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 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 91-004-00: on 910320, supply breaker between non-Class IE
 13.8 kV switchgear buses opened, resulting in loss of power
 to train A Class 1E 4.16 kV bus. Caused by personnel error.
 Preventive maint suspended. W/910419 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 05000528

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	NRR/DST/SRXB 8E		1	1		<u>REG FILE</u> 02		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
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Arizona Public Service Company
PALO VERDE NUCLEAR GENERATING STATION
P.O. BOX 52034 • PHOENIX, ARIZONA 85072-2034

192-00718-JML/TRB/RKR
April 19, 1991

JAMES M. LEVINE
VICE PRESIDENT
NUCLEAR PRODUCTION

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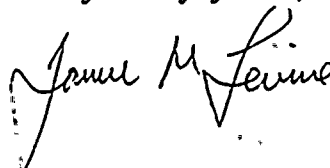
Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 1
Docket No. STN 50-528 (License No. NPF-41)
Licensee Event Report 1-91-004-00
File: 91-020-404

Attached please find Licensee Event Report (LER) No. 1-91-004-00 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,



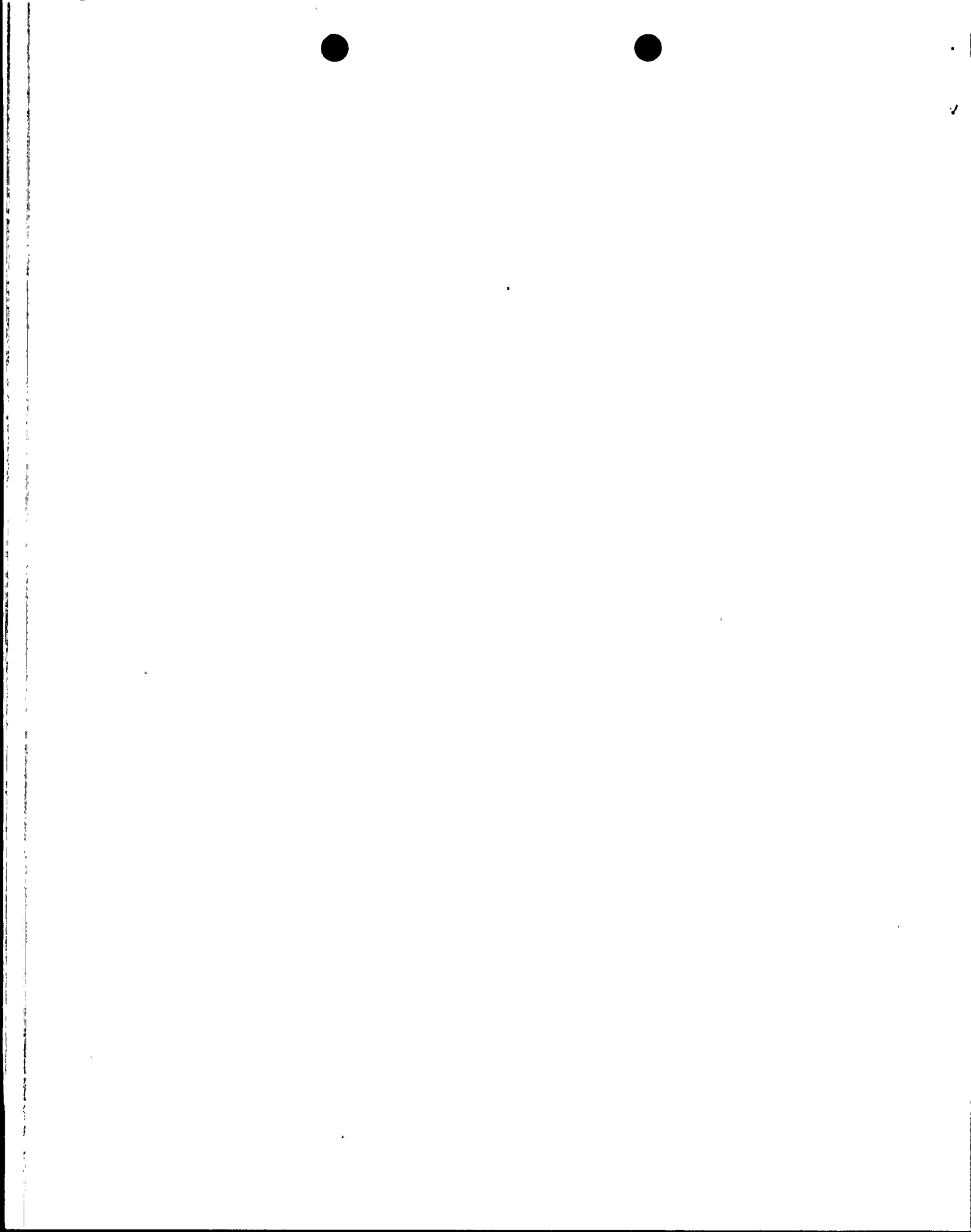
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Attachment

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

9104230003 910419
PDR ADQCK 05000528
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11



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
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TITLE (4)
ESF Actuation Due To Loss Of Power To 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		
									N/A		
0 3	2 0	9 1	9 1	0 0 4	0 0	0 4	1 9	9 1	N/A		
									DOCKET NUMBER(S) 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	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.406(e)	<input checked="" type="checkbox"/> 60.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)						
	<input type="checkbox"/> 20.406(a)(1)(i)	<input type="checkbox"/> 60.36(c)(1)	<input type="checkbox"/> 60.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)						
	<input type="checkbox"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 60.36(c)(2)	<input type="checkbox"/> 60.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 365A)						
	<input type="checkbox"/> 20.406(a)(1)(iii)	<input type="checkbox"/> 60.73(a)(2)(i)	<input type="checkbox"/> 60.73(a)(2)(viii)(A)							
	<input type="checkbox"/> 20.406(a)(1)(iv)	<input type="checkbox"/> 60.73(a)(2)(ii)	<input type="checkbox"/> 60.73(a)(2)(viii)(B)							
	<input type="checkbox"/> 20.406(a)(1)(v)	<input type="checkbox"/> 60.73(a)(2)(iii)	<input type="checkbox"/> 60.73(a)(2)(ix)							

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER	
NAME Thomas R. Bradish, Compliance Manager	AREA CODE 6 0 2 3 9 3	NUMBER - 2 5 2 1	

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

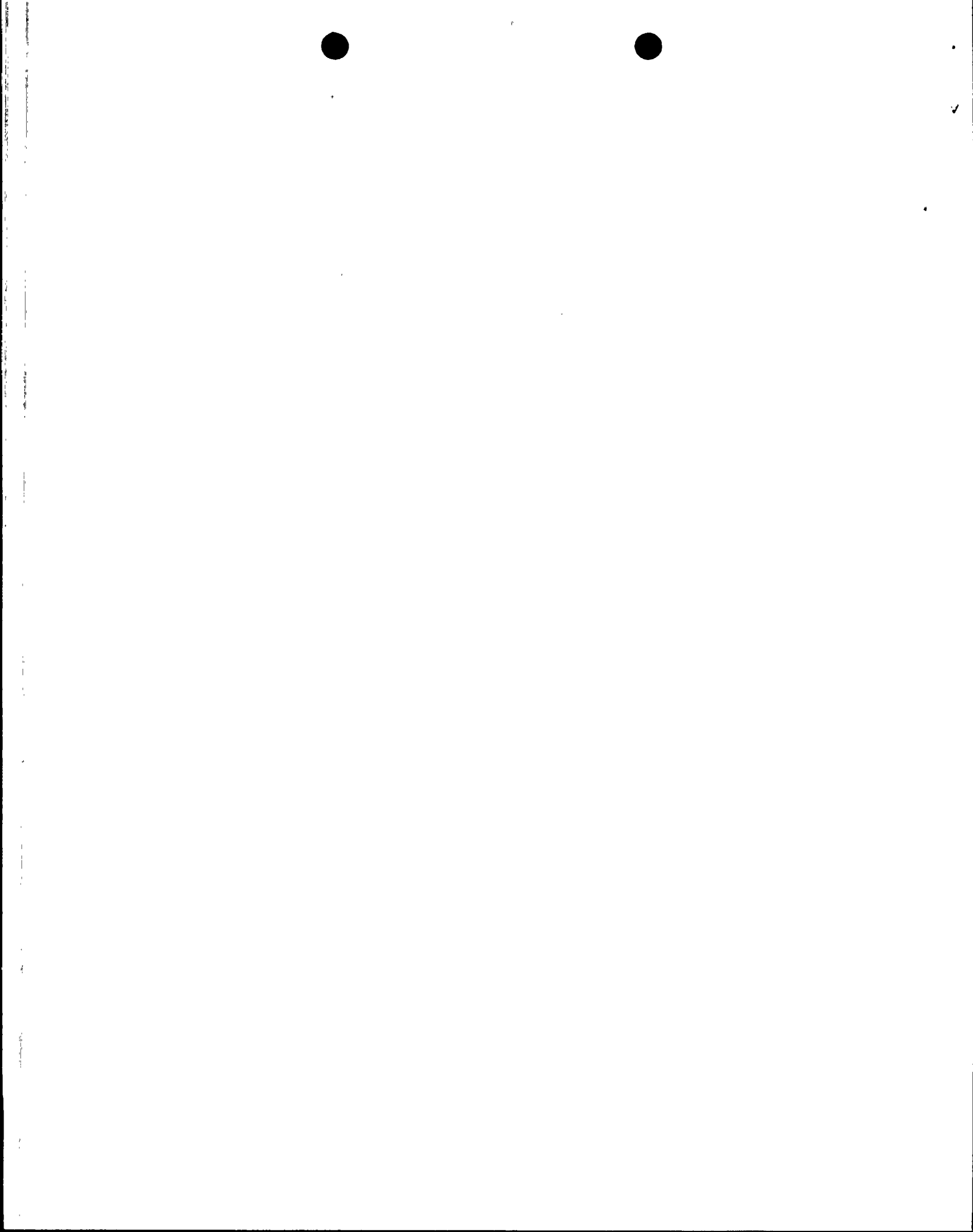
SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO				

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

At approximately 1414 MST on March 20, 1991, Palo Verde Unit 1 was in Mode 1 (POWER OPERATION) at approximately 100 percent power when a supply breaker opened between the Unit 1 non-Class 1E 13.8 KV switchgear busses resulting in a loss of power to the Unit 1 train "A" Class 1E 4.16 KV bus. This resulted in a Loss of Power (LOP) Engineered Safety Feature (ESF) signal being generated. The ESF signal resulted in automatic load shed of the Class 1E bus and started the train "A" Emergency Diesel Generator (DG). The DG started and assumed the loads as designed. All equipment functioned as designed. No other ESF protection signals were activated and none were required. Unit 1 continued to operate normally at 100 percent power throughout the event.

The cause of the event was personnel error by an electrical maintenance worker who was performing periodic maintenance on the non-Class 1E 13.8 KV switchgear. The individual inadvertently brushed the breaker trip relay which resulted in the actuation.

There have been no previous similar events reported pursuant to 10CFR50.73.



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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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:

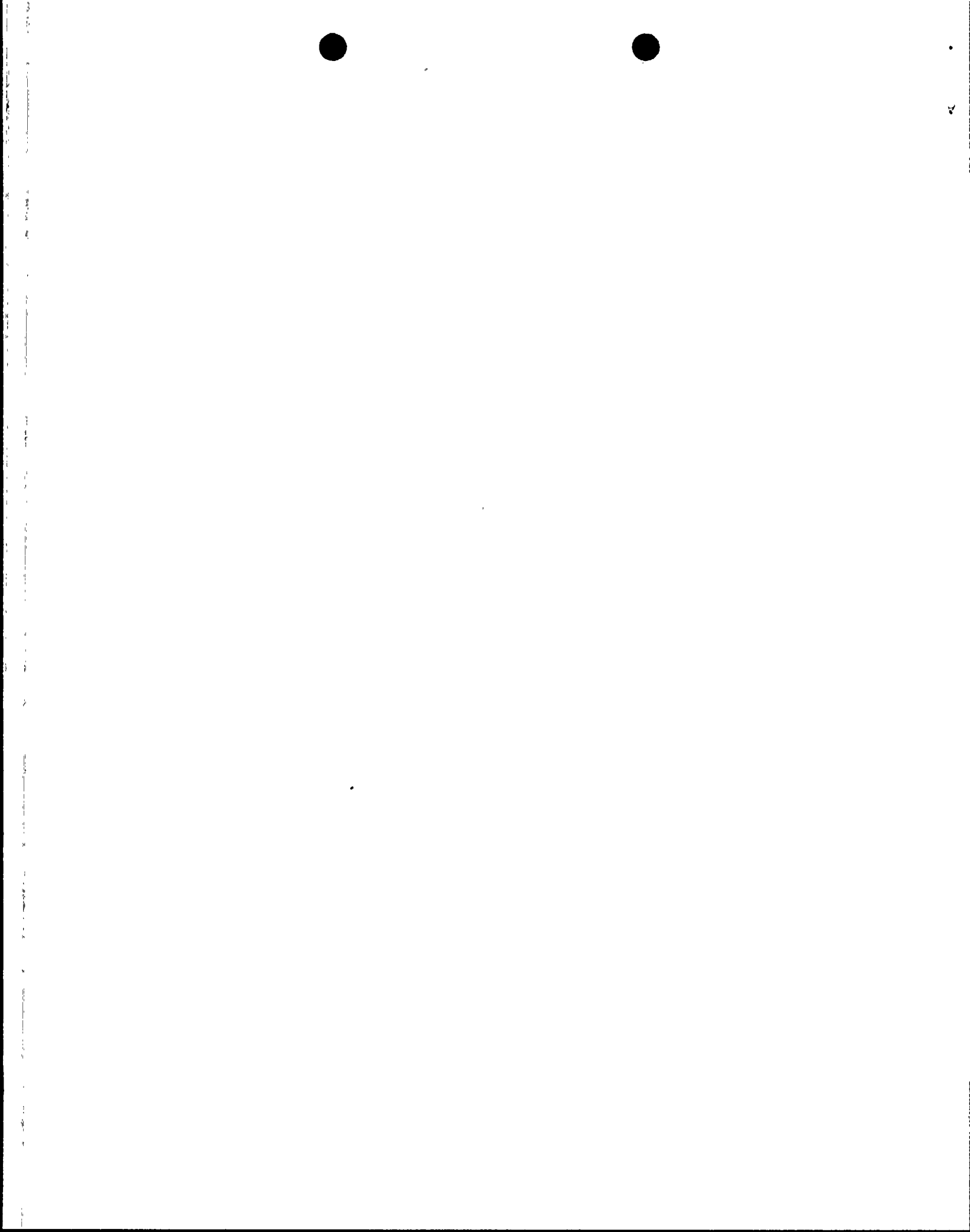
At approximately 1414 MST on March 20, 1991, Palo Verde Unit 1 was in MODE 1 (POWER OPERATION) at approximately 100 percent power.

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 1414 MST on March 20, 1991, a supply breaker opened between the Unit 1 non-Class 1E 13.8 KV switchgear busses (BU)(EA) resulting in a loss of power to the Unit 1 train "A" Class 1E 4.16 KV bus (BU)(EB). This resulted in a Loss of Power (LOP) Engineered Safety Feature (ESF)(JE) signal being generated. The ESF signal automatically load shed the Class 1E bus and started the train "A" Emergency Diesel Generator (DG)(EX). The DG started and assumed the loads as designed. All equipment functioned as designed. No other ESF protection 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 completed for one offsite circuit inoperable.

Prior to this event at approximately 1400 MST on March 20, 1991, Electrical Maintenance personnel (utility, non-licensed) began normal, periodic maintenance (inspection and cleaning) of the non-Class 1E 13.8 KV switchgear in accordance with an approved work document. During inspection of the train "A" Class 1E 4.16 KV Switchgear Feeder breaker cubicle in the non-Class 1E 13.8 KV switchgear it was noted that the cover over the breaker's trip relay was misaligned. This misalignment allowed a portion of the trip relay to be exposed. The electricians did not attempt to realign the cover because they did not want to disturb the relay with the breaker in the closed position but subsequently wrote a work request to document and correct the deficiency. While the electrician was cleaning (vacuuming) the breaker cubicle, the electrician inadvertently brushed the exposed relay and the breaker opened. The breaker opening resulted in a loss of power to the Unit 1 train "A" Class 1E 4.16 KV bus and the subsequent ESF actuation. The electricians immediately notified the Control Room. An inspection and review of the equipment involved in this event was performed by Protective Relay and Control personnel (utility,



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Palo Verde Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 5 2 8				LER NUMBER (6)			PAGE (3)		
					YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

non-licensed) and Electrical Maintenance personnel (utility, non-licensed) found that the breaker did not open due to or as a result of any fault protection signals. A review of the breaker circuit showed that actuation of the trip relay would cause the breaker to trip.

The cover was realigned over the trip relay and at approximately 1529 MST on March 20, 1991, the breaker was closed and normal off site power was restored to the Unit 1 train "A" Class 1E 4.16 KV bus and Action a. of TS LCO 3.8.1.1 was exited. At approximately 1645 MST the train "A" DG was shutdown and returned to normal standby after completion of the required loaded run time.

- 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:

Not applicable - no component or system failures were involved.

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

Not applicable - no component failures were involved.

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

Not applicable - no component failures were involved.

- 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 were involved which rendered a train of a safety system inoperable.

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

Not applicable - there have been no component or system failures or procedural errors identified.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		9 1	0 0 4	0 0	0 4	OF	0 5

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

I. Cause of Event:

The cause of the event was a personnel error by the Electrical Maintenance worker (utility, non-licensed) who inadvertently tripped the exposed relay while cleaning the breaker cubicle (SALP Cause Code A: Personnel Error). The individual inadvertently brushed the relay during cleaning activities which resulted in the breaker opening and the LOP ESF actuation as described in Section I.B.

Contributing to the cause of event was the mispositioned cover on the relay. If the cover had been properly installed the chance of an inadvertent relay actuation would have been reduced. Unit 1 management has evaluated whether the individual should have stopped work when it was noted that the cover was mispositioned. Based on the individual's experience and knowledge, the decision to continue with planned maintenance was evaluated to be appropriate. There were no other unusual characteristics of the work location (e.g., noise, heat, poor lighting).

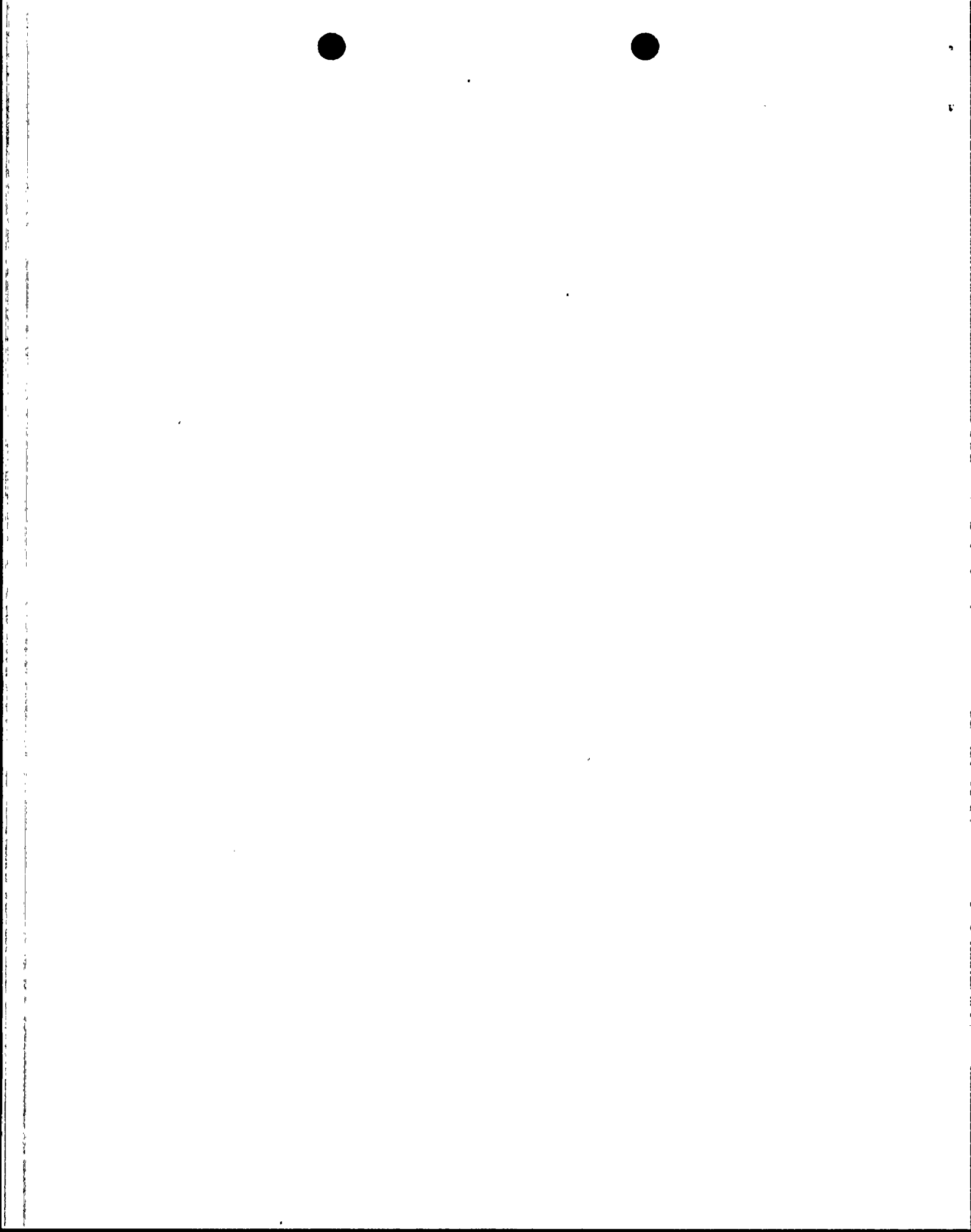
The cause of the trip relay cover being misaligned could not be determined. The cover is a dust cover which is slid into place over the relay and is easily moved out of alignment. With the cover misaligned an armature at the bottom of the relay is exposed. If moved this armature can trip the relay. If the cover had been installed properly it may have prevented the relay from being tripped.

J. Safety System Response:

Following loss of power to the train "A" Class 1E 4.16 KV bus, the train "A" DG started and energized the train "A" ESF bus within the Technical Specification time requirement. The load sequencer started the following safety systems as required by design: Control Room and Diesel Generator Essential Ventilation (VI & VJ), Essential Battery Chargers (BYC) (EI), "A" train Auxiliary Feedwater pump (P)(BA), "A" train Essential Cooling Water pump (P) (BI), Essential Spray Pond pump (P)(BI), and "A" train Essential Chiller (CHU)(KM).

K. Failed Component Information:

Not applicable - no component failures were involved.



LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 600 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 368A's) (17)

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

No adverse safety consequences or implications resulted from this event. The train "A" Diesel Generator properly started and assumed the loads on the train "A" Class 1E 4.16 KV bus. All components operated properly.

III. CORRECTIVE ACTION:

A. Immediate:

1. Cleaning preventive maintenance in the area of the trip relay on energized 13.8 KV switchgear was suspended in Units 1, 2, and 3 until the cause and action to prevent recurrence were developed for this event.

B. Action to prevent recurrence:

1. The need to be cautious when performing work around energized equipment has been discussed with personnel involved in this event.
2. The procedures for the periodic maintenance of switchgear are being evaluated to determine if any changes are needed to caution personnel of the potential for equipment actuations during cleaning. This evaluation and a schedule for implementing any procedure changes resulting from this evaluation is expected to be completed by May 31, 1991.
3. This event will be included in continuing training for maintenance personnel. This training is scheduled for the third quarter 1991 training cycle.

IV. PREVIOUS SIMILAR EVENTS:

There have been no previous similar events reported pursuant to 10CFR50.73.