DER 83-42
A 50.55(e) Potentially Reportable Condition Relating To
Thermowells In The Reactor Coolant System
File: 83-019-026; D.4.33.2

Reference: (A) Telephone Conversation between P. Johnson and J. Roedel on July 29, 1983
(B) ANPP-27398, dated July 25, 1983 (Interim Report)

Dear Sir:

The NRC was notified of a potentially reportable deficiency in Reference (A), and an Interim Report was transmitted by Reference (B). At that time, it was estimated that a Final Report would be available by September 21, 1983.

Due to the extensive investigation and evaluation required, it is now expected that this information will be finalized by December 1, 1983, at which time a complete report will be submitted.

There is no new information or change to the Interim Report at this time.

Very truly yours,

E. E. Van Brunt, Jr.
APS Vice President,
Nuclear Projects Management
ANPP Project Director

EEVBJr/RQT:sn

cc: See Attached Page 2

FILE COPY

8310070352

cc: Richard DeYoung, Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

T. G. Woods, Jr.
G. C. Andognini
J. A. Roedel
D. B. Fasnacht
A. C. Rogers
B. S. Kaplan
W. E. Ide
J. Vorees
J. R. Bynum
D. D. Green/P. P. Klute
A. C. Gehr
W. J. Stubblefield
W. G. Bingham
R. L. Patterson
R. W. Welcher
R. M. Grant
D. R. Hawkinson
L. E. Vorderbrueggen
G. A. Fiorelli
S. R. Frost
J. Self
D. Canady

Records Center
Institute of Nuclear Power Operations
1100 Circle 75 Parkway - Suite 1500
Atlanta, Georgia 30339

8.

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REGION V

Arizona Public Service Company
P.O. BOX 21666 • PHOENIX, ARIZONA 85036

July 25, 1983
ANPP-27398-BSK/RQT

U. S. Nuclear Regulatory Commission
Region V
Creekside Oaks Office Park
1450 Maria Lane - Suite 210
Walnut Creek, CA 94596-5368

Attention: Mr. D. M. Sternberg, Chief
Reactor Projects Branch 1

Subject: Interim Report - DER 83-42
A 50.55(e) Potentially Reportable Deficiency Relating to Thermowells in Reactor Coolant System
File: 83-019-026; D.4.33.2

Reference: Telephone Conversation between P. Johnson and J. Roedel on June 29, 1983

Dear Sir:

The NRC was notified of a potentially reportable deficiency in the referenced telephone conversation. At that time, it was estimated that a determination of reportability would be made within thirty (30) days.

Due to the extensive investigation and evaluation required, an Interim Report is attached. It is now expected that this information will be finalized by September 21, 1983, at which time a complete report will be submitted.

Very truly yours,

E. E. Van Brunt

E. E. Van Brunt, Jr.
APS Vice President,
Nuclear Projects Management
ANPP Project Director

EEVBJr./RQT:rb
Enclosure

cc: See Page Two

8308050247

FILE COPY

cc: Richard DeYoung, Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

T. G. Woods, Jr.
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G. A. Fiorelli
S. R. Frost
J. Self

Records Center
Institute of Nuclear Power Operations
1100 Circle 75 Parkway - Suite 1500
Atlanta, Georgia 30339

INTERIM REPORT - DER 83-42
POTENTIAL REPORTABLE DEFICIENCY
ARIZONA PUBLIC SERVICE COMPANY (APS)
PVNGS UNIT 1

I. Potential Problem

During hot functional testing, it was discovered that thermowells 01JRCA-TW-122CA and 01JRCC-TW-112CC were not maintaining the pressure boundary in the Reactor Coolant System and were emitting steam through their respective temperature elements, tag numbers 01JRCA-TE-122CA and 01JRCC-TE-112CC. Preliminary investigation reveals penetration cracks on the thermowells internal wall surface. Some damage to temperature elements was also observed.

II. Approach To and Status of Proposed Resolution

Bechtel engineering is corresponding with C-E to provide reportability disposition and technical justification for corrective action.

III. Projected Completion of Corrective Action and Submittal of the Final Report

Evaluation of this condition and submittal of the Final Report is forecast to be completed by September 21, 1983.

9

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CALIFORNIA 94596

JUL 15 1983

Docket No. 50-528

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

Attention: Mr. G. C. Andognini
Vice President, Electric Operations

Gentlemen:

Subject: NRC Inspection - Palo Verde Unit 1

This refers to the inspection conducted by Messrs. G. Fiorelli and G. Johnston of this office on June 1 - June 30, 1983, of activities authorized by NRC Construction Permit No. CPPR-141 and to the discussion of their findings with you and members of your staff at the conclusion of the inspection.

Areas examined during this inspection are described in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspectors.

While no items of noncompliance with NRC requirements were identified within the scope of this inspection, we wish to inform you of a matter which warrants management attention. The report identifies several operational problems which were the result of several factors that indicate a need for improved communication of equipment status, improved control of testing activities, continued training on plant design, and more timely completion of plant changes. While none of the items involved an immediate health and safety concern, correction of their root causes is necessary for future improved plant operations.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure will be placed in the NRC Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1).

8308090718

Should you have any questions concerning this inspection, we will be glad to discuss them with you.

Sincerely,

/s/

D. M. Sternberg, Chief
Reactor Projects Branch 1

Enclosure:
Inspection Report
No. 50-528/83-25

cc w/enclosure:
E. E. Van Brunt Jr., Vice President
Nuclear Projects Management

cc w/o enclosure:
Arthur C. Gehr, Esq.

bcc: RSB/Document Control Desk (RIDS)

Distributed by RV:

JBM
State of Arizona
Resident Inspector

RV				
G.Fiorelli:dh	G.Johnston	T.Young	D.Sternberg	
7/12/83	7/12/83	7/12/83	7/12/83	

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-528/83-25

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 Site, Wintersburg, Arizona

Inspection conducted: June 1 - June 30, 1983

Inspectors: Talbert Young Jr. for — 7-12-83
G. Fiorelli, Senior Resident Inspector — Date Signed

Talbert Young Jr. for — 7-12-83
G. Johnston, Resident Inspector — Date Signed

Approved by: Talbert Young Jr. — 7-12-83
T. Young, Chief, Reactor Projects Section 2 — Date Signed

Summary:

Inspection on June 1 - June 30, 1983 (Report No. 50-528/83-25)

Areas Inspected: Routine, resident inspection of startup testing procedures, safety injection systems, plant operating problems, piping verification program, and pre-Core hot functional testing. The inspection involved 280 hours onsite by the resident inspectors.

Results: No items of noncompliance or deviations were identified.

8308040723

DETAILS

1. Persons Contacted

a. Arizona Public Service Company (APS)

G. C. Andognini, Vice President, Nuclear Operations
*J. R. Bynum, Nuclear Operations Manager
*J. Kirby, Startup Manager
D. Hayes, Unit 1 Preoperational Startup Manager
W. Jump, Startup Control Manager
C. Connell, Preoperational Test Group Supervisor
P. Brandjes, Preoperational Test Group Supervisor
G. Pankonin, Startup Quality Assurance/Quality Control (QA/QC) Manager
*W. Craig, Startup QC Supervisor
R. Beeken, Hot Functional Test Coordinator
R. Younger, Operations Supervisor
P. Wiley, Operations Shift Supervisor
D. Ennis, Nuclear Operator
M. Halpin, Operations Shift Supervisor
R. Gouge, Operations Shift Supervisor
T. Mount, Hot Functional Test Coordinator
J. Nedermeyer, Assistant Shift Supervisor
D. Ensign, Operations Shift Supervisor
G. Green, Assistant Shift Supervisor
G. Maio, Startup Engineer
*S. Moyers, Maintenance Manager
*C. Russo, Operations QA Manager

b. Bechtel Corporation

*L. Fotter, Administrative/Technical Support Manager

*Attendees at Exit Interview on June 30, 1983.

2. Safety Injection System

Several problems have been detected in the course of testing. These problems include the following:

a. Safety Injection System Reflush

An examination of the safety injection and containment spray pump suction strainers revealed the presence of a piece of plastic about 18 inches in diameter in one strainer and pieces of duct tape in another. Based on these findings, APS plans to reverify the cleanliness of the safety injection system piping with a series of system reflush, some to be conducted at elevated temperatures.

b. B LPSI Pump

This pump has been tripping out intermittently from over current. The unit was instrumented, and motor performance and pump vibrations were checked, as were power supplies and breakers. In addition, the pump was disassembled for examination by APS, Bechtel, CE, and Westinghouse reprcsentatives. Initially, the evaluation appeared to indicate the problem was related to a magnetic anomaly in the motor. The defective motor was replaced with a Unit 3 motor. On retest, the pump tripped again from over current. Trouble shooting is continuing.

c. Low Pressure Safety Injection and Containment Spray Pump Lower Motor Bearing and Structural Weld Defects

Oil leaks were discovered from the lower bearing area of these pumps. During disassembly cracks were noticed in the welds of the end bracket between pump and motor of one of the pumps. The welds are shop welds and the problem is attributed to the welding sequence done at the shop. The bearings will be replaced with redesigned units. The brackets will also be replaced.

d. High Pressure Safety Injection Pumps

These pumps have experienced internal rubbing problems. The units will be disassembled and realigned.

Preoperational testing of the pumps had not been done as yet and will be completed following repairs.

No items of noncompliance or deviations were identified.

3. Startup Testing

Procedure Reviews

In September of 1982 the format of preoperational testing procedures were modified to require that the Section 2 acceptance criteria line items identify the corresponding Section 8 detailed test sections to which the criteria applied. Of the approximately 160 procedures written prior to the revision date, less than 10 percent were safety-related. The inspector noted that two were associated with integrated and local leak rate testing and will require report to the NRC and two were still being used in testing. A review of three of the remaining procedures associated with completed tests could be readily correlated and properly applied in the reviews of the completed test data.

Two procedures were noted to have test change notices (TCNs) written to defer test sections involving acceptance criteria to hot functional tests. The inspector confirmed that these sections had been included in the hot functional testing program. Based on discussions with the chairman of the test working group (TWG) and members of his staff, the inspectors felt that test change notices were being properly controlled

and coordinated with specific responsibility for this function being assigned to an individual whose review's of the TCNs included confirmation that TCNs of acceptance criteria were included in other procedures.

A review of several procedures in the TWG files confirmed that backup information was available to support reviews of preoperational test procedures by TWG members. Documentation demonstrating formal approval of procedures was also available.

The inspector reviewed the test procedure entitled "Pre Core Safety Injection Check Valve Test" against administrative control and regulatory commitments.

No items of noncompliance or deviations were identified.

4. Plant Operating Problems

During the period, several operational problems were experienced by the operations organization in connection with the operation of plant equipment in support of preoperational testing. These problems included:

a. Operation of a LPSI pump with its suction valve closed. This occurred in connection with a loss of instument power after a transfer to inverter from bypass.

b. The loss of atmospheric dump valve control for a short period of time causing the steam safety valves to operate. This occurred when power was removed from the "B" train remote shutdown panel.

c. The flooding of the control building basement with about one foot of water from cooling pond water which flowed through spare electrical conduits. This occurred when the water level of the cooling ponds was allowed to reach a level where water flowed into the recirculation pump pits through piping penetrations and then through the conduits.

d. Inadvertant grounding of the Z winding of the No. 1 startup transformer causing the loss of half of the startup power. This occurrence was related to a discrepancy between the drawing and the as-built which had been identified for correction, however, resolution had not been given sufficient priority.

e. Pressurizer level dropped for a brief period of time when one of the spray valves was operated. This occurred because the spray line drain valve was left open after maintenance was performed on the spray valve.

Several factors that contributed to these problems include:

a. Unfamiliarity with some of the design features due to the first time operation of equipment.

b. Dilution of control and coordination of testing and operating activities due to the number and variety of activities in progress.

c. Lack of proper priority in the implementation of corrective design modifications.

d. Inadequate communication on the status of equipment.

None of the above cases involved the damage of equipment. This matter was discussed with APS management.

No items of noncompliance or deviations were identified.

5. Maintenance

The inspector observed the work package related to the repair of the loop 2A thermowell leak. The work package had been approved, QC hold points were identified and QC inspections had been performed. The repair involved the installation of a threaded pipe spool and valve into the thermowell. The juncture was then seal welded. Both Bechtel and CE had approved this repair which is temporary until the problem can be evaluated and permanently corrected.

No items of noncompliance or deviations were identified.

6. Tours

Several tours of the plant were conducted with representatives from APS operations, QA, and Bechtel. The plant was being kept in a clean orderly condition. Outside areas required pickup and this was accomplished after being brought to the attention of APS. Plant equipment was properly protected and fire watchers were posted during the operation of RC Pump 2A. This pump leaked oil from the thrust bearing during initial starts. Random checks of primary coolant and secondary system water chemistry showed them to be in specification. Improvement was noted to be needed in the control of rooms having operating equipment. This was brought to the attention of APS management since some construction activities related to design changes were occurring. No unauthorized activities were noted.

No items of noncompliance or deviations were identified.

7. Control Building Flooding Incident

On June 3, 1983, a flooding incident occurred in the basement elevation of the control building. The cause of the flooding was due to water from the circulating water system entering electrical conduits in the circulating water pump pit and flowing by gravity to the control building. The initiating event was an overfilling of the circulating water system canal. This overfill resulted in water flowing into the circulating water pump pit through penetrations for the discharge of bearing cooling water.

APS is examining the possibility of a discrepancy in the design of the pump pit. The penetrations for the bearing cooling water appear to be lower than the outflow pipe that provides an outlet in case of overfilling of the circulating water canal. Notification of potential reportability was made June 28, 1983. No apparent damage occurred to any of the equipment in the basement, as the water did not rise to a height that would have affected any of the safety-related HVAC equipment there.

No items of noncompliance or deviations were identified.

8. RTD Thermowell Failures

During the recent Pre Core Hot Functional test Unit 1 has experienced two failures of RTD thermowells. It is speculated that the two thermowells may have failed due to fretting where the thermowells projects from the internal diameter of the cold leg. The first failure occurred on June 17, 1983, in the loop 2A cold leg; the affected RTD was TE122CA. While shutdown to repair the thermowell, TE112CC began to leak on loop 1A cold leg. Temporary repairs were made to both thermowells.

At present, CE engineering personnel are evaluating to determine the factors involved in the failure mode of the thermowells. Preliminary observations have determined that the higher flow rate in one pump operation is a factor in accelerating the failure of the thermowells. This is born out by the fact that the loops with the highest run time on the pumps are 2A and 1A. The resolution of the failure mode and possible fixes will depend on inspection of the thermowells after the cool down and depressurization of the reactor coolant system takes place. The inspectors have discussed with APS management the circumstances of the failures and have expressed the importance of resolving this problem. The resolution of this problem will be followed up in a future inspection. Preliminary notification to Region V was made June 22, 1983, following APS's internal review for reportability. Deficiency Evaluation Report (DER 83-42) was written. (50-528/83-25-01)

No items of noncompliance or deviations were identified.

9. Witness of Piping Verification Program

The inspector observed selected portions of the following tests:

91 HP-1FW02	Auxiliary Feedwater Waterhammer Test
91 HF-1RC01	RCS Expansion Measurements
91 HF-1RC16	NSSS Pipe Stop Installation and Gap Measurement Test
91 HF-1ZZ06	BOP Piping Steady State Vibration Test
91 HF-1ZZ07	BOP Piping Dynamic Transient Test
91 HF-1ZZ08	BOP Thermal Expansion Measurement

During the performance of these tests, the inspector verified on a selected basis, by observation and discussion with test personnel, that the portions of the tests that were observed were conducted using an approved procedure, the test equipment was properly calibrated, test data were collected and recorded per the applicable procedure, and the test adequately demonstrated conformance with the applicable acceptance criteria or was properly identified as a test exception.

No items of noncompliance or deviations were identified.

10. Witness of Pre Core Hot Functional Testing

The inspectors observed selected portions of the following tests:

92 HF-1ZZ01	Instrument Correlation Test
91 HF-1AF01	Emergency and Auxiliary Feed Water System Test
91 HF-1CH01	CVCS Integrated Test
91 HF-1SF02	Atmospheric Steam Dump Test
91 HF-1RC05	Reactor Coolant System Leak Rate Test
91 HF-1RC02	Pressurizer Performance Test
91 HF-1MT01	Initial Turbine/Generator Roll
91 HF-1SG01	Main Steam Isolation Valve Operation Test
91 HF-1SI02	Shutdown Cooling System Test

During the performance of these tests, the inspectors verified on a selected basis, by observation and discussion with test personnel, that the portions of the tests that were observed were conducted using an approved procedure, the test equipment was properly calibrated, test data were collected and recorded per the applicable procedure, and the test adequately demonstrated conformance with the applicable acceptance criteria or was properly identified as a test exception.

A listing of the more significant problems which were identified during hot functional testing and have been corrected or are in the process of correction include:

a. Failure of primary coolant RTDs.

b. Hydraulic system leaks and operational difficulties with the MSIVs.

c. Non linear operation of the atmospheric dump valves.

d. Auxiliary feed water system flow, vibration anomalies and turbine over speed tripping.

e. Inaccurate steam generator level instrumentation.

f. Steam bypass valve operational difficulties.

g. Let down control problems causing the relief valve to lift.

h. Low nuclear sampling flow rates.

i. Containment HVAC does not provide uniform cooling.

No items of noncompliance or deviations were identified.

11. Exit Meeting

An exit meeting was held with representatives of APS on June 30, 1983. The findings of the inspection were discussed. Highlighted was the need for APS amanagement to give attention to causes of recent operations problems and put into place necessary corrective actions.

10.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CALIFORNIA 94596

SEP 28 1983

Docket No. 50-528

Arizona Public Service Company
P. O. Box 21666
Pheonix, Arizona 85036

Attention: Mr. G. C. Andognini
Vice President, Nuclear Operations

Gentlemen:

Subject: NRC Inspection - Palo Verde Unit 1 (Preoperational Test Phase)

This refers to the inspection conducted by Mr. P. H. Johnson of this office on July 5-8 and 19-22, 1983, of activities authorized by NRC Construction Permit No. CPPR-141 and to the discussion of our findings held by Mr. Johnson with Mr. Allen and other members of the Arizona Public Serivce Company staff at the conclusion of the inspection.

Areas examined during this inspection are described in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

No items of noncompliance with NRC regulations were identified within the scope of this inspection.

In accordance with 10 CFR 2.790(a), a copy of this leti r and the enclosure will be placed in the NRC Public Document Room unless you noify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1).

8310170468

Should you have any questions concerning this inspection, we will be glad to discuss them with you.

Sincerely,

T. W. Bishop, Director
Resident, Reactor Projects &
Engineering Programs Division

Enclosure:
Inspection Report
No. 50-528/83-26

cc w/enclosure:
J. R. Bynum, APS
Jill Morrison

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-528/83-26

Docket No. 50-528 License No. CPPR-141 Safeguards Group ____

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 Site (Wintersburg, Arizona)

Inspection conducted: July 5-8 and 19-22, 1983

Inspectors: P. H. Johnson 9/26/83
P. H. Johnson, Reactor Inspector — Date Signed

Approved by: for P. H. Johnson 9/26/83
T. Young, Jr. — Date Signed
Chief, Reactor Projects Section No. 2

Summary:

Inspection on January 4-7, 1983 (Report No. 50-528/83-01)

Areas Inspected: Routine, unannounced inspection of plant procedures and surveillance testing, plus independent inspection effort. The inspection involved 55 inspector-hours onsite by one region-based NRC inspector.

Results: No violations or deviations were identified.

8310170470

DETAILS

1. Persons Contacted

J. R. Bynum, Manager of Nuclear Operations
*J. M. Allen, Technical Support Manager
*R. A. Bernier, Operations Supervisor
*W. F. Fernow, Administrative Support Manager
*K. Gross, Compliance Supervisor
*L. G. Papworth, Operations Engineering Supervisor
*C. N. Russo, Operations Quality Assurance/Quality Control Manager
*J. Self, Supervisor, Shift Technical Advisor/Independent Safety Engineering Group

The inspector also interviewed or talked with other licensee representatives, including licensed operators and engineering personnel.

*Denotes those attending the exit interview.

2. Licensee Actions on Previous Inspection Findings

(83-01-03) Unresolved Item: Orientation of Diesel Air Start Check Valves (Closed). During the inspection the licensee presented the inspector a letter dated March 21, 1983 from Cooper Energy Services, which stated that the check valves were mounted in the inverted position to minimize valve damage. The letter also stated that a valve was tested for proper operation in this configuration in 1977 by starting the diesel with a simulated air line break (line disconnected).

3. Plant Procedures

The licensee issued Revision 6 to Procedure 70AC-0ZZ02, Review and Approval of Station Procedures, on July 13, 1983. Review of this revision showed earlier comments to have been incorporated (82-36-04 and 83-15-02, closed). However, the inspector questioned a new provision in the procedure that post-OL startup test procedures would be reviewed in accordance with Procedure 70AC-0ZZ17, Test Results Review Group. The latter procedure did not address startup procedure format, technical review, procedure approval, or documentation that no unreviewed safety questions exist, even though the same Technical Specifications (TS) requirements apply. (83-26-01)

The licensee's listing of issued and proposed plant procedures was reviewed against the requirements of TS Section 6.8 and Regulatory Guide 1.33, Revision 2, with regard to administrative, general plant operating, system operating, and plant emergency procedures. The inspector questioned whether the items listed below were properly covered by plant procedures (numbers is parentheses refer to item numbers in Appendix A to Regulatory Guide 1.33). This will be reviewed further during a future inspection (83-26-02):

a. Administrative Procedures:

- (6.b) Authorities and responsibilities for safe operation and shutdown (for other than Shift Supervisor and Assistant Shift Supervisor, which were defined in Procedure 404C-9ZZ02, Conduct of Shift Operations)
- (1.h) Log reviews
- (1.k) Call-in of personnel
- Control of overtime (NUREG-0737, Item I.A.1.e)
- Independent verifications (NUREG-0737, Item I.C.6)

b. General Plant Operating Procedures:

- (2.b) Hot standbly to minimum load
- (2.d) Operation at hot standby
- (2.e) Turbine startup and synchronization of generator
- (2.f,g) Power Operation
- (2.i) Plant shutdown to hot standby
- (2.k) Preparation for refueling
- (2.l) Refueling and core alterations

c. System Operating Procedures

- (3.m) Safety-related plant cooling water systems

d. Emergency and abnormal Operating Procedures

- (6.f) Loss of containment integrity
- (6.g) Loss of essential chilled water or essential cooling water
- (6.q) Turbine or generator trip

No violations or deviations were identified.

4. Plant Surveillance

During the inspection, licensee representatives discussed pre-startup surveillance testing with the inspector (refer to Inspection Report 83-15, paragraph 4.e). The representatives identified certain surveillance tests which for obvious reasons could not be performed prior to fuel loading (e.g., control element assembly tests, core power

distribution). They also identified refueling outage and other low-frequency surveillance tests which would be performed after fuel load, and questioned to what degree surveillance credit could be taken for preoperational test data. The inspector stated that the scope of initial surveillance testing and its interface with preoperational testing should be reviewed by the Plant Review Board and approved by station management.

No violations or deviations were identified.

5. Independent Inspection Effort

The inspector conducted two tours of portions of the plant. Observations were made regarding reactor coolant pump and other reactor coolant system problems. The condition of these components was as reported by the Senior Reactor Inspector in Inspection Report 83-31.

No violations or deviations were identified.

6. Exit Interview

The inspector met with APS representatives (denoted in paragraph 1) on July 22, 1983 at the Palo Verde site. The inspection findings identified in paragraphs 2 through 5 were discussed. As discussed in paragraph 3, the inspector noted that Procedure 70AC-0ZZ17 did not provide necessary instructions for the preparation, review and approval of post-OL startup test procedures.

11.

Arizona Public Service Company
P.O. BOX 21666 • PHOENIX, ARIZONA 85036

G. CARL ANDOGNINI
VICE PRESIDENT
NUCLEAR OPERATIONS

September 9, 1983

NOLD 83-143

Mr. John B. Martin
Office of Inspection and Enforcement
Region V
U. S. Nuclear Regulatory Commission
1450 Maria Lane, Suite 210
Walnut Creek Plaza
Walnut Creek, California 94596

Subject: Palo Verde Nuclear Generating Station
Docket Nos. STN 50-528/529/530
File: 83-055-026

Reference: (A) Inspection Report No. 50-528/83-31 to G. C. Andognini from D. M. Sternberg, dated August 9, 1983.

Dear Mr. Martin:

As a result of the inspection conducted on July 1, - July 29, 1983, and in accordance with NRC Enforcement Policy, 10 CFR Part 2, Appendix C. 47 FR 9987, the following violation was identified:

1. Criterion V of Appendix B to 10 CFR 50 states, in part, that "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings...."

   Precore Hot Functional Testing Controlling Document 90 HF-1ZZ01- contains a test prerequiste confirming completion of the following action: "A walkdown of the auxiliary building has been completed. The area is free of flamable materials in the proximity of potentially hot piping and is acceptable for the operation of precore HFT." The control was intended to prevent fires or degradation of operating equipment.

   Contrary to the above on July 6, 1983, the inspector observed the following:

8309270017

a. A temporary construction power cable which was energized and resting on a section of uninsulated letdown line in the auxiliary building was not removed prior to plant heatup. Following heatup the hot section of line melted the cable insulation causing the conductors to come in contact with the pipe. This in turn caused arcing which eventually burned a hole in the letdown line. Reactor cooldown from the hot functional test was in progress at the time the leak occurred requiring the operators to isolate the letdown line and adopt an alternate method of controlling pressurizer level.

Company's Response to Notice of Violation

1. Corrective Action Which Has Been Taken and Results Achieved.

The subject power cable was removed from the area and returned to Construction for disposition. The affected section of piping was then identified (line N-027-CCBA-2" between the Regenerative and Letdown Heat Exchangers) and the measures necessary to replace the affected section were initiated. Replacement was completed 8/1/83 with subsequent hydrostatic testing performed on 8/4/83.

2. Corrective Action Which Will Be Taken to Avoid Further Noncompliance.

An investigation was performed to determine how and when the cable came to rest on the exposed section of pipe. It was not possible, based upon the gathered information, to determine if the cable had been:

a. Overlooked during the walkdown,
b. placed in the area after the walkdown, or
c. dislodged from an acceptable routing.

Pursuant to the investigation, all Startup personnel are being informed of the Notice of Violation and are being directed to ensure that all actions called for by a procedure statement are complete and, in particular, that when prerequisites are established that measures are taken to ensure that they remain in effect until modified by the establishing procedure. Also, the Startup Safety Organization was made aware of the situation and as further reinforcement the incident is being used as the subject of a Startup Safety Meeting. The meeting will make specific reference to the Notice of Violation.

3. Date When Full Compliance Will Be Achieved.

The replacement and testing of the affected section of piping were completed 8/1/83 and 8/4/83 respectively. The notification of Startup personnel, per a Safety Directive, and the Safety Meeting were completed by 9/1/83.

We feel that this response adequately addresses the item of concern. Should you have any questions, please feel free to contact me.

Very truly yours,

G. Carl Andognini

cc: Director, Office of Nuclear Reactor Regulation
Director, Office of Inspection and Enforcement
NRC Resident Inspector - PVNGS
PVNGS Project Manager - USNRC

12.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CALIFORNIA 94596

AUG 09 1983

Docket No. 50-528

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

Attention: Mr. G. C. Andognini
Vice President, Nuclear Operations

Gentlemen:

Subject: NRC Resident Inspection

This refers to the inspection conducted by Messers. G. Fiorelli and G. Johnston of this office on July 1 - July 29, 1983, of activities authorized by NRC Construction Permit No. CPPR-141 and to the discussion of their findings with members of your staff at the conclusion of the inspection.

Areas examined during this inspection are described in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspectors.

Based on the results of this inspection, it appears that one of your activities was not conducted in full compliance with NRC requirements, as set forth in the Notice of Violation, enclosed herewith as Appendix A.

Your response to this notice is to be submitted in accordance with the provisions of 10 CFR 2.201 as stated in Appendix A, Notice of Violations.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosures will be placed in the NRC Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1).

8309140041

AUG 09 1983

Should you have any questions concerning this inspection, we will be glad to discuss them with you.

Sincerely,

D. M. Sternberg

D. M. Sternberg, Chief
Reactor Operations Project Branch

Enclosures:
A. Notice of Violation
B. Inspection Report
No. 50-528/83-31

cc w/o enclosure B:
Mr. E. E. Van Brunt, Jr.
Vice President, Nuclear Projects, APS

APPENDIX A

NOTICE OF VIOLATION

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

Docket No. 50-528
Construction Permit No. 141

As a result of the inspection conducted on July 1, - July 29, 1983, and in accordance with NRC Enforcement Policy, 10 CFR Part 2, Appendix C. 47 FR 9987, the following violation was identified:

1. Criterion V of Appendix B to 10 CFR 50 states, in part, that, "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings...."

   Precore Hot Functional Testing Controlling Document 90 HF-1ZZ01 - contains a test prerequiste confirming completion of the following action: "A walkdown of the auxiliary building has been completed. The area is free of flamable materials in the proximity of potentially hot piping and is acceptable for the operation of precore HFT." The control was intended to prevent fires or degradation of operating equipment.

   Contrary to the above on July 6, 1983, the inspector observed the following:

   a. A temporary construction power cable which was energized and resting on a section of uninsulated letdown line in the auxiliary building was not removed prior to plant heatup. Following heatup the hot section of line melted the cable insulation causing the conductors to come in contact with the pipe. This in turn caused arcing which eventually burned a hole in the letdown line. Reactor cooldown from the hot functional test was in progress at the time the leak occurred requiring the operators to isolate the letdown line and adopt an alternate method of controlling pressurizer level.

   This is a Level V Violation (Supplement II).

Pursutant to the provisions of 10 CFR 2.201, Arizona Public Service Company is hereby required to submit to this office within thirty days of the date of this Notice, a written statement to explanation in reply, including: (1) the corrective steps which have been taken and the results achieved: (2) corrective steps which will be taken to avoid further items of noncompliance; and (3) the date when full compliance will be achieved. Consideration may be given to extending your response time for good cause shown.

Dated

Tolbert Young Jr.

Tolbert Young, Jr., Chief Reactor Projects, Section 2

8311040411

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-528/83-31

Docket No. 50-528 License No. CPPR-141 Safeguards Group ___

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 Site, Wintersburg, Arizona

Inspection conducted: July 1 - July 29, 1983

Inspectors: Jolbert Young Jr. for 8-9-83
G. Fiorelli, Senior Resident Inspector Date Signed

Approved by: Jolbert Young Jr. 8-9-83
T. Young, Chief, Reactor Projects Section 2 Date Signed

Summary: Inspection on July 1 - July 29, 1983 (Report No. 50-528/83-31).

Areas Inspected: Routine, resident inspection of precore hot functional testing, system acceptance, and reactor coolant pump damage. The inspection involved 112 hours onsite by the resident inspectors.

Results: One item of noncompliance involving the failure to remove a temporary power cable from a hot pipe was identified.

8309140043

DETAILS

1. Persons Contacted

a. Arizona Public Service Company (APS)

G. C. Andognini, Vice President, Nuclear Operations
J. R. Bynum, Nuclear Operations Manager
J. Kirby, Startup Manager
D. Hayes, Unit 1 Preoperational Startup Manager
C. Connell, Preoperational Test Group Supervisor
G. Pankonin, Startup Quality Assurance/Quality Control (QA/QC) Manager
W. Craig, Startup QC Supervisor
R. Beeken, Hot Functional Test Coordinator
R. Younger, Operations Supervisor
R. Gouge, Shift Supervisor
S. Spencer, Quality Control Supervisor
D. Ingram, Test Document Review Supervisor
C. Churchman, Startup Test Engineer
J. Phillips, Startup Test Engineer
*J. Allen, Operations Engineering, Manager
C. Newsome, Systems Acceptance Engineer

b. Bechtel Corporation

L. Fotter, Administrative/Technical Support Manager
H. Hulslander, Field Superintendent

c. KSB

B. Robinson, Pump Engineer

*Attendees at Exit Interview.

2. Chemical Volume and Control Piping Failure

During the reactor cooldown following hot functional testing, the reactor operators encountered difficulty in controlling let down flow. Operation of various valve combinations in the let down system led to the conclusion that let down flow was being diverted. A walk down of the line confirmed that a pipe leak had occurred in the auxiliary building pipe tunnel. The section of line was isolated and inspected. The inspection revealed that a hole had been created in the let down line as a result of arcing by a temporary construction power cable which had come in contact with a small portion of uninsulated line where the pipe penetrated the tunnel wall. The hot pipe had melted the cable insulation causing the conductor to come into contact with the pipe surface. The repeated arcing had burned a hole in the pipe wall creating a leak. The inspector's observation of the actions taken by operators in compensating for the isolated letdown line were considered a credit to their training and knowledge of the plant.

The inspection for potential problems of this type was identified as a prerequisite line item in the hot functional test controlling document. The removal of temporary cables, hoses and power supplies had been discussed with licensee and contractor representative on several previously conducted plant tours. The matter is considered a violation of procedural requirements (83-31/01), and was discussed with the Vice President of Nuclear Operations.

3. Hot Functional Testing

Hot functional testing was concluded during the period. The inspectors observed portions of the test including cooldown to 300°F from the remote shutdown panel. This cooldown was accomplished using approved procedures. The test was observed to be well coordinated and directed. The licensee had made some modifications to the remote shutdown area to accommodate up to five people in the room. An observer from APS engineering was also in attendance to acquire information for future improvements which are intended to assist operators in operating the panel and communicating with supporting groups.

Cooldown rates were accomplished within procedural requirements. Reactor control from the remote shutdown panel appeared to be successful.

A second remote shutdown test is scheduled during the phase IV power ascension test program. The major work at hand now is to identify test exceptions to the overall hot functional test program so that proper resolutions can be initiated and appropriate retesting accomplished.

No items of noncompliance or deviations were identified.

4. Tours

Several plant tours were conducted with representatives from APS QA/QC, APS operations and Bechtel construction. Housekeeping appeared good with exception of some areas where construction work had increased following cooldown from the hot functional test. The inspector observed that work areas associated with reactor coolant pump inspections, steam generator work, auxiliary feedwater turbine and safety injection pump inspections were controlled.

No instances of equipment abuse or damage or unauthorized work were observed. Controls of the fuel building and diesel generator building were properly in place.

No items of noncompliance or deviations were identified.

5. Reactor Coolant Pumps

Following plant cooldown from the hot functional test, pumps 1A and 1B were disassembled in preparation for repair of a casing indication in pump 1A and a thrust bearing oil leak in pump 1B. An inspection of pump 1A internals revealed the following anomalies. Four diffuser holddown cap screws were found cracked, 3 of which were missing. The 3 missing cap scews had tumbled around in the upper portion of the pump until they were reduced to small fragments. The diffuser clamping ring

sections indicated deformation due to impact from the cap screws. In addition many of the 16 suction pipe cap screws were found loose. Inspection of the piping down stream of the pump revelaed 3 thermowells missing as well as a missing thermal sleeve in the safety injection line-reactor loop connection.

An inspection of the No. 1 and No. 2 steam generator cold leg sides revealed the following, one compression washer was found in the No. 1 steam generator along with several small pieces of slag like material, eleven compression washers and a 2 inch plug were found in the No. 2 steam generator. The compression washers and plug were part of the pump vibration monitoring equipment installed on the reactor internals. This installation was temporary and was to be removed after completion of the hot functional test.

An inspection of the 1B pump revealed one of the impeller blades cracked and a piece missing. In addition 1 diffuser cap screw was found broken but still captured by the locking sleeve. One of the thermowells was found broken and missing.

Based on these findings pumps 2A and 2B were disassembled and inspected. The following anomolies were observed in pump 2A. Two pieces of impeller vanes were broken and missing. One suction pipe cap screw was cracked and missing, another was loose. Several diffuser cap screws were loose as was one of the wedge assemblies. In addition one of the thermowells was noted to have a mashed tip and a second one was bent. The inspection of pump 2B revealed 2 loose diffuser cap screws and a loose wedge assembly.

The inspector observed the conditions of the 1A and 2A pumps as well as the locations of the 2A cold leg thermowells and thermal sleeve. Findings were consistent with those of the licensee.

The licensee and its vendors are currently evaluating the list of problems revealed by the inspection. According to the licensee a meeting is scheduled in early August at which time the proposed repairs and their impact on schedule will be discussed.

No items of noncompliance or deviations were identified.

6. System Acceptance by Operations

The inspector reviewed the process to be used in the acceptance of subsystems by Operations. The process is described in procedures and instructions and involves a detailed review of the key test related documents by startup QA. This review will identify any open items of an administrative control or documentation nature. The open items accompany the subsystem transfer to operations when the system is accepted. The status and close out of the open items are tracked by the operations engineering staff. The program requires several layers of organizational reviews and involves the review of numerous startup related documents for proper close out and completion. Technical reviews of equipment and

system performance are accomplished by the formal Test Working Group (TWG) reviews.

The review effort, exclusive of TWG to support subsystem acceptance by operations is being conducted by a staff of 13.

No items of noncompliance or deviations were identified.

7. Exit Meeting

An exit meeting was held on July 28, 1983 with representatives from APS. The findings of the inspection were discussed.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CALIFORNIA 94596

13.

AUG 24 1983

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

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

Attention: Mr. E. E. Van Brunt, Jr., Vice President
Nuclear Projects Management

Gentlemen:

Subject: NRC Inspection of Palo Verde Units 1, 2, and 3

This refers to the routine inspection conducted by Mr. L. E. Vorderbrueggen of this office during the period June 20 through August 4, 1983, of activities authorized by NRC Construction Permit Nos. CPPR-141, -142, and -143, and to the discussion of his findings with you and members of your staff at the conclusion of the inspection.

Areas examined during this inspection are described in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

No items of noncompliance with NRC requirements were identified within the scope of this inspection.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure will be placed in the NRC Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1).

8309140005

Should you have any questions concerning this inspection, we will be glad to discuss them with you.

Sincerely,

/S/

D. M. Sternberg, Chief
Reactor Projects Branch No. 1

Enclosure:
Inspection Report
Nos. 50-528/83-32
50-529/83-15
50-530/83-12

cc: J. Bynum, APS
G. C. Andognini, Vice President, APS

cc w/o encl:
Snell & Wilmer (Gehr)

bcc: RSB/Document Control Desk (RIDS)

Distributed by RV:

JBM
Resident Inspector
P. Narbut

RV
for L. Vorderbrueggen:dn
8/18/83

T. Young
8/18/83

D. Sternberg
8/18/83

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-528/83-32
50-529/83-15
50-530/83-12

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

License Nos. CPPR-141, CPPR-142, CPPR-143

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

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

Inspection at: Palo Verde Construction Site, Wintersburg, Arizona

Inspection Conducted: June 20 - August 4, 1983

Inspector: Delbert Young Jr. for 8-18-83
L. E. Vorderbrueggen, Senior Resident Inspector Date Signed

Approved By: Delbert Young Jr. 8-18-83
T. Young, Jr., Chief Date Signed
Reactor Projects Section 2

Summary:

Inspection on June 20 - August 4, 1983 (Report Nos. 50-528/83-32, 50-529/83-15 and 50-530/83-12)

Areas Inspected: Routine, unannounced inspection by the construction resident inspector of activities pertaining to follow-up of 50.55(e) items, follow-up of corrective action regarding the Independent Design Verification Program, follow-up of faulty electrical work allegation, defect removal from reactor coolant pump girth weld, piping component damage during hot-functional testing, and general activities in progress throughout the plant site. The inspection involved 103 inspector-hours onsite by one NRC inspector.

Results: No items of noncompliance or deviations were identified.

8309140009

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 Manager (QA/QC)
   R. J. Kimmel, Field Engineering Supervisor
   S. Penick, QA Engineer
   *L. Souza, QA Engineer
   D. Wittas, QA Engineer
   R. Forrester, QA Engineer
   K. Anderson, QA Engineer
   P. Moore, QA Engineer

   b. Bechtel Power Corporation (Bechtel)

   S. M. Nickell, Project Superintendent
   D. R. Hawkison, Project QA Supervisor
   M. Alexander, Lead Electrical Field Engineer
   R. Ruff, Electrical Instrumentation QC Supervisor
   G. Niessen, Lead Piping Field Engineer

   c. Combustion Engineering, Inc. (CE)

   S. Mager, Site Manager

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

   *Denotes personnel present at the management meeting.

2. Follow-up On Regional Request - Investigation of Electrical Allegation By Anonymous Alleger

   a. Background

   This allegation was made to an NRC Region V office staff member on May 25, 1982. It is similar to one presented by another alleger which was investigated and reported in NRC, Inspection Report 50-528/83-10, paragraph 11. The background associated with this allegation is detailed in paragraph 3.a. of NRC Inspection Report 50-528/83-23.

   b. Allegation

   In Unit 1 at the 120-foot elevation at the top of the stairs, undersize cables are coming into Motor Control Center M-0317. The vendor installed two number 2 cables (150 amp.). A young engineer

wrote a FCR in April 1981 for number 6 cable (60 to 70 amp.) which is much too small.

c. Investigation

It appears that the alleger was referring to 480-volt Motor Control Center (MCC) 1E-NHN-M03, compartment 17. It is located just beyond the top of the stairway at the 120-foot elevation. This location is referred to as the Corridor Building. This MCC furnishes power to non safety-related equipment. This is indicated by the letter "N" following the letter "H" in the MCC identification (nameplate) given above. Compartment 17 supplies 480-volt power to Battery Charger E-1, one of three chargers supplying 125-volt DC Load Center No. 1E-NKN-M45 in the Unit 1 Turbine Building. As furnished by the General Electric Company, compartment 17 of MCC-M03 was fitted with a contactor/breaker module rated for 50-amp. service.

The licensee's records show the following chronology of events:

(1) On February 5, 1981, Bechtel workmen installed 3 - 4/0 cables between MCC -M03 and Load Center -M45 as specified on the EE530 Cable Installation Card.

(2) Field Change Request (FCR) 18976-E, applicable to all three Units, was written on April 27, 1981, and approved on May 19, 1981, to permit splicing number 6 "pigtails" to the number 4/0 cables in the cable entrance section of -M03 compartment 17. Job procedures require an approved FCR for each case of "pigtailing" to field run cables. This cable size reduction was necessary because the Number 4/0 cables were too large to fit on the terminal block provided by the vendor in compartment 17; the vendor wiring from the contactor to the terminal block was Number 6. (The National Electric Code specifies an allowable current carrying capacity of 65 amps. for Number 6, Type RH or TH wire in an enclosed raceway.)

NOTE: The alleger's statement that an FCR was written in April 1981 for Number 6 cable was correct.

(3) Design Change Package (DCP) 1-SE-NH-105 was issued by Bechtel Engineering on September 22, 1981, to replace the module in compartment 17 of MCC -M03 with one rated for 150 amps. The modules are plug-in type and are easily changed. The change was required because the 50-amp module was too small for the intended service.

(4) FCR No. 39695-E was written on May 19, 1982, and approved on May 25, 1982, to permit splicing two Number 2 "pigtails" to each of the three 4/0 field-run cables entering compartment 17. The vendor wiring to the terminal block in the replacement 150-amp. module was two Number 2s for each phase. (The allowable current carrying capacity for Number 2 wire is 115 amps. in an enclosed raceway. The allowable value for Number 4/0 cable is 230 amps. in enclosed raceway.)

(5) On June 10, 1982, the Number 2 "pigtails" were spliced to the Number 4/0 cables in compartment 17 and the Number 2 wires were connected to the terminal block, completing the terminations for the MCC end of that cable run. This work is documented on EE580 Termination Card for Cable 1ENK02NC4KJ. The work was inspected and found acceptable on June 16, 1982.

Because of the long lead-time required for an acceptable delivery date, the purchase order for the MCC had to be placed before the electrical design had progressed to the point where the end uses for each of the component modules had been determined. Compartment 17 had been specified for 50-amp. service and, consequently, had to be changed when it was much later determined that 150-amp. service was required. This is not an uncommon occurrence during design and construction of any sizeable project. At the time FCR 18976-E was written in April 1981, the authoring Field Engineer was not aware that the 50-amp. module would be changed. The "pigtailing" work authorized by his FCR (18976-E) was never completed.

Although Battery Charger E-1 has a full-load nameplate rating of 137 amps., Bechtel Engineering specified a 4/0 size for the feeder cables (230 amps.). This was done to assure that the in-service voltage drop at full load would be within acceptable limits.

d. NRC Finding

The alleger was correct in his statement that instructions had been issued to wire a motor control center with wire which was too small. However, apparently the alleger was unaware that these instructions were never implemented and that acceptable wiring instructions were subsequently issued and implemented, when full information was known by the engineering department.

None of the events or circumstances associated with this matter was unusual, or at any time represented an unacceptable or out-of-control situation. All associated activities appear to have been handled in full accord with approved project procedures.

No items of noncompliance or deviations were identified.

3. Follow-up on Headquarters Request - Verify Completion of Corrective Action Regarding Independent Design Verification Program (IDVP)

Seventeen (17) findings resulted from the IDVP conducted by Torrey Pines Technology, Inc. (TPT) in mid-1982. One finding was subsequently ruled invalid by TPT and thus required no corrective action. The corrective action identified for each of the remaining 16 findings was appropriately documented by the Licensee on a Corrective Action Request (CAR). The inspector reviewed the 16 CAR "packages." Each was seen to contain documentary evidence that the corrective measures had been completed and independently verified as being satisfactory. The inspector concluded that all planned corrective actions had been completed and that all findings had been acceptably dispositioned.

4. Unacceptable Pump Casing Girth Weld - Reactor Coolant Pump 1A - Unit 1

During Combustion Engineering's final review of the radiographs of the welds in the primary collant system components, two unacceptable indications were discovered in the casing circumferential girth weld of pump 1A. The indications appeared to be very fine slag stringers, both within a circumferential length of six inches. One measured 3/4-inch long and the other three inches. Ultrasonic examinations were subsequently performed at the jobsight and the indications were located 3.2 inches in from the outside surface of the casing. Neither indication had any perceptible thickness dimension. The base metal of the casing is 5.625 inches thick.

CE informed the licensee that they had performed a fracture analysis which assumed that the "flaw" had a through-wall dimension of 3/4-inch and traversed the entire circumference of the casing at the 3.2-inches depth. The analysis showed that the casing was structurally adequate for the 40-year design life of the pump. The licensee decided, however, that the indications were to be removed.

Excavation of the inside casing wall was begun on July 20, 1983, by a specialty Boilermaker from the CE fabrication shop in Newington, NH. CE Procedure SPS 709-650400 was developed and approved for this work. The inspector examined the work in progress and observed that appropriate cleanliness measures were established and the area inside the pump was neat and orderly. The work was proceeding under the continous surveillance of a quality control engineer using an ultrasonic instrument to guide the workman. The indications did become visible at the expected locations and were confirmed to be slag inclusions. Magnetic particle testing was utilized in the final grinding stages to show when the indications were no longer present.

The excavated area has been ground to provide a smooth contour of the casing inner surface. The final acceptance radiograph of the excavated region confirms that the weld conforms to the ASME code requirements. The reduced wall thickness in the excavated area is now 3.2 inches, measured ultrasonically. This compares with a calculated (by CE) minimum acceptable wall thickness of 1.78 inches. The licensee is making preparations for the casing hydrotest. A decision has not yet been made regarding further surface treatment of the excavated area.

No items of noncompliance or deviations were identified.

5. Piping Component Damage During Hot Functional Testing - Unit 1

During the latter stages of the preoperational hot functional test program, two resistance temperature detector (RTD) thermowells displayed leakage from the reactor coolant system. These were thermowell 112CC in vessel cold leg 1A and thermowell 122CA in vessel cold leg 2A. When access to the reactor coolant system piping became available subsequent to the completion of the hot functional testing, a detailed inspection of the piping internals disclosed the following component damage:

a. The thermal sleeve in the shutdown cooling return nozzle in cold leg 1A was missing.

b. All 12 of the cold leg thermowells were damaged as shown in the tabulation below.

Cold Leg	T.W. No.	Condition
1A	111Y	End Broken Off and Missing
1A	112CA	End Broken Off and Missing
1A	112CC	End Broken Off and Missing
1B	112CB	Fretting Distress at Nozzle Exit
1B	112CD	Entire Thermowell Missing
1B	115	Fretting Distress at Nozzle Exit
2A	122CA	End Broken Off and Missing
2A	122CC	Fretting Distress at Nozzle Exit
2A	125	Badly Bent and Cracked Struck by Moving Object
2B	122CB	Fretting Distress at Nozzle Exit
2B	122CD	Fretting Distress at Nozzle Exit
2B	121Y	Fretting Distress at Nozzle Exit

The nine thermowells in each of the vessel hot legs were found intact and apparently undamaged. When the reactor vessel internals were removed, the missing thermal sleeve and two of the five broken thermowell pieces were found lodged against the flow baffle in the bottom of the vessel. The other three missing thermowell pieces are believed to be lodged in the core support structure or the upper guide structure.

The thermowells were fabricated from Inconel SB166. The failure mechanism is believed to be fatigue resulting from flow induced vibration and vortex shedding. Metallurgical studies are to be performed by CE to determine the cause of the failures and to develop a solution to prevent recurrence. The inspector will follow the resolution of these problems. (50-528/83-32-01)

6. Review of 50.55(e) Items - All Units

During this reporting period, the inspector reviewed and closed out the 13 items tabulated below which the licensee had identified to the NRC as having potential 50.55(e) reportability significance. Each item was documented on a Deficiency Evaluation Report (DER) as required by the licensee's procedure. The DER describes the discrepant condition,

identifies supporting documents and the corrective action to be taken, and is the basis for the licensee's report to the NRC. For each of the items, the records indicate that the licensee's evaluations were thorough and that satisfactory corrective action had been completed or has been arranged. In the tabulation below, only those marked with an asterisk (*) were judged by the licensee to be reportable under the 50.55(e) criteria and have been satisfactorily reported; the others were considered not reportable. The inspector concurs with the licensee's decisions.

DER NO.	SUBJECT
*81-14	ASTM A354BD Pipe Restraint Anchor Bolts - Nonconforming Strength Characteristics - All Units.
82-50	Questionable Expansion/Deflection Conduit Fittings Between Auxiliary and Control Buildings - Unit 1.
82-56	Questional Design Approach - Condensate Storage Tank - All Units.
82-63	Design Calculation Error - Refueling Water Tank Wall/Basemat Junction - All Units.
*82-72	In-Wall Communication Between Two Tendon Sleeves - Unit 1 Containment Structure.
82-83	Jamesbury Air Valve Seat Leakage - Unit 1 Diesel Engines.
*83-1	Improper Application of Current Transformer - Diesel Generator Control Panels - Units 1 and 2.
83-11	Possible Cover Seal Cracks in Exide Class 1E Batteries - Units 1 and 2.
83-13	Licensee Terminating Cables Without Proper Procedures - Unit 1.
*83-17	Faulty Class 1E Electrical Switches Supplied By ITE Gould - Unit 2.
83-28	Insufficient Cold Setting Reserve Range on Mechanical Shock Arrestors - Unit 1.
*83-29	Improper Pipe Stop Installation on Hangers - Unit 1.
*83-33	Defective General Electric Model AKR-50, 125 Volt DC Circuit Breakers - Unit 3.

No items of noncompliance or deviations were identified.

7. Inspection Tours of Plant Site

At various times during this inspection period, the inspector toured the plant site in order to observe general housekeeping conditions, care and preservation of equipment, handling of heavy components, tagging and identification of material, absence of welding electrode stubs lying around the various work areas, adequacy of caps over pipe openings not being worked on, and presence of cribbing under stored pipe spools, valves, and other components.

No items of noncompliance or deviations were identified.

8. Management Meeting

On August 4, 1983, the inspector met with the licensee and Bechtel representatives identified in paragraph 1. During the meeting, the inspector summarized the scope of the inspection activities and reviewed the inspection findings as described in this report.

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CALIFORNIA 94596

SEP 19 1983

Docket No. 50-528

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

Attention: Mr. G. C. Andognini
Vice President, Nuclear Operations

Gentlemen:

Subject: NRC Inspection - Palo Verde Unit 1

This refers to the routine inspection conducted by Messrs. G. Fiorelli and G. Johnston of this office on August 1 through August 31, 1983, of activities authorized by NRC Construction Permit No. CPPR-141 and to the discussion of our findings with Mr. J. Bynum and other members of your staff at the conclusion of the inspection.

Areas examined during this inspection are described in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

No items of noncompliance with NRC requirements were identified within the scope of this inspection.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure will be placed in the NRC Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1).

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Should you have any questions concerning this inspection, we will be glad to discuss them with you.

Sincerely,

/S/

T. W. Bishop, Director
Division of Resident, Reactor Projects
and Engineering Programs

Enclosure:
Inspection Report
No. 50-528/83-38

cc w/enclosure:
E. E. Van Brunt, Jr., Vice President

bcc: RSB/Document Control Desk (RIDS)

Distributed by RV:

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Resident Inspector
Snell & Wilmer (Gehr)
Ms. Jill Morrison, Palo Verde Intervention Fund.

RV
for G.Fiorelli:db for G.Johnston for P.Young T.Bishop
9/13/83 9/13/83 9/13/83 9/13/83

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-528/83-38

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 Site, Wintersburg, Arizona

Inspection conducted: August 1 through August 31, 1983

Inspectors: for [signature] 9/13/83
G. Fiorelli, Senior Resident Inspector Date Signed

for [signature] 9/13/83
G. Johnston, Resident Inspector Date Signed

Approved By: for [signature] 9/13/83
T. Young, Jr., Chief Date Signed
Reactor Projects Section 2

Summary:

Inspection on August 1 through August 31, 1983 (Report No. 50-528/83-38)

Areas Inspected: Routine, resident inspection of equipment qualification, startup testing, TMI follow-up items, NSSS problems, and plant modification. The inspection involved 187 hours onsite by the resident inspectors.

Results: No items of noncompliance or deviations were identified.

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DETAILS

1. Persons Contacted

   a. Arizona Public Service Company (APS)

      G. C. Andognini, Vice President, Nuclear Operations
      *J. R. Bynum, Nuclear Operations Manager
      D. Hayes, Unit 1 Preoperational Startup Manager
      C. Connell, Preoperational Test Group Supervisor
      G. Pankonin, Startup Quality Assurance/Quality Control (QA/QC) Manager
      W. Craig, Startup QC Supervisor
      E. Beeken, Hot Functional Test Coordinator
      D. Ingram, Test Document Review Supervisor
      C. Churchman, Startup Test Engineer

   b. Bechtel Corporation

      L. Fotter, Administrative/Technical Support Manager
      H. Hulslander, Field Superintendent

   c. Combustion Engineering (CE)

      C. Ferguson, Project Manager
      D. Amerine, Site Manager
      J. Gibbon, Senior Engineer

   *Attendee at Exit Interview.

2. Review of Hot Functional Test Procedure Results

   An evaluation of individual hot functional test results is currently being conducted by the licensee. A review of the controlling test document by the inspector confirmed that:

   a. Data collection was conducted in accordance with the procedure. Test exceptions were noted in Test Exception Reports.

   b. Test prerequisites had been signed off.

   c. Approvals to progress to higher temperature/pressure plateaus or subsequent testing were documented.

   d. Test changes were covered by Test Change Notices. Scoped changes had been approved by the Test Working Group.

   e. Chemistry data acquistion had been performed. At one time during the test, primary coolant oxygen limits was exceeded. The plant was immediately cooled and hydrazine was added. Oxygen limits were restored prior to the reheat.

   f. Pipe hanger checks had been completed.

g. Measuring and test equipment information had been documented.

h. Test modifications had been documented and restored.

i. Test logs had been maintained.

Test engineers are currently compiling a listing of test exceptions for the purpose of identifying retesting requirements.

No items of noncompliance or deviations were identified.

3. NSSS Problems

a. Reactor Internals Inspection

Following cooldown from the hot functional test, the reactor head and internals were removed for inspection. The following significant observations were made:

- Seven upper guide structure Control Element Assembly (CEA) shrouds were found with cracks in the upper ends of the cylinders.
- Metal powder was observed to have accumulated in the area of the mating surfaces of the head and upper guide structure support barrel.
- The missing reactor coolant pump impeller vane segments, thermal sleeve, and two of the four thermowells were located in the area of the flow skirt (these items were discussed in Inspection Report 50-528/83-31).
- Loose pins were noticed on the capscrews which hold the core barrel snubber shims in place.
- Several loose pins and washers were located in the cavity of the upper guide structure.
- The condition of the reactor vessel was noted to be exceptionally clean.

The licensee is currently conducting a detailed inspection of the upper guide structure. Metallographic samples are being removed for examination.

b. Reactor Coolant Pump Corrective Efforts

The licensee along with its contractors and consultants have attributed the problems with the reactor coolant pumps (discussed in Inspection Report 50-528/83-31) to be associated with an insufficient clearance between the impeller and diffuser vane edges. This configuration is concluded to have created pressure pulses as the vanes passed each other. This phenomenon is blamed for damage of the pump internals as well as having contributed to the fatigue

failure of the thermowells and loss of the thermal sleeve. A program is currently under way to modify the pumps and conduct tests to confirm that the corrective actions are appropriate. Other modifications including redesign of the thermowell and increasing the diffuser bolt lengths are being pursued.

Combustion Engineering is evaluating the need for the thermal sleeve and is conducting studies of the upper guide structure flow region in an effort to ascertain the cause for the cracks in the CEA shrouds.

An inspection of pump seal packages revealed some wear of seal components and some loose keys. All seal packages are being inspected.

The licensee has publicly announced a delay in fuel loading to May 1, 1984.

No items of noncompliance or deviations were identified.

4. Plant Modification Program

An APS task force was assembled to define the program APS intends to use for controlling plant configurations originating from APS-initiated plant modifications. The task force representing the major APS organizations has completed its charter of defining the process to be used in the development and implementation of plant configuration control following receipt of an operating license. The overall program, which will involve several APS organizations both onsite and offsite as described to the inspectors appeared comprehensive and consistent with regulatory commitments. The next effort will involve the writing of implementation and interface documents. This task has been goaled to be completed in the next few months and will again be reviewed by the Nuclear Regulatory Commission.

No items of noncompliance or deviations were identified.

5. TMI Follow-up

The following reviews were conducted:

a. II F.1 (2F) Containment Water Level Monitor

The inspector confirmed that two channels of containment sump and containment water level indicators were installed in the control room. Range of the instruments was from six inches above the bottom of the sump to 138 inches above the floor of the containment. In addition to the two channels of level indications, a recorder was also installed in the control room which records one channel of wide range containment level measurement. A review of documentation confirmed that with one exception the sensors and transmitters were environmentally qualified to function in post LOCA environment. This item is being pursued with the licensee.

b. II.F.1 (2F) Containment Hydrogen Monitor

The inspector confirmed that containment hydrogen monitoring is provided by two redundant hydrogen analyzers. Indication is provided in the control room of hydrogen concentrations over a range of 0-10 percent. Recording on one channel is also provided in the control room. This equipment has not as yet been tested. Testing is scheduled prior to fuel loading. A review of documentation confirmed it to be qualified to function in a post accident environment.

c. II.F.1 (2D) Containment Pressure Monitor

The inspector confirmed that two channels of containment pressure indication had been installed in the control room. The instruments ranged from -5 to 150 psig. In addition, a recorder is installed in the control room to record one channel of pressure measurement. A review of documentation confirmed that the transmitters are qualified to function in a post accident environment. Operations personnel will write an operating procedure covering this equipment.

d. II.B.1 Reactor Coolant System Vents

An inspection of key components of the reactor vent system confirmed that it had been installed in accordance with design drawings. Control room position indicator switches are provided for all power operated valves. A review of documentation confirmed that solenoid valves are qualified to function in a post LOCA environment. The system will be preoperationally tested prior to fuel load. The test procedure is currently being written. Operating procedures governing the operation of the system are also being written.

e. II.E.1.2 Part I Auxiliary Feedwater System Automatic Initiation

The automatic initiation signals and circuits were designed as safety grade as part of the original design. No backfit or modifications will be required. No additional follow-up is planned.

f. II.B.2 (4) Radiation Qualification of Safety-Related Equipment

An inspection of environmental qualifications of selected components to verify that qualification for post accident radiation exposure effects was conducted as a portion of an examination of environmental qualification testing. This is delineated further in Section 7 of this report.

The findings of this review are considered consistent with the applicable provisions of NUREG-0737.

No items of noncompliance or deviations were identified.

6. Startup Testing

A portion of the following preoperational test was observed:

Diesel Generator Electrical Test.

A properly approved official test procedure was being used. All action which was required prior to the start of the actual test was properly signed off as were the individual test steps. Test engineers met qualification standards.

No items of noncompliance or deviations were identified.

7. Environmental Qualifications

The inspectors examined a selection of environmental qualification records to determine the nature and completeness of the testing conducted on selected components. This included a determination of the conditions the components were subjected to and the evaluation of the results of the testing. The results of the testing were evaluated against the qualification requirements in the FSAR, Chapter 3. These requirements included seismic, temperature, humidity, pressure, and radiation as appropriate to the application. The following component records were examined:

Motor Operated Valve Actuators

Containment Purge Valves

Containment Power Purge Valves

Reactor Head Vent Valves

600 Volt Control Cable

Containment Wide Range Pressure Transmitters

Containment Hydrogen Monitors

Containment Wide Range Water Level Transmitter

Containment Narrow Range Water Level Transmitter

In examining the records, the inspector determined that the containment water level transmitter qualification records did not address the narrow range units, despite the fact the wide range and narrow range units are essentially identical in configuration. In discussion with the applicant's engineering personnel, they agreed to review the test and to determine the applicability of the test results for the narrow range instrument. This will be followed up during a future inspection. (83-38-01) The inspector also verified that the installed equipment corresponded to the equipment that was tested by verifying the models of the installed equipment were the same as those that went through the qualification tests.

No items of noncompliance or deviations were identified.

8. Piping Verification Program

The inspector examined the test results of the piping ve
testing that was conducted during the hot functional te t
examination included a review of the test results repor est -
packages for completeness, documentation of Test Change , meet
Exceptions, and Startup Field Reports. The only noted fa. tem
the required acceptance criteria occurred during Reactor Coolant
(RCS) expansion measurements. This occurred at the No. 2 pressurizer
keyway at the 565 F plateau. This was documented in SFR-1RC-115 and a
retest will be conducted during the Post Core Hot Functional Test under
procedure 73HF-1RC07. The following tests were examined:

91HP-1RC01 - Reactor Coolant System Expansion Measurements

91HP-1RC16 - Reactor Coolant System Pipe Stop Measurements

91HP-1ZZ06 - Balance of Plant Steady State Vibration Test

91HP-1ZZ07 - Balance of Plant Dynamic Transient Test

91HP-1ZZ08 - Balance of Plant Thermal Expansion Test

91HP-1FW02 - Auxiliary Feedwater Water Hammer Test

No items of noncompliance or deviations were identified.

9. Plant Tours

Several plant tours were conducted during the period. Housekeeping was noted to be good. No observations of equipment abuse, fire potential, unauthorized work, or loss of access control were noted.

No items of noncompliance or deviations were noted.

10. Exit Meeting

An exit meeting was held on August 31, 1983. The inspection findings were discussed with a representative of APS management at that time.