NRC Form 366 (9-83)	ENSEE EVENT R	EPORT (LER)	U.S. N	UCLEAR REGULATORY COMMISSION APPROVED OMB NO. 3150-0104 EXPIRES: 8/31/88
FACILITY NAME (1)			DOCKET NUMBER	R (2) PAGE (3)
Palo Verde Unit 2			0 5 0 0	0 5 2 9 1 OF 0 4
Technical Specification 3.0.	3 Entered Due	to Three Inc	perable Ch	arging Pumps
EVENT DATE (5) LER NUMBER (6)	REPORT DATE (7)	ОТН	ER FACILITIES INVO	DLVED (8)
MONTH DAY YEAR YEAR SEQUENTIAL REVISION NUMBER NUMBER	MONTH DAY YEAR	FACILITY	NAMES	DOCKET NUMBER(S)
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OPERATING THIS REPORT IS SUBMITTED PURSUANT	TO THE REQUIREMENTS OF	10 CFR §. (Check one or m	ore of the following) (1	11)
POWER 20.402(6) LEVEL 0	20.406(2) 60.36(c)(1) 50.36(c)(2) 80.73(a)(2)(i) 50.73(a)(2)(ii) 50.73(a)(2)(iii)	50.73(a)(2)(50.73(a)(2)(v 50.73(a)(2)(v 50.73(a)(2)(v 50.73(a)(2)(v 50.73(a)(2)(v	er)))) (A) (B))	73,716) 73,71(e) OTHER (Specify in Abstract below and in Text, NRC Form 366A)
NAME	ICENSEE CONTACT FOR TH	S LER (12)		TELEPHONE NUMBER
Thomas R. Bradish, Complianc	e Supervisor (Ext. 6936)	AREA CODE	913121-15131010
	EACH COMPONENT FAILUR	E DESCRIBED IN THIS REI	PORT (13)	herear and
CAUSE SYSTEM COMPONENT TURER TO NPROS	CAUS	E SYSTEM COMPONEN	TURER	TO NPROS
X CIB IAICIC GI21510 Y	69			
SUPPLEMENTAL REPORT	EXPECTED (14)		EXPECT SUBMISS DATE 1	ED MONTH DAY YEAR
At approximately 1137 MST on 3 (HOT STANDBY) when the thr This required entry into Tec were stabilized at approxima approximately 2 hours and 48 Prior to the event, charging allow the replacement of the "A" had been taken out of se discharge pulsation dampener operators noticed that charg point the charging pumps wer The root cause of the gas bi the charging pump "A" discha is believed to have ruptured As immediate corrective acti- dampener was replaced. To p preventative maintenance pro	July 18, 1986 ee charging pu hnical Specifi tely 1425. Th minutes. pump "B" had suction pulsa rvice to allow . At approxim ing pump "E" h e declared ino nding of charg rge pulsation due to normal on, charging p revent recurre cedures have b	, Palo Verde mps were decl cation 3.0.3. e duration of been taken ou tion dampener for the pred ately 1137 cd ad no dischar perable. ing pump "E" dampener blad in-service w ump "A" disch nce, the oper een revised.	Unit 2 was ared inope Plant co the event t of servi . Charging of ontrol room ge flow. was the ru lder. The was the ru lder. The marge pulse rations and	s in Mode erable. onditions t was ice to ng pump f the n At this upture of bladder ation i
A similar event was reported	in Unit 1 LER	86-008-00.		

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IS BOT	LICENSEE EVENT REPORT (LER) TEXT CONTINUATION						U.3. NUCLEAR REGULATORY COMMISSION APPROVED OMB NO 3150-0104 EXPIRES: 8/31/88						
FACILITY NAME (1)	DOCKET NUMBER (2)		L	SR NUMBER (6)			GE (3					
		YEAR		SEQUENTIAL NUMBER	REVISION NUMBER		Π						
Palo Verde Unit 2	0 5 0 0 5 2 9	816	-	01118	- 010	012	OF	014					

At approximately 1137 MST on July 18, 1986, Palo Verde Unit 2 was in Mode 3 (HOT STANDBY) when the three cnarging pumps (CB)(P) were declared inoperable. Technical Specification LCO 3.1.2.2 specifies the minimum number of boration flow paths (CB) required for operability and LCO 3.1.2.4 specifies the minimum number of charging pumps required for operability. As a result of the pumps being declared inoperable, these conditions could not be met and Technical Specification 3.0.3 was entered. At 1338, charging pump "E" was returned to service and LCO 3.0.3 was exited. Plant conditions were returned to normal at 1425 when charging pump "B" was returned to service. The duration of the event was approximately 2 hours and 48 minutes.

TEXT (If more spece is required, use additional NRC Form 386A's) (17)

Prior to the event, a routine ailution of the Reactor Coolant System (RCS)(AB) was in progress utilizing charging pumps "A" and "E". Charging pump "B" had been taken out of service to allow the replacement of the suction pulsation dampener (CB) bladder. The charging pump common suction header was being supplied by chemical and volume control system (CB) through Refueling Water Tank (RWT)(BP)(TK) gravity feed isolation valve (ISV) CH-536, RWT gravity feed/safety injection system (BP) isolation valve CH-327, and bori: acid bypass valve (V) CH-164. Reactor coolant pumps (RCP) (AB) (P) 14, 2a, and 1b were in service.

Charging pump "A" was taken out of service at 1036 to allow for the precharging of the discharge pulsation dampener. At approximately 1137 control room operators (utility-licensed) noticed that charging pump "E" had no indicated discharge flow. As a result, the three charging pumps were declared inoperable and Technical Specification LCO 3.0.3 was entered. At 1221, control room operators began decreasing the RCS pressure to 1750 psia by utilizing pressurizer (PZR) spray (AB) to allow emergency boration at 26 gpm with the high pressure safety injection pumps (BQ)(P) if required.

An investigation determined that charging pump "A" discharge pulsation dampener bladder (Greer Hydraulics Inc., Part No. 720507)(ACC) had ruptured. During the normal precharge procedure, the system discharge pressure as drained off until the gauge attached to the dampener read the same as the previous precharge pressure, 900 psia. When the bladder ruptured, nitrogen gas leaked to the suction side of charging pump "A" through relief valve (RV) PSV-326 on the discharge line. (Prior to the nitrogen leakage through PSV-326, the gas was bounded by the charging pump on the upstream side and check valve V328 (V) on the downstream side.) It has been estimated that nitrogen leaks through valve F v-326 at a sate 300 times greater than the specified water leakage rate.

LICENSEE	EVENT	REPORT	(LER)	TEXT	CONTINUATION
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US NUCLEAR REGULATORY COMMISSION APPROVED OMB NO 3150-0104

FACILITY NAME (1)	DOCKET NUMBER (2)		LER NUMBER (6)						PAGE (3)		
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Palo Verde Unit 2	0 5 0 0 0 5 2	816	-	01118	-	010	013	OF	014		

With only charging pump "E" running, there was no flow in the suction header to impede gas movement from charging pump "A" to charging pump "E". Once enough gas migrated through the common header to the suction of charging pump "E", the pump became gas bound. This accounted for the sudden loss of discharge flow from charging pump "E".

The root cause of the gas binding of charging pump "E" was the rupture of the charging pump "A" discharge pulsation dampener bladder. The bladder is believed to have ruptured due to normal in-service wear.

As immediate corrective action, charging pump "A" discharge pulsation dampener bladder was replaced. To prevent recurrence, the operations and preventive maintenance procedures for Units 1 and 2 have been revised, as indicated below.

To insure that gas will not enter the suction of the operating pumps during the precharging of a dampener (increasing or decreasing the precharge pressure), the Operations procedures were revised to include the following steps:

- a) The suction value of the pump being charged will be closed prior to the precharge. This will prevent gas from migrating into the suction of the other pumps should a bladder failure occur during the precharge.
- b) After completion of each precharge, the pressure in the discharge piping will be reduced below the bladder precharge pressure to insure the bladder has not failed.

Maintenance has revised the Preventive Maintenance procedures to include a Preventive Maintenance Task which is consistent with the revisions described for the Operations procedures.

The manufacturer's recommended replacement interval (based on shelf life) is three years. As a conservative measure, the dampener bladders will be replaced during each refueling outage.

All operator actions during the event were appropriate and in accordance with approved procedures. There were no automatic or manual safety system responses. There were no other structures, systems, or components inoperable prior to the event which contributed to the event. There were no other systems or components which could have performed the same function as the ruptured discharge pulsation dampener bladder.

AC Form 366A

(9-83) LICENSI	EE EVENT REPORT (LER) TEXT CONTINU	EPORT (LER) TEXT CONTINUATION						U & NUCLEAR REGULATORY COMMISSION APPROVED OMB NO 3150-0104 EXPIRES 8/31/88						
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Palo Verde Unit 2	0 5 0 0 5 2 9	816	-	0 1 8	-	010	014	OF	014					

The loss of the three charging pumps resulted in the temporary loss of the auxiliary spray system (AB). However, had all four RCPs been out of service, cooldown and depressurization would have been accomplished by natural circulation. Depressurization could have been assisted by utlizing the pressurizer vent (VTV) and/or the reactor vessel head vent (VTV) if necessary. Additionally, as previously demonstrated, the charging pumps can be quickly vented and returned to service. Since reactor pressure was reduced utilizing pressurizer spray, and the charging pumps were quickly returned to service, this event did not adversely affect the safe operation of the plant or the health and safety of the public.

Based on the knowledge gained from this event, it has been determined that the previous Preventive Maintenance procedures would not have prevented the gas binding of charging pump "E". These Preventive Maintenance procedures have been revised as indicated to incorporate the lessons learned from this event.

A similar event was reported in Unit 1 LER 86-008-00.



Arizona Nuclear Power Project

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August 15, 1986 ANPP-00050-JGH/TDS/MJC/96.03

U.S. Nuclear Regulatory Commission Document Control Desk Washington, D.C. 20555

Subject: Palo Verde Nuclear Generating Station (PVNGS) Unit 2 Docket No. STN 50-529 Licensee Event Report-86-018-00 File: 86-020-404

Dear Sirs:

Attached please find Licensee Event Report (LER) No.86-018-00 prepared and submitted pursuant to 10 CFR 50.73. In accordance with 10 CFR 50.73(d), we are herewith 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 Supervisor at (602)932-5300 Ext.6936.

Very truly yours,

VGrtaynes

J. G. Haynes Vice President Nuclear Production

JGH/MJC/dh

Attachment

cc: O. M. DeMichele (all w/a)
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