

DEC 4 1991

Dockets: 50-528-OLA-2  
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50-530-OLA-2

MEMORANDUM FOR: Robert C. Jones, Chief  
Reactor Systems Branch  
Division of Systems Technology  
Office of Nuclear Reactor Regulation

FROM: Jack E. Rosenthal, Chief  
Reactor Operations Analysis Branch  
Division of Safety Programs  
Office for Analysis and Evaluation  
of Operational Data

SUBJECT: PROPOSED TECHNICAL SPECIFICATIONS AMENDMENT TO SECTIONS  
3/4.3.1, 3/4.4.2, 3/4.7.1, AND 3/4.7.2 FOR PALO VERDE  
NUCLEAR STATION, UNIT NOS. 1, 2, AND 3

The changes in the tolerances for the setpoints of the main steam safety valves and the pressurizer safety valves as stated in the referenced document are of concern to us. We understand that you are reviewing this proposal for acceptability. We are, therefore, forwarding the enclosed document, "Comments on Proposed Technical Specification Changes" to you for your information and for use in formulating NRC's response to the licensee's request.

We believe that the licensee has not established a need for the Technical Specification changes; that he has not shown that the proposed changes, if adopted, could be met; that the analytic model for the pressurizer safety valve is flawed; and that the main steam safety valve tolerance as proposed will produce an average setpoint which is not +3 percent but +6.4 percent above the design pressure of the main steam system.

We believe that it would not be prudent to entertain Palo Verde's request for TS relief at this time.

Original signed by Jack E. Rosenthal

Jack E. Rosenthal, Chief  
Reactor Operations Analysis Branch  
Division of Safety Programs  
Office for Analysis and Evaluation  
of Operational Data

Enclosure: As stated  
cc: See attached list  
Distribution: See attached list

Technical Contact: Mary S. Wegner  
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9112120180

## COMMENTS ON PROPOSED TECHNICAL SPECIFICATIONS CHANGES

### I. Introduction

Our concerns with the licensee's request for an amendment to their Technical Specifications to increase the setpoint tolerances for their main steam safety valves (MSSVs) and for their pressurizer safety valves (PSVs) for the three Palo Verde units are based on prior operating experience and review of their analytic models. These concerns are as follows:

- A. The licensee fails to establish a need for a technical specification change in that he fails to show that no correctable problems exist with the testing procedure or with the valve design.
- B. The licensee does not show that the tolerances which he proposes can be met.
- C. The licensee uses a flawed model for PSV lift.
- D. The licensee proposes MSSV tolerances which, if granted, would reduce the margin between design pressure and the upset limit by 64 percent not 30 percent.

### II. Summary of Licensee Proposal

Because of difficulties in meeting the surveillance requirements for PSV and MSSV setpoint tolerances, the utility proposed changing the PSV tolerances to +3 percent, -1 percent and the MSSV setpoint tolerances to  $\pm 3$  percent. The minus tolerance for the PSV remain at one percent to assure the reactor trip prior to the opening of the PSVs. The model of the PSV was changed from 70 percent open at the setpoint and ramping fully open at 3 percent accumulation to fully open at the setpoint. Palo Verde references CEN-227 as a justification for this model. These points are evaluated in section IV.

Additional reductions in conservatism/margin taken by the licensee include:

To meet the safety limits for peak pressures during the postulated accident scenarios, a reduction in the response time for the high pressurizer pressure trip from 1.15 seconds to 0.5 seconds is made.

The surge line friction form loss factor was reduced from 3.9 to 3.0.

Clearly, the licensee is systematically identifying and reducing margins in the overpressure analysis to justify the proposed technical specification changes.

For the loss of condenser vacuum at full power, the following sequence of event was postulated:

<u>Time</u>	<u>Event</u>	<u>Setpoint or Value</u>
0.0	Loss of Condenser Vacuum - Loss of all Normal Feedwater and Turbine Load	
7.2	MSSVs begin to open	1302 psia
7.75	High pressurizer pressure trip	2450 psia
8.25	Pressurizer safety valves begin to open	2575 psia
8.25	Trip breakers open	
8.59	CEAs fall into core	
* 9.15	Maximum RCS pressure	2740.86 psia
* 10.55	Maximum secondary pressure	1369.6 psia
*	Discussed in this document	

### III. Cause of the Setpoint Problem

The difficulties that the licensee encountered in meeting surveillance requirements are as follows: The as-found setpoints of the pressurizer safety valves and the main steam safety valves were not always within the  $\pm 1$  percent tolerance as specified by the Technical Specifications. See Table 1.

In Figure 1, "Palo Verde PSV Test Results," we see that the as-found setpoints for nine of the twelve PSVs tested were above the TS allowable tolerance. The remaining 3 were within  $\pm 1$  percent (okay). Figures 2a, 2b, 3a, 3b, 4a, and 4b show the as-found setpoint results for the MSSVs. Unit 1 MSSV setpoints are high for 19 valves, okay for 19, and low for 2. Unit 2 MSSV setpoints are high for 19, okay for 18, and low for 3. Unit 3 MSSV setpoints are high for 9, okay for 18 and low for 6. See Figure 5 for a graphic presentation of the variance distribution between as found and nominal setpoint. With a symmetric tolerance, one would expect to see as many valves low as high. Something is skewing the results. Something is causing the setpoint to "drift" high.

#### A. The Licensee's Analysis, From Licensee Event Reports (LERs)

In LER 528/88-014, the licensee attributes the cause of the setpoint change to several factors. Removal of lagging (insulation) was said to have been responsible for a 1.4 percent increase in the setpoints of the valves. They also postulated that spring relaxation and tolerance of testing equipment could have contributed to the setpoint change.

In LER 528/89-010, the licensee states that the cause of the event is setpoint drift. They further state that "A generic review revealed that this type of valve is subject to drift."

LER 529/89-002 makes the same claims and adds "discussion with the valve vendor indicates that the performance of the MSSV's (*sic*) is within the design tolerance of the valves.

LER 529/89-007 makes the same assertions.

LER 529/90-004 introduces the EPRI data, claiming that "From this test data it was determined that relief and safety valves of the size and application tested have lift setting repeatability of plus or minus three (3) percent." They conclude that the failure of the pressurizer safety valves to meet the  $\pm 1$  percent tolerance requirements of the Technical Specifications and FSAR Chapter 15 Accident Analysis assumptions is "the performance limitation of the valve." In repeating the claims made in previous LERs for steam safety valve setpoint change, they further claim that setpoint drift is a "normal occurrence."

LER 530/91-001 makes the standard claims for "setpoint drift" and alludes to knowledge of industry experience with the problem.

#### B. Background of the "Setpoint Drift" Problem

"Setpoint drift" has been the name given to a phenomenon experienced by two-stage Target Rock safety/relief valves (SRVs) used on some boiling-water reactors. The major event in the "setpoint drift" saga was a post-scrum transient at the Hatch 1 Nuclear Plant on July 2, 1982 when all 11 of the SRVs failed to lift at their setpoints (1080, 1090, and 1100 psig). Three SRVs lifted at 1180 psig on the steam lines. Subsequently, the industry effort to find a root cause first established a standard testing method to eliminate testing errors. Then they determined and eliminated all but one of the root causes. The work on corrective action for that cause is still in progress. This series of events has been described in detail in a series of INs and in a soon-to-be-published AEOD special study entitled, "Safety Valve and Safety Relief Valve Reliability."

Spring-action safety valves such as the ones used at Palo Verde have a similar history of a problem which has been labeled "setpoint drift." In Information Notices (INs) 86-56 and 86-92, the setpoint problems with MSSVs and PSVs were first discussed. An LER from Calvert Cliffs (318/85-011) was attached to IN 86-56 to "give an example of the problems found during testing, and because it gives an especially thorough treatment of corrective actions ..." Calvert Cliffs submitted a detailed analysis of their testing procedures, equipment, and practices. They found many deficiencies in their MSSV testing program.

The report, AEOD/T704, "Pressurizer Code Safety Valve Reliability" discusses how a testing method was shown to affect the as-found setpoint of a PSV. While the PSV problem discussed in the report is not applicable to the Palo Verde valves which do not

have loop seals; nevertheless, it is another example of setpoint problems directly related to testing problems.

The event described in the AEOD paper and a related event were the subject of Information Notice 88-68, "Setpoint Testing of Pressurizer Safety Valves with Filled Loop Seals Using Hydraulic Assist Devices."

Information Notice 89-90, including Supplements 1 and 2, "Pressurizer Safety Valve Setpoint Shift" and AEOD/T91-05, "Setpoint Testing of Pressurizer Safety Valves With Water-Filled Loop Seals" discuss the disparity of results when setpoint testing procedures are designed and carefully controlled to produce precise results vs. the standard setpoint testing procedure.

Additionally, the Duke Power Corporation has developed enhanced procedures designed to improve the performance of the Dresser 31709NA, pressurizer safety valves, used at Catawba and Oconee. The same model valves are also used at Palo Verde. Duke found that focusing on a particular problem (leakage) led to a solution which solved that problem, but caused another (failure to restore the valve configuration).

NRR issued an Information Notice IN 91-74, "Changes in Pressurizer Safety Valve Setpoints Before Installation" to distribute this information to all licensees. Palo Verde has been referred to Duke by the NRC Resident Inspector at our suggestion.

Many licensees have addressed setpoint problems with PSVs and MSSVs independently in a number of LERs which are available to Palo Verde for reference.

#### IV. Evaluation of Licensee's Assumptions

##### A. Valve Model

Licensee's Submittal, Attachment 1 Safety Evaluation 2.2.1

- 3) Safety valves are assumed to open at the setpoint pressure.

Justification is based on the test data presented in ABB-Combustion Engineering Topical Report CEN-227, "Summary Report on the Operability of Pressurizer Safety Valves in CE Designed Plants"

CEN-227 declares that "the valves had stable performance and the stem achieved 120 to 130 percent of full flow lift (0.499") at opening."

The PSV manufacturer, Dresser, does not agree with the instantaneously open model. Dresser states that the PSV will pop to about 60-70 percent open at the setpoint, pause for a brief but finite time, and then lift to fully open. They stated that a zero

accumulation is not realistic. The valve is rated at 90 percent capacity at 3 percent accumulation according to ASME standards.

EPRI test results show that for valve number 603 with a ramp rate  $\leq 3$  psi/sec, full stem travel of 0.65 inch was achieved in 20 milliseconds while 0.499 inch was achieved in 17 milliseconds; for valve number 606 with a ramp rate of 288 - 322 psi/sec, full stem travel of 0.64 inch was achieved in 22 milliseconds while 0.499 inch was achieved in 18 milliseconds; for valve number 611 with a ramp of 288 - 322 psi/sec, full stem travel was achieved in 25 milliseconds while 0.499 inch was achieved in 20 milliseconds; and for valve number 618 with a ramp rate of 288 - 322 psi/sec, full stem travel was achieved in 21 milliseconds while 0.499 inch was achieved in 18 milliseconds.

The average time for these valves to achieve 0.499 inch is 18.25 milliseconds; the system response for a ramp rate of 300 psi/sec is 5.5 psi and 2.6 psi for a ramp rate of 145 psi/sec. Therefore, the assumption that the safety valves are fully open at the setpoint is less conservative than actual conditions and should be disallowed. This will raise the peak RCS pressure to 2743.5 to 2746.4 psia. While this change is itself small with a margin of about 10 psi this constitutes about a 1/3 of the margin between peak calculated and safety limit pressures.

B. Relationship of the MSSV Setpoints to the Design Pressure

The tolerance on MSSVs is  $\pm 1$  percent of design pressure. Steam safety valves are set at 1250, 1290, or 1315 psig and the design pressure of the main steam system is 1255 psig. The average setpoint of an MSSV is 1297 psig or 3.3 percent above the design pressure of the main steam system. With all steam safety valves set at 3 percent above their nominal setpoints, the average setpoint is 1336 psig or 6.4 percent above the design pressure of the main steam system.

Figure 6: "Average Setpoints of MSSVs and Relationship to Design Pressure" shows the average variation from the setpoint of the valves tested. Except for the first group of valves tested for Unit 3, this is the average variation for all 20 valves.

Unit 1 as-found MSSV setpoints in 1987 (87U1) averaged 3.7 percent above the design pressure of the main steam system. Unit 1 as-found MSSV setpoints in 1989 (89U1) averaged 4.7 percent above the design pressure of the main steam system.

Unit 2 as-found MSSV setpoints in 1988 (88U2) averaged 4.7 percent above the design pressure of the main steam system. Unit 2 as-found MSSV setpoints in 1989 (89U2) averaged 4.3 percent above the design pressure of the main steam system.

Unit 3 as-found MSSV setpoints (for the valves tested) in 1989 (89U3) averaged 3.9 percent above the design pressure of the main steam system. Unit 3 as-found MSSV

setpoints in 1991 (91U3) averaged 3.3 percent above the design pressure of the main steam system.

## V. Findings and Conclusion

Palo Verde has not shown a cause for the failure of their safety valves to meet the standards to which the plants are committed by FSAR technical specifications and accident analyses. The licensee fails to establish that no correctable errors exist in the testing program or the valve design. In view of the large number of NRC communications on setpoint problems of safety valves and SRVs, it is reasonable to assume that the licensee knew or should have known of the possibility of testing problems. Where licensees have attempted a root cause analysis, they have found correctable problems, particularly in all aspects of the setpoint testing.

Palo Verde should first determine that no correctable problem exists in their testing program or their valves before they ask for relief from the requirements, especially the reductions in conservative assumptions and safety margins.

Furthermore, Palo Verde makes a claim for repeatability in setpoint testing that is unsubstantiated. Experience with setpoint testing has show that "setpoint drift" is not confined within the  $\pm 3$  percent band. Lack of reproducibility of results has led licensees to question testing methods. It also raises questions about the ability of any licensee to state that any tolerance can be met.

The value of the model used by Palo Verde in determining the final reactor coolant system (RCS) pressure in the case of a loss of condenser vacuum is compromised by a flaw. It is less conservative than actual operating conditions as demonstrated in the EPRI tests to which the licensee refers. The valve manufacturer also does not subscribe to the licensee's description of the valve opening. The correction of this model would remove a substantial amount of the insubstantial margin in the final RCS pressure as given in the safety evaluation.

The licensee's request for broadening the TS tolerances on the MSSVs fails to point out that the current setpoints for 16 of 20 MSSVs for each unit are above the design pressure of the main steam system. He is asking for a reduction of the margin of the main steam system to 3.6 percent. Although, the reduced main steam line margin (between design pressure and upset) is about ten times the RCS margin remaining between design pressure and the TS safety limits; the licensee fails to establish any substantial need for such substantive reductions.

A request for Technical Specifications relief for the purpose of reducing the number of LERs is frivolous. Numbers of LERs should be reduced by reducing the events which necessitate them; that is, correcting the defect.

We believe that it would not be prudent to entertain Palo Verde's request for TS relief at this time. The licensee might be advised to consider root cause analysis of the "setpoint drift" problem, including researching NRC generic communications. With the MSSVs set as high as

they are, the licensee might be advised to consider reduction of the setpoints (50 to 100 psig) in any future attempts to broaden their setpoint tolerance.

#### ADDITIONAL SUPPORTING INFORMATION

The licensee has differing opinions within their own organization on this subject as evidenced by the items in the following paragraphs. The last quotation expresses our sentiments also.

##### In-House Correspondence Dated August 23, 1990

The following was excerpted from an in-house memorandum, provided to the NRC Resident Inspector as background for an LER analysis, written prior to the November 1990 proposed TS amendment:

The loss of condenser vacuum event was initially simulated using the "as-found" opening pressure for PSVs with the main steam valves opening pressures set at 3 percent above setpoint pressure.

CESEC, a Combustion Engineering Code, was used for this simulation.

The resultant primary peak pressure was above the acceptable limit of 2750 psia.

The LOCV event was reanalyzed using the worst case "as-found" pressures for the MSSVs for unit 2 that might have existed before the Unit 2 surveillance tests for the PSVs of April 27 and 28, 1990. The maximum RCS pressure of 2749.2 psia occurred for the Unit 2 cycle 1 case at 9.85 sec.

Previous safety evaluations in which Combustion Engineering relaxed a number of conservative assumptions to ensure that the peak RCS pressure did not exceed 110 percent of the design pressure were done after safety valve test results were found to be out-of-specification. "The latest violation of Pressurizer Safety Valve Criteria has brought the peak pressure even closer to the limit (less than 1 psi away from the limit). Although some additional conservatism may still be present in the analysis, it is felt that a slightly more adverse tolerance for the PSVs or MSSVs, would be very difficult to justify."

**TABLE 1: SAFETY VALVE TEST DATA**

PSV Design 2500 psia	TS SP (psia)	Unit 1 04/12/89	Unit 2 05/04/90	Unit 3 04/01/91
	2500	2556	2590.7	2.5%
	2500	2547	2566.7	3.3%
	2500		2554.7	3.4%
	2500		2534.7	

MSSV Design 1255 psig	TS SP (psig)	Unit 1 10/02/87 A/F	Unit 1 04/08/89 A/F	Unit 2 02/14/88 A/F	Unit 2 09/21/89 A/F	Unit 3 02/23/89 A/F	91 (?) A/F
SGE 554	1250	1273	1269	1255	1258.4	1258	1261
SGE 555	1290	1266	1302	1272	1298.8	1300	1271
SGE 556	1315	1331	1344	1358	1326.4	1340	1312
SGE 557	1315	1316	1350	1352	1322.4	1316	1308
SGE 558	1315	1338	1318.2	1339	1328.4	1322	1300
SGE 559	1315	1313	1321	1345	1300	1322	1307
SGE 560	1290	1300	1325	1294	1296.5	1320	1305
SGE 561	1250	1251	1253	1294	1252.3	1259	1257
SGE 572	1250	1262	1275	1225	1264	1279	1269
SGE 573	1290	1304	1312	1323	1318.3	1289	1281
SGE 574	1315	1340	1317.3	1321	1324.3	1316	1335
SGE 575	1315	1330	1341	1304	1324.2		1301
SGE 576	1315	1314	1318	1374	1347.7		1334
SGE 577	1315	1309	1318.3	1342	1326.3		1315
SGE 578	1290	1296	1333	1316	1298.9		1288
SGE 579	1250	1185	1256.4	1267	1267.5		1264
SGE 691	1315	1337	1341	1307	1337.6		1294
SGE 692	1315	1336	1330.5	1345	1331.3		1318
SGE 694	1315	1319	1330	1305	1332.5	1292	1296
SGE 695	1315	1316	1324.3	1341	1311.7	1333	1312
Average	1297	1302	1314	1314	1308	1304	1296

**FIGURE 1: PALO VERDE PSV TEST RESULTS**

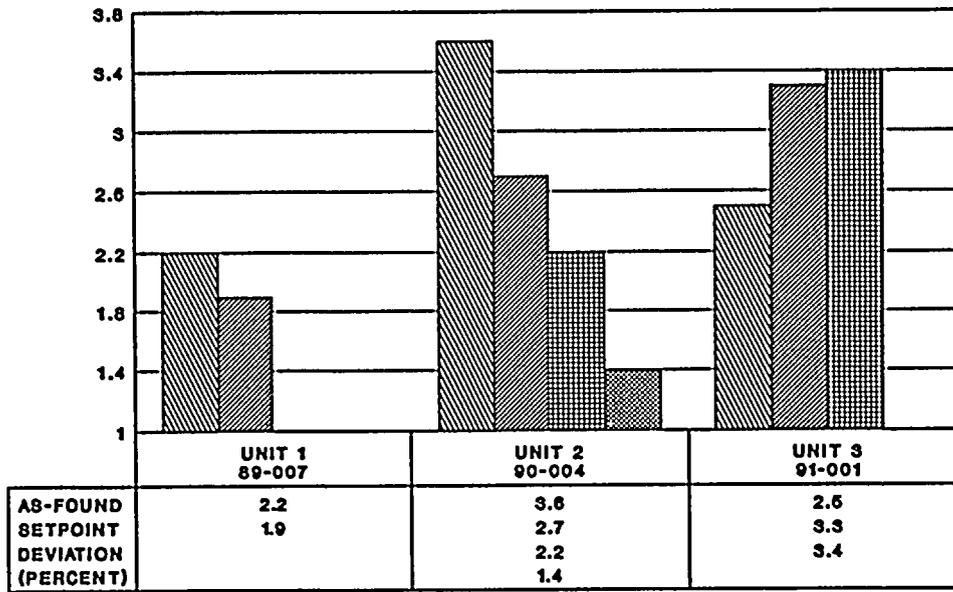


FIGURE 2a: PALO VERDE 1 MSSV RESULTS  
1987, 1989 TESTS

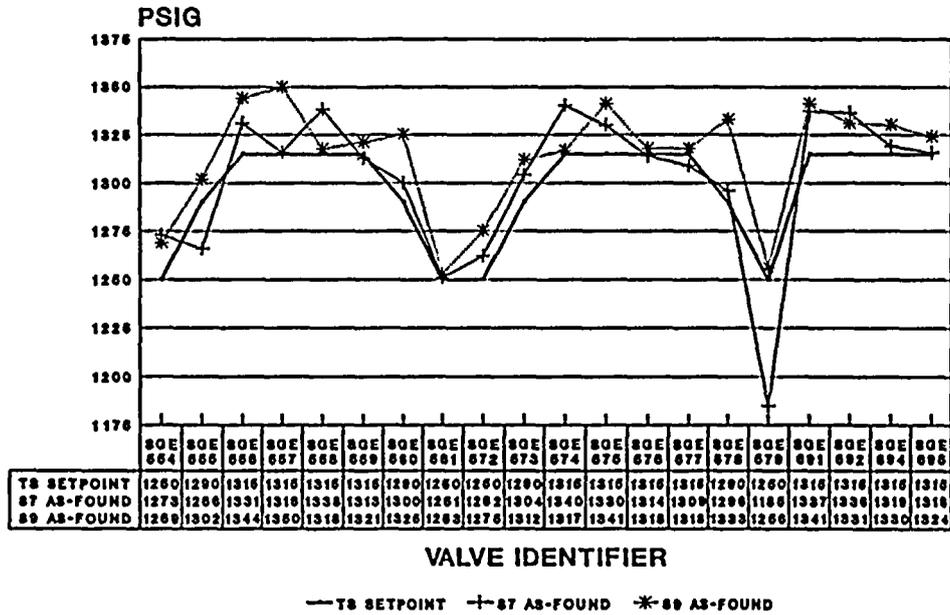


FIGURE 2b: PALO VERDE 1 MSSV RESULTS  
1987, 1989 TESTS

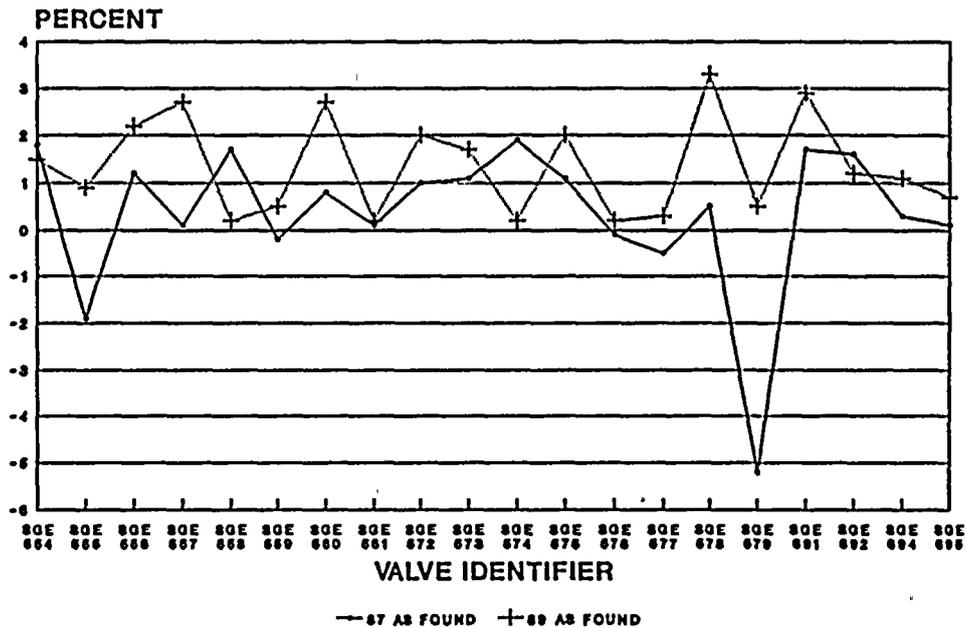


FIGURE 3a: PALO VERDE 2 MSSV RESULTS  
1988, 1989 TESTS

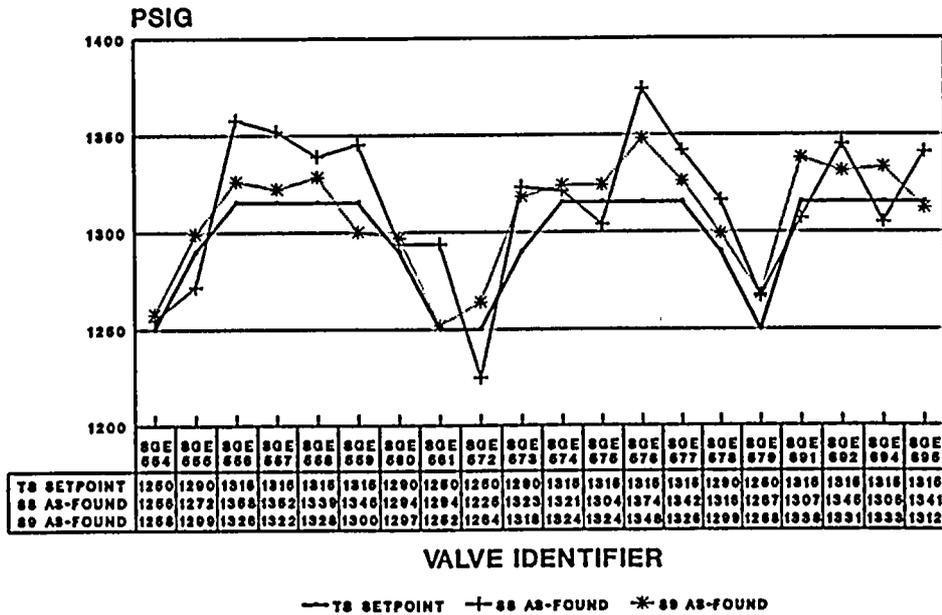


FIGURE 3b: PALO VERDE 2 MSSV RESULTS  
1988, 1989 TESTS

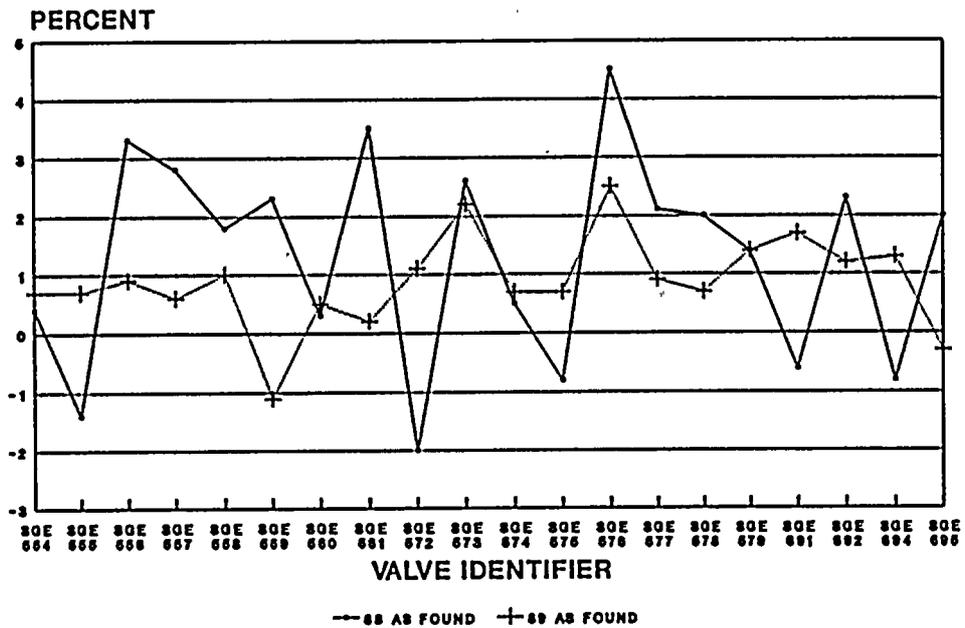


FIGURE 4a: PALO VERDE 3 MSSV RESULTS  
1989, 1991 TESTS

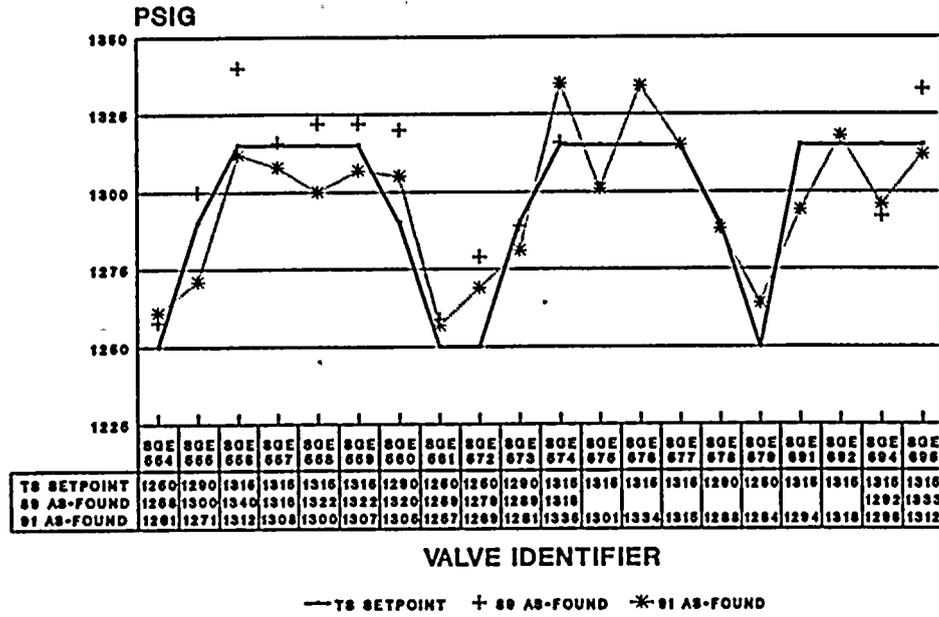
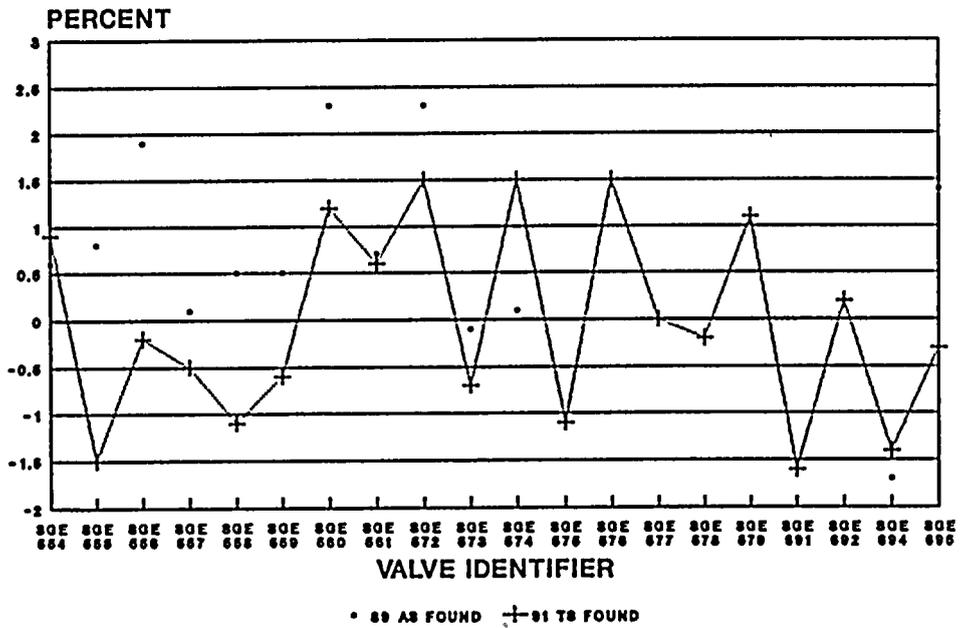
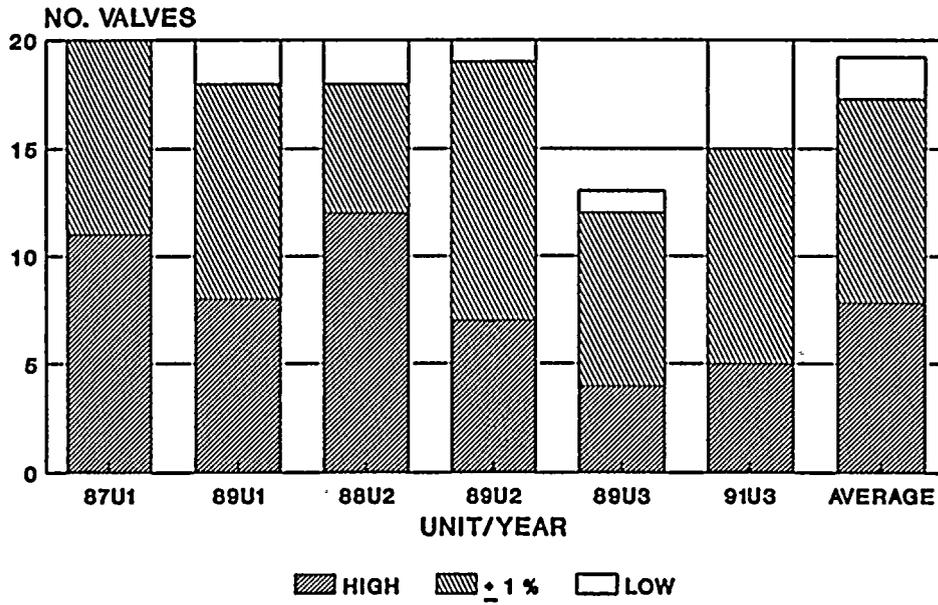


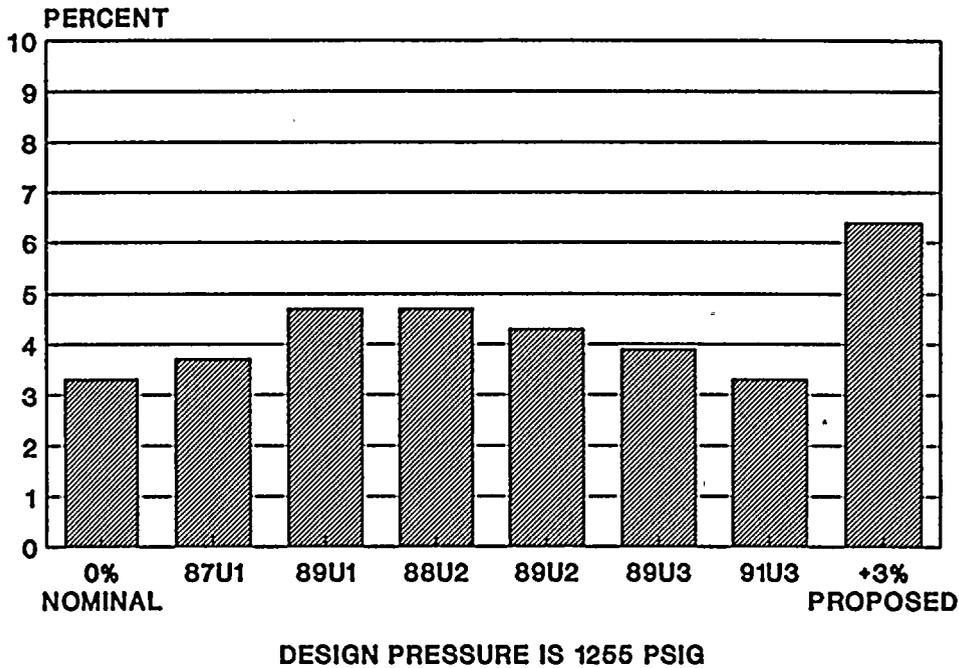
FIGURE 4b: PALO VERDE 3 MSSV RESULTS  
1989, 1991 TESTS



**FIGURE 5: DISTRIBUTION OF DEVIATION OF MSSV SETPOINTS FROM NOMINAL**



**FIGURE 6: AVERAGE SETPOINTS OF MSSVs AND RELATIONSHIP TO DESIGN PRESSURE**



**EXHIBIT NO. 2**

**APS**  
Arizona Public Service Company  
COMPANY CORRESPONDENCE

ID #: 320-00102-MSD

DATE: June 5, 1991

TO: B.S. Ecklund

Sta. #: 1560

Ext. #: 4068

FROM: M.S. Coppock *WELW*

Sta. #: 6046

Ext. #: 3535

*for MSC*

File: 91-055-026

SUBJECT: Information Notice (IN) 89-90

Component Engineering has reviewed the subject Information Notice and has developed a trouble shooting action plan to determine the root cause for the safety valve setpoint drift concern. The action plan is attached.

The problem has been experienced at Palo Verde, most recently during the Unit 3 outage, where three out of four of the Pressurizer Safety Valves tested off-site were found to have setpoints outside the allowable range. The setpoint drift concern was documented our Root Cause of Failure (RCF) EER 91-RC-052 and also PRS 1917. PRS 1917 will be closed referencing EER 91-RC-052.

The attached action plan is part of an interim disposition to EER 91-RC-052 and includes installation of instrumentation on several Unit 2 safety valves. These valves will be monitored during the initial primary system heat up and also during the next fuel cycle. The data will then be reviewed and compared to the testing conditions at the off-site testing facility. The overall goal of the trouble shooting action plan is to determine the root cause for the safety valve setpoint drift concern at PVNGS and to develop test parameters for the testing of safety valves at off-site testing facilities.

The completion of this plan may take two years or longer. In addition to the referenced troubleshooting action plan, Component Engineering will continue to discuss this issue with cognizant industry personnel to expedite a solution to this concern.

Component Engineering recommends that IN 89-90 be tracked under the existing RCF EER 91-RC-052. Any recommendations pertaining to IN 89-90 will be issued with the completion of this EER. The results and recommendations are expected to be available by June 1, 1993. A copy of this memo will be included with EER 91-RC-052.

MSC/dlm

cc: E. C. Simpson 1962  
J. Levine 6125  
G. R. Overbeck 6102  
D. B. Hansen 6086  
B. Mendoza 6046  
M. Winsor 6002  
M. Hodge 1796  
S. Borst 1560

**EXHIBIT NO. 3**



Arizona Public Service Company  
COMPANY CORRESPONDENCE

ID #: 054-01205-GSG  
 DATE: March 6, 1991  
 TO: William Rudolph  
 Sta. #: 6992  
 Ext.: 2539  
 FROM: George Green  
 Sta. # 6992  
 Ext. 2511  
 FILE: 91-005-419.05  
 SUBJECT: Technical Specification Amendment File: 90-056-026.

The request to amend the setpoint tolerances for the Main Steam Safety Valves (MSSVs) and Pressurizer Safety Valves (PSVs) should be reconsidered. The concern is that there is only a 9.1 psia margin between the safety limit of 2750 psia and the peak pressure of 2740.9 psia according to the safety evaluation for the pressurizer safeties. The Technical Specification change was generated because the tolerance of plus or minus 1% was too restrictive and these limits had been exceeded several times during surveillance testing. The band of plus or minus 1% calculates to be 50 psia and with the Technical Specification change the safety margin is only 9.1 psia. Any drift in the increasing direction of the pressurizer safeties setpoint with a setting high in the band could cause a safety limit violation in the event of a loss of condenser vacuum. A reduction of all associated setpoints IE, high pressurizer trip, SPS trip, and Safety valve setpoint would allow for an increased tolerance band with out a reduction in the margin of safety. Decreasing all setpoints 50 psia would allow for a safety margin of 59.1 psia and still have the same requested tolerance band.

Sincerely

  
 George S. Green  
 Nuclear Instructor III

CC: William Conway ( 6125 )  
 Allen Peroutka ( 6992 )  
 Ed Firth ( 6155 )  
 Wayne Aho ( 6992 )

Attachments:: Safety Evaluation  
 T.S Bases 3/4.4.2 Safety Valves

**EXHIBIT NO. 4**

## 3/4.4 REACTOR COOLANT SYSTEM

### BASES

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#### 3/4.4.1 REACTOR COOLANT LOOPS AND COOLANT CIRCULATION

The plant is designed to operate with both reactor coolant loops and associated reactor coolant pumps in operation, and maintain DNBR above 1.231 during all normal operations and anticipated transients. In MODES 1 and 2 with one reactor coolant loop not in operation, this specification requires that the plant be in at least HOT STANDBY within 1 hour.

In MODE 3, a single reactor coolant loop provides sufficient heat removal capability for removing decay heat; however, single failure considerations require that two loops be OPERABLE.

In MODE 4, and in MODE 5 with reactor coolant loops filled, a single reactor coolant loop or shutdown cooling loop provides sufficient heat removal capability for removing decay heat; but single failure considerations require that at least two loops (either shutdown cooling or RCS) be OPERABLE. Thus, if the reactor coolant loops are not OPERABLE, this specification requires that two shutdown cooling loops be OPERABLE.

In MODE 5 with reactor coolant loops not filled, a single shutdown cooling loop provides sufficient heat removal capability for removing decay heat; but single failure considerations, and the unavailability of the steam generators as a heat removing component, require that at least two shutdown cooling loops be OPERABLE.

The operation of one reactor coolant pump or one shutdown cooling pump provides adequate flow to ensure mixing, prevent stratification, and produce gradual reactivity changes during boron concentration reductions in the Reactor Coolant System. A flow rate of at least 4000 gpm will circulate one equivalent Reactor Coolant System volume of 12,097 cubic feet in approximately 23 minutes. The reactivity change rate associated with boron reductions will, therefore, be within the capability of operator recognition and control.

The restrictions on starting a reactor coolant pump in MODES 4 and 5, with one or more RCS cold legs less than or equal to 255°F during cooldown or 295°F during heatup are provided to prevent RCS pressure transients, caused by energy additions from the secondary system, which could exceed the limits of Appendix G to 10 CFR Part 50. The RCS will be protected against overpressure transients and will not exceed the limits of Appendix G by restricting starting of the RCPs to when the secondary water temperature of each steam generator is less than 100°F above each of the RCS cold leg temperatures.

#### 3/4.4.2 SAFETY VALVES

The pressurizer code safety valves operate to prevent the RCS from being pressurized above its Safety Limit of 2750 psia. Each safety valve is designed to relieve a minimum of 460,000 lb per hour of saturated steam at the valve setpoint. The relief capacity of a single safety valve is adequate to relieve any overpressure condition which could occur during shutdown. In the event that no safety valves are OPERABLE, an operating shutdown cooling loop, connected to the RCS, provides overpressure relief capability and will prevent RCS overpressurization.

## REACTOR COOLANT SYSTEM

### BASES

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#### SAFETY VALVES (Continued)

During operation, all pressurizer code safety valves must be OPERABLE to prevent the RCS from being pressurized above its Safety Limit of 2750 psia. The combined relief capacity of these valves is sufficient to limit the system pressure to within its Safety Limit of 2750 psia following a complete loss of turbine generator load while operating at RATED THERMAL POWER and assuming no reactor trip until the first Reactor Protective System trip setpoint (Pressurizer Pressure-High) is reached (i.e., there is no direct reactor trip on the loss of turbine) and also assuming no operation of the steam dump valves.

Demonstration of the safety valves' lift settings will occur only during shutdown and will be performed in accordance with the provisions of Section XI of the ASME Boiler and Pressure Vessel Code.

#### 3/4.4.3 PRESSURIZER

An OPERABLE pressurizer provides pressure control for the Reactor Coolant System during operations with both forced reactor coolant flow and with natural circulation flow. The minimum water level in the pressurizer assures the pressurizer heaters, which are required to achieve and maintain pressure control, remain covered with water to prevent failure, which could occur if the heaters were energized uncovered. The maximum water level in the pressurizer ensures that this parameter is maintained within the envelope of operation assumed in the safety analysis. The maximum water level also ensures that the RCS is not a hydraulically solid system and that a steam bubble will be provided to accommodate pressure surges during operation. The steam bubble also protects the pressurizer code safety valves against water relief. The requirement to verify that on an Engineered Safety Features Actuation test signal concurrent with a loss-of-offsite power the pressurizer heaters are automatically shed from the emergency power sources is to ensure that the non-Class 1E heaters do not reduce the reliability of or overload the emergency power source. The requirement that a minimum number of pressurizer heaters be OPERABLE enhances the capability to control Reactor Coolant System pressure and establish and maintain natural circulation.

The auxiliary pressurizer spray is required to depressurize the RCS by cooling the pressurizer steam space to permit the plant to enter shutdown cooling. The auxiliary pressurizer spray is required during those periods when normal pressurizer spray is not available, such as during natural circulation and during the later stages of a normal RCS cooldown. The auxiliary pressurizer spray also distributes boron to the pressurizer when normal pressurizer spray is not available. Use of the auxiliary pressurizer spray is required during the recovery from a steam generator tube rupture and a small loss of coolant accident.

**EXHIBIT NO. 5**

CRDR CONTINUATION SHEET

CRDR 1-2-0139

## EQUIPMENT ROOT CAUSE OF FAILURE ANALYSIS INVESTIGATION

Date of Failure	System RC & SG	SIMS Equipment Tag Number See attached list	Component Type Valvex
Equipment Description Pressurizer and Main Steam Safety Valves			
Investigator — Ben Mendoza		Ext 82-5397	Sta 7568

### System Design Function of the Component:

#### 1. Main Steam Safety Valves (MSSVs)

The Main Steam system shall have overpressure protection sufficient to prevent a rise in pressure of more than 10% above the system design pressure (1270 psia) at design temperature 600°F per ASME III NC-7000. Also the MSSVs provides cooling to the RCS, both in the event of a main steam isolation valve closure prior to reactor scram and post-scram decay heat, thereby assisting in prevention or overpressurization of the RCS.

#### 2. Pressurizer Safety Valves (PSVs)

The reactor coolant system shall have overpressure protection sufficient to prevent a rise in pressure of more than 10% above the system design pressure at design temperature per ASME III NB-7000.

### Description of Equipment Failures(s):

Malfunctions of the valves include failure to lift, lifting at a pressure outside of the setpoint plus tolerance range.

#### For the Main Steam Safety Valves

A. See the attached as-found test data for each valve.

B. Of the twenty (20) valves tested, 14 of the 20 MSSVs as-found settings were out of tolerance

1 was < 1%

8 were > 1% but < 2%

0 were > 2% but < 3%

3 were > 3%

1 would not lift due to excessive seat leakage

Of the 3 valves > 3% and the one valve that did not lift it should be noted that these valves were some of the valves noted to be leaking during the last fuel cycle and were the valves that had the excessive seat leakage during the off site testing.

For the Pressurizer Safety Valves, 2 of the four valves as-found settings were out of tolerance.

A. For valve PSVRC200 (Serial # BS-08615) the valve lifted at 2424 psig (-2.4%), (-2.0%) and 2429 psig (-2.2%). The valve started to leak during the pressure ramp up and developed an excessive leak prior

## EQUIPMENT ROOT CAUSE OF FAILURE ANALYSIS INVESTIGATION

to lifting. During the disassembly, the valve seats were steam cut and the three blowdown rings were found out of configuration and not installed as required per PVNGS documents.

- 2.01'*
- B. For valve PSVRC204 (Serial # BS-08591) the valve lifted at 2480 psig (-0.20%), 2371 psig (-4.6%), and 2396 psig (-3.6%). The valve was disassembled and again the three blowdown ring locations were not per the settings as indicated in PVNGS documents.
- C. For valve PSVRC202 (Serial # BS-08617) the valve lifted at 2526 psig (+1.6%), 2599 psig (+1.8%), and 2571 psig (+3.5%). The valve was disassembled and again the three blowdown ring were not per the require settings as indicated in PVNGS documents. *1970 - Dresser/Inye*
- D. For valve PSVRC203 (Serial # BS-08593) the valve lifted at 2468 psig (-0.7%), 2409 psig (-3.1%), and 2411 psig (-2.9%). The valve started to leak after the first as-found test. The valve was disassembled and it was noted that the seats were steam cut and the blowdown rings are not set as required per existing documents.

### Facts and Evidence: (History, Changes, Industry Experience, and Observations)

PSVs and MSSVs are allowed 1 percent tolerance on either side of the setpoint: i.e., setpoint  $\pm$  percent psig. The ASME code requirement for similar valves in non-nuclear application is generally  $\pm$  3 percent psig. In nuclear applications, most transients and accident analysis take credit for  $\pm$  3 percent tolerance.

1. During disassembly on the MSSVs, all of the valves had galling noted between the disc holder and the disc guide (some more severe than others), the seating surfaces of the disc were not always flat and there were various valves with steam cut seats. This galling and steam cutting were noted to be more severe on the valves where the as-found were  $>3\%$ . The valve that would not lift started leaking past its seat at 100# psig, the leakage increased as the inlet pressure was increased to a point where the limited steam flow test stand could not develop enough steam flow/pressure to overcome the steam leak and make the valve lift. This valve's seating surface was also found not to be totally flat, this created gaps between the disc and nozzle seats, creating leaks.

The galling noted between the disc guide and disc holder would require extra steam pressure (for upward force) to develop and overcome the breakaway force of the galled disc holder. This would account for the higher as-found tests noted. Also, when a safety valve develops a seat leak this will deteriorate and severely damage the seating surface and will cause the popping pressure to become erratic.

2. During disassembly of the PSVs various valves were found with their blowdown rings out of their required position as indicated above. This would cause popping pressure to become erratic, not to mention the problems that this indicates with the valve vendor (Dresser) QA program.
3. Per NRC Notice 89-90 - there is an industrial history of these valves on set pressure drifting. PVNGS has an approved action plan that will deal with this concern (Letter 320-00102-MSC, dated June 5, 1991). The actual experience with PSV and MSSVs in nuclear applications is that frequently they neither lift at the required setpoint nor reseal tightly without leaking. The variation of the setpoint from the requirements often exceed not only the  $\pm$  1 percent but also the  $\pm$  3 percent.

## CRDR CONTINUATION SHEET

EQUIPMENT ROOT CAUSE OF FAILURE ANALYSIS  
INVESTIGATION

4. It should also be noted that this is the first time that the Unit 1 valves have been tested at their required temperature profile and that preventive maintenance has not been performed since 1984.
5. Exercising the valves proved to have no useful effect on preventing the valve setpoint drift and could result in failure to reseal and develop seat leakage.
6. If an MSSV or PSV develops a seat leak the leak will deteriorate and severally damage the valve seating surface (over time). If this condition is not corrected within a reasonable amount time, the seating surface will become eroded and the set pressure will become erratic causing both premature lift and failure to lift.

This is known to be caused by:

1. Foreign material lodged between the disc and seat.
2. Low valve set pressure.
3. Low valve leak test pressure.
4. Blowdown ring not properly located.
5. Totally flat seating surface not being between disc and nozzle seat.
7. The position of the blowdown rings controls the following:
  1. The lower adjustment ring defines the Huddle Chamber size and the secondary orifice size. The lower ring eliminates simmering just prior to the valve popping to insure a sharp and distinct popping pressure. The lower ring also provides a cushioning effect to eliminate seat damage at the time of valve closure.

The Huddle Chamber size, in conjunction with the expansive characteristics of steam, and the position of the lower adjusting rings, causes the valve to "pop" open to almost full lift.

The position of the lower adjusting ring and the middle adjusting ring will affect the closing point of the valve and the amount of valve lift achieved.

The upper adjusting ring, when properly positioned, insures valve lift and capacity.

8. The last set pressure test performed on the valves are as follows:

1. PSV - 4/89 STWO 352467 using 73ST-9ZZ24
2. MSSV - 4/29/90 STWO 408534 using 73ST-9ZZ18

## EQUIPMENT ROOT CAUSE OF FAILURE ANALYSIS INVESTIGATION

Procedures 73ST-9ZZ18 and 9ZZ24 are in place (in situ) test procedures using the Furmanite "Trevitrst" method. Which is a hydraulic assist device using a load cell and a strip chart recorder to determine when the valve lifts (set pressure). The actual system pressure and the force required to lift the valve (read from the strip chart recorder) are combined (calculated) to determine the lift setpoint. Since the test pressure relies on several indications (system pressure, load cell, strip chart recorder, valves meant seat area and operators reading of the strip chart recorder). The various uncertainties of the in situ testing are much greater (less accurate) than the current testing being performed off site.

9. The environmental temperature effects on setpoint determination has shown that environmental temperature may produce a setpoint change of 0.5 percent to 2 percent of the nominal setpoint.
10. Setpoint drift in SRV's can also be contributed to seat to disc corrosion bonding. The oxide of the stellate disc and the stellate seat form a continuous film to inhibit disc movement, causing the "sticking" of disc to seat. The disc to seat bonding is thought to occur when oxygen in the steam corrodes the disc.

### Root Cause(s):

1. The exact Root Cause of Failure can not be determined at this time. Engineering has developed an action plan to perform a detailed Root Cause of Failure. See letter #320-00102-MS, dated June 5, 1991 which documents the RCF program. The action plan addresses the effects of the environmental temperatures, and revises the valve testing procedures.

2. The blowdown rings:

Apparently the Unit 1 PSVs blowdown rings were incorrectly positioned by the valve manufacturer (Dresser) during the last rebuild/test performance by Dresser, this indicates that Dresser existing QA Program is questionable and needs to be reviewed by Vendor Quality.

3. During disassembly of the MSSVs, engineering noted galling which was apparently cause by excessive internal wear between the disc holder and disc guide. This was due to lack of proper clearance in the valves internals when reassembled by Dresser. Based on information to date, this condition is aggravated by in-situ testing. During in-situ testing, the valve disc is hydraulically lifted and without the proper clearances, causes the galling noted between the disc holder and disc guide.

### Corrective Action(s):

1. Engineering to finalize the Root Cause of Failure per CAT S item # 051284 Action 4, which is due approximately June 1993. (Date due to next scheduled Unit 2 outage, spring 1993, which will be the first opportunity to retest and reinspect valves using the new testing procedure.)

**EQUIPMENT ROOT CAUSE OF FAILURE ANALYSIS  
INVESTIGATION**

2. Vendor Quality to determine if any special inspection or monitoring programs need to be developed for Unit 3 valves. If required, then Vendor quality to develop procedures/inspections reports. This will determine if any problems exists with the valve's vendors QA program.

CATS Sheets attached.

3. Engineering recommends not performing in situ testing on MSSVs and PSVs. Testing for these valves shall be performed off site until further notice. Procedure 73ST-9ZZ18 and 73ST-9ZZ24 will be revised to add a note which shall require the Component Engineers approval, before performing any in-situ testing.

CATS Sheets attached.

4. As part of the Root Cause of Failure for the setpoint drift, Engineering is currently modifying the offsite test procedures to establish a standard practice for the testing of the valves, which should reduce testing uncertainties/errors. This will also incorporate any new development with respect to valve testing.

Ref. CATS Item 051284 Action 4.

5. Per letter # 161-03587-WFC/JST, dated November 13, 1990, from W. F. Conway, APS, to NRC "Proposed Technical Specification Amendments to section 3/4.3.1, 3/4.4.4.2, 3/4.7.1 and 3/4.7.2" APS is currently in the process of changing the current Tech Spec requirements of  $\pm 1\%$ . This action is with the NRC for approval or denial. This will increase the valve setpoint tolerance to allow wider normal operating ranges. This should reduce the failure rate if approved. No corrective action item will be added to track this since it is dependent on regulatory ruling.

**EXHIBIT NO. 6**

**SPECIAL STUDY**  
**SAFETY AND SAFETY/RELIEF VALVE RELIABILITY**

April, 1992

Prepared by:  
Mary S. Wegner

Reactor Operations Analysis Branch  
Office for Analysis and Evaluation  
of Operational Data  
U.S. Nuclear Regulatory Commission

## EXECUTIVE SUMMARY

In the nine year period from January 1, 1981 to December 31, 1989, there have been over 1100 reports of safety valve or safety/relief valve malfunctions<sup>1</sup> during operations or during surveillance testing. This study summarizes the operational experience, catalogs recurring problems, and quantifies the magnitude of the deviation from acceptable operation. Root cause analyses and corrective actions are discussed and, where appropriate, suggestions are made to reduce problems associated with maintaining, testing, and operating these valves. The study covers those valves used as safety/relief valves (SRV) on boiling water reactors (BWRs), as main steam safety valves (MSSVs) on pressurized water reactors (PWRs), and pressurizer safety valves (PSVs) on PWRs.

The PSV and the SRV are designed to prevent overpressurization of the reactor coolant system (RCS) by lifting at the required setpoint to relieve pressure and to maintain RCS pressure boundary integrity by reseating tightly without leakage. The MSSV prevents overpressurization of the main steam system also by lifting at the appropriate setpoint and reseating tightly without leaking to preserve the steam line integrity. Also the MSSV provides cooling to the RCS, both in the event of main steam isolation valve closure prior to reactor scram and post-scram decay heat, thereby assisting in the prevention of overpressurization of the RCS.

PSVs, SRVs, and MSSVs are usually allowed 1 percent tolerance on either side of the setpoint; i.e., setpoint  $\pm 1$  percent psig. The ASME Code requirement for similar valves in non-nuclear applications is generally  $\pm 3$  percent psig. In nuclear applications, most transient and accident analyses take credit for the more stringent tolerance. The number of malfunctions of safety valves and SRVs are not supportive of assumptions used in accident analyses. Tolerances of  $\pm 1$  percent on setpoints are goals that are simply not met by PSVs, MSSVs, and SRVs in most plants. A majority of the valves do not meet the  $\pm 1$  percent tolerance required by the FSAR; in addition, many do not meet  $\pm 3$  percent warranted by the valve manufacturer for valves in service.

Together, safety valves and SRVs have a record of problems in nuclear applications of one reported failure per plant per year which is, on the average plant with 20 pressure relief valves, a five percent failure rate. There have been very few challenges to pressurizer safety valves. The two events in which the PSVs may have been challenged involved rapid closure of all main steam isolation valves with the reactor at full power. In the first event, reactor coolant system pressure reached a maximum of 2475 psia without PSV actuation. In the second event, one PSV lifted at 2461 psia. None of the PSVs were subsequently found to be

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<sup>1</sup> A malfunction occurs when the valve fails to operate correctly. The only correct operation for safety valves or safety/relief valves is to lift sharply within the tolerances of the setpoint, relieve a specific amount of pressure, and reseat tightly. Any other operation is considered a malfunction.

set at  $2500 \pm 1$  percent psia, the technical specification setpoint. The PSV which lifted was set 1.6 percent low and the others were set 3-5 percent high.

The problems experienced by safety valves and safety/relief valves are (1) "set-point drift" and (2) leakage, and variations on these: failure to lift, failure to reseat, and premature lift.

Safety valves and SRVs must provide dependable overpressure protection and maintain pressure boundary integrity. Those problems which challenge that dependability should be identified and corrected. SRV problems have been identified and efforts are underway to find an effective corrective action. Licensees with spring-action safety valves would also benefit from a similar effort to maintain their valves within TS limits.

At the present time, the quality of setpoint testing is not sufficiently free of errors to determine either what tolerance of the nominal setpoint can be achieved, or assess whether a problem with valve design or operation exists. Recent AEOD reports T91-05, "Setpoint Testing of Pressurizer Safety Valves with Water-Filled Loop Seals" and T92-01, "Enhanced Setpoint Testing Procedures For Pressurizer Safety Valves at Oconee and Catawba" highlight some of these issues. As an example, one investigation found that procedures introduced as remedies for leakage could affect the valve setpoint and required retest of the valve after polishing the disc and seat.

In order to establish standard practices for testing and eliminate testing errors, a program such as that established by the SRV owners could be established by the safety valve owners.

Maintenance and testing practices are in need of standardization so that reproducible results can be obtained. Industry groups such as ASME should consider development of a standard practice for in-service testing safety valves and safety/relief valves, including the training, experience, and qualification of personnel. Some other actions which should be included in planning corrective actions are outlined in Section 8, "Suggestions."

6.2.3 The problems experienced by safety valves and safety/relief valves are (1) "set-point drift" and (2) leakage, and variations on these: failure to lift, failure to reseat, and premature lift.

6.2.4 Where a common problem has existed on SRVs and a common solution sought, a degree of success has been achieved. The errors from testing have been reduced and good practices have been developed for maintenance. Remaining problems with valve design have been identified and common corrective actions are being sought. For safety valves, testing requirements specify the quantity of valves to be tested and the frequency of the tests. Technical Specifications provide the required setpoint and the permitted tolerance. In the absence of either regulatory or Code guidance, individual licensees develop procedures, designate personnel to perform the tests, and purchase equipment and services which are individual rather than common or universal. Thus, standard practices are needed on an industry-wide basis to improve testing results and to provide for reproducibility.

6.2.5 Diagnoses or failure analyses for safety valve problems have not been successful in finding root causes for problems being experienced.

6.2.6 Corrective actions for safety valve problems have been ineffective in preventing recurrence of problems. SRV problems have not yet been reduced to an acceptable level but two common solutions are being proposed; i.e., the catalyst to recombine oxygen and hydrogen and the solenoid actuation of the valve for automatic pressure relief.

## 7.0 CONCLUSIONS

The safety valve - regardless of its manufacturer or its application - experiences setpoint drift which is not within the tolerance of  $\pm 1$  percent required by TS or the  $\pm 3$  percent warranted by the valve vendors. The average rate of malfunctions is one per plant per year, 5 percent. This has resulted in instances where a plant has been operated in an unanalyzed condition for some period of time; that is, both the number of malfunctioning valves and the amount of variation, such as setpoint drift assumed in safety analyses were exceeded. Where reanalysis has been performed, some conditions fall within acceptable limits; however, some licensees have reported that final pressure and temperature limits exceeded the limits assumed in FSAR accident analyses.

At the present time, the quality of setpoint testing is not sufficiently free of errors to determine either what tolerance of the nominal setpoint can be achieved, or assess whether a problem with valve design or operation exists. Recent AEOD reports T91-05, "Setpoint Testing of Pressurizer Safety Valves with Water-Filled Loop Seals" and T92-01, "Enhanced Setpoint Testing Procedures For Pressurizer Safety Valves at Oconee and Catawba" highlight some of these issues. As an example, one investigation found that procedures introduced as remedies for leakage could affect the valve setpoint and required retest of the valve after polishing the disc and seat.

50-528

PALO VERDE 1

APS

PROPOSED AMENDMENTS FOR ADMINISTRATIVE  
CHANGES TO UPDATE THE PVNGS OPERATING LICENSES

REC'D W/LTR DTD 12/1/99...993430261

**Enclosure**

**Proposed Amendments for Administrative Changes to  
Update The PVNGS Operating Licenses**

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**A. DESCRIPTION OF THE PROPOSED OPERATING LICENSE (OL) AMENDMENTS AND JUSTIFICATION FOR PROPOSED CHANGES**

These proposed PVNGS Units 1, 2, and 3 administrative OL amendments would (1) delete or update operating license references to outdated administrative information, (2) delete license conditions that were complied with and are no longer applicable to the current operating environment, and (3) delete license conditions that were one-time requirements and have been completed. The specific proposed changes for Units 1, 2, and 3 OLs are identified by item numbers in Attachments A, B, and C along with justification for the proposed changes. The proposed changes are categorized as follows:

1. Changes to delete or update references to outdated administrative information:

<u>Unit</u>	<u>Item numbers</u>
U-1	1, 2, 3 and 8
U-2	1, 2, 6 and 10
U-3	1, and 2

2. Changes to delete license conditions that were complied with and are no longer applicable to the current operating environment:

<u>Unit</u>	<u>Item numbers</u>
U-1	5, 6, 9, and 16
U-2	4 and 5
U-3	4

3. Changes to delete license conditions that were one-time requirements and have been completed:

<u>Unit</u>	<u>Item Numbers</u>
U-1	4, 7, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20 and 21
U-2	3, 7, 8, 9, 11, 12, 13, 14, and 15
U-3	3, 4, 5, and 6

**B. PURPOSE OF THE OPERATING LICENSES AND LICENSE CONDITIONS**

The PVNGS operating licenses were issued by the NRC to permit the operation of PVNGS Units 1, 2, and 3. The operating licenses include administrative information and references that were valid at the time of issuance but are now outdated. In addition, the operating licenses include many license conditions that were required by the NRC to operate the PVNGS plants but have since been completed and are no longer needed.

**C. NEED FOR THE OPERATING LICENSE AMENDMENTS**

The proposed operating license amendments would update the PVNGS operating licenses by removing or correcting outdated administrative information and removing completed license conditions. This will help reduce any potential for misinterpreting the operating licensing requirements.

**D. SAFETY ANALYSIS FOR THE PROPOSED OPERATING LICENSE AMENDMENTS**

The proposed changes to the PVNGS operating licenses are administrative and have no affect on the design, operation, or maintenance of PVNGS. The proposed changes would (1) delete or update operating license references to outdated administrative information, (2) delete license conditions that were complied with and are no longer applicable to the current operating environment, and (3) delete license conditions that were one-time requirements and have been completed. These proposed changes would not change any current requirements for the operation of the PVNGS units.

**E. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION**

Standard 1 -- Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

No – The proposed administrative changes do not involve a significant increase in the probability or consequences of an accident previously evaluated. The proposed administrative Operating License (OL) amendments would (1) delete or update operating license references to outdated administrative information, (2) delete license conditions that were complied with and are no longer applicable to the current operating environment, and (3) delete license conditions that were one-time requirements and have been completed.

Since these proposed changes are administrative and have no affect on the current OL requirements, plant design, operation, or maintenance, the proposed administrative changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

Standard 2 -- Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

No – The proposed administrative changes do not create the possibility of a new or different kind of accident from any accident previously evaluated. The proposed changes would have no affect on the physical plant. Consequently, plant configuration and the operational characteristics remain unchanged and the proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

Standard 3 -- Does the proposed change involve a significant reduction in a margin of safety?

No -- The proposed administrative changes do not involve a significant reduction in a margin of safety. The proposed changes are administrative and have no affect on the current OL requirements, plant design, operation, or maintenance. No margin of safety would be affected by the proposed administrative changes to the PVNGS OLs since no current operating requirements would be changed.

**F. ENVIRONMENTAL CONSIDERATION**

APS has determined that the proposed amendments involve no changes in the amount or type of effluent that may be released offsite, and results in no increase in individual or cumulative occupational radiation exposure. As described above, the proposed OL amendments involve no significant hazards consideration and, as such, meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9).

G. MARKED-UP PVNGS UNIT 1, UNIT 2, AND UNIT 3 OPERATING  
LICENSE PAGES



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

ARIZONA PUBLIC SERVICE COMPANY

SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT

EL PASO ELECTRIC COMPANY

SOUTHERN CALIFORNIA EDISON COMPANY

PUBLIC SERVICE COMPANY OF NEW MEXICO

LOS ANGELES DEPARTMENT OF WATER AND POWER\*

SOUTHERN CALIFORNIA PUBLIC POWER AUTHORITY

DOCKET NO. STN 50-528

PALO VERDE NUCLEAR GENERATING STATION, UNIT 1

FACILITY OPERATING LICENSE

License No. NPF-41

1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:

- A. The application for license filed by Arizona Public Service Company, on behalf of itself and the Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power\*, and Southern California Public Power Authority (licensees), complies with the standards and requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations set forth in 10 CFR Chapter I and all required notifications to other agencies or bodies have been duly made;
- B. Construction of the Palo Verde Nuclear Generating Station, Unit 1 (facility) has been substantially completed in conformity with Construction Permit No. CPPR-141 and the application, as amended, the provisions of the Act and the regulations of the Commission;
- C. The facility will operate in conformity with the application; as amended, the provisions of the Act, and the regulations of the Commission (except as exempted from compliance in Section 2.D below);

\*Los Angeles Department of Water and Power will be included as an owner in this license on the date it officially acquires an ownership interest in the facility which is expected to occur shortly after Palo Verde Nuclear Generating Station, Unit 1 achieves commercial operation.

(Unit 1)

Unit 1  
Item 1

Unit 1  
Item 1

- D. There is reasonable assurance: (i) that the activities authorized by this operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I (except as exempted from compliance in Section 2.D below);
  - E. Arizona Public Service Company\* is technically qualified to engage in the activities authorized by this operating license in accordance with the Commission's regulations set forth in 10 CFR Chapter I;
  - F. The licensees have satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements", of the Commission's regulations;
  - G. The issuance of this license will not be inimical to the common defense and security or to the health and safety of the public;
  - H. After weighing the environmental, economic, technical, and other benefits of the facility against environmental and other costs, and after considering available alternatives, the issuance of this Facility Operating License No. NPF-41, subject to the conditions for protection of the environment set forth in the Environmental Protection Plan attached as Appendix B, is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied; and
  - I. The receipt, possession, and use of source, byproduct and special nuclear material as authorized by this license will be in accordance with the Commission's regulations in 10 CFR Parts 30, 40 and 70.
2. Pursuant to approval by the Nuclear Regulatory Commission at a meeting held on May 30, 1985, the license for fuel loading and low power testing, License No. NPF-34, issued on December 31, 1984, is superseded by Facility Operating License No. NPF-41 hereby issued to the Arizona Public Service Company, Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority (licensees) to read as follows:

\*Arizona Public Service Company is authorized to act as agent for Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority and has exclusive responsibility and control over the physical construction, operation and maintenance of the facility.

No changes to this page

(Unit 1)

A. This license applies to the Palo Verde Nuclear Generating Station, Unit 1, a pressurized water reactor and associated equipment (facility) owned by the licensees. The facility is located on the licensees' site in Maricopa County, Arizona and is described in the licensees' Final Safety Analysis Report, as supplemented and amended through Amendment No. 14; in the related CESSAR Final Safety Analysis Report, as supplemented and amended through Amendment No. 8; and in their Environmental Report, as supplemented and amended through Supplement No. 4.

Unit 1  
Item 2

and referenced  
in the  
licensees' updated  
Final  
Safety  
Analysis  
Report

B. Subject to the conditions and requirements incorporated herein; the Commission hereby licenses:

(1) Pursuant to Section 103 of the Act and 10 CFR Part 50, Arizona Public Service Company, Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority to possess, and Arizona Public Service Company (APS) to use and operate the facility at the designated location in Maricopa County, Arizona, in accordance with the procedures and limitations set forth in this license;

(2) Pursuant to the Act and 10 CFR Part 70, APS to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the licensees' Final Safety Analysis Report, as supplemented and amended through Amendment No. 14 and the CESSAR Final Safety Analysis Report as supplemented and amended through Amendment No. 8;

Unit 1  
Item 3

(3) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, APS to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

(4) Pursuant to the Act and 10 CFR Part 30, 40 and 70, APS to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and

(5) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, APS to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

(Unit 1)

(6)(a)

Pursuant to an Order of the Nuclear Regulatory Commission dated December 12, 1985, the Public Service Company of New Mexico (PNM) was authorized to transfer a portion of its ownership share in Palo Verde, Unit 1 to certain institutional investors on December 31, 1985, and at the same time has leased back from such purchasers the same interest in the Palo Verde, Unit 1 facility. The term of the lease is to January 15, 2015, subject to a right of renewal. Additional sale and leaseback transactions (for a term expiring on January 15, 2015) of all or a portion of PNM's remaining ownership share in Palo Verde Unit 1 are hereby authorized until June 30, 1987. Any such sale and leaseback transaction is subject to the representations and conditions set forth in the aforementioned applications of October 19, 1985, February 5, 1986, October 16, 1986 and November 26, 1986, and the Commission's Order of December 12, 1985, consenting to such transactions. Specifically, the lessor and anyone else who may acquire an interest under this transaction are prohibited from exercising directly or indirectly any control over the licensees of the Palo Verde Nuclear Generating Station, Unit 1. For purposes of this condition, the limitations in 10 CFR 50.81, "Creditor Regulations," as now in effect and as they may be subsequently amended, are fully applicable to the lessor and any successor in interest to that lessor as long as the license for Palo Verde, Unit 1 remains in effect; this financial transaction shall have no effect on the license for the Palo Verde nuclear facility throughout the term of the license.

(b) Further, the licensees are also required to notify the NRC in writing prior to any change in: (i) the terms or conditions of any lease agreements executed as part of this transaction; (ii) the ANPP Participation Agreement, (iii) the existing property insurance coverage for the Palo Verde nuclear facility, Unit 1 as specified in licensee counsel's letter of November 26, 1985, and (iv) any action by the lessor or others that may have an adverse effect on the safe operation of the facility.

Amct. # 11, DEC 11 1986

No changes to this page

(Unit 1)

C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

Arizona Public Service Company (APS) is authorized to operate the facility at reactor core power levels not in excess of 3876 megawatts thermal (100% power) in accordance with the conditions specified herein and in Attachment 1 to this license. The items identified in Attachment 1 to this license shall be completed as specified. Attachment 1 is hereby incorporated into this license.

Unit 1  
Item 4

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 114<sup>21</sup> and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. APS shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

(3) Antitrust Conditions

This license is subject to the antitrust conditions delineated in Appendix C to this license.

(4) Operating Staff Experience Requirements

APS shall have operators on each shift who meet the requirements described in Attachment 2. Attachment 2 is hereby incorporated into this license.

Unit 1  
Item 5

Deleted

(5) Post-Fuel-Loading Initial Test Program (Section 14, SER and SSER 2)\*

Any changes in the Initial Test Program described in Section 14 of the FSARs (Palo Verde and CESSAR) made in accordance with the provisions of 10 CFR 50.59 shall be reported in accordance with 50.59(b) within one month of such change.

Unit 1  
Item 6

Deleted

\*The parenthetical notation following the title of many license conditions denotes the section of the Safety Evaluation Report and/or its supplements wherein the license condition is discussed.

ARL 4  
1-29-86

Deleted

(6) Environmental Qualification

Unit 1  
Item 7

Pursuant to the extension granted in the Commission letter of November 18, 1985, APS shall environmentally qualify the hydrogen recombiners according to the provisions of 10 CFR 50.49 by March 30, 1986.

(7) Fire Protection Program ((Section 9.5.1, SSER 6, SSER 7 and SSER 8))

Amct. #  
14,  
4-8-87

Unit 1  
Item 8

APS shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety analysis Report for the facility, as supplemented and amended, and as approved in the SER through Supplement 8, subject to the following provision:

APS may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

(8) Emergency Preparedness

Deleted

Unit 1  
Item 9

In the event that the NRC finds that the lack of progress in completion of the procedures in the Federal Emergency Management Agency's final rule, 44 CFR Part 350, is an indication that a major substantive problem exists in achieving or maintaining an adequate state of preparedness, the provisions of 10 CFR Section 50.54(s)(2) will apply.

(Unit 1)



(9) Results of Piping Vibration Test Program (Section 3.9.2, SER)

Unit 1  
Item 10

Deleted

Three months following completion of the piping vibration test program performed during initial startup, APS shall submit a summary of the results which demonstrate that the vibration of piping systems is within acceptable levels.

(10) Response to Salem ATWS Event (Section 7.2, SSER 7, and Section 1.11, SSER 8)

Unit 1  
Item 11

Deleted

APS shall complete implementation of the requirements of Generic Letter 83-28 on a schedule which is consistent with that given in its letter dated April 19, 1985.

(11) Supplement No. 1 to NUREG-0737 Requirements

Unit 1  
Item 12

Deleted

APS shall complete the emergency response capabilities as required by Attachment 3.

(12) Radiochemistry Laboratory (Section 7.3.1.5(3), Emergency Plan)

Unit 1  
Item 13

Deleted

APS shall maintain and operate the Palo Verde, Unit 2 radiochemistry laboratory as part of the Palo Verde, Unit 1 facility under this Part 50 license authorization, in accordance with the commitments made by letter ANPP-30937, dated October 24, 1984, until the Unit 2 facility is issued a Part 50 license.

(13) RCP Shaft Vibration Monitoring Program (Section 5.4.1, SSER 12)

Deleted

(14) Additional Conditions

Unit 1  
Item 14

Deleted

The Additional Conditions contained in Appendix D, as revised through Amendment No. 117, are hereby incorporated into this license. Arizona Public Service Company shall operate the facility in accordance with the Additional Conditions.

- D. The facility requires an exemption from Paragraph III.D.2(b)(ii) of Appendix J to 10 CFR Part 50 (Section 6.2.6, SSER 7). This exemption is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest. This exemption is, therefore, hereby granted pursuant to 10 CFR 50.12. With the granting of this exemption, the facility will operate, to the extent authorized herein, in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission.
- E. The licensees shall fully implement and maintain in effect all provisions of the Commission-approved physical security, guard training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The Safeguard Contingency Plan is incorporated into the Physical Security Plan. The plans, which contain Safeguards Information protected under 10 CFR 73.21, are entitled: "Palo Verde Nuclear Station Physical Security Plan," with revisions submitted through March 18, 1997; and "Palo Verde Nuclear Generating Station Guard Training and Qualification Plan," with revisions submitted through December 26, 1987. Changes made in accordance with 10 CFR 73.55 shall be implemented in accordance with the schedule set forth therein.

No changes to this page

Amendment No. 32-33-84, 115

(Unit 1)

- F. Except as otherwise provided in the Technical Specifications or the Environmental Protection Plan, APS shall report any violations of the requirements contained in Section 2.C of this license in the following manner: Initial notification shall be made within 24 hours in accordance with the provisions of 10 CFR 50.72 with written follow-up within 30 days in accordance with the procedures described in 10 CFR 50.73(b), (c) and (e);
- G. The licensees shall have and maintain financial protection of such type and in such amounts as the Commission shall require in accordance with Section 170 of the Atomic Energy Act of 1954, as amended, to cover public liability claims; and
- H. This license is effective as of the date of issuance and shall expire at midnight on December 31, 2024.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed By

Harold R. Denton, Director  
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Attachment 1 - Requirements for Initial Mode 1 Entry
- 2. Attachment 2 - Operating Staff Experience Requirements
- 3. Attachment 3 - Emergency Response Capabilities
- 4. Appendix A - Technical Specifications
- 5. Appendix B - Environmental Protection Plan
- 6. Appendix C - Antitrust Conditions
- 7. Appendix D - Additional Conditions

Deleted

Unit 1  
Item 15

Unit 1  
Item 16

Unit 1  
Item 17  
through  
Item 21

Unit 1  
Item 14

Date of Issuance: June 1, 1985

Amendment No. 111

(Unit 1)



ATTACHMENT 1

PALO VERDE NUCLEAR GENERATING STATION, UNIT 1  
OPERATING LICENSE NPF-41

This attachment identifies items which must be completed to the NRC staff's satisfaction in accordance with the schedule identified below.

Surveillance Program

Prior to entering Mode 1 for the first time, APS shall

- a. Have completed a review of the surveillance procedures applicable to the change of mode, and determined that the procedures demonstrate the operability of the required systems with respect to all acceptance criteria defined in the Technical Specifications.
- b. Have dispatched written notification to the NRC Regional Administrator, Region V, that the action defined in (a), above, has been completed for Mode 1.

Deleted

Unit 1  
Item 15

(unit 1)



## ATTACHMENT 2

PALO VERDE NUCLEAR GENERATING STATION; UNIT 1  
OPERATING LICENSE NPF-41OPERATING STAFF EXPERIENCE REQUIREMENTS

APS shall have a licensed senior operator on each shift who has had at least six months of hot operating experience on a same type plant, including at least six weeks at power levels greater than 20% of full power, and who has had startup and shutdown experience. For those shifts where such an individual is not available on the plant staff, an advisor shall be provided who has had at least four years of power plant experience, including two years of nuclear plant experience, and who has had at least one year of experience on shift as a licensed senior operator at a similar type facility. Use of advisors who were licensed only at the RO level will be evaluated on a case-by-case basis. Advisors shall be trained on plant procedures, technical specifications and plant systems, and shall be examined on these topics at a level sufficient to assure familiarity with the plant. For each shift, the remainder of the shift crew shall be trained in the role of the advisors. Advisors, or fully trained and qualified replacements, shall be retained until the experience levels identified in the first sentence above have been achieved. The names of any replacement advisors shall be certified by APS prior to these individuals being placed on shift. The NRC shall be notified at least 30 days prior to the date APS proposes to release the advisors from further service.

Deleted

Unit 1  
Item 16

(Unit 1)

ATTACHMENT 3

PALO VERDE NUCLEAR GENERATING STATION, UNIT 1  
OPERATING LICENSE NPF-41

EMERGENCY RESPONSE CAPABILITIES

APS shall complete the following requirements of NUREG-0737 Supplement No. 1 on the schedule noted below:

Unit 1  
Item 17

(a) Three months after the staff issues its evaluation of Revision 2 to the CE Owners Group emergency procedure guidelines (CEN-152), dated May 8, 1984, APS shall provide a schedule for revising (i) the Procedure Generation Package to be in conformance with Revision 2 to CEN-152, as modified by the staff's evaluation, and (ii) the emergency operating procedures to be in conformance with the revised Procedures Generation Package.

Unit 1  
Item 18

(b) Prior to August 31, 1985, APS shall submit for review and approval a Supplemental DCRDR Summary Report which provides the information described in SSER 7.

Unit 1  
Item 19

(c) Prior to startup following the first refueling outage, APS shall implement actions to correct HEDs A-5.14, A-5.9, B-5.9, B-5.14 and deferred HEDs A-1.2, A-1.3, 64, 100, 101b, 138, 172, and A-5.16 as described in APS letter, dated October 29, 1984.

Unit 1  
Item 20

(d) By June 28, 1985, APS shall have installed, tested and made functional the primary system to be used for post accident dose assessment (the Chemical and Radiological Analysis Computer system or an alternate system which meets the NRC staff's requirements).

Unit 1  
Item 21

(e) After completion of the verification and validation program for the Safety Parameter Display System (SPDS), APS shall provide a date for the NRC staff's on-site audit of the SPDS. The system shall not be used by the operators for accident evaluation until the NRC staff has approved its use.

Deleted

(Unit 1)

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

ARIZONA PUBLIC SERVICE COMPANY

SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT

EL PASO ELECTRIC COMPANY

SOUTHERN CALIFORNIA EDISON COMPANY

PUBLIC SERVICE COMPANY OF NEW MEXICO

LOS ANGELES DEPARTMENT OF WATER AND POWER

SOUTHERN CALIFORNIA PUBLIC POWER AUTHORITY

DOCKET NO. STN 50-529

PALO VERDE NUCLEAR GENERATING STATION, UNIT 2

FACILITY OPERATING LICENSE

License No. NPF-51

1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
  - A. The application for license filed by Arizona Public Service Company, on behalf of itself and the Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority (licensees), complies with the standards and requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations set forth in 10 CFR Chapter I and all required notifications to other agencies or bodies have been duly made;
  - B. Construction of the Palo Verde Nuclear Generating Station, Unit 2 (facility) has been substantially completed in conformity with Construction Permit No. CPPR-142 and the application, as amended, the provisions of the Act and the regulations of the Commission;
  - C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission (except as exempted from compliance in Section 2.D below);

*No changes to this page*

(Unit 2)



- D. There is reasonable assurance: (i) that the activities authorized by this operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I (except as exempted from compliance in Section 2.D below);
  - E. Arizona Public Service Company\* is technically qualified to engage in the activities authorized by this operating license in accordance with the Commission's regulations set forth in 10 CFR Chapter I;
  - F. The licensees have satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements", of the Commission's regulations;
  - G. The issuance of this license will not be inimical to the common defense and security or to the health and safety of the public;
  - H. After weighing the environmental, economic, technical, and other benefits of the facility against environmental and other costs, and after considering available alternatives, the issuance of this Facility Operating License No. NPF-51, subject to the conditions for protection of the environment set forth in the Environmental Protection Plan attached as Appendix B, is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied; and
  - I. The receipt, possession, and use of source, byproduct and special nuclear material as authorized by this license will be in accordance with the Commission's regulations in 10 CFR Parts 30, 40 and 70.
2. Pursuant to approval by the Nuclear Regulatory Commission at a meeting held on April 23, 1986, the license for fuel loading and low power testing, License No. NPF-46, issued on December 9, 1985, is superseded by Facility Operating License No. NPF-51 hereby issued to the Arizona Public Service Company, Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority (licensees) to read as follows:

\*Arizona Public Service Company is authorized to act as agent for Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority and has exclusive responsibility and control over the physical construction, operation and maintenance of the facility.

No changes to this page

(Unit 2)

Unit 2  
Item 1

and  
referenced  
in the  
licensee's  
updated  
Final  
Safety  
Analysis  
Report

Unit 2  
Item 2

A.

This license applies to the Palo Verde Nuclear Generating Station, Unit 2, a pressurized water reactor and associated equipment (facility) owned by the licensees. The facility is located on the licensees' site in Maricopa County, Arizona and is described in the licensees' Final Safety Analysis Report, as supplemented and amended; in the related CESSAR Final Safety Analysis Report, as supplemented and amended through Amendment No. 8; and in their Environmental Report, as supplemented and amended.

B.

Subject to the conditions and requirements incorporated herein, the Commission hereby licenses:

- (1) Pursuant to Section 103 of the Act and 10 CFR Part 50, Arizona Public Service Company, Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority to possess, and Arizona Public Service Company (APS) to use and operate the facility at the designated location in Maricopa County, Arizona, in accordance with the procedures and limitations set forth in this license;
- (2) Pursuant to the Act and 10 CFR Part 70, APS to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the licensees' Final Safety Analysis Report, as supplemented and amended, and the CESSAR Final Safety Analysis Report as supplemented and amended through Amendment No. 8;
- (3) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, APS to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (4) Pursuant to the Act and 10 CFR Part 30, 40 and 70, APS to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (5) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, APS to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

(Unit 2)

(6)(a)

Public Service Company of New Mexico (PNM) is authorized to transfer all or a portion of its 10.2% ownership share in Palo Verde, Unit 2 and a proportionate share of a third of PNM's interest in the Palo Verde common facilities to certain equity investors identified in its submissions of August 6 and November 26, 1986, and at the same time to lease back from such purchasers such interest sold in the Palo Verde, Unit 2 facility. The term of the lease is for approximately 29- $\frac{1}{2}$  years, subject to a right of renewal. Additional sale and leaseback transactions of all or a portion of PNM's remaining ownership share of Palo Verde, Unit 2 are hereby authorized until June 30, 1987. Any such sale and leaseback transaction is subject to the representations and conditions set forth in the aforementioned application of February 14, 1986, and the subsequent submittals dated April 22, June 10, July 29, July 30, August 6, and August 7, October 16 and November 26, 1986, as well as the letters of the Director of the Office of Nuclear Reactor Regulation dated August 12 and December 11, 1986, consenting to such transactions. Specifically, the lessor and anyone else who may acquire an interest under this transaction are prohibited from exercising directly or indirectly any control over the licensees of the Palo Verde Nuclear Generating Station, Unit 2. For purposes of this condition the limitations in 10 CFR 50.81, "Creditor Regulations," as now in effect and as they may be subsequently amended, are fully applicable to the lessor and any successor in interest to that lessor as long as the license for Palo Verde, Unit 2 remains in effect; this financial transaction shall have no effect on the license for the Palo Verde nuclear facility throughout the term of the license.

(b) Further, the licensees are also required to notify the NRC in writing prior to any change in: (i) the terms or conditions of any lease agreements executed as part of this transaction; (ii) the ANPP Participation Agreement, (iii) the existing property insurance coverage for the Palo Verde nuclear facility, Unit 2 as specified in licensee counsel's letter of November 26, 1985, and (iv) any action by the lessor or others that may have an adverse effect on the safe operation of the facility.

DEC 11 1986  
 Amdt. # 6,

No changes to this page

(Unit 2)



(7)(a) Deleted

(b) Deleted

No changes to this page

(Unit 2)

Amendment No. 91

Correction letter of 1-2-96

- (8)(a) Arizona Public Service Company is authorized to transfer all or a portion of its 29.1% ownership share in Palo Verde, Unit 2 to certain equity investors identified in its submissions of August 6, August 8 and December 5, 1986, and at the same time to lease back from such purchasers such interest sold in the Palo Verde, Unit 2 facility. The term of the lease is for approximately 29-1/2 years subject to a right of renewal. Additional sale and leaseback transactions of all or a portion of APS's remaining ownership share in Palo Verde, Unit 2 are hereby authorized until June 30, 1987. Any such sale and leaseback transaction is subject to the representations and conditions set forth in the aforementioned application of May 2, 1986, and the subsequent submittals dated July 30, August 2, August 6, August 7, August 8, August 13, October 16 and December 5, 1986, as well as the letters of the Director of the Office of Nuclear Reactor Regulation dated August 15, and December 11, 1986, consenting to such transactions. Specifically, the lessor and anyone else who may acquire an interest under this transaction are prohibited from exercising directly or indirectly any control over the licensees of the Palo Verde Nuclear Generating Station, Unit 2. For purposes of this condition the limitations in 10 CFR 50.81, "Creditor Regulations," as now in effect and as they may be subsequently amended, are fully applicable to the lessor and any successor in interest to that lessor as long as the license for Palo Verde, Unit 2 remains in effect; this financial transaction shall have no effect on the license for the Palo Verde nuclear facility throughout the term of the license.
- (b) Further, the licensees are also required to notify the NRC in writing prior to any change in: (i) the terms or conditions of any lease agreements executed as part of this transaction; (ii) the ANPP Participation Agreement, (iii) the existing property insurance coverage for the Palo Verde nuclear facility, Unit 2 as specified in licensee counsel's letter of November 26, 1985, and (iv) any action by the lessor or others that may have an adverse effect on the safe operation of the facility.

Amctt. # 6, DEC 11 1986

No changes to this page

(Unit 2)

C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

Unit 2  
Item 3

Arizona Public Service Company (APS) is authorized to operate the facility at reactor core power levels not in excess of 3876 megawatts thermal (100% power) in accordance with the conditions specified herein, and in Attachment 1 to this license. The items identified in Attachment 1 to this license shall be completed as specified. Attachment 1 is hereby incorporated into this license.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 4<sup>20</sup>, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. APS shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

(3) Antitrust Conditions

This license is subject to the antitrust conditions delineated in Appendix C to this license.

(4) Operating Staff Experience Requirements (Section 13.1.2, SSER 9)\*

Unit 2  
Item 4

Deleted

APS shall have a licensed senior operator on each shift who has had at least six months of hot operating experience on the same type of plant, including startup and shutdown experience and at least six weeks at power levels greater than 20% of full power.

Unit 2  
Item 5

Deleted

(5) Initial Test Program (Section 14, SER and SSER 2)

Any changes in the initial test program described in Section 14 of the FSARs (Palo Verde and CESSAR), made in accordance with the provisions of 10 CFR 50.59 shall be reported in accordance with 50.59(b) within one month of such change.

\*The parenthetical notation following the title of many license conditions denotes the section of the Safety Evaluation Report and/or its supplements wherein the license condition is discussed.

(6) Fire Protection Program (Section 9.5.1, SSER 6, SSER 7 and SSER 8)

Unit 2  
Item 6

APS shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report for the facility, as supplemented and amended, and as approved in the SER through Supplement 8, subject to the following provision:

APS may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

Unit 2  
Item 7

(7) Inservice Inspection Program (Sections 5.2.4 and 6.6, SER and SSER 9)

Deleted

~~Prior to September 10, 1986, APS shall submit the inservice inspection program for Unit 2 for NRC review and approval.~~

Unit 2  
Item 8

(8) Supplement No. 1 to NUREG-0737 Requirements

Deleted

~~APS shall complete the items listed in Attachment 2.~~

Unit 2  
Item 9

(9) Additional Conditions

Deleted

~~The Additional Conditions contained in Appendix D, as revised through Amendment No. 117, are hereby incorporated into this license. Arizona Public Service Company shall operate the facility in accordance with the Additional Conditions.~~

D. (1)

APS has previously been granted an exemption from Paragraph III.D.2(b)(ii) of Appendix J to 10 CFR Part 50. This exemption was previously granted in Facility Operating License NPF-46 pursuant to 10 CFR 50.12.

Unit 2  
Item 10

(2)

Deleted

~~APS has previously been granted a partial exemption from those portions of General Design Criterion 4 of Appendix A to 10 CFR Part 50 which require protection of structures, systems, and components against certain dynamic effects associated with postulated reactor coolant system pipe breaks. This exemption was granted on November 29, 1985 (50 FR 50020) pursuant to 10 CFR 50.12 for a period ending with the completion of the second refueling outage for PVNGS-2 or the adoption of the proposed rulemaking for modification of GDC 4 whichever occurs first.~~

With the granting of these exemptions, the facility will operate, to the extent authorized herein, in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission.

E. The licensees shall fully implement and maintain in effect all provisions of the Commission-approved physical security, guard training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to

(Unit 2)

the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The Safeguard Contingency Plan is incorporated into the Physical Security Plan. The plans, which contain Safeguards Information protected under 10 CFR 73.21, are entitled: "Palo Verde Nuclear Station Physical Security Plan," with revisions submitted through March 18, 1997; and "Palo Verde Nuclear Generating Station Guard Training and Qualification Plan," with revisions submitted through December 26, 1987. Changes made in accordance with 10 CFR 73.55 shall be implemented in accordance with the schedule set forth therein.

- F. Except as otherwise provided in the Technical Specifications or the Environmental Protection Plan, APS shall report any violations of the requirements contained in Section 2.C of this license in the following manner: Initial notification shall be made within 24 hours to the NRC Operations Center via the Emergency Notification System with written follow-up within 30 days in accordance with the procedures described in 10 CFR 50.73(b), (c) and (e);
- G. The licensees shall have and maintain financial protection of such type and in such amounts as the Commission shall require in accordance with Section 170 of the Atomic Energy Act of 1954, as amended, to cover public liability claims; and
- H. This license is effective as of the date of issuance and shall expire at midnight on December 9, 2025.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed By

Darrell G. Eisenhut, Acting Director  
Office of Nuclear Reactor Regulation

Attachments:

- 1. Attachment 1
- 2. Attachment 2
- 3. Appendix A -  
Technical Specifications
- 4. Appendix B  
Environmental Protection Plan
- 5. Appendix C  
Antitrust Conditions
- 6. Appendix D  
Additional Conditions

Deleted

Unit 2  
Items 11  
through 14

Unit 2  
Item 15

Unit 2  
Item 9

Date of Issuance: April 24, 1986

Amendment No. 403, 108

(Unit 2)



ATTACHMENT 1

PALO VERDE NUCLEAR GENERATING STATION, UNIT 2  
OPERATING LICENSE NPF-51

Deleted

This attachment identifies items which must be completed to the NRC staff's satisfaction in accordance with the schedule identified below.

1. Prior to entering Mode 1 for the first time, APS shall

Unit 2  
Item 11

- a. Have installed and operable a Post Accident Sampling System which meets the provisions of NUREG-0737 (II.B.3).
- b. Have completed a review of the surveillance procedures applicable to the change of mode, and determined that the procedures demonstrate the operability of the required systems with respect to all acceptance criteria defined in the Technical Specifications.
- c. Have dispatched written notification to the NRC Regional Administrator, Region V, that the action defined in (a) and (b) above, has been completed for Mode 1 entry.

Unit 2  
Item 12

2. APS shall perform compensatory measures, complete testing and make operable all elements of the Radiation Monitoring System in accordance with the schedule and commitments presented in ANPP letters 34129 and 36152, dated November 29, 1985 and April 15, 1986, respectively.

3. APS shall submit the following information concerning the charging pumps to the Office of Nuclear Reactor Regulation in accordance with the schedules and commitments presented in ANPP Letters 34127 and 34174, dated November 29, 1985 and December 5, 1985, respectively:

Unit 2  
Item 13

- a. An evaluation of the effects of gas binding an operating charging pump assuming that the pump has a preexisting crack in the block. If this postulated condition will lead to a failure of the pump to deliver the required flow, APS shall also include with the evaluation a proposed course of action regarding this outcome.
- b. An evaluation and implementation schedule, for staff approval, regarding the long-term solution which considers alternative hardware changes that may be necessary to eliminate the need for venting hydrogen from the suction of the charging pumps.

Unit 2  
Item 14

4. APS shall implement the resolution of the design adequacy of masonry walls in accordance with the commitments provided in ANPP letter 36301, dated April 18, 1986.

(Unit 2)



ATTACHMENT 2

deleted

PALO VERDE NUCLEAR GENERATING STATION, UNIT 2  
OPERATING LICENSE NPF-51

APS shall complete the following requirement of NUREG-0737 Supplement No. 1  
on the schedule noted below:

By October 30, 1986, the Safety Parameter Display System  
(SPDS) shall be ready for operation. The system shall not  
be used by the operators for accident evaluation until  
the NRC staff has approved its use.

Unit 2  
Item 15

(Unit 2)





UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

ARIZONA PUBLIC SERVICE COMPANY

SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT

EL PASO ELECTRIC COMPANY

SOUTHERN CALIFORNIA EDISON COMPANY

PUBLIC SERVICE COMPANY OF NEW MEXICO

LOS ANGELES DEPARTMENT OF WATER AND POWER

SOUTHERN CALIFORNIA PUBLIC POWER AUTHORITY

DOCKET NO. STN 50-530

PALO VERDE NUCLEAR GENERATING STATION, UNIT 3

FACILITY OPERATING LICENSE

License No. NPF-74

1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
  - A. The application for license filed by Arizona Public Service Company on behalf of itself and the Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority (licensees) complies with the standards and requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations set forth in 10 CFR Chapter I, and all required notifications to other agencies or bodies have been duly made;
  - B. Construction of the Palo Verde Nuclear Generating Station, Unit 3 (facility) has been substantially completed in conformity with Construction Permit No. CPPR-143 and the application, as amended, the provisions of the Act, and the regulations of the Commission;
  - C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission (except as exempted from compliance in Section 2.D below);
  - D. There is reasonable assurance: (i) that the activities authorized by this operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I (except as exempted from compliance in Section 2.D below);

No changes to this page

(Unit 3)

- E. Arizona Public Service Company\* is technically qualified to engage in the activities authorized by this operating license in accordance with the Commission's regulations set forth in 10 CFR Chapter I;
- F. The licensees have satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements," of the Commission's regulations;
- G. The issuance of this license will not be inimical to the common defense and security or to the health and safety of the public;
- H. After weighing the environmental, economic, technical, and other benefits of the facility against environmental and other costs, and after considering available alternatives, the issuance of this Facility Operating License No. NPF-74, subject to the conditions for protection of the environment set forth in the Environmental Protection Plan attached as Appendix B, is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied; and
- I. The receipt, possession, and use of source, byproduct, and special nuclear material as authorized by this license will be in accordance with the Commission's regulations in 10 CFR Parts 30, 40, and 70.

2. Pursuant to approval by the Nuclear Regulatory Commission at a meeting held on November 25, 1967, the license for fuel loading and low power testing, License No. NPF-65, issued on March 25, 1967, is superseded by Facility Operating License No. NPF-74 hereby issued to the Arizona Public Service Company, Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority (licensees) to read as follows:

Unit 3  
Item 1

and  
referenced  
in the  
licensees'  
updated  
Final  
Safety  
Analysis Report

- A. This license applies to the Palo Verde Nuclear Generating Station, Unit 3, a pressurized water reactor and associated equipment (facility) owned by the licensees. The facility is located on the licensees' site in Maricopa County, Arizona and is described in the licensees' Final Safety Analysis Report, as supplemented and amended; in the related CESSAR Final Safety Analysis Report, as supplemented and amended through Amendment No. 8; and in their Environmental Report, as supplemented and amended.

\*Arizona Public Service Company is authorized to act as agent for Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority, and has exclusive responsibility and control over the physical construction, operation, and maintenance of the facility.

(Unit 3)



B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses:

(1) Pursuant to Section 103 of the Act and 10 CFR Part 50, Arizona Public Service Company, Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority to possess, and Arizona Public Service Company (APS) to use and operate the facility at the designated location in Maricopa County, Arizona, in accordance with the procedures and limitations set forth in this license;

Unit 3  
Item 2

(2) Pursuant to the Act and 10 CFR Part 70, APS to receive, possess, and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the licensees' Final Safety Analysis Report, as supplemented and amended, and the CESSAR Final Safety Analysis Report, as supplemented and amended through Amendment No. 8;

and referenced  
in the  
licensees  
updated  
FSAR

(3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, APS to receive, possess, and use at any time any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, as sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

(4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, APS to receive, possess, and use in amounts required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and

(5) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, APS to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

Amendment No. 74  
Dec 8 1955

(Unit 3)



(1) Maximum Power Level

Arizona Public Service Company (APS) is authorized to operate the facility at reactor core power levels not in excess of 3876 megawatts thermal (100% power) in accordance with the conditions specified herein and in Attachment 1 to this license. The items identified in Attachment 1 to this license shall be completed as specified. Attachment 1 is hereby incorporated into this license.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 114<sup>120</sup>, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. APS shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

(3) Antitrust Conditions

This license is subject to the antitrust conditions delineated in Appendix C to this license.

Unit 3 Item 4

(4) Initial Test Program (Section 14, SER and "SER 2)

Deleted

Any changes in the initial test program described in Section 14 of the FSARs (Palo Verde and CESSAR) made in accordance with the provisions of 10 CFR 50.59 shall be reported in accordance with 50.59(b) within one month of such change.

Unit 3 Item 5

(5) Additional Conditions

Deleted

The Additional Conditions contained in Appendix D, as revised through Amendment No. 117, are hereby incorporated into this license. Arizona Public Service Company shall operate the facility in accordance with the Additional Conditions.

D. APS has previously been granted an exemption from Paragraph III.D.2(b)(ii) of Appendix J to 10 CFR Part 50. This exemption was previously granted in Facility Operating License NPF-65 pursuant to 10 CFR 50.12.

With the granting of this exemption, the facility will operate, to the extent authorized herein, in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission.

E. The licensees shall fully implement and maintain in effect all provisions of the Commission-approved physical security, guard training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The Safeguard Contingency Plan is incorporated into the Physical Security Plan. The plans, which contain Safeguards Information protected under 10 CFR 73.21, are entitled: "Palo Verde

Nuclear Station Physical Security Plan," with revisions submitted through March 18, 1997; and "Palo Verde Nuclear Generating Station Guard Training and Qualification Plan," with revisions submitted through December 26, 1987. Changes made in accordance with 10 CFR 73 55 shall be implemented in accordance with the schedule set forth therein.

- F. APS shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report for the facility, as supplemented and amended, and as approved in the SER through Supplement 11, subject to the following provision:

APS may make changes to the approved fire protection program without approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

- G. Except as otherwise provided in the Technical Specifications or the Environmental Protection Plan, APS shall report any violations of the requirements contained in Section 2.C of this license in the following manner: Initial notification shall be made within 24 hours to the NRC Operations Center via the Emergency Notification System, with written follow-up within 30 days in accordance with the procedures described in 10 CFR 50.73(b), (c), and (e);
- H. The licensees shall have and maintain financial protection of such type and in such amounts as the Commission shall require in accordance with Section 170 of the Atomic Energy Act of 1954, as amended, to cover public liability claims; and
- I. This license is effective as of the date of issuance and shall expire at midnight on March 25, 2027.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed By

Thomas E. Murley, Director  
Office of Nuclear Reactor Regulation

Attachments:

- 1. Attachment 1 - Deleted
- 2. Appendix A - Technical Specifications
- 3. Appendix B - Environmental Protection Plan
- 4. Appendix C - Antitrust Conditions
- 5. Appendix D - Additional Conditions

Unit 3  
Item 6

Unit 3  
Item 5

Date of Issuance: November 25, 1987

Amendment No. 83, 87

(Unit 3)



ATTACHMENT 1

PALO VERDE NUCLEAR GENERATING STATION, UNIT 3  
OPERATING LICENSE NPF-74

Deleted

This attachment identifies items that must be completed to the NRC staff's satisfaction in accordance with the schedule identified below.

1. Prior to entering Mode 1 for the first time, APS shall:
  - a. Have completed a review of the surveillance procedures applicable to the change of mode and determined that the procedures demonstrate the operability of the required systems with respect to all acceptance criteria defined in the Technical Specifications.
  - b. Have dispatched written notification to the NRC Regional Administrator, Region V, that the action defined in (a), above, has been completed for Mode 1.
2. The post-accident sampling system shall be operable prior to exceeding 5% power.
3. DELETED

Unit 3  
Item 6

Unit 3  
Item 7

(Unit 3)

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Amendment No. 56

OCT 27 1994

(Unit 3)

**Attachment A**

**Proposed Changes to PVNGS  
Unit 1 Operating License and License Conditions**

**Attachment A**  
**Proposed Changes to PVNGS**  
**Unit 1 Operating License and License Conditions**

1. The footnote in the Unit 1 operating license for the list of owners, page 1, should be deleted because it is obsolete and no longer applies. The footnote states:

Los Angeles Department of Water and Power will be included as an owner in this license on the date it officially acquires an ownership interest in the facility which is expected to occur shortly after Palo Verde Nuclear Generating Station, Unit 1 achieves commercial operation.

The NRC was notified in letter number ANPP-39575, dated December 31, 1986, that Los Angeles Department of Water and Power had officially acquired an ownership interest in PVNGS. This footnote was not included in the PVNGS Units 2 and 3 operating licenses.

2. Unit 1 operating license item 2.A should be revised to delete the reference to a specific PVNGS Final Safety Analysis Report amendment number, and to qualify the reference to the Combustion Engineering Standard Safety Analysis Report (CESSAR) Final Safety Analysis Report. Item 2.A currently states:

This license applies to the Palo Verde Nuclear Generating Station, Unit 1, a pressurized water reactor and associated equipment (facility) owned by the licensees. The facility is located on the licensees' site in Maricopa County, Arizona and is described in the licensees' Final Safety Analysis Report, as supplemented and amended through Amendment No. 14; in the related CESSAR Final Safety Analysis Report, as supplemented and amended through Amendment No. 8; and in their Environmental Report, as supplemented and amended through Supplement No. 4.

Item 2.A should be revised as follows (with proposed changes in italics):

This license applies to the Palo Verde Nuclear Generating Station, Unit 1, a pressurized water reactor and associated equipment (facility) owned by the licensees. The facility is located on the licensees' site in Maricopa County, Arizona and is described in the licensees' Final Safety Analysis Report, *as supplemented and amended*; in the related CESSAR Final Safety Analysis Report, as supplemented and amended through Amendment No. 8 *and referenced in the licensees' updated Final Safety Analysis Report*; and in their Environmental Report, as supplemented and amended through Supplement No. 4.

The reference to the specific PVNGS Final Safety Analysis Report Amendment No. 14 should be removed, as was done in the Units 2 and 3 OLs. The PVNGS Final Safety Analysis Report is routinely updated in accordance with 10 CFR 50.59 and 50.71(e). In addition, the reference to the CESSAR Final Safety Analysis Report should be qualified because many of the PVNGS Updated Final Safety Analysis Report descriptions have been updated in accordance with 10 CFR 50.59 and 50.71(e) and now supersede the original CESSAR Final Safety Analysis Report descriptions.

3. Unit 1 operating license item 2.B.(2) should be revised to delete the reference to a specific PVNGS Final Safety Analysis (FSAR) amendment number, and to qualify the reference to the Combustion Engineering Standard Safety Analysis Report (CESSAR) Final Safety Analysis Report. Item 2.B.(2) currently states:

Pursuant to the Act and 10 CFR Part 70, APS to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the licensees' Final Safety Analysis Report, as supplemented and amended, through Amendment No. 14 and the CESSAR Final Safety Analysis Report as supplemented and amended through Amendment No. 8;

Item 2.B.(2) should be revised as follows (with proposed changes in italics):

Pursuant to the Act and 10 CFR Part 70, APS to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the licensees' Final Safety Analysis Report, *as supplemented and amended*, and the CESSAR Final Safety Analysis Report as supplemented and amended through Amendment No. 8 *and referenced in the licensee's updated Final Safety Analysis Report*;

The reference to the specific PVNGS Final Safety Analysis Report Amendment No. 14 should be removed, as was done in the Units 2 and 3 OLs. The PVNGS Final Safety Analysis Report is updated routinely in accordance with 10 CFR 50.59 and 50.71(e). In addition, the reference to the CESSAR Final Safety Analysis Report should be qualified because many of the PVNGS Updated Final Safety Analysis Report descriptions have been updated in accordance with 10 CFR 50.59 and 50.71(e) and now supersede the original CESSAR Final Safety Analysis Report descriptions.



4. Unit 1 license condition 2.C.(1), Maximum Power Level should be revised to remove the references to Attachment 1, which contains conditions that have been completed. The justification to delete the items in Attachment 1 is provided in item number 15 below.
  
5. Unit 1 license condition 2.C.(4), Operating Staff Experience Requirements currently states:

APS shall have operators on each shift who meet the requirements described in Attachment 2. Attachment 2 is hereby incorporated into this license.

This license condition imposing operating staff experience requirements on PVNGS Unit 1 is no longer necessary. This condition was imposed on Unit 1 for initial startup because it was the first PVNGS unit to be started up, and there was no site-specific operating staff experience. This license condition was not included with the Unit 3 operating license. Since PVNGS Unit 1 has been operating for over thirteen years, the operating staff has accumulated significant operating experience. Also, operating staff requirements are prescribed by 10 CFR 50.54, PVNGS Technical Specifications, and in the PVNGS UFSAR commitments to Regulatory Guide 1.8 and ANSI/ANS 3.1. (Item number 16 below addresses deletion of Attachment 2)

6. Unit 1 license condition 2.C.(5), Post-Fuel-Loading Initial Test Program (Section 14, SER and SSER 2) currently states:

Any changes in the Initial Test Program described in Section 14 of the FSARs (Palo Verde and CESSAR) made in accordance with the provisions of 10 CFR 50.59 shall be reported in accordance with 50.59(b) within one month of such change.

This condition is no longer applicable. The Initial Test Program described in Section 14 of the PVNGS and CESSAR FSARs ended with the completion of initial power ascension testing.

7. Unit 1 license condition 2.C.(6), Environmental Qualification currently states:

Pursuant to the extension granted in the Commission letter of November 18, 1985, APS shall environmentally qualify the hydrogen recombiners according to the provisions of 10 CFR 50.49 by March 30, 1986.



This License Condition was completed as described in letter number ANPP-36035, dated April 10, 1986.

8. Unit 1 license condition 2.C.(7), Fire Protection Program (Section 9.5.1. SSER 6, SSER 7 and SSER 8) currently states:

APS shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety analysis Report for the facility, as supplemented and amended, and as approved in the SER through Supplement 8, subject to the following provision: ...

The reference to the SER through Supplement 8 should be updated to reference the SER through Supplement 11, as in the Unit 3 license requirement 2.F. After the Unit 1 operating license was issued, the NRC continued to review information submitted by APS for the licensing of Unit 2 and then Unit 3, including fire protection information that was common to all three units. The NRC reviews were documented in subsequent SER Supplements. The last SER Supplement containing fire protection program approval was Supplement 11. Since the Palo Verde fire protection program was and is common to all three units, the approval documented in Supplement 11 would also apply to all three units.

9. Unit 1 license condition 2.C.(8), Emergency Preparedness currently states:

In the event that the NRC finds that the lack of progress in completion of the procedures in the Federal Emergency Management Agency's final rule, 44 CFR Part 350, is an indication that a major substantive problem exists in achieving or maintaining an adequate state of preparedness, the provisions of 10 CFR Section 50.54(s)(2) will apply.

This condition is no longer necessary because FEMA advised the staff of a formal 44 CFR 350 finding of adequate offsite emergency preparedness. Supplement No. 9 to NUREG-0857, NRC Safety Evaluation Report Related to the Operation of PVNGS Units 1, 2, and 3, dated December 1985, section 1.11, item (1), states that the emergency preparedness license condition from the Unit 1 full power license was not included in the Unit 2 full power license because "[b]y letter dated September 25, 1985, FEMA advised the staff of a formal 44 CFR 350 finding of adequate offsite emergency preparedness."

10. Unit 1 license condition 2.C.(9), Results of Piping Vibration Test Program (Section 3.9.2, SER) currently states:

Three months following completion of the piping vibration test program performed during initial startup, APS shall submit a summary of the results which demonstrate that the vibration of piping systems is within acceptable levels.

This License Condition was completed as described in APS letter number 161-00312, dated June 24, 1987.

11. Unit 1 license condition 2.C.(10), Response to Salem ATWS Event (Section 7.2, SSER 7, and Section 1.11, SSER 8) currently states:

APS shall complete implementation of the requirements of Generic Letter 83-28 on a schedule which is consistent with that given in its letter dated April 19, 1985.

The implementation of the commitments made as a result of Generic Letter 83-28 have been completed. In an APS/NRC Management Meeting on May 26, 1992, as documented in an NRC letter to APS dated June 16, 1992, "Report of Meeting with APS Management," APS informed NRC that 31 of 31 commitments made as a result of Generic Letter 83-28 on the Salem ATWS event were reviewed and determined to be appropriately closed.

12. Unit 1 license condition 2.C.(11), Supplement No. 1 to NUREG-0737 Requirements currently states:

APS shall complete the emergency response capabilities as required by Attachment 3.

The reference to Attachment 3 should be deleted. The emergency response capabilities required by Attachment 3 have been completed. They are discussed in items 17 through 21 below.



13. Unit 1 license condition 2.C.(12), Radiochemistry Laboratory (Section 7.3.1.5(3), Emergency Plan) currently states:

APS shall maintain and operate the Palo Verde, Unit 2 radiochemistry laboratory as part of the Palo Verde, Unit 1 facility under this Part 50 license authorization, in accordance with the commitments made by letter ANPP-30937, dated October 24, 1984, until the Unit 2 facility is issued a Part 50 license.

This condition has been completed and is no longer applicable. PVNGS Unit 2 was issued a 10 CFR Part 50 full power license on April 24, 1986.

14. Unit 1 license condition 2.C.(14), Additional Conditions currently states:

The Additional Conditions contained in Appendix D, as revised through Amendment No. 117, are hereby incorporated into this license. Arizona Public Service Company shall operate the facility in accordance with the Additional Conditions.

Justification to delete this license condition was submitted in APS letter 102-04250 dated February 26, 1999.

15. Unit 1 operating license, Attachment 1:

Surveillance Program currently states:

Prior to entering Mode 1 for the first time, APS shall

- a. Have completed a review of the surveillance procedures applicable to the change of mode, and determined that the procedures demonstrate the operability of the required systems with respect to all acceptance criteria defined in the Technical Specifications.
- b. Have dispatched written notification to the NRC Regional Administrator, Region V, that the action defined in (a), above, has been completed for Mode 1.

These license conditions have been completed as described in letter number ANPP-32780, dated June 6, 1985.

16. Unit 1 operating license, Attachment 2 currently states:

APS shall have a licensed senior operator on each shift who has had at least six months of hot operating experience on a same type plant, including at least six weeks at power levels greater than 20% of full power, and who has had startup and shutdown experience. For those shifts where such an individual is not available on the plant staff, an advisor shall be provided who has had at least four years of power plant experience, including two years of nuclear plant experience, and who has had at least one year of experience on shift as a licensed senior operator at a similar type facility. Use of advisors who were licensed only at the RO level will be evaluated on a case-by-case basis. Advisors shall be trained on plant procedures, technical specifications and plant systems, and shall be examined on these topics at a level sufficient to assure familiarity with the plant. For each shift, the remainder of the shift crew shall be trained in the role of the advisors. Advisors, or fully trained and qualified replacements, shall be retained until the experience levels identified in the first sentence above have been achieved. The names of any replacement advisors shall be certified by APS prior to these individuals being placed on shift. The NRC shall be notified at least 30 days prior to the date APS proposes to release the advisors from further service.

This license condition imposing operating staff experience requirements for PVNGS Unit 1 is no longer necessary. This license condition was imposed on Unit 1 for initial startup because it was the first PVNGS unit to be licensed, and APS, therefore, had no site-specific operating staff experience. This license condition was not included with the Unit 3 operating license. Since PVNGS Unit 1 has been operating for over thirteen years, the operating staff has accumulated significant operating experience. Also, operating staff requirements are prescribed by 10 CFR 50.54, PVNGS Technical Specifications, and in the PVNGS UFSAR commitments to Regulatory Guide 1.8 and ANSI/ANS 3.1.

17. Unit 1 operating license, Attachment 3, item (a):

EMERGENCY RESPONSE CAPABILITIES currently states:

APS shall complete the following requirements of NUREG-0737 Supplement No. 1 on the schedule noted below:

- (a) Three months after the staff issues its evaluation of Revision 2 to the CE Owners Group emergency procedure guidelines (CEN-152), dated May 8, 1984, APS shall provide a



schedule for revising (i) the Procedure Generation Package to be in conformance with Revision 2 to CEN-152, as modified by the staff's evaluations, and (ii) the emergency operating procedures to be in conformance with the revised Procedures Generation Package.

This condition was completed as described in letter number ANPP-32987, dated July 10, 1985.

18. Unit 1 operating license, Attachment 3, Item (b) currently states::

- (b) Prior to August 31, 1985, APS shall submit for review and approval a Supplemental DCRDR Summary Report which provides the information described in SSER 7.

This condition was completed as described in letter number ANPP-33302, dated August 30, 1985, as supplemented by letter number ANPP-39830, dated January 23, 1987.

19. Unit 1 operating license, Attachment 3, Item (c) currently states:

- (c) Prior to startup following the first refueling outage, APS shall implement actions to correct HEDs A-5.14, A-5.9, B-5.9, B-5.14 and deferred HEDs A-1.2, A-1.3, 64, 100, 101b, 138, 172, and A-5.16 as described in APS letter, dated October 29, 1984.

This condition was completed as described in APS letter number 161-01060, dated May 27, 1988.

20. Unit 1 operating license, Attachment 3, Item (d) currently states:

- (d) By June 28, 1985, APS shall have installed, tested and made functional the primary system to be used for post accident dose assessment (the Chemical and Radiological Analysis Computer system or an alternate system which meets the NRC staff's requirements).

This condition was completed as described in letter number ANPP-32918, dated June 27, 1985.



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21. Unit 1 operating license, Attachment 3, Item (e) currently states:

- (e) After completion of the verification and validation program for the Safety Parameter Display System (SPDS), APS shall provide a date for the NRC staff's on-site audit of the SPDS. The system shall not be used by the operators for accident evaluation until the NRC staff has approved its use.

This condition was completed as described in letter number ANPP-33965, dated November 8, 1985. Also, in a letter from NRC to APS dated February 5, 1987, the NRC stated that "the staff finds that the SPDS is acceptable for use by the operators for accident evaluation. Therefore, the restriction on the use of the SPDS, specified in Condition (e) in Attachment 3 to the Operating License for Palo Verde, Unit 1 (NPF-41) and in the Condition in Attachment 2 to the Operating License for Palo Verde, Unit 2 (NPF-51), is no longer applicable."



**Attachment B**

**Proposed Changes to PVNGS  
Unit 2 Operating License and License Conditions**



**Attachment B**  
**Proposed Changes to PVNGS**  
**Unit 2 Operating License and License Conditions**

1. Unit 2 operating license, item 2.A should be revised to qualify the reference to the Combustion Engineering Standard Safety Analysis Report (CESSAR) Final Safety Analysis Report. Item 2.A currently states:

This license applies to the Palo Verde Nuclear Generating Station, Unit 2, a pressurized water reactor and associated equipment (facility) owned by the licensees. The facility is located on the licensees' site in Maricopa County, Arizona and is described in the licensees' Final Safety Analysis Report, as supplemented and amended; in the related CESSAR Final Safety Analysis Report, as supplemented and amended through Amendment No. 8; and in their Environmental Report, as supplemented and amended.

Item 2.A should be revised to read (with proposed changes in italics):

This license applies to the Palo Verde Nuclear Generating Station, Unit 2, a pressurized water reactor and associated equipment (facility) owned by the licensees. The facility is located on the licensees' site in Maricopa County, Arizona and is described in the licensees' Final Safety Analysis Report, as supplemented and amended; in the related CESSAR Final Safety Analysis Report, as supplemented and amended through Amendment No. 8 *and referenced in the licensees' updated Final Safety Analysis Report*; and in their Environmental Report, as supplemented and amended.

The reference to CESSAR Final Safety Analysis Report should be qualified because many of the PVNGS Updated Final Safety Analysis Report descriptions have been updated in accordance with 10 CFR 50.59 and 50.71(e) and now supersede the original CESSAR Final Safety Analysis Report descriptions.

2. Unit 2 operating license, item 2.B.(2) should be revised to qualify the reference to the Combustion Engineering Standard Safety Analysis Report (CESSAR). Item 2.B.(2) currently states:

- (2) Pursuant to the Act and 10 CFR Part 70, APS to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the licensees' Final Safety Analysis Report, as supplemented and amended, and the CESSAR Final Safety Analysis Report as supplemented and amended through Amendment No. 8.



Item 2.B.(2) should be revised to read (with proposed changes in italics):

Pursuant to the Act and 10 CFR Part 70, APS to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the licensees' Final Safety Analysis Report, as supplemented and amended, and the CESSAR Final Safety Analysis Report as supplemented and amended through Amendment No. 8 *and referenced in the licensees' updated FSAR.*

The reference to CESSAR should be qualified because many of the PVNGS Updated FSAR descriptions have been updated in accordance with 10 CFR 50.59 and 50.71(e) and now supersede the original CESSAR descriptions.

3. Unit 2 license condition 2.C.(1), Maximum Power Level should be revised to remove the references to Attachment 1, which contains conditions that have been completed. The justification to delete the items in Attachment 1 is provided in item numbers 11 through 14 below.
4. Unit 2 license condition 2.C.(4), Operating Staff Experience Requirements (Section 13.1.2, SSER 9) currently states:

APS shall have a licensed senior operator on each shift who has had at least six months of hot operating experience on the same type of plant, including startup and shutdown experience and at least six weeks at power levels greater than 20% of full power.

This license condition imposing operating staff experience requirements for PVNGS Unit 2 is no longer necessary. This condition was imposed on Unit 2 for initial startup because, since PVNGS had only recently begun operation, there was little site-specific operating staff experience. This license condition was not included with the Unit 3 operating license. Since PVNGS Unit 2 has been operating for over thirteen years, the operating staff has accumulated significant operating experience. Also, operating staff requirements are prescribed by 10 CFR 50.54, PVNGS Technical Specifications, and in the PVNGS UFSAR commitments to Regulatory Guide 1.8/ANSI/ANS 3.1.



5. Unit 2 license condition 2.C.(5), Initial Test Program (Section 14, SER and SSER 2) currently states:

Any changes in the initial test program described in Section 14 of the FSARs (Palo Verde and CESSAR) made in accordance with the provisions of 10 CFR 50.59 shall be reported in accordance with 50.59(b) within one month of such change.

This condition is no longer applicable. The Initial Test Program described in Section 14 of the PVNGS and CESSAR FSARs ended with the completion of initial power ascension testing.

6. Unit 2 license condition 2.C.(6), Fire Protection Program (Section 9.5.1, SSER 6, SSER 7 and SSER 8) currently states:

APS shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety analysis Report for the facility, as supplemented and amended, and as approved in the SER through Supplement 8, subject to the following provision: ...

The reference to the SER through Supplement 8 should be updated to reference the SER through Supplement 11, as in the Unit 3 license requirement 2.F. After the Unit 2 operating license was issued, the NRC continued to review information submitted by APS for the licensing of Unit 3, including fire protection information that was common to all three units. The NRC reviews were documented in subsequent SER Supplements. The last SER Supplement containing fire protection program approval was Supplement 11. Since the Palo Verde fire protection program was and is common to all three units, the approval documented in Supplement 11 would also apply to all three units.

7. Unit 2 license condition 2.C.(7), Inservice Inspection Program (Sections 5.2.4 and 6.6, SER and SSER 9) currently states:

Prior to September 10, 1986, APS shall submit the inservice inspection program for Unit 2 for NRC review and approval.

This license condition was completed as described in letter number ANPP-37421, dated July 17, 1986.



8. Unit 2 license condition 2.C.(8) Supplement No. 1 to NUREG-0737 Requirements currently states:

APS shall complete the items listed in Attachment 2.

The items listed in attachment 2 have been completed. See item number 15 below.

9. Unit 2 license condition 2.C.(9), Additional Conditions currently states:

The Additional Conditions contained in Appendix D, as revised through Amendment No. 117, are hereby incorporated into this license. Arizona Public Service Company shall operate the facility in accordance with the Additional Conditions.

Justification to delete this license condition was submitted to NRC in APS letter 102-04250 dated February 26, 1999.

10. Unit 2 license condition 2.D.(2) currently states:

APS has previously been granted a partial exemption from those portions of General Design Criterion 4 of Appendix A to 10 CFR Part 50 which require protection of structures, systems, and components against certain dynamic effects associated with postulated reactor coolant system pipe breaks. This exemption was granted on November 29, 1985 (50 FR 50020) pursuant to 10 CFR 50.12 for a period ending with the completion of the second refueling outage for PVNGS-2 or the adoption of the proposed rulemaking for modification of GDC 4 whichever occurs first.

This license condition has expired and should be deleted.

11. Unit 2 operating license, Attachment 1, Item 1 currently states:

Prior to entering Mode 1 for the first time, APS shall

- a. Have installed and operable a Post Accident Sampling System which meets the provisions of NUREG-0737 (II.B.3).
- b. Have completed a review of the surveillance procedures applicable to the change of mode, and determined that the procedures demonstrate the operability of the required

systems with respect to all acceptance criteria defined in the Technical Specifications.

- c. Have dispatched written notification to the NRC Regional Administrator, Region V, that the action defined in (a) and (b) above, has been completed for Mode 1 entry.

These license conditions were completed as described in letter number ANPP-36653, dated May 21, 1986.

12. Unit 2 operating license, Attachment 1, Item 2 currently states:

APS shall perform compensatory measures, complete testing and make operable all elements of the Radiation Monitoring System in accordance with the schedule and commitments presented in ANPP letters 34129 and 36152, dated November 29, 1985 and April 15, 1986, respectively.

This license condition was completed during the initial Unit 2 startup program (documented in the Palo Verde Regulatory Commitment Tracking System item number 035824).

13. Unit 2 operating license, Attachment 1, Item 3 currently states:

APS shall submit the following information concerning the charging pumps to the Office of Nuclear Reactor Regulation in accordance with the schedules and commitments presented in ANPP Letters 34127 and 34174, dated November 29, 1985 and December 5, 1985, respectively:

- a. An evaluation of the effects of gas binding an operating charging pump assuming that the pump has a preexisting crack in the block. If this postulated condition will lead to a failure of the pump to deliver the required flow, APS shall also include with the evaluation a proposed course of action regarding this outcome.
- b. An evaluation and implementation schedule, for staff approval, regarding the long-term solution which considers alternative hardware changes that may be necessary to eliminate the need for venting hydrogen from the suction of the charging pumps.



These license conditions have been completed. The evaluation required by item 3.a was submitted to NRC in APS letter number 161-00845, dated March 2, 1988. The evaluation and implementation schedule required by item 3.b was submitted to NRC in letter number ANPP-37162, dated June 26, 1986. In letter number 102-03278 dated March 9, 1995, APS requested NRC acceptance to not implement the plant changes committed to in the June 26, 1986 letter. The NRC accepted this in a letter to APS dated March 23, 1999.

14. Unit 2 operating license, Attachment 1, Item 4 currently states:

APS shall implement the resolution of the design adequacy of masonry walls in accordance with the commitments provided in ANPP letter 36301, dated April 18, 1986.

This license condition has been completed. In NRC Inspection Report number 50-529/88-15 for Palo Verde Unit 2, dated June 29, 1988, the NRC stated that "[APS] completed the reinforcement of the masonry block wall separating the two trains of safety related equipment housed on the basement level of the control building. Completion of this work was identified as a license condition in the Unit 2 operating license. This item is closed."

15. Unit 2 operating license, Attachment 2 currently states:

APS shall complete the following requirement of NUREG-0737 Supplement No. 1 on the schedule noted below:

By October 30, 1986, the Safety Parameter Display System (SPDS) shall be ready for operation. The system shall not be used by the operators for accident evaluation until the NRC staff has approved its use.

This license condition is no longer needed. In a letter from NRC to APS dated February 5, 1987, the NRC stated that "the staff finds that the SPDS is acceptable for use by the operators for accident evaluation. Therefore, the restriction on the use of the SPDS, specified in Condition (e) in Attachment 3 to the Operating License for Palo Verde, Unit 1 (NPF-41) and in the Condition in Attachment 2 to the Operating License for Palo Verde, Unit 2 (NPF-51), is no longer applicable."

In addition, in APS letter number 161-02242, dated August 30, 1989, Response to Generic Letter 89-06, APS certified that the SPDS at Palo Verde Units 1, 2 and 3 will fully meet the requirements of NUREG-0737,



Supplement 1, by October 31, 1992 taking into account the information provided in NUREG-1342. In a letter from NRC to APS dated April 25, 1990, the NRC stated that based upon this certification, the NRC staff concluded that the Palo Verde facility will satisfactorily meet all requirements for an SPDS specified in NUREG-0737, Supplement 1, provided that commitments for implementation are completed on schedule. In APS letter number 102-03139, dated September 30, 1994, APS notified the NRC that the PVNGS SPDS has been fully implemented and meets the requirements of NUREG 0737.



**Attachment C**

**Proposed Changes to PVNGS  
Unit 3 Operating License and License Conditions**



**Attachment C**  
**Proposed Changes to PVNGS**  
**Unit 3 Operating License and License Conditions**

1. Unit 3 operating license item 2.A should be revised to qualify the reference to the Combustion Engineering Standard Safety Analysis Report (CESSAR) Final Safety Analysis Report. Item 2.A currently states:

This license applies to the Palo Verde Nuclear Generating Station, Unit 3, a pressurized water reactor and associated equipment (facility) owned by the licensees. The facility is located on the licensees' site in Maricopa County, Arizona and is described in the licensees' Final Safety Analysis Report, as supplemented and amended; in the related CESSAR Final Safety Analysis Report, as supplemented and amended through Amendment No. 8; and in their Environmental Report, as supplemented and amended.

Item 2.A should be revised as follows (with proposed changes in italics):

This license applies to the Palo Verde Nuclear Generating Station, Unit 3, a pressurized water reactor and associated equipment (facility) owned by the licensees. The facility is located on the licensees' site in Maricopa County, Arizona and is described in the licensees' Final Safety Analysis Report, as supplemented and amended; in the related CESSAR Final Safety Analysis Report, as supplemented and amended through Amendment No. 8 *and referenced in the licensee's updated Final Safety Analysis Report*; an in their Environmental Report, as supplemented and amended.

The reference to the CESSAR Final Safety Analysis Report should be qualified because many of the PVNGS Updated Final Safety Analysis Report descriptions have been updated in accordance with 10 CFR 50.59 and 50.71(e) and now supersede the original CESSAR Final Safety Analysis Report descriptions.

2. Unit 3 operating license item 2.B.(2) should be revised to qualify the reference to the Combustion Engineering Standard Safety Analysis Report (CESSAR). Item 2.B.(2) currently states:

Pursuant to the Act and 10 CFR Part 70, APS to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the licensees' Final Safety Analysis Report, as supplemented and amended, and the CESSAR Final Safety Analysis Report as supplemented and amended through Amendment No. 8.



Item 2.B.(2) should be revised as follows (with proposed changes in italics):

Pursuant to the Act and 10 CFR Part 70, APS to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the licensees' Final Safety Analysis Report, as supplemented and amended, and the CESSAR Final Safety Analysis Report as supplemented and amended through Amendment No. 8 *and referenced in the licensee's updated FSAR.*

The reference to CESSAR should be qualified because many of the PVNGS Updated FSAR descriptions have been updated in accordance with 10 CFR 50.59 and 50.71(e) and now supersede the original CESSAR descriptions.

3. Unit 3 license condition 2.C.(1), Maximum Power Level should be revised to remove the references to Attachment 1, which contains conditions that have been completed. The justification to delete the items in Attachment 1 is provided in item nos. 6 and 7 below.
4. Unit 3 license condition 2.C.(4), Initial Test Program (Section 14, SER and SSER 2) currently states:

Any changes in the initial test program described in Section 14 of the FSARs (Palo Verde and CESSAR) made in accordance with the provisions of 10 CFR 50.59 shall be reported in accordance with 50.59(b) within one month of such change.

This condition is no longer applicable. The Initial Test Program described in Section 14 of the PVNGS and CESSAR FSARs ended with the completion of initial power ascension testing.

5. Unit 3 license condition 2.C.(5), Additional Conditions currently states:

The Additional Conditions contained in Appendix D, as revised through Amendment No. 117, are hereby incorporated into this license. Arizona Public Service Company shall operate the facility in accordance with the Additional Conditions.

Justification to delete this license condition was submitted to NRC in APS letter 102-04250 dated February 26, 1999.



6. Unit 3 operating license, Attachment 1, Item 1 currently states:

1. Prior to entering Mode 1 for the first time, APS shall

a. Have completed a review of the surveillance procedures applicable to the change of mode and determined that the procedures demonstrate the operability of the required systems with respect to all acceptance criteria defined in the Technical Specifications.

b. Have dispatched written notification to the NRC Regional Administrator, Region V, that the action defined in (a), above, has been completed for Mode 1.

These license conditions have been completed, as described in APS letter number 200-00517, dated November 26, 1987.

7. Unit 3 operating license, Attachment 1, Item 2 currently states:

The post accident sampling system shall be operable prior to exceeding 5% power.

This license condition has been completed as described in APS letter number 161-00858, dated March 4, 1988.

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