

## ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9001180411 DOC.DATE: 90/01/11 NOTARIZED: NO DOCKET.#  
 FACIL:STN-50-528 Palo Verde Nuclear Station, Unit 1, Arizona Publi 05000528  
 AUTH.NAME AUTHOR AFFILIATION  
 BRADISH,T.R. Arizona Public Service Co. (formerly Arizona Nuclear Power  
 LEVINE,J.M. Arizona Public Service Co. (formerly Arizona Nuclear Power  
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 89-024-00:on 891212,ESF actuation during reactor coolant  
 pump test.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 8  
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

05000528

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	CHAN,T	1 1	DAVIS,M.	1 1
INTERNAL:	ACRS MICHELSON	1 1	ACRS MOELLER	2 2
	ACRS WYLIE	1 1	AEOD/DOA	1 1
	AEOD/DSP/TPAB	1 1	AEOD/ROAB/DSP	2 2
	DEDRO	1 1	NRR/DET/ECMB 9H	1 1
	NRR/DET/EMEB9H3	1 1	NRR/DET/ESGB 8D	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
	NUDOCS-ABSTRACT	1 1	REG FILE 02	1 1
	RES/DSIR/EIB	1 1	RGNS FILE 01	1 1
EXTERNAL:	EG&G WILLIAMS,S	4 4	L ST LOBBY WARD	1 1
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NOTES:

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

192-00616-JML/TRB/SBJ  
January 11, 1990

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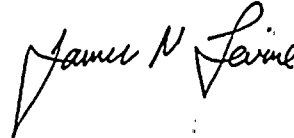
Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)  
Unit 1  
Docket No. STN 50-528 (License No. NPF-41)  
Licensee Event Report 1-89-024-00  
File: 90-020-404

Attached please find Licensee Event Report (LER) No. 1-89-024-00 prepared and submitted pursuant to 10CFR50.73. In accordance with 10CFR50.73(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, (Acting) Compliance Manager at (602) 393-2521.

Very truly yours,



JML/TRB/SBJ/kj

Attachment

cc: W. F. Conway (all with attachment)  
E. E. Van Brunt  
J. B. Martin  
D. Coe  
M. J. Davis  
A. C. Gehr  
INPO Records Center

9001180411 900111  
FDR ADOCK 05000528  
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## LICENSEE EVENT REPORT (LER)

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)

Palo Verde Unit 1

DOCKET NUMBER (2)

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PAGE (3)

TITLE (4)

Engineered Safety Feature Actuation During Reactor Coolant Pump Test

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)
1	2	8	9	0	2	0	1	1	N/A		0 5 0 0 0 0
1	2	8	9	0	2	0	1	1	N/A		0 5 0 0 0 0

OPERATING MODE (9) 6

POWER LEVEL (10) 0 0 10

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 50. (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)(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)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Thomas R. Bradish, (Acting) Compliance Manager	6 0 2 3 9 3 - 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)

YES (If yes, complete EXPECTED SUBMISSION DATE)	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X			0	2	9

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

On December 12, 1989 Unit 1 was in Mode 6 with the reactor coolant system at atmospheric pressure and approximately 95 degrees Fahrenheit. At approximately 1055 MST, a test was initiated on reactor coolant pump 2A motor prior to coupling the impeller. The motor start caused a voltage perturbation in the electrical system that tripped radiation monitors and initiated a containment purge isolation actuation signal, a fuel building essential ventilation actuation signal, and a control room essential filtration actuation signal. All systems responded as designed.

The RCP motor was immediately stopped. All actuations were reset by approximately 1300 MST.

An investigation into the event is in progress. Upon completion of the investigation, a supplemental report will be issued providing the root cause and any corrective actions to prevent recurrence.



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.

FACILITY NAME (1)  Palo Verde Unit 1	DOCKET NUMBER (2)  0 5 0 0 0 5 2 8 8 9	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		—	0 2 4	— 0 0	0 2	OF	0 7

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

## I. DESCRIPTION OF WHAT OCCURRED:

## A. Initial Conditions:

On December 12, 1989 at the time of this event, Palo Verde Unit 1 was in Mode 6 (REFUELING). The reactor coolant system (RCS)(AB) was at atmospheric pressure and approximately 95 degrees Fahrenheit.

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

Event Classification: Engineered Safety Feature Actuation

On December 12, 1989 at approximately 1055 MST, reactor coolant pump (RCP)(AB) 2A motor (MO) was started to perform a test with the motor uncoupled from the impeller. The pump start caused a voltage perturbation in the AC electrical distribution system and resulted in an undervoltage condition on the "A" AC vital instrument distribution panel (EF) which tripped radiation monitor actuation relays. This resulted in the initiation of a containment purge isolation actuation signal (CPIAS)(JE), a control room essential filtration actuation signal (CREFAS)(VI), and a fuel building essential ventilation actuation signal (FBEVAS)(VG).

Prior to the event on December 12, 1989 at approximately 0615 MST, the emergency power supply (the "A" class 1E battery (EI)(BTRY)) was disconnected from the 125 volt DC control center (EJ) in order to support outage work. The normal power supply to the 125 volt DC control center (battery charger (BYC)) remained connected. The battery charger was powered via the 480 volt AC Motor Control Center (ED), the 13.8 kv AC bus (BU) NAN-S03 (EA), and ultimately from the startup transformer (NAN-X03)(EA)(XFMR). (See attached sketch.)

The RCP 2A motor was powered from 13.8 kv AC bus NAN-S01 (EA). Since Unit 1 was not in operation, the 13.8 kv AC bus NAN-S01 was powered via the 13.8 kv AC bus NAN-S03 and from the startup transformer (NAN-X03). (See attached sketch.)

Prior to the test, operations personnel (utility, licensed) questioned the possible effects the RCP motor test could have on plant equipment. However, after discussions with engineering personnel (utility, non-licensed), it was decided the test could





LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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

be performed without impacting plant equipment.

At approximately 1055 MST, RCP 2A motor was started causing a voltage perturbation in the AC electrical system. This perturbation propagated from the 13.8 kv busses (NAN-S01 & S03), through the ESF transformer (NBN-X03), the load center transformer, the battery charger (PKA-H11), the 125 VDC bus, and the 120 VAC inverter (PNA-N11), and finally to the 120 VAC distribution panel. This perturbation caused an undervoltage condition on the 120 volt AC instrument and control distribution panel (EF). The undervoltage condition on the 120 volt AC instrument and control distribution panel deenergized (tripped) the actuation relays for the containment purge effluent radiation monitor (RU-37)(IL), control building effluent radiation monitor (RU-29)(IL) and the fuel building area radiation monitor (RU-31)(IL) and initiated a CREFAS, FBEVAS, and CPIAS. Upon receipt of the CREFAS, the "B" train essential chiller (CHU)(KM), essential cooling water (CC) pump (P), and essential spray pond (BS) pump started. The "A" train essential chiller, essential cooling water, and essential spray pond systems were in service prior to the event.

The RCP 2A motor was immediately stopped. At approximately 1112 MST the control building (NA) normal air handling unit (AHU) and engineered safety features (ESF) equipment room AHU were stopped per operating procedures. At approximately 1120 MST, all equipment actuations were verified per plant procedures.

The CPIAS, FBEVAS, and CREFAS were reset at approximately 1243 MST. The fuel building (ND) ventilation was returned to normal at approximately 1247 MST. The control room and control building ventilation were returned to normal at approximately 1258 MST. The "B" train essential cooling water, essential chiller, and essential spray pond systems were stopped at approximately 1300 MST.

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

The ventilation to the DC equipment room and battery rooms was inoperable at the time of the event. In order to support the outage work on the ventilation (See LER 528/89-23-00), the "A" class 1E battery was disconnected from the distribution bus.



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.

FACILITY NAME (1)

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Palo Verde Unit 1

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

## 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 failures that rendered a train of a safety system inoperable, estimated time elapsed from the discovery of the failure until the trains were 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.

## I. Cause of Event:

An investigation is being performed to determine the root cause of the event. In support of the investigation, voltage data from the inverter to the 120 volt AC instrumentation and control distribution panel, the voltage regulator to the 120 volt AC instrumentation and control distribution panel, and the battery charger to the 125 volt DC distribution panel were recorded during the reperformance of the RCP 2A uncoupled impeller motor run on January 5, 1990. A supplemental report will be submitted providing the results of this investigation.

## J. Safety System Response:

The containment purge (CP)(BK) isolation valves were isolated prior to the event; therefore, the CPIAS did not result in actuation of any CP components per design.

The FBEVAS stopped the normal fuel building AHUs, isolated the normal supply and exhaust dampers (DMP), and started the fuel



LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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building essential exhaust air filtration units per design.

The CREFAS closed the control room isolation dampers, stopped the control room normal AHUs, and started the control room essential AHUs per design. The "B" train essential cooling water pump, essential chiller, and essential spray pond pump also started as a result of the CREFAS per design. The "A" train essential chiller, essential cooling water pump, and essential spray pond pump were in service prior to this event.

K. Failed Component Information:

Not applicable - No failures were involved.

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

The undervoltage condition on the "A" AC vital instrument distribution panel, caused by the starting of the RCP 2A motor, only lasted a few seconds as indicated by computer printout following the event. The voltage returned to normal immediately after the RCP motor was stopped. Alarms were only received on the "A" AC vital instrumentation and control distribution bus indicating the undervoltage condition only affected one of the four vital instrumentation and control distribution panels. The availability of redundant instrumentation and control distribution panels and the short duration of the electrical transient did not effect the ability to monitor and operate systems required by technical specifications.

The initiation of emergency ventilation and emergency cooling water systems was the result of an undervoltage condition and not the result of abnormal levels of radiation. The safety systems responded as designed. Therefore, this event did not have an effect on the health and safety of the public.

III. CORRECTIVE ACTIONS:

A. Immediate

The RCP motor was immediately stopped and equipment actuations were verified.

B. Action to Prevent Recurrence:

An investigation is in progress to determine the root cause of the event. Upon completion of this investigation, a supplemental



LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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

report will be submitted. The supplement will be submitted by February 28, 1990.

## IV. PREVIOUS SIMILAR EVENTS:

There have been no previous similar events reported pursuant to 10CFR 50.73. There have been several reported engineered safety feature actuations caused by the deenergization of an instrumentation and control distribution panel. However, none of the previous events were caused by an undervoltage condition associated with the starting of a reactor coolant pump motor.





LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 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)

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ATTACHMENT  
SWITCHYARD