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SUBJECT: LER 89-009-01:on 890728,inadvertent fuel bldg essential ventilation ESF actuation.

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192-00555-JML/TDS/JEM
November 30, 1989

JAMES M LEVINE
VICE PRESIDENT
NUCLEAR PRODUCTION

U. S. Nuclear Regulatory Commission
NRC Document Control Desk
Washington, D.C. 20555

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 3
Docket No. STN 50-530 (License NPF-74)
Licensee Event Report 89-009-01
File: 89-020-404

Attached please find Supplement Number 1 to Licensee Event Report (LER) No. 89-009-00 prepared and submitted pursuant to the requirements of 10CFR 50.73. This supplement is being provided to revise the estimated completion date for performing a root cause of failure investigation. In accordance with 10CFR 50.73(d), we are herewith forwarding a copy of this report to the Regional Administrator of the Region V Office.

If you have any questions, please contact T. D. Shriver, Compliance Manager at (602) 393-2521.

Very truly yours,

James M Levine

JML/TDS/JEM/kj

Attachment

cc: W. F. Conway (all w/a)
E. E. Van Brunt
J. B. Martin
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NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WTH THIS INFORMATION COLLECTION REQUEST: 50.0 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.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Palo Verde Unit 3	0 5 0 0 0 5 3 0	1 OF 0 7

TITLE (4)

Inadvertent Fuel Building Essential Ventilation ESF 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)
0 7	2 8	8 9	8 9	0 0 9	0 1	1 1	3 0	8 9	N/A	0 5 0 0 0
									N/A	0 5 0 0 0

OPERATING MODE (9)	6	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)							
POWER LEVEL (10)	0 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
Timothy D. Shriver, Compliance Manager	6 0 2 3 9 3 - 2 5 2 1 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	
X	V I	B K R	G 1 8 4	N							

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X YES (If yes, complete EXPECTED SUBMISSION DATE)	NO		0 1	3 1	9 0

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

At approximately 0430 MST on July 28, 1989, Palo Verde Unit 3 was in Mode 6 (REFUELING) with the Reactor Coolant System at ambient temperature and core reloading in progress when an inadvertent Train "A" Fuel Building Essential Ventilation Actuation Signal (FBEVAS) was initiated on the Balance of Plant Engineered Safety Feature Actuation System. The Train "A" FBEVAS resulted in the designed cross-trips of Train "B" FBEVAS and Train "A" and "B" Control Room Essential Filtration Actuation Signals (CREFAS). The actuation occurred when a Maintenance individual reset the Spent Fuel Pool Area Radiation Monitor (RU-31) Remote Indicating and Control Unit without ensuring that the channel was placed in "bypass." Following the actuation, Control Room Essential Ventilation System Train "B" fan tripped. All other components operated as designed. Radiation Protection personnel verified that no actual high radiation levels existed in the area of the Spent Fuel Pool Area Monitor.

The root cause of this event was a cognitive personnel error by an APS Maintenance individual who did not ensure that RU-31 was placed in bypass in accordance with approved procedures. As corrective action, the individual has been counseled.

Previous similar events were reported in LER's 528/85-033 and 528/87-026.

I. DESCRIPTION OF WHAT OCCURRED:

A. Initial Conditions:

At approximately 0430 MST on July 28, 1989, Palo Verde Unit 3 was in Mode 6 (REFUELING) with the Reactor Coolant System (RCS)(AB) at ambient temperature. Core (AC) reloading was in progress.

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

Event Classification: Engineered Safety Feature Actuation.

At approximately 0430 MST on July 28, 1989, an inadvertent Train "A" Fuel Building Essential Ventilation Actuation Signal (FBEVAS)(VG)(JE) was initiated on the Balance of Plant Engineered Safety Feature Actuation System (BOP ESFAS)(JE). The Train "A" FBEVAS resulted in the designed cross-trips of Train "B" FBEVAS and Train "A" and "B" Control Room Essential Filtration Actuation Signals (CREFAS)(VI)(JE). The actuations occurred when a maintenance individual (utility, non-licensed) reset the Spent Fuel Pool Area Radiation Monitor (RU-31)(ND)(IL)(RI) Remote Indicating and Control Unit (CPU) without ensuring that the channel was placed in "bypass." Following the actuation, Control Room Essential Ventilation System (VI) Train "B" fan (FAN) tripped. All other components operated as designed. Radiation Protection personnel (utility, non-licensed) verified that no actual high radiation levels existed in the area of the Spent Fuel Pool Area Monitor (RU-31).

RU-31 monitors for a release of activity due to a fuel handling accident in the Fuel Building (ND). This monitor provides a HIGH-HIGH dose rate alarm (RA) initiation signal via its Remote Indicating and Control Unit to BOP ESFAS which performs the safety function of isolating the normal ventilation system (VG) and activating the essential ventilation system. To prevent inadvertent ESF actuations during testing, troubleshooting, or calibration activities, it is necessary that the radiation monitor be removed from the on-line mode and placed in the bypass mode at the BOP ESFAS panel (PNL). The bypass mode allows the operation of the various monitor interlocks (IEL) and trips for functional testing, but does not allow the monitor to actively interface with BOP ESFAS. Therefore, trip signals generated as a normal consequence of testing and calibration activities do not result in unnecessary ESF actuations.

Prior to the event, at approximately 0425 MST on July 28, 1989, the Unit 3 Spent Fuel Pool Area Radiation Monitor (RU-31) went off-line

(i.e., would not communicate with its Remote Indicating and Control Unit). RU-31 was declared inoperable and Fuel Building Essential Ventilation was initiated pursuant to Technical Specification 3.3.3.1 ACTION requirements. Radiation Protection personnel (utility, non-licensed) were unsuccessful in attempts to reset the monitor; therefore, they contacted Instrumentation & Control (I&C) Maintenance personnel (utility, non-licensed) for assistance. A maintenance individual went to the Remote Indicating and Control (RIC) Unit for RU-31 and noted that the RIC was not functioning properly (i.e., locked-up). The individual was aware of an investigation of a ground isolation elsewhere in the plant and believed that this had resulted in power supply (JX) perturbations which would cause RU-31 to "lock-up" and go off-line.

In order to reset the RIC, it is necessary to momentarily de-energize the Unit by either pressing the reset button or pulling the power supply fuse (FU). However, since a loss of power to the RIC and/or RU-31 will cause a Train "A" FBEVAS, it is necessary to place Train "A" FBEVAS in bypass prior to de-energizing the RIC to prevent an inadvertent ESF actuation.

At approximately 0430 MST, the individual de-energized the RIC without first contacting Control Room personnel (utility, licensed) and having Train "A" FBEVAS placed in bypass per approved procedures. This resulted in a Train "A" FBEVAS and designed cross trips of Train "B" FBEVAS and Train "A" and "B" CREFAS's. The BOP ESF actuation signals resulted in actuations of the Fuel Building Essential Ventilation System (VG) Trains "A" and "B", the Control Room Essential Ventilation System (VI) Trains "A" and "B", the Essential Chilled Water System (KM) Trains "A" and "B", the Essential Cooling Water System (BI) Trains "A" and "B" and the Essential Spray Pond System (BS) Trains "A" and "B". Following the actuations, the Train "B" Control Room Essential Ventilation System fan tripped. All other components operated as designed.

The BOP ESF actuations were identified by Control Room personnel (utility, licensed) as a result of main control board (MCBD) annunciations (ANN). There were no operator actions which contributed to the cause of this event. No other ESF actuations occurred and none were necessary. Operations personnel verified that the ESF actuations did not occur as a result of high radiation levels in the Fuel Building.

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

Prior to the event, the Spent Fuel Pool Area Radiation Monitor (RU-31) was inoperable as discussed in Section I.B. No other

structures, systems, or components were inoperable at the start of the event which contributed to the event.

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

The cause of Control Room Essential Ventilation System Train "B", fan tripping was an intermittent failure in the fan's power supply breaker (BKR). The cause of the power supply breaker malfunction is under investigation in accordance with the APS root cause evaluation program. The investigation to determine the root cause is expected to be completed by December 31, 1989. The results of the investigation will be reported in a supplement to this LER expected to be submitted by January 30, 1990.

The cause of the Spent Fuel Pool Area Radiation Monitor (RU-31) communication problem discussed in Section I.B could not be determined. Troubleshooting was conducted in accordance with an approved work authorization document and no problems were discovered. After resetting the monitor, the monitor operated properly and was returned to service at approximately 2151 MST on July 28, 1989.

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

The cause of the intermittent failure in the Control Room Essential Ventilation System Train "B" fan power supply breaker is under investigation as described in Section I.D. The intermittent failure resulted in a loss of power to the Control Room Essential Air Handling Unit fan which resulted in Train "B" Control Room Ventilation not functioning (i.e., no air flow). This did not result in a loss of Control Room Ventilation since the 'A" Train started and operated properly. Each train is designed to provide 100 percent capacity.

The Spent Fuel Pool Area Radiation Monitor (RU-31) problem discussed in Sections I.B and I.D resulted in the inability to remotely access RU-31 indicated radiation levels and the inability of the monitor to initiate a FBEVAS if a HIGH-HIGH alarm condition occurred.

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

Not applicable - no component failures occurred which had multiple functions.

G. For failures 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:

Control Room Essential Ventilation System Train "B" was inoperable from approximately 0430 MST on July 28, 1989 until it was returned to service at approximately 0041 MST on August 12, 1989. Train "B" was inoperable approximately 14 days 20 hours. During this period of inoperability, "A" Train Control Room Essential Ventilation remained operable.

No other failures occurred which rendered a train of a safety system inoperable; however, the Spent Fuel Pool Area Radiation Monitor (RU-31) was inoperable from approximately 0425 MST on July 28, 1989 until it was returned to service at approximately 2151 MST on July 28, 1989. RU-31 was inoperable approximately 17 hours 26 minutes.

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

The intermittent failure in the Control Room Ventilation System Train "B" fan power supply breaker was discovered during troubleshooting conducted after the event. The Spent Fuel Pool Area Radiation Monitor (RU-31) communication problem was discovered by Control Room personnel via local annunciation in the Control Room and subsequent investigation by Radiation Protection personnel. There were no procedural errors discovered.

I. Cause of Event:

The cause of the event was a cognitive personnel error on the part of the APS individual (utility, non-licensed) responsible for resetting the Spent Fuel Pool Area Radiation Monitor (RU-31) Remote Indicating and Control Unit (RIC) without first notifying Control Room personnel and ensuring that the monitor was placed in bypass. The error was contrary to approved procedural controls and cautionary labeling affixed to the RIC. There were no procedural errors or deficiencies that contributed to the event. There were no unusual characteristics of the work location that directly contributed to the event.

The cause of the equipment malfunctions are described in Section I.D.

J. Safety System Response:

The following automatic safety system responses occurred:

- Fuel Building Essential Ventilation
- Control Room Essential Ventilation
- Essential Chilled Water System
- Essential Cooling Water System
- Essential Spray Pond System

K. Failed Component Information:

The failed breaker is manufactured by Brown Boveri Co. It is a 480 volt Model K-600S.

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

There were no safety consequences or implications resulting from the ESF actuation. The Spent Fuel Pool Area Monitor (RU-31) monitors for a release of activity due to a fuel handling accident in the Fuel Building. RU-31 performs the safety function of initiating an isolation of the normal ventilation system and activating the essential ventilation system on a HIGH-HIGH dose rate alarm. As discussed in Section I.B., Fuel Building Essential Ventilation was started by Control Room personnel when RU-31 became inoperable. RU-31 continued to monitor radiation levels at the time of the event initiation and no abnormal radiation levels were detected. Additionally, Radiation Protection personnel verified that no abnormal radiation levels existed. There was no fuel handling accident which initiated this event.

There were no safety consequences resulting from the malfunctioning Train "B" Control Room Essential Ventilation fan/breaker as Train "A" started properly and provided 100 percent capacity Control Room Essential Ventilation.

III. CORRECTIVE ACTIONS:

A. Immediate:

As immediate corrective action, Radiation Protection personnel (utility, non-licensed) verified that no abnormal radiation levels existed and Control Room personnel (utility, licensed) verified that the FBEVAS was not the result of a fuel handling accident.

B. Action to Prevent Recurrence:

An investigation of this event was conducted in accordance with the PVNGS Incident Investigation Program. As corrective action to prevent recurrence, the involved individual was counseled.

Additionally, the events described in this LER will be included in routine training provided to Unit 1, 2, and 3 I&C Maintenance personnel.

IV. PREVIOUS SIMILAR EVENTS:

Previous similar events were reported in Unit 1 LER's 528/85-033 and 528/87-026. As discussed in Section I.I, the cause of the event reported in this LER (530/89-009) was a cognitive personnel error. Cognitive personnel errors are primarily the result of mental lapses and are not normally correctable with revised procedures or additional training. Therefore, the corrective actions for the previous events would not have prevented this event. It should be noted that corrective actions for previous events were successful in preventing recurrence of the event for approximately two years and that this is the first event of this type which has occurred in Unit 3.