

ACCELERATED DOCUMENT DISTRIBUTION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9406150194 DOC. DATE: 94/06/08 NOTARIZED: NO DOCKET #
 FACIL: STN-50-529 Palo Verde Nuclear Station, Unit 2, Arizona Publi 05000529
 AUTH. NAME AUTHOR AFFILIATION
 GRABO, B.A. 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 94-001-00: on 940513, determined that unit 2's EDG "B" had been inoperable. Caused by personnel error. EDG "B" exhaust fan was tested & both fan & returned to operable status. W/940608 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 9
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: Standardized plant.

05000529

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	PDIV-3 PD	1 1	HOLIAN, B	1 1
	TRAN, L	1 1		
INTERNAL:	ACRS	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/HHFB	1 1	NRR/DRCH/HICB	1 1
	NRR/DRCH/HOLB	1 1	NRR/DRSS/PRPB	2 2
	NRR/DSSA/SPLB	1 1	NRR/DSSA/SRXB	1 1
	NRR/PMAS/IRCB-E	1 1	REG FILE 02	1 1
	RES/DSIR/EIB	1 1	RGN4 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 28 ENCL 28

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

JAMES M. LEVINE
VICE PRESIDENT
NUCLEAR PRODUCTION

192-00894-JML/BAG/KR
June 8, 1994

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

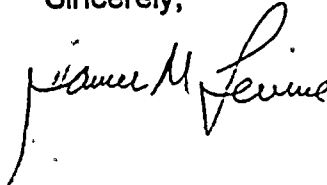
Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 2
Docket No. STN 50-529 (License No. NPF-51)
Licensee Event Report 94-001-00
File: 94-020-404

Attached please find Licensee Event Report (LER) 94-001-00 prepared and submitted pursuant to 10CFR50.73. This LER reports an event where Unit 2's Emergency Diesel Generator 'B' (EDG-B) was determined to be inoperable from May 10, 1994 to May 13, 1994 during the time period that the essential exhaust fan (necessary attendant equipment) was not capable of performing its specified support function. Therefore, a condition prohibited by the plant's Technical Specifications (TS) occurred when the unit did not comply with TS Limiting Condition for Operation (LCO) 3.8.1.1 ACTION b (i.e., restore the EDG to OPERABLE status within 72 hours). 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 Burton A. Grabo, Supervisor, Nuclear Regulatory Affairs, at (602) 393-6492.

Sincerely,



JML/BAG/KR/rv

Attachment

cc: W. L. Stewart (all with attachment)
L. J. Callan
K. E. Perkins
K. E. Johnston
INPO Records Center

14061 9406150194 940608
PDR ADCK 05000529
S PDR



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 8
---	---	-----------------------------

TITLE (4)
Emergency Diesel Generator and attendant equipment inoperable for greater than 72 hours

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 5	1 3	9 4	9 4	0 0 1	0 0	0 6	0 8	9 4	N/A	0 5 0 0 0 0
									N/A	0 5 0 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) 0 8 6	20.402(b)			20.405(c)			50.73(a)(2)(iv)			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 Burton A. Grabo, Supervisor, Nuclear Regulatory Affairs	TELEPHONE NUMBER AREA CODE: 6 0 2 NUMBER: 3 9 3 - 6 4 9 2

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	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 (Unit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On May 13, 1994, Palo Verde Unit 2 was in Mode 1 (POWER OPERATION) when members of the Plant Review Board determined that Unit 2's Emergency Diesel Generator 'B' (EDG-B) had been inoperable from approximately 0448 MST on May 10, 1994 to approximately 0855 MST on May 13, 1994. For approximately 76 hours and 7 minutes, the Train B Diesel Generator Building essential exhaust fan had been removed from service (i.e., breaker in the open position) with the fan's discharge damper wired in the closed position and had not been capable of performing its specified support function. The essential exhaust fan is necessary attendant equipment that is required for the EDG to perform its intended safety function. Therefore, EDG-B was inoperable and a condition prohibited by TS occurred when the unit did not comply with TS Limiting Condition for Operation (LCO) 3.8.1.1 ACTION b (i.e., restore the EDG to OPERABLE status within 72 hours). EDG-A remained operable during this event and was verified to be operable at approximately 1146 MST on May 13, 1994.

Although Operations personnel had reasonable expectation that the essential exhaust fan could be reenergized and manually started and that EDG-B was operable, Operations personnel failed to consider the essential exhaust fan as necessary attendant equipment that is required for the EDG to perform its intended safety function.

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

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE	
Palo Verde Unit 2		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		94	001	00	02	OF 08

TEXT

I. DESCRIPTION OF WHAT OCCURRED:

A. Initial Conditions:

From May 10, 1994 to May 13, 1994, Palo Verde Unit 2 was in Mode 1 (POWER OPERATION) operating at approximately 86 percent power.

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

Event Classification: Condition prohibited by the plant's Technical Specifications (TS).

On May 13, 1994, members of the Plant Review Board (PRB) (utility, nonlicensed) determined that Unit 2's Emergency Diesel Generator 'B' (EDG-B) (EK) had been inoperable from approximately 0448 MST on May 10, 1994 to approximately 0855 MST on May 13, 1994. For approximately 76 hours and 7 minutes, the Train B Diesel Generator Building essential exhaust fan (VJ) had been removed from service (i.e., breaker in the open position) with the fan's discharge damper (UDMP) wired in the closed position and had not been capable of performing its specified support function. The essential exhaust fan is necessary attendant equipment that is required for the EDG to perform its intended safety function. Therefore, EDG-B was inoperable and a condition prohibited by TS occurred when the unit did not comply with TS Limiting Condition for Operation (LCO) 3.8.1.1 ACTION b (i.e., restore the EDG to OPERABLE status within 72 hours). EDG-A remained operable during this event and was verified to be operable at approximately 1146 MST on May 13, 1994.

At approximately 0448 MST on May 10, 1994, Operations personnel (utility, licensed) removed the EDG-B essential exhaust fan from service (i.e., racked open the breaker) for minor weld repairs to and cleaning of the steel mesh discharge screen on the backdraft damper side of the fan. No work was scheduled to be performed on the fan or the damper. The essential exhaust fan breaker was racked in the open position to prevent automatic starting and to address personnel safety concerns during screen removal and replacement. Clearance tags were hung on the breaker and on the handswitch located in the EDG-B Control Room. Per the approved work authorization document, there was no impact on equipment operability or plant operations. The task was not expected to exceed approximately 16 hours. The work package was reviewed by planners, schedulers, and Operations personnel (utility, licensed and nonlicensed). Operations personnel evaluated the degraded essential exhaust fan condition and determined that the

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE	
Palo Verde Unit 2		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		94	001	00	03	OF 08

TEXT

operability of EDG-B was not impacted because the clearances could be removed and the essential exhaust fan could be manually started should EDG operation be required. In addition, Operations personnel took credit for the normal exhaust fan being operable.

On the evening of May 10, 1994, heating, ventilation, and air conditioning (HVAC) maintenance personnel (utility, nonlicensed) initiated the cleaning and repair work. Per the approved work authorization document, the clearance was verified, the screen was removed, a foreign material exclusion (FME) device was installed on the damper, and the screen was delivered to the utility group for cleaning. On the evening of May 11, 1994, HVAC maintenance personnel contacted the utility group and were informed that the screen had not been cleaned.

During shift turnover at approximately 0630 MST on May 12, 1994, the offgoing night Shift Supervisor (utility, licensed) expressed his concern to the oncoming day Shift Supervisor (utility, licensed) that the EDG-B essential exhaust fan had been out of service for approximately two days. Based on his discussion with HVAC maintenance personnel, the work was expected to be completed that day (i.e., May 12, 1994). The day Shift Supervisor recognized that TS LCO 3.3.3.5 (Remote Shutdown System Instrumentation) was impacted by the fan breaker being racked open and that the TS LCO 3.3.3.5 ACTION statement should have been entered when the fan was removed from service on May 10, 1994. Through out the day, the day Shift Supervisor remained in contact with the HVAC maintenance personnel emphasizing the importance of restoring the fan to service.

Operations personnel reevaluated the affect of the degraded fan condition on EDG operability, including a review of the EDG surveillance test procedure, and concluded that no operability concerns existed as long as the fan could be reenergized and manually started should EDG operation be required. By shift turnover at approximately 1830 MST on May 12, 1994, the cleaning and repair work had not been completed and the fan remained out of service. The oncoming night Shift Supervisor made a late entry in the Unit 2 Log for May 10, 1994 at 0448 MST indicating that TS LCO 3.3.3.5 ACTION statement was entered when the EDG-B essential exhaust fan had been removed from service.

On the morning of May 13, 1994, Operations management (utility, licensed and nonlicensed) was included in continued discussion concerning EDG-B operability. Operations management decided to conservatively declare EDG-B inoperable due to EDG-B essential exhaust fan being deenergized for minor repairs and cleaning. In addition, Operations management developed an equipment restoration

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE	
Palo Verde Unit 2		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		94	001	00	04	OF 08

TEXT

plan which included addressing personnel safety and FME concerns by restricting access to the fan's discharge area while the screen was not in place; removing the clearance (i.e., reenergize the fan); testing the fan; and finally, restoring the essential exhaust fan and EDG-B to OPERABLE status.

At approximately 0756 MST on May 13, 1994, the Shift Supervisor declared EDG-B inoperable and entered TS LCO 3.8.1.1 ACTION b. During the process of restricting access to the fan's discharge area and removing the clearance, an auxiliary operator (utility, nonlicensed) discovered that the discharge damper had been wired in the closed position. HVAC maintenance personnel were contacted to removed the wire and restore the damper to a functional condition. It was determined at a later time that the damper was wired shut for FME concerns. The approved work authorization document specified that an FME cover/device should be installed once the screen was removed.

At approximately 0835 MST, the one hour surveillance requirement associated with TS LCO 3.8.1.1 ACTION b was completed.

Following the discovery of the discharge damper wired in the closed position, a special PRB meeting was convened at approximately 0835 MST to discuss EDG-B operability and adverse safety consequences or implications as a result of the wired damper. The essential exhaust fan which is necessary attendant equipment that is required for the EDG to perform its intended safety function was not capable of performing its specified support function with the essential exhaust fan deenergized and the fan's discharge damper wired in the closed position. The PRB determined that EDG-B had been inoperable from May 10, 1994 to May 13, 1994. The Operation management's equipment restoration plans continued during the PRB meeting. The EDG-B essential exhaust fan was tested and both the fan and EDG-B were returned to OPERABLE status. At approximately 0855 MST on May 13, 1994, ACTION statements for TS LCO 3.8.1.1 and TS LCO 3.3.3.5 were exited. For approximately 76 hours and 7 minutes, EDG-B was inoperable and a condition prohibited by TS occurred when the unit did not comply with TS LCO 3.8.1.1 ACTION b (i.e., restore the EDG to OPERABLE status within 72 hours).

At approximately 1146 MST on May 13, 1994, Control Room personnel performed the surveillance test for EDG-A to verify that it had been operable during the time period that EDG-B was determined to be inoperable. At approximately 1625 MST, EDG-A was stopped following successful completion of the surveillance test.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE	
Palo Verde Unit 2		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		9 4 -	0 0 1	- 0 0	0 5	OF 0 8

TEXT

Although Operations personnel failed to enter the TS LCO 3.3.3.5 ACTION statement at approximately 0448 on May 10, 1994, the applicable remote shutdown system disconnect switches and control circuits were returned to OPERABLE status within the 7 day TS LCO time period.

At approximately 1230 MST on May 13, 1994, work was initiated to complete the minor weld repairs and to clean the steel mesh discharge screen. At approximately 2200 MST, the screen was reinstalled and the essential exhaust fan retested.

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

As described in Section I.B, the essential exhaust fan, which is necessary attendant equipment that is required for the EDG to perform its intended safety function, was not capable of performing its specified support function with the essential exhaust fan deenergized and the fan's discharge damper, wired in the closed position. Both the essential exhaust fan and EDG-B had been inoperable from May 10, 1994 to May 13, 1994.

- 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 failures of components with multiple functions 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:

Although no component failure occurred, EDG was declared inoperable at approximately 0756 MST on May 13, 1994 following the discovery of the discharge damper wired in the closed position, and EDG-B was restored to OPERABLE status at approximately 0855 MST on May 13, 1994. Approximately 59 minutes elapsed from the determination that EDG-B was inoperable until EDG-B was returned to service.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE		
Palo Verde Unit 2		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		94	001	00	06	OF	08

TEXT

- 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.

- I. Cause of Event:

An investigation was performed under the APS Incident Investigation Program. The investigation determined that, although Operations personnel had reasonable expectation that the essential exhaust fan could be reenergized and manually started and that EDG-B was operable, Operations personnel failed to consider the essential exhaust fan as necessary attendant equipment that is required for the EDG to perform its intended safety function. Since the essential exhaust fan was not capable of performing its specified support function with the essential exhaust fan deenergized and the fan's discharge damper wired in the closed position, EDG-B had been inoperable for approximately 76 hours and 7 minutes (SALP Cause Code A: Personnel Error).

A subsequent review of the EDG surveillance test procedure and its implementing procedures identified a step in an EDG-B Building HVAC implementing procedure which clearly states that the EDGs shall be declared inoperable when the essential HVAC units are to be shutdown (breakers open to prevent automatic start). Although there were no procedural errors which contributed to this event, the investigation team determined that if the step in the implementing procedure had been located in the EDG surveillance test procedure, this event would not have occurred.

The failure to enter TS LCO 3.3.3.5 on May 10, 1994 was attributed to a cognitive personnel error by the Shift Supervisor.

No unusual characteristics of the work location (e.g., noise, heat, poor lighting) directly contributed to this event.

- J. Safety System Response:

Not applicable - there were no safety system responses and none were necessary.

- K. Failed Component Information:

Not applicable - no component failures were involved.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE	
Palo Verde Unit 2		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		94	001	00	07	OF 08

TEXT

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

Emergency diesel generators function as an independent standby source of AC power to the two trains of ESF equipment for safe plant shutdown and decay heat removal in the event of a loss of offsite power. In accordance with the Updated Final Safety Analysis Report (FSAR) Section 9.4.7, the EDG building HVAC system shall be designed to maintain the temperatures within the limits required [i.e., maximum of 140 degrees Fahrenheit(F)] to ensure the operability of the equipment during emergency conditions. The EDG room is ventilated using one 100 percent essential exhaust fan to maintain the temperature within the specified limits during operation. During essential operation, the exhaust fan will induce flow of outside air through the outside ventilation air intake over the heat-producing equipment (i.e., EDG) to pick up the heat load, and exhaust the heated air to the atmosphere. A room thermostat controls operation of the exhaust fan which limits the room air temperature to 140 degrees F. During normal operation, the room is ventilated by a normal exhaust fan to limit the air temperature to 122 degrees F.

With the fan's breaker in the open position and with the fan's discharge damper wired in the closed position, the essential exhaust fan was not capable of performing its specified support function. Although EDG-B was inoperable because its necessary attendant equipment was unavailable, EDG-B would have started and performed its intended safety function for some period of time prior to room temperatures exceeding 140 degrees F. From early May 10 to the morning of May 13, 1994, there were no high outside temperature concerns. The highest one-hour average in degrees F for May 10, 1994 was 81.8, for May 11, 1994 was 82.3, and for May 12, 1994 was 88.9. A contingency plan was in place for Operations personnel to reenergize and manually start the fan should EDG operation be required. With the damper wired closed, even if the fan failed to trip on a no-flow condition, Operations personnel would have recognized the closed damper and restored the fan to OPERABLE status. As discussed in Section I.B and I.G, it took less than one hour to restore the fan to service (i.e., restrict access, remove the wire and the clearance, and test the fan) and declare the essential exhaust fan and EDG-B OPERABLE following the Shift Supervisor declaring EDG-B inoperable at 0756 MST.

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 the health and safety of the public. The event did not result in any challenges to the fission product barriers or result in any releases of radioactive materials.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE	
Palo Verde Unit 2		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		9 4	0 0 1	0 0	0 8	OF 0 8

TEXT

III. CORRECTIVE ACTION:

A. Immediate:

At approximately 0855 MST on May 13, 1994, the EDG-B essential exhaust fan was tested and both the fan and EDG-B were returned to OPERABLE status. EDG-A remained operable and was verified to be operable at approximately 1146 MST on May 13, 1994.

B. Action to Prevent Recurrence:

On May 19, 1994, a maintenance organization newsflash was distributed which discussed the event and the importance of communicating the entire scope of work with Operations personnel, specifically, if additional actions, such as securing a damper, are necessary.

A night order was written in Units 1, 2, and 3 clearly stating that the EDG is inoperable when the essential exhaust fan is shutdown (breakers open to prevent autostart).

The Shift Supervisor was disciplined in accordance with the APS Positive Discipline Program for failing to enter the TS LCO 3.3.3.5 ACTION statement.

Additional actions to prevent recurrence are being tracked under the Commitment Action Tracking System. These actions include revisions to applicable procedures and to the model work authorization document.

IV. PREVIOUS SIMILAR EVENTS:

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

