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BRADISH,T.R. Alabama Public Service Co.
LEVINE,J.M. Alabama Public Service Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 92-003-00:on 920527,spurious fuel bldg essential ventilation sys actuation occurred.Caused by an age re intermittent failure fo KERIC units output relay.KERIC unit for RU-145 was replaced.W/920623 ltr.

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JAMES M. LEVINE
VICE PRESIDENT
NUCLEAR PRODUCTION

192-00791-JML/TRB/PJC
June 23, 1992

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 2
Docket No. STN 50-529 (License No. NPF-51)
Licensee Event Report 92-003-00
File: 92-020-404

Attached please find Licensee Event Report (LER) No. 92-003-00 prepared and submitted pursuant to 10CFR50.73. This LER documents a Unit 2 spurious Train B Fuel Building Essential Ventilation Actuation System (FBEVAS) actuation on the Balance of Plant Engineered Safety Features Actuation System. 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) 393-5421.

Very truly yours,

James M Levine

JML/TRB/PJC/mh

Attachment

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

IE22
1/1

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Palo Verde Unit 2	0 5 0 0 0 5 2 9	1 OF 0 6

TITLE (4)
Spurious Fuel Building Essential Ventilation System Actuation

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)
									N/A	0 5 0 0 0
0 5	2 7	9 2	9 2	0 0 3	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)	X 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)(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)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
Thomas R. Bradish, Compliance Manager	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 NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	
E	I L	9 4	K 0 2 0	N							

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On May 27, 1992, at approximately 1439 MST, Palo Verde Unit 2 was in Mode 1 (POWER OPERATION) at approximately 100 per cent power when a spurious Train B Fuel Building Essential Ventilation Actuation System (FBEVAS) actuation occurred on the Balance of Plant Engineered Safety Features Actuation System (BOP ESFAS). The Train B FBEVAS resulted in the designed cross trips of Train A FBEVAS and Trains A and B of the Control Room Essential Filtration Actuation System (CREFAS). All equipment operated as designed. Unit 2 personnel verified that radiation levels and activity levels in the Fuel Building (ND) were normal.

The apparent cause of the FBEVAS and CREFAS actuations is the age-related degradation of the output relay in the Kaman Electronic remote indication and control (KERIC) unit. The KERIC unit was replaced. The investigation into the event is still in progress.

There have been no previous events reported pursuant to 10CFR50.73 which resulted from the same root cause.

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Palo Verde Unit 2	0 5 0 0 0 5 2 9	9 2	– 0 0 3	– 0 0	0 2 OF 0 6

TEXT

I. DESCRIPTION OF WHAT OCCURRED:

A. Initial Conditions:

At 1439 MST on May 27, 1992, Palo Verde Unit 2 was in Mode 1 (POWER OPERATION) at approximately 100 per cent power.

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

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

At approximately 1439 MST on May 27, 1992, a spurious Train B Fuel Building Essential Ventilation Actuation System (FBEVAS) (VG) (JE) actuation occurred on the Balance of Plant Engineered Safety Features Actuation System (BOP ESFAS) (JE). The Train B FBEVAS resulted in the designed cross trips of Train A FBEVAS and Trains A and B of the Control Room Essential Filtration Actuation System (CREFAS) (VI) (JE). Control Room personnel (utility, licensed) responded to the alarms and verified that all equipment operated as designed. The Train B, low range, Fuel Building Ventilation Exhaust Monitor (RU-145) (VG) (IL) (RI) provides the trip signal to Train B FBEVAS. There were no radiation alarms, and a review of the Radiation Monitoring System (RMS) (IL) data indicated that the FBEVAS trip signal did not originate from RU-145. No abnormal effluent activity levels were recorded by the monitor, and Unit 2 personnel (utility, licensed and non-licensed) verified that radiation levels and activity levels in the Fuel Building (ND) were normal. At the time of the event, no work was in progress on any RMS or BOP ESFAS equipment, nor were any fuel handling activities in progress.

The FBEVAS Train B module was placed in bypass and all actuated equipment was left in operation pending engineering evaluation and troubleshooting. On May 28, 1992, at approximately 1220 MST, the Train B FBEVAS was removed from bypass, and the actuated equipment was restored to a standby condition.

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

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:

In accordance with the APS Incident Investigation Program, Engineering personnel developed an action plan to inspect and test components associated with the BOP ESFAS cabinet and RU-145's Kaman Electronic remote indication and control (KERIC) unit. At approximately 1754 MST, the FBEVAS Train B module was placed in bypass to support the investigation effort. The module was reset, but all actuated equipment was kept operating. The visual inspection and initial testing did not result in identification of a problem(s) with components in either cabinet. The FBEVAS Train B module appeared to be functioning per design.

A recorder was then installed between the output of the KERIC unit and the input of the BOP ESFAS cabinet. On May 28, 1992, at approximately 1220 MST, the Train B FBEVAS was removed from bypass and the actuated equipment was restored to a standby condition with the recorder still in place.

An Engineering review of recorder data compiled between May 27 and June 3, 1992, revealed that the KERIC relay contacts for RU-145 which would initiate a FBEVAS signal attempted to open on three separate occasions and tripped the recorder; however, a cause for the recorder trips has not yet been determined. There were no further trips on the BOP ESFAS. A replacement KERIC unit for RU-145 was installed. At present, Engineering attributes the FBEVAS to an apparent age-related, intermittent malfunction of the KERIC unit's output relay.

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

RU-145's field unit (detector and microcomputer) communicates with a microcomputer-controlled remote indication and control (KERIC) unit located in a BOP ESFAS RMS cabinet in the Control Room. The KERIC unit provides continuous remote indication of the current radiation and activity levels at the field unit's location in the Fuel Building. The KERIC unit automatically initiates a signal to the BOP ESFAS on a high-high activity alarm.

At approximately 1439 MST on May 27, 1992, the KERIC relay contacts for RU-145 apparently opened without a signal from the field unit's sensors which resulted in a fail safe signal being sent to the BOP ESFAS and a subsequent, spurious Train B FBEVAS actuation. The apparent cause of the actuation is the age-related degradation of the KERIC output relay; however, the investigation is not complete, and testing on the KERIC unit continues.

TEXT

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

Not applicable - The output relay in the KERIC unit for RU-145 does not have multiple functions.

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 - The apparent malfunction of the KERIC unit's output relay did not result in a safety system train being inoperable.

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

The apparent malfunction associated with the KERIC unit's output relay was identified during testing in accordance with APS' Incident Investigation Program. No procedural or personnel errors which could have contributed to this event have been identified.

I. Cause of Event:

As discussed above, the apparent cause of this event is an age-related intermittent failure of the KERIC unit's output relay (SALP Cause Code E: Component Failure). Testing on the KERIC unit is still in progress. Should the completed event investigation identify a root cause which is different from the apparent cause discussed herein, a supplement to this report will be issued.

No unusual characteristics of the work location (e.g., noise, heat, poor lighting) contributed to this event. The event was not a result of personnel or procedural errors.

J. Safety System Response:

The following safety system responses occurred:

- Fuel Building Essential Ventilation System (VG), Trains A and B,
- Control Room Essential Ventilation System (VI), Trains A and B,
- Essential Chilled Water System (KM), Trains A and B,
- Essential Cooling Water System (BI), Trains A and B, and
- Essential Spray Pond System (BS), Trains A and B.

K. Failed Component Information:

The component that apparently failed is the output relay in the Kaman Electronic remote indication and control (KERIC) unit. This is a circuit board-mounted relay manufactured by Aromat. The relay is model No. NC2D-JP-DC-24V.

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

Channel B for Fuel Building Ventilation Exhaust Monitoring consists of two gaseous radiation monitors (RU-145 and RU-146) located in the Fuel Building normal exhaust duct (VG) (DUCT). Monitors RU-145 and RU-146 monitor the Fuel Building ventilation exhaust for release of activity due to a fuel handling accident. RU-145 performs the safety function of isolating the normal ventilation system and activating the essential ventilation system (initiates a FBEVAS signal on BOP ESFAS) on a high-high activity alarm. RU-145, the low range monitor, works in tandem with RU-146, the high range monitor. Normal configuration consists of RU-145 in operation and RU-146 in standby. When RU-145 reaches its predetermined setpoint, RU-146 starts, and RU-145 goes to standby. As discussed in Section I.B, Unit 2 personnel verified that radiation levels and activity levels in the Fuel Building were normal. All equipment designed to respond to the actuation signals operated as expected.

The event did not result in any challenges to the fission product barriers or result in the release of radioactive materials. Therefore, no safety consequences or implications resulted from this event, and there was no adverse effect on the safe operation of the plant or the health and safety of the public.

III. CORRECTIVE ACTION:

A. Immediate:

As immediate corrective action, Unit 2 personnel verified that no abnormal radiation levels or activity levels were present in the Fuel Building (ND). The KERIC unit for RU-145 was replaced.

B. Action to Prevent Recurrence:

This event is still under investigation. The apparent age-related degradation of the KERIC unit's output relay cannot be detected through normal testing, and this is the first suspected age-related failure of this relay. Engineering considers the service

TEXT

performance record of the relay to be acceptable. Therefore, APS does not currently plan to establish a periodic replacement interval for the relay. Further corrective actions to prevent recurrence are not deemed necessary at this time.

IV. PREVIOUS SIMILAR EVENTS:

There have been no previous similar events reported pursuant to 10CFR50.73 which resulted from the apparent age-related degradation of a KERIC output relay.