

## ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9009250192 DOC.DATE: 90/09/11 NOTARIZED: NO DOCKET #  
 FACIL:STN-50-529 Palo Verde Nuclear Station, Unit 2, Arizona Publi 05000529  
 AUTH.NAME AUTHOR AFFILIATION  
 BRADISH,T.R. Arizona Public Service Co. (formerly Arizona Nuclear Power  
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 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 90-004-01:on 900504,pressurizer safety relief valve  
 setpoints out of tolerance.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 W/9 ltr. ENCL 1 SIZE: 7  
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:Standardized plant.

05000529

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	PETERSON,S.	1 1	TRAMMELL,C.	1 1
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	AEOD/DOA	1 1	AEOD/DSP/TPAB	1 1
	AEOD/ROAB/DSP	2 2	NRR/DET/ECMB 9H	1 1
	NRR/DET/EMEB 7E	1 1	NRR/DLPQ/LHFB11	1 1
	NRR/DLPQ/LPEB10	1 1	NRR/DOEA/OEAB11	1 1
	NRR/DREP/PRPB11	2 2	NRR/DST/SELB 8D	1 1
	NRR/DST/SICB 7E	1 1	NRR/DST/SPLB8D1	1 1
	NRR/DST/SRXB 8E	1 1	<del>REG-FILE-02</del>	1 1
	RES/DSIR/EIB	1 1	RGN5 FILE 01	1 1
EXTERNAL:	EG&G BRYCE,J.H	3 3	L ST LOBBY WARD	1 1
	NRC PDR	1 1	NSIC MAYS,G	1 1
	NSIC MURPHY,G.A	1 1	NUDOCS FULL TXT	1 1
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A04



Arizona Public Service Company  
PALO VERDE NUCLEAR GENERATING STATION  
P.O. BOX 52034 • PHOENIX, ARIZONA 85072-2034

JAMES M. LEVINE  
VICE PRESIDENT  
NUCLEAR PRODUCTION

192-00689-JML/TRB/RKR  
September 11, 1990

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
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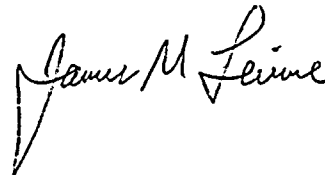
Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)  
Unit 2  
Docket No. STN 50-529 (License No. NPF-51)  
Licensee Event Report 90-004-01  
File: 90-020-404

Attached please find Supplement 1 to Licensee Event Report (LER) No. 90-004 prepared and submitted pursuant to 10CFR50.73. In accordance with 10CFR50.73(d), we are forwarding a copy of the LER to the Regional Administrator of the Region V office.

If you have any questions, please contact T. R. Bradish, Compliance Manager at (602) 393-2521.

Very truly yours,



JML/TRB/RKR/dmn

Attachment

cc: W. F. Conway (all with attachment)  
J. B. Martin  
D. H. Coe  
C. M. Trammell  
A. C. Gehr  
A. H. Gutterman  
INPO Records Center

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ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) <b>Palo Verde Unit 2</b>										DOCKET NUMBER (2) <b>0 5 0 0 0 5 2 9 1</b>										PAGE (3) <b>OF 0 6</b>	
TITLE (4) <b>Pressurizer Safety Relief Valve Setpoints Out of Tolerance</b>																					
EVENT DATE (5)			LER NUMBER (6)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)											
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES						DOCKET NUMBER(S)						
									N/A						0 5 0 0 0						
0 5 0	4 9	0 9	0	0 4	0 1	0 9	1 1	9 0	N/A						0 5 0 0 0						
OPERATING MODE (8)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																			
POWER LEVEL (10)		20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)							
0 0 0		20.405(a)(1)(i)				50.36(c)(1)				50.73(a)(2)(v)				73.71(c)							
		20.405(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)							
		20.405(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(viii)(A)											
		20.405(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)											
		20.405(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(x)											
LICENSEE CONTACT FOR THIS LER (12)																					
NAME <b>Thomas R. Bradish, Compliance Manager</b>										TELEPHONE NUMBER											
										AREA CODE <b>6 0 2</b>				3 9 3 1 - 2 5 2 1							
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																					
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC											
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)				MONTH	DAY	YEAR			
YES (If yes, complete EXPECTED SUBMISSION DATE)												NO									

**ABSTRACT** (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

At approximately 0700 MST on May 4, 1990, Palo Verde Unit 2 was in a refueling outage with the core offloaded to the spent fuel pool when APS was informed by an offsite testing lab that all four Pressurizer Code Safety Valves' as-found setpoints were out of the Technical Specification (TS) tolerance of 2500 pounds per square inch absolute (psia) plus or minus one (1) percent (25 psi).

The cause of the event for three of the valves is a performance limitation of the pressurizer safety valves. Industry testing has shown that relief and safety valves, of the size and application of the Palo Verde pressurizer safety valves, have a lift setting repeatability of plus or minus three (3) percent. Three of the pressurizer safety valves lifted within three (3) percent of the required lift setting. One of the pressurizer safety valves lifted at approximately 3.6 percent above the required lift setting. The cause of the valve exceeding the three (3) percent performance limitation is setpoint drift.

As immediate corrective action, the valves were adjusted and retested satisfactorily.

A previous similar LER (528/89-007-01) described an event wherein two of four pressurizer safety valves in Unit 1 were out of the TS tolerance limits.



LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

## I. DESCRIPTION OF WHAT OCCURRED

## A. Initial Conditions:

At approximately 0700 MST on May 4, 1990, Palo Verde Unit 2 was in a refueling outage with the core (AC) offloaded to the spent fuel pool (ND).

## B. Reportable Event Description (Including Dates and Approximate Times of Major Occurrences):

Event Classification: Operation prohibited by the plant's Technical Specifications.

At approximately 0700 MST on May 4, 1990, APS was informed by an offsite testing lab (Wyle Laboratory) that all four of the Unit 2 Pressurizer Code Safety Valves' (RV) as-found setpoints were out of the Technical Specification (TS) 3.4.2.2 tolerance of 2500 pounds per square inch absolute (psia) plus or minus one (1) percent. During the refueling outage, in April 1990, the valves were removed and sent to Wyle Laboratory for scheduled testing.

Palo Verde Unit 2 is a two-loop pressurized water reactor (PWR). Overpressure protection for the primary loops (AB) is provided by four direct acting, spring loaded, stainless steel code safety valves with enclosed bonnets. These valves are mounted on the top of the pressurizer. The valve opening pressure is set in accordance with ASME Code and Technical Specification requirements. The valves are all set to lift at 2500 psia plus or minus one (1) percent (25 psi).

The primary safety valves are required to be tested once per five (5) years. The testing is conducted using an approved procedure. The procedure verifies that the set pressure and operation of the primary safety valves are acceptable for continued service. In order to have an acceptable test by current APS requirements, it is necessary to have three (3) consecutive lifts within plus or minus one (1) percent of the given set pressure of the valve.

At approximately 0700 MST on May 4, 1990, Wyle Laboratory reported the results of the testing to APS. The "as-found" lift pressures for the four primary safety valves were approximately 2590.7 psia (plus 3.6 percent), 2566.7 psia (plus 2.7 percent), 2554.7 psia (plus 2.2 percent), and 2534.7 psia (plus 1.4 percent). All four primary safety valves were adjusted and retested satisfactorily, in





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accordance with the previously described requirements.

Since all of the "as-found" lift pressures for the four primary safety valves were above the TS limit, it is assumed that one or more of the primary safety valves were above the TS limit during operation. TS 3.4.2.2 requires that all pressurizer code safety valves be OPERABLE in MODES 1 (POWER OPERATION), 2 (STARTUP) and 3 (HOT STANDBY). Therefore it is assumed that the OPERABILITY requirements and the associated ACTIONS were not met for TS 3.4.2.2.

- C. Status of structures, systems, or components that were inoperable at the start of the event that contributed to the event:

Other than the pressurizer code safety valves as described above; no structures, systems, or components were inoperable which contributed to the event.

- D. Cause of each component or system failure, if known:

Not applicable - no failures were involved.

- E. Failure mode, mechanism, and effect of each failed component, if known:

Not applicable - no failures were involved.

- F. For failures of components with multiple functions, list of systems or secondary functions, that were also affected:

Not applicable - no failures were involved.

- G. For failure that rendered a train of a safety system inoperable, estimated time elapsed from the discovery of the failure until the train was returned to service:

Not applicable - no failures were involved.

- H. Method of discovery of each component or system failure or procedural error:

Not applicable - no failures were involved.



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## I. Cause of Event:

In 1982 the Electrical Power Research Institute (EPRI) performed testing to determine safety and relief valve performance data in response to NUREG 0578. A representative sample of valves from all Nuclear Steam Supply System (NSSS) and valve manufacturers, including the Dresser Model 31709NA used at Palo Verde, were tested. 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. Three of the Palo Verde Unit 2 pressurizer relief valves lifted within three (3) percent of the lift setting. Therefore, the cause of these Palo Verde Unit 2 pressurizer safety valves not meeting the current plus or minus one (1) percent lift setting tolerance is the performance limitation of the valve (SALP Cause Code X).

The cause of the Palo Verde Unit 2 pressurizer safety valve exceeding the three (3) percent performance limitation is setpoint drift. Industry experience, including that at Palo Verde Units 1, 2, and 3, indicates that relief and safety valve setpoint drift is a normal occurrence.

## J. Safety System Response:

No safety system responses occurred and none were necessary.

## K. Failed Component Information:

Although there were no failed components associated with this event, the following data regarding the code safety valves is provided for information:

Manufacturer: Dresser Valve and Control  
Dresser Industries, Inc.

Model: 31709NA

## II. ASSESSMENT OF THE SAFETY CONSEQUENCES AND IMPLICATIONS OF THIS EVENT:

During operation, all pressurizer code safety valves must be OPERABLE to prevent the Reactor Coolant System (RCS)(AB) 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



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(TA) load while operating at RATED THERMAL POWER and assuming no reactor trip until the first Reactor Protective System (JC) trip setpoint (Pressurizer Pressure-High) is reached (there is no direct reactor trip on the loss of turbine) and also assuming no operation of the atmospheric dump valves (SB)(V).

An analysis was performed to determine if the "as-found" condition discussed in Section I.B could have resulted in the RCS being pressurized above the Safety Limit of 2750 psia. The results determined that the Safety Limit would not have been exceeded.

## III. CORRECTIVE ACTIONS:

## A. Immediate:

The four valves discovered out of tolerance were adjusted and retested in accordance with ASME Code and Technical Specification requirements. They were tested satisfactorily and returned to service.

## B. Action to Prevent Recurrence:

1. Based on the performance limitation of the valve described in Section I. 1 and the analysis described in Section II, a change to the Technical Specifications to expand the setpoint tolerance is being pursued. The change to the Technical Specifications is expected to be submitted by October 31, 1990. This change, if approved, will provide more tolerance for "as-found" setpoint variations.
2. No additional corrective actions were required based on the single occurrence of a pressurizer code safety valve exceeding the three (3) percent performance limitation. The Unit 3 pressurizer code safety valves are scheduled to be tested during the next Unit 3 refueling outage. The data from this testing will be evaluated along with the Unit 1 and Unit 2 data to determine if any changes are required for the pressurizer code safety valve testing program.



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## IV. PREVIOUS SIMILAR EVENTS:

LER 528/89-007-01 described an event wherein two of four Pressurizer Code Safety Valves' as-found setpoints in Unit 1 were out of the Technical Specification tolerance limits of 2500 psia plus or minus one (1) percent. Corrective action included readjustment of the valves and development of a Technical Specification change to increase the tolerance limits. The previous corrective action could not have prevented this event due to the tendency for setpoint drift exhibited by this type of valve.

