

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9704150078 DOC. DATE: 97/04/07 NOTARIZED: NO DOCKET #
 FACIL: STN-50-529 Palo Verde Nuclear Station, Unit 2, Arizona Publi 05000529
 AUTH. NAME AUTHOR AFFILIATION
 MARKS, D.G. Arizona Public Service Co. (formerly Arizona Nuclear Power
 OVERBECK, G.R. Arizona Public Service Co. (formerly Arizona Nuclear Power
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 97-002-00: on 970310, discovered leak on charging pump
 indicative of cracked block. Replaced charging pump block &
 declared charging pump A operable. W/970407 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 6
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: Standardized plant.

05000529

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AD4



Palo Verde Nuclear
Generating Station

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192-00988-GRO/DGM/KR
April 7, 1997

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Station P1-37
Washington, D.C. 20555-0001

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 2
Docket No. STN 50-529
License No. NPF-51
Licensee Event Report 97-002-00

Terz

Attached please find Licensee Event Report (LER) 97-002-00 prepared and submitted pursuant to 10CFR50.73. This LER reports a Technical Specification Limiting Condition for Operation (TS LCO) 3.0.3 entry due to non-compliance with the structural integrity requirements of TS LCO 3.4.9 for an ASME Code Class 2 component (i.e., charging pump A). In accordance with 10CFR50.73(d), a copy of this LER is being forwarded to the Regional Administrator, NRC Region IV. If you have any questions, please contact Daniel G. Marks, Section Leader, Nuclear Regulatory Affairs, at (602) 393-6492.

Sincerely,

Gregg R. Overbeck

GRO/DGM/KR/kr

Attachment

cc: E. W. Merschoff (all with attachment)
K. E. Perkins
K. E. Johnston
INPO Records Center

9704150078 970407
PDR ADDCK 05000529
S PDR



LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Palo Verde Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 5 2 9	PAGE (3) 1 OF 0 5
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TITLE (4)
TS 3.0.3 Entry due to Non-compliance with TS LCO 3.4.9 Structural Integrity for Charging Pump A

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 NUMBERS	
0 3	1 0	9 7	9 7	- 0 0 2	- 0 0	0 4	0 7	9 7	N/A	0 5 0 0 0 0	
									N/A	0 5 0 0 0 0	

OPERATING MODE (9) **1**

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)	50.38(c)(1)	50.73(a)(2)(v)	73.71(c)
20.405(a)(1)(ii)	50.38(c)(2)	50.73(a)(2)(vi)	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)(vii)(A)	
20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(vii)(B)	
20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(v)	

LICENSEE CONTACT FOR THIS LER (12)

NAME Daniel G. Marks, Section Leader, Nuclear Regulatory Affairs	TELEPHONE NUMBER AREA CODE 6 0 2 3 9 3 - 6 4 9 2
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs
X	C	B B L K	G 0 4 5	N					

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On March 10, 1997, at approximately 0830 MST, Palo Verde Unit 2 was in Mode 1 (POWER OPERATION), operating at approximately 100 percent power when Control Room personnel entered Technical Specification Limiting Condition for Operation (TS LCO) 3.0.3 due to non-compliance with the structural integrity requirements of TS LCO 3.4.9 for an ASME Code Class 2 component. A small leak indicative of a cracked block had been discovered on charging pump A. The pump was isolated to comply with the requirements of TS LCO 3.4.9 ACTION b, and Control Room personnel exited TS LCO 3.0.3 at approximately 0900 MST.

As corrective action, the charging pump block was replaced and Control Room personnel declared charging pump A operable at approximately 1630 MST on March 15, 1997. Following replacement, a visual inspection revealed a crack at the intersection connecting the number one plunger bore and its discharge check valve bore. Based on historical performance information, APS Engineering personnel determined that the most probable cause of the cracked pump block was high-cycle fatigue.

A previous similar event was reported pursuant to 10CFR50.73 in LER 530/95-001-00 and LER 530/94-004-00.

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		05000529	97	-	002	-	00

TEXT

1. REPORTING REQUIREMENT:

This LER 529/97-002-00 is being written to report an event that resulted in a condition prohibited by the plant's Technical Specifications (TS) as specified in 10 CFR 50.73(a)(2)(i)(B).

Specifically, at approximately 0830 MST on March 10, 1997, Palo Verde Unit 2 was in Mode 1 (POWER OPERATION) operating at approximately 100 percent power when Control Room personnel (utility-licensed operator) entered TS Limiting Condition for Operation (LCO) 3.0.3 due to non-compliance with the structural integrity requirements of TS LCO 3.4.9 for an ASME Code Class 2 component (charging pump A) (CHA-P01) (CB). A small leak indicative of a cracked block had been discovered on charging pump A. The pump was isolated to comply with the requirements of TS LCO 3.4.9 ACTION b, and Control Room personnel exited TS LCO 3.0.3 at approximately 0900 MST.

TS LCO 3.4.9 addresses structural integrity of ASME Code Class 1, 2, and 3 components and is applicable in all modes. TS LCO 3.4.9 ACTION b states that with the structural integrity of any ASME Code Class component(s) not being maintained in accordance with the requirements of TS Surveillance Requirement (SR) 4.0.5, restore the structural integrity of the affected component(s) to within its limit or isolate the affected component(s) PRIOR to increasing the reactor coolant system (RCS) (AB) temperature above 210 degrees Fahrenheit.

2. EVENT DESCRIPTION:

On March 10, 1997, a Unit 2 auxiliary operator (utility-nonlicensed operator) discovered a small leak on charging pump A. Based on a cursory inspection, mechanical maintenance personnel (other utility personnel) suspected the leakage to be attributed to a cracked charging pump block. Radiation Protection personnel (other utility personnel) surveyed the area and determined that the leakage was from the RCS as opposed to seal leakage.

At approximately 0830 MST on March 10, 1997, Control Room personnel entered TS LCO 3.0.3 due to non-compliance with the structural integrity requirements of TS LCO 3.4.9 for an ASME Code Class 2 component (charging pump A). Charging pump A was isolated to comply with the requirements of TS LCO 3.4.9 ACTION b, and Control Room personnel exited TS LCO 3.0.3 at approximately 0900 MST.

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The charging pump block was replaced and Control Room personnel declared charging pump A operable at approximately 1630 MST on March 15, 1997. There were no safety system actuations and none were required.

3. ASSESSMENT OF THE SAFETY CONSEQUENCES AND IMPLICATIONS OF THIS EVENT:

Three charging pumps (CHA-P01, CHB-P01, and CHE-P01) are available to supply RCS makeup and reactor coolant pump (RCP) (AB) seal injection flow. The charging pumps are positive displacement pumps and each pump has a design capacity of 44 gallons per minute (gpm) at a discharge head of 2470 psi. The design requires that two charging pumps be supplied from a separate emergency power bus (EB), and that the third charging pump be capable of receiving power from either emergency power bus. Charging pump CHE-P01 is designed to be powered from either emergency power bus.

TS LCO 3.1.2.4 requires that at least two charging pumps be OPERABLE in MODES 1 through 4 (HOT SHUTDOWN). At the time of discovery, all three charging pumps were OPERABLE. Therefore, the removal of charging pump A had no impact on plant operations and no additional TS LCOs needed to be entered as a result of this condition.

The event did not result in any challenges to the fission product barriers or result in any release of radioactive materials. Therefore, there were no adverse safety consequences or implications as a result of this event. This event did not adversely affect the safe operation of the plant or health and safety of the public.

4. CAUSE OF THE EVENT:

An independent investigation of this event is being conducted in accordance with the APS Corrective Action Program. The charging pump block was replaced and Control Room personnel declared charging pump A operable at approximately 1630 MST on March 15, 1997. Following replacement, a visual inspection revealed a crack at the intersection connecting the number one plunger bore and its discharge check valve bore. Based on historical performance information, APS Engineering personnel determined that the most probable cause of the cracked pump block was high-cycle fatigue (SALP Cause Code E: Component Failure). The cause of the component failure and the failure mode, mechanism, and effect of the failed component is discussed in Section 5.

No unusual characteristics of the work location (e.g., noise, heat, poor lighting) directly contributed to this event. There were no personnel or procedural errors which contributed to this event.

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5. STRUCTURES, SYSTEMS, OR COMPONENTS INFORMATION:

Following replacement, a visual inspection of charging pump A revealed that the leakage was due to a crack at the intersection connecting the number one plunger bore and its discharge check valve bore. The crack was visible from the radius through the discharge check valve landing area. Based on historical performance information, APS Engineering personnel determined that the most probable cause of the cracked pump block was high-cycle fatigue. This type of failure is associated with normal operation. The pump block was installed on November 6, 1988 and had 40,228 run-time hours. This was the oldest block in-service at PVNGS. Since the block's construction, the block design has been changed to increase available run-time hours prior to failure.

The block is a 17-4 PH charging pump block, stainless steel, manufactured by Gaulin, model number NP18. Charging pump A was isolated within approximately 30 minutes from determination that ASME Code Class 2 structural integrity may be compromised. At the time of discovery, all three charging pumps were OPERABLE. Therefore, the removal of charging pump A had no impact on plant operations and no additional TS LCOs needed to be entered as a result of this condition.

There were no indications that any structures, systems, or components were inoperable at the start of the event which contributed to this event. There were no additional component or system failures involved. No failures that rendered a train of a safety system inoperable were involved. No failures of components with multiple functions were involved.

6. CORRECTIVE ACTIONS TO PREVENT RECURRENCE:

An independent investigation of this event is being conducted in accordance with the APS Corrective Action Program. At approximately 0900 on March 10, 1997, charging pump A was isolated to comply with TS LCO 3.4.9 ACTION b and TS LCO 3.0.3 was exited.

Mechanical maintenance personnel suspected the leakage to be attributed to a cracked charging pump block. Radiation Protection personnel surveyed the area and determined that the leakage was from the RCS as opposed to seal leakage. Following replacement of the charging pump block, on March 15, 1997, charging pump A was returned to service and declared operable at approximately 1630 MST.

Following the approval of the PVNGS Improved Technical Specifications (ITS), this event will no longer be reportable since TS LCO 3.4.9 does not

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TEXT

satisfy the TS criteria of 10CFR50.36(c)(2)(ii), and the structural integrity of ASME Code Class components LCO and surveillance may be located to plant controlled documents outside of TS. Specifically, TS LCO 3.4.9 is more directed toward prevention of component degradation and continued long term maintenance of acceptable structural conditions; therefore, it is not necessary to retain this TS to ensure immediate operability of safety systems.

7. PREVIOUS SIMILAR EVENTS:

Similar events have been reported pursuant to 10CFR50.73 under LER 530/95-001-00 dated May 5, 1995, and LER 530/94-004-00 dated June 27, 1994. LER 530/95-001-00 reported a condition where a TS LCO 3.0.3 entry was made due to non-compliance with TS LCO 3.4.9 for a defective weld on the Unit 3 charging pump A. LER 530/94-004-00 reported a condition where two TS LCO 3.0.3 entries were made due to non-compliance with TS LCO 3.4.9 for weld failures on a sample nozzle and instrument nozzle on the Unit 3 steam generator 2 (AB). Corrective actions for the previous events would not have prevented this event.

