

CATEGORY 1

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 FACIL: STN-50-529 Palo Verde Nuclear Station, Unit 2, Arizona Publi 05000529
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 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 97-003-00: on 970907, inadvertent loss of power & EDG
 start due to procedural deficiency. Revised EDG/integrated
 safeguards surveillance testing procedures. W/971007 ltr.

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NOTES: Standardized plant.

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192-01000- GRO/DGM/KR
October 7, 1997

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

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 2
Docket No. STN 50-529
License No. NPF-51
Licensee Event Report 97-003-00

Attached please find Licensee Event Report (LER) 97-003-00 prepared and submitted pursuant to 10CFR50.73. This LER reports an inadvertent loss of power on the Class 1E 4160 V bus and emergency diesel generator start due to a procedural deficiency. 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,

GRO/DGM/KR/mah

Attachment

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

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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 4
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TITLE (4)
Inadvertent Loss of Power and Emergency Diesel Generator Start Due to Procedural Error

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
0 9	0 7	9 7	9 7	0 0 3	0 0	1 0	0 7	9 7	N/A
									DOCKET NUMBERS
									0 5 0 0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)									
OPERATING MODE (9)		20.402(b)		20.405(c)		<input checked="" type="checkbox"/>		50.73(a)(2)(M)	
POWER LEVEL(10)		20.405(a)(1)(i)		50.36(c)(1)				50.73(a)(2)(V)	
0 0 0		20.405(a)(1)(ii)		50.36(c)(2)				50.73(a)(2)(vi)	
		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)(viii)	
		20.405(a)(1)(vi)						73.71(b)	
								73.71(c)	
								OTHER (Specify in Abstract below and in Text, NRC Form 306A)	

LICENSEE CONTACT FOR THIS LER (12)

NAME Daniel G. Marks, Section Leader, Nuclear Regulatory Affairs	TELEPHONE NUMBER 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

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 September 7, 1997, at approximately 1923 MST, Palo Verde Unit 2 was in Mode 5 (COLD SHUTDOWN) in its seventh refueling outage when an inadvertent loss of power (LOP) of the Train B Class 1E 4160 V bus (PBB-S04) and a Train B emergency diesel generator (EDG-B) automatic start occurred during pretest staging for EDG-B and integrated safeguards (ISG) surveillance testing (ST) of the Train B LOP actuation. By approximately 1944 MST, PBB-S04 was restored to normal system lineup and EDG-B was stopped. This event is being reported because an engineered safety feature (EDG-B) actuation occurred during a preplanned test in a way that was not part of the planned procedure.

The cause of the inadvertent line up was attributed to a procedural deficiency which caused Control Room personnel to close the alternate supply breaker (PBB-S04L) to PBB-S04 from the Control Room board as opposed to the local panel. This action caused the synchronizing switch interlock logic to automatically open the normal supply breaker (PBB-S04K) to PBB-S04 resulting in an inadvertent LOP of PBB-S04 and automatic start of EDG-B. All systems actuated as designed. There were no other ESF actuations and none were required. As corrective action, the EDG/ISG ST procedure was revised.

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

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Palo Verde Unit 2		YEAR	SEQUENTIAL NUMBER	REVISIO NUMBER			
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TEXT

1. REPORTING REQUIREMENT:

This LER 529/97-003-00 is being written to report an event that resulted in the automatic actuation of an Engineered Safety Feature (ESF) (JE) as specified in 10 CFR 50.73(a) (2) (iv).

Specifically, at approximately 1923 MST on September 7, 1997, Palo Verde Unit 2 was in Mode 5 (COLD SHUTDOWN) in its seventh refueling outage (U2R7) when an inadvertent loss of power (LOP) of the Train B Class 1E 4160 V bus (PBB-S04) (EB) and a Train B emergency diesel generator (EDG-B) (EK) automatic start occurred during pretest staging for EDG-B and integrated safeguards (ISG) surveillance testing (ST) of the Train B LOP actuation. The Reactor Coolant System (RCS) (AB) was at approximately 130 degrees Fahrenheit (F) and at approximately 80 psia. By approximately 1944 MST, PBB-S04 was restored to normal system lineup and EDG-B was stopped.

2. EVENT DESCRIPTION:

Prior to the event, on September 7, 1997, Unit 2 Control Room (NA) personnel were preparing to perform the EDG/ISG ST for a Train B LOP only (no ESFAS) actuation of PBB-S04 by opening the normal supply breaker (NAN-S04A) to the ESF transformer (NBN-X04). The pretest conditions included placing the alternate supply breaker (PBB-S04L) to PBB-S04 in the test position and closing PBB-S04L from the local panel. The normal supply breaker (PBB-S04K) to PBB-S04 remained closed. The EDG/ISG ST was to demonstrate that following a load shed signal, the EDG-B would be removed from override and would start in emergency mode. Following the EDG start, PBB-S04L and PBB-S04K would open, EDG breaker (PBB-S04B) would close onto the bus, and the sequencer would proceed to sequence on available (i.e., not in test) loads.

During the pretest staging of the ST, the alternate supply breaker (PBB-S04L) was closed from the Control Room board, as opposed to locally. The synchronizing switch interlock logic automatically opened the normal supply breaker (PBB-S04K) resulting in an inadvertent LOP on PBB-S04. EDG-B started, EDG-B breakers closed on to PBB-S04, and the sequencer proceeded to sequence on available (i.e., not in test) loads. The sequenced loads included:

- Train B Control Room Essential Ventilation (VI)
- Train B EDG Building Essential Exhaust Fan (VJ)
- Essential Battery Chargers B, BD, and D (EJ)
- Train B Essential Cooling Water Pump (BI)

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TEXT

- Train B Essential Spray Pond Pump (BS)
- Train B Essential Chiller (KM)

By approximately 1944 MST, PBB-S04 was restored to normal system lineup and EDG-B was stopped. There were no other safety system actuations and none were required. All systems actuated as designed.

This event is being reported because an ESF (EDG-B) actuation occurred during a planned test in a way that was not part of the planned procedure.

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

Although an EDG/ISG ST LOP actuation was part of a preplanned test, the inadvertent LOP of PBB-S04 and EDG-B automatic start which occurred during pretest staging presented an unnecessary challenge to a safety system. However, EDG-B automatically actuated as designed and as assumed by the safety analysis. 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 cause of the LOP was determined to be due to the inappropriate closing of the alternate supply breaker (PBB-S04L) from the Control Room board, as opposed to the local panel. When PBB-S04L is closed locally, the synchronizing switch interlock logic, which would normally automatically open the normal supply breaker (PBB-S04K), is bypassed. With PBB-S04L in test (no alternate power supply available), the LOP occurred when the synchronizing switch interlock logic automatically opened PBB-S04K.

The EDG/ISG ST procedure caused Control Room personnel performing the pretest staging to close the Control Room hand switch PBB-HS-S04L. Although a note stated that the PBB-S04L breaker was in test and must be closed locally, the annotation for the note was misplaced and improperly designated when compared to other annotations for notes within the procedure. It was not readily apparent that a note coincided with the pretest staging step. A preliminary evaluation has determined that the apparent root cause is attributed to a deficient procedure (SALP Cause Code D: Defective Procedures). No unusual characteristics of the work location (e.g., noise, heat, poor lighting) directly contributed to this event. No personnel errors contributed to this event.

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TEXT 5. STRUCTURES, SYSTEMS, OR COMPONENTS INFORMATION:

There are no indications that any structures, systems, or components were inoperable at the start of the event which contributed to this event. No component or system failures were involved. No failures of components with multiple functions were involved. No failures that rendered a train of a safety system inoperable 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. Actions to prevent recurrence are being developed based upon the results of the investigation. Both the Train A and Train B EDG/ISG ST procedures were changed to consistently reflect the proper pretest staging hand switches and to ensure consistency in annotation of notes, prior to the performance of the Train A EDG/ISG ST test.

7. PREVIOUS SIMILAR EVENTS:

Although previous events have been reported pursuant to 10 CFR 50.73 in the past three years for inadvertent ESFAS actuations, the causes discussed in the previous events have not been similar to this event. Therefore, the corrective actions of the previous events would not have prevented this event.