

ACCELERATED DOCUMENT DISTRIBUTION SYSTEM

REGULATOR INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9303190225 DOC. DATE: 93/03/13 NOTARIZED: NO DOCKET #
 FACIL: STN-50-528 Palo Verde Nuclear Station, Unit 1, Arizona Public Service 05000528
 AUTH. NAME AUTHOR AFFILIATION
 BRADISH, T.R. Arizona Public Service Co. (formerly Arizona Nuclear Power
 LERVINE, J.M. Arizona Public Service Co. (formerly Arizona Nuclear Power
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 93-003-00: on 930213, determined that loss of power to
 Train A Class 1E 4.16 kv Bus. Caused by overcurrent condition
 on Intermediate Bus. Breaker for switchyard control power was
 removed. W/930313 ltr.

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

NOTES: STANDARDIZED PLANT

05000528

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	PD5 LA	1 1	PD5 PD	1 1
	TRAMMELL, C	1 1	TRAN, L	1 1
INTERNAL:	ACNW	2 2	ACRS	2 2
	AEOD/DOA	1 1	AEOD/DSP/TPAB	1 1
	AEOD/ROAB/DSP	2 2	NRR/DE/EELB	1 1
	NRR/DE/EMEB	1 1	NRR/DORS/OEAB	1 1
	NRR/DRCH/HHFBHE	1 1	NRR/DRCH/HICB	1 1
	NRR/DRCH/HOLB	1 1	NRR/DRIL/RPEB	1 1
	NRR/DRSS/PRPB	2 2	NRR/DSSA/SPLB	1 1
	NRR/DSSA/SRXB	1 1	REG FILE 02	1 1
	RES/DSIR/EIB	1 1	RGN5 FILE 01	1 1
EXTERNAL:	EG&G BRYCE, J.H	2 2	L ST LOBBY WARD	1 1
	NRC PDR	1 1	NSIC MURPHY, G.A	1 1
	NSIC POORE, W.	1 1	NUDOCS FULL TXT	1 1

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK,
 ROOM P1-37 (EXT. 504-2065) TO ELIMINATE YOUR NAME FROM DISTRIBUTION
 LISTS FOR DOCUMENTS YOU DON'T NEED!

FULL TEXT CONVERSION REQUIRED
 TOTAL NUMBER OF COPIES REQUIRED: LTTR 33 ENCL 33

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

JAMES M LEVINE
VICE PRESIDENT
NUCLEAR PRODUCTION

192-00835-JML/TRB/RJR
March 13, 1993

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

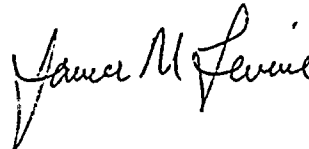
Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 1
Docket No. STN 50-528 (License No. NPF-41)
Licensee Event Report 93-003-00
File: 93-020-404

Attached please find Licensee Event Report (LER) 93-003-00 prepared and submitted pursuant to 10CFR50.73. An automatic start of an Emergency Diesel Generator during a Loss of Power to the Train A Class 1E 4.16kv bus. In accordance with 10CFR50.73(d), a copy of this LER is being forwarded to the Regional Administrator, NRC Region V.

If you have any questions, please contact T. R. Bradish, Nuclear Regulatory Affairs Manager, at (602) 393-5421.

Very truly yours,



JML/TRB/RJR/ap

Attachment

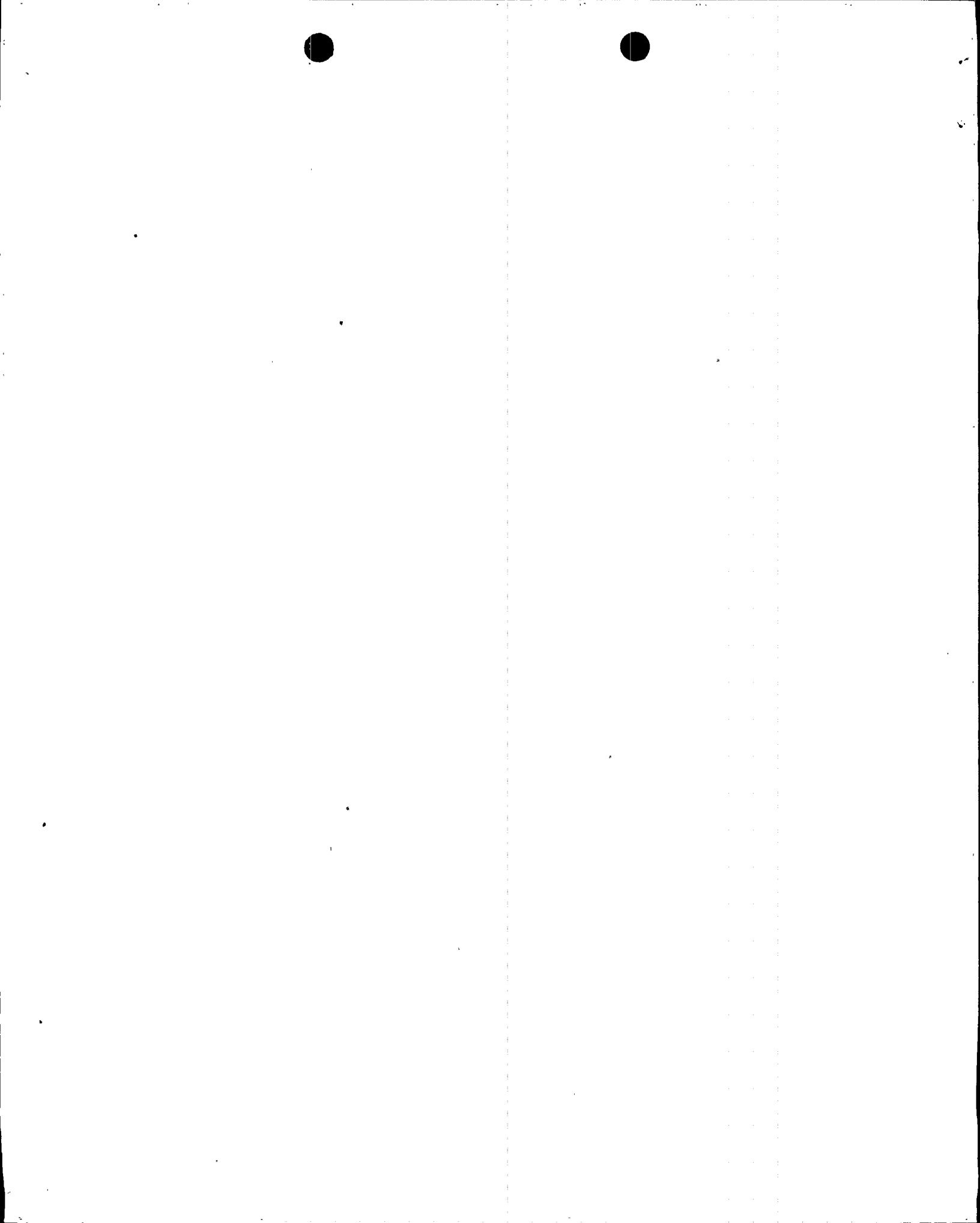
cc: W. F. Conway (all with attachment)
J. B. Martin
J. A. Sloan
INPO Records Center

190050

9303190225 930313
PDR ADOCK 05000528
S PDR

DE27 1/1

bcc: W. E. Ide 7194
R. K. Flood 7294
R. J. Adney 7394
R. F. Schaller 7194
T. D. Shriver 7294
J. J. Scott 7394
F. W. Riedel 7198
P. J. Wiley 7298
M. L. Clyde 7398
Source Document File 7747
CRDR File: 1-3-0071
R. J. Stevens 7603
E. G. Firth 6156
R. C. Fullmer 7996
D. M. Eastman 7995
M. K. Muhs (STA) 7595
T. E. Matlock (NSD) 1510
S. G. Penick (ISE) 7997
R. W. Page 1678
D. B. Andrews 6200
A. C. Rogers 1534
R. G. Hogstrom 7545
D. A. Hettick 7965
J. D. Bayless 7564
A. C. Gehr 4141
A. H. Guttermann
P. J. Coffin 7636
B. A. Brown 7636
T. A. Buvens 7965
Dave Brevig
Dennis Cox
Responsible Department (required review):
NRA Supervisor
NRA Manager
M. J. Reid 1605
D. W. Smyers 7524
M. R. Oren 7516



LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Palo Verde Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 5 2 8	PAGE (3) 1 OF 0 5
---	---	-----------------------------------

TITLE (4)
Loss of Power to Train A Class 1E 4.16 kV Bus

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)
0 2	1 3	9 3	9 3	0 0 3	0 0	0 3	1 3	9 3	N/A	0 5 0 0 0
									N/A	0 5 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)										
POWER LEVEL (10) 1 0 0	20.402(b)			20.405(c)			<input checked="" type="checkbox"/>	50.73(a)(2)(v)			73.71(b)
	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)(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)(x)			

LICENSEE CONTACT FOR THIS LER (12)									
NAME Thomas R. Bradish, Nuclear Regulatory Affairs Manager								TELEPHONE NUMBER 6 0 2 3 9 3 - 5 4 2 1	

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	

SUPPLEMENTAL REPORT EXPECTED (14)								EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
<input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) <input type="checkbox"/> NO										0 5	3 0	9 3

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

On February 13, 1993, at approximately 0614 MST Palo Verde Unit 1 was in Mode 1 (POWER OPERATIONS), operating at approximately 100 percent power when the normal supply breaker to the Unit 1, non-Class 1E 13.8 kV, Intermediate Bus opened on overcurrent. This resulted in a loss of power to the Unit 1 Train A Class 1E 4.16 kV bus. The Loss Of Power Engineered Safety Feature (ESF) signal automatically load shed the Class 1E 4.16 kV bus and started the Train A Emergency Diesel Generator. All equipment functioned as designed, and no other ESF signals were actuated or required. Unit 1 continued to operate normally at 100 percent power. Units 2 and 3 were not affected by this event.

An initial inspection of the switchgear indicates that the normal supply breaker to the Intermediate Bus tripped on overcurrent. Troubleshooting identified damage on the C phase, line side to bus interface, of the normal supply breaker for switchyard control power. This caused the normal supply breaker for the Intermediate Bus to open on overcurrent as designed. A Root Cause of Failure Analysis is being conducted to determine the cause of the overcurrent condition. The damaged line side to bus interface was removed from the switchyard control power switchgear and the Intermediate Bus was re-energized from its alternate supply. The Emergency Diesel Generator was shutdown at approximately 1617 MST on February 13, 1993.

No similar events have been previously reported pursuant to 10CFR50.73.



7

1 1 1 1

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE		
Palo Verde Unit 1		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		05	000528	93	-	003	-
							02 OF 05

TEXT

I. DESCRIPTION OF WHAT OCCURRED:

A. Initial Conditions:

At approximately 0614 MST on February 13, 1993, Palo Verde Unit 1 was in Mode 1 (POWER OPERATIONS) at approximately 100 percent power and normal operating temperature and pressure.

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

Event Classification: An event or condition that resulted in an automatic actuation of an Engineered Safety Feature (ESF)(JE).

At approximately 0614 MST on February 13, 1993, the normal supply breaker to the Unit 1, non-Class 1E 13.8 kV, Intermediate Bus, NAN-S05, (SWGR)(EA) opened on overcurrent. This resulted in a Loss of Power (LOP) to the Unit 1 Train A Class 1E 4.16 kV bus (BU)(EB). The LOP ESF signal automatically load shed the Class 1E 4.16 kV bus and started the Train A Emergency Diesel Generator (DG)(EX). The Emergency DG started and assumed the loads as designed. All equipment functioned as designed. No other ESF signals were actuated and none were required. Unit 1 continued to operate normally at 100 percent power throughout the event. Technical Specification (TS) Limiting Condition for Operation (LCO) 3.8.1.1. ACTION a. was entered for one offsite circuit inoperable.

The non-Class 1E, 13.8 kV power system receives off-site power from the 525 kV switchyard (SWGR)(FK). The non-Class 1E, 13.8 kV power system consists of one 525 to 13.8 kV startup transformer and six 13.8 kV switchgear per unit. The normal switching arrangement provides for each start-up transformer to supply power to two 13.8 kV Intermediate Buses (NAN-S05 and NAN-S06) of two different units. For example, Unit 1 transformer NAN-X03 supplies the normal power to bus NAN-S05 and transformer NAN-X01 supplies the alternate power to bus NAN-S05. The Intermediate Buses supply power to their respective 13.8 kV bus which in turn supplies the Class 1E 4.16 kV system through an ESF transformer (XFMR)(EB).

An initial inspection of the switchgear by Operations personnel (utility, non-licensed), indicated that the normal supply breaker to the Unit 1 Intermediate Bus tripped on overcurrent. There was smoke in the metal outdoor switchgear enclosure, but no fire. Troubleshooting by APS Maintenance and Engineering personnel (utility, non-licensed) determined that the normal supply breaker for switchyard control power (breaker NAN-S05F) had evidence of a

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE	
Palo Verde Unit 1		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		9/3	0/0/3	0/0	0/3	OF 0/5

TEXT

fault on the C phase, line side to bus interface. This caused the normal supply breaker for the Unit 1 Intermediate Bus to open on overcurrent as designed.

The damaged line side to bus interface for the normal switchyard control power breaker was removed. Switchyard control power was re-energized from its alternate supply breaker. The Intermediate Bus normal supply breaker was racked out. After testing for grounds, the Intermediate Bus was re-energized from its alternate supply. Preventive maintenance was performed on the Intermediate Bus normal supply breaker. No problems were found and the normal power supply breaker was returned to service. The Unit 1 Intermediate Bus was returned to a normal line-up. A Root Cause of Failure Analysis is being conducted on the damaged components removed from the switchyard control power switchgear. TS LCO 3.8.1.1 ACTION a. was exited at approximately 1617 MST on February 13, 1993. Units 2 and 3 were not affected by this event.

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

Not applicable - no structures, systems, or components were inoperable at the start of the event which contributed to this event.

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

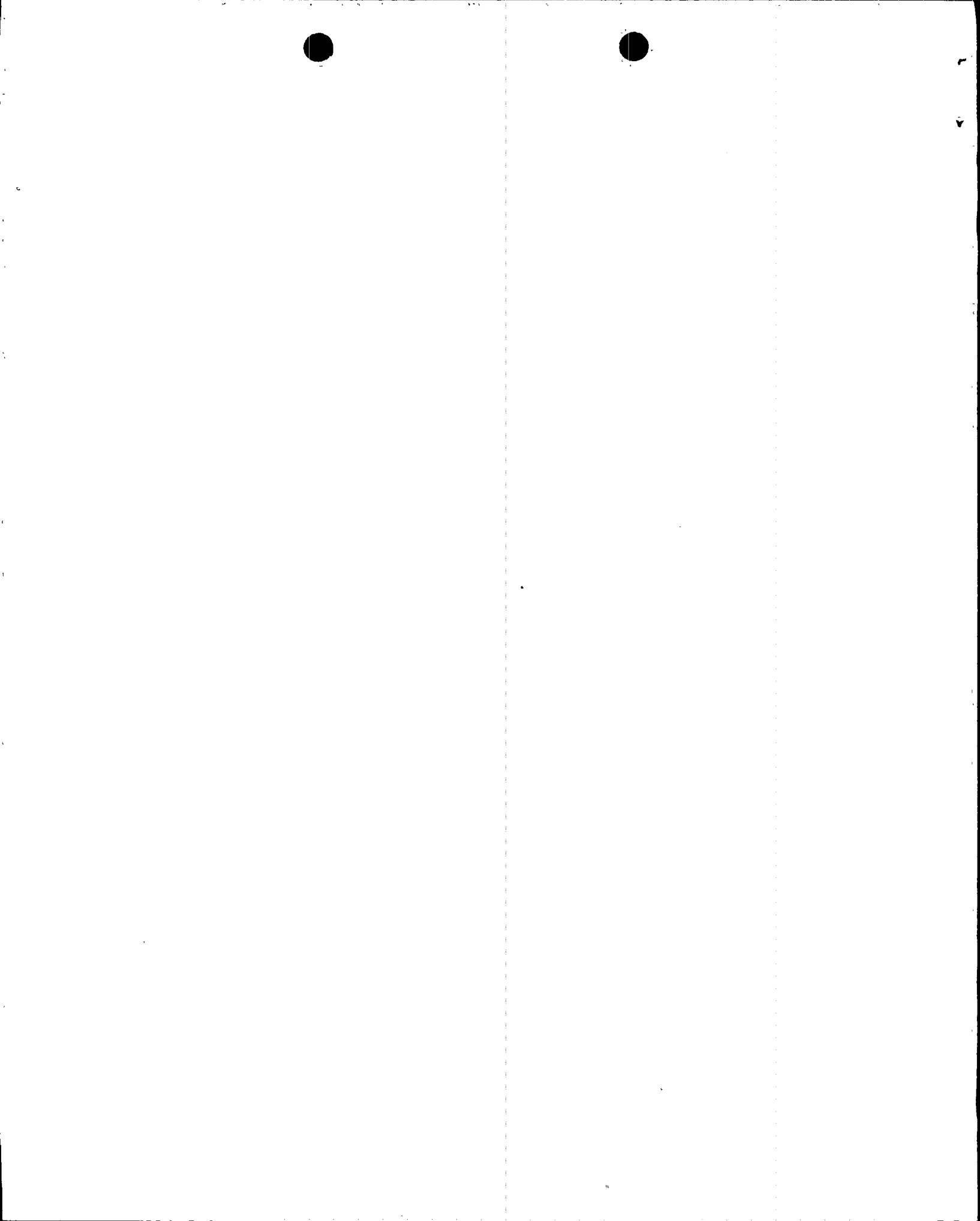
The apparent cause of the failure was determined to be an overcurrent condition associated with the switchyard control power normal supply breaker C phase, line side to bus interface. APS Engineering personnel are conducting an Equipment Root Cause of Failure Analysis as discussed in Sections I.I and III.B.

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

As described in Section I.B., the fault condition on the C phase of the normal supply breaker for switchyard control power caused the normal supply breaker for the Unit 1 Intermediate Bus to open on overcurrent. This resulted in an LOP on the 13.8 kV Intermediate Bus and caused an LOP ESF signal to the Train A Class 1E 4.16 kV bus and an automatic start of the Train A Emergency DG.

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

Not applicable - no failures of components with multiple functions were involved.



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE	
Palo Verde Unit 1		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		93	003	010	04	OF 05

TEXT

- G. For a 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 that rendered a train of a safety system inoperable were involved.

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

The overcurrent condition was discovered during the inspection of the switchgear immediately following the event.

- I. Cause of Event:

An investigation of this event is being conducted in accordance with the APS Incident Investigation Program. An initial inspection of the normal supply breaker to the Unit 1 Intermediate Bus identified that the breaker had opened on an overcurrent condition. An action plan for troubleshooting was developed and carried out.

The apparent cause of the overcurrent condition on the Intermediate Bus was a fault on the supply breaker for switchyard control power C phase, line side to bus interface (SALP Cause Code X: Other). There were no procedural or personnel errors which contributed to this event.

APS Engineering personnel are conducting an Equipment Root Cause of Failure Analysis of the damaged components to determine the cause and any additional corrective actions to prevent recurrence. The results of this investigation will be included in a supplement to this report.

- J. Safety System Response:

Following the LOP to the Train A Class 1E 4.16 kV bus, the Train A Emergency DG started and re-energized the associated ESF bus within the TS time requirement. The load sequencer initiated the required Load Shed signal and subsequently re-sequenced the following safety systems as required by design: Control Room Essential Ventilation (VI), Essential Cooling Water Pump (P)(BI), Essential Spray Pond Pump (P)(BI) and Essential Chiller (CHU)(KM).

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE		
Palo Verde Unit 1		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		05000528	93	003	00	05	OF

TEXT

K. Failed Component Information:

An Equipment Root Cause of Failure Analysis, as discussed in Sections I.I and III.B, is being conducted. Failed component information will be identified in a supplement to this report.

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

The event did not result in any challenges to the fission product barriers or result in any releases of radioactive materials. There were no safety consequences or implications as a result of the event. The event did not adversely affect the health or safety of the public.

III. CORRECTIVE ACTION:

A. Immediate:

The normal supply breaker for switchyard control power was removed from its cubical for troubleshooting and the damaged breaker to bus interface was removed. The normal supply breaker for the Unit 1 Intermediate Bus was racked out for troubleshooting. Preventive maintenance was performed and no problems were identified.

B. Action to Prevent Recurrence:

As discussed in Section I.I and II.B., APS Engineering personnel are conducting an Equipment Root Cause of Failure Analysis to determine the failure mechanism of the damaged components. The results of this investigation will be included in a supplement to this report. This supplement is expected to be submitted by May 30, 1993.

IV. PREVIOUS SIMILAR EVENTS:

No previous similar events have been reported pursuant to 10CFR50.73, where a faulty supply breaker to the non-Class 1E 13.8 kV switchgear Intermediate Bus resulted in an LOP to a Class 1E 4.16 kV bus and the initiation of an Emergency DG automatic starting signal.

V. ADDITIONAL INFORMATION:

None



12