ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8801140122 DOC.DATE: 88/01/07 NOTARIZED: NO DOCKET #
FACIL:STN-50-528 Palo Verde Nuclear Station, Unit 1, Arizona Publi 05000528
AUTH.NAME AUTHOR AFFILIATION
MALIK,J.E. Arizona Nuclear Power Project (formerly Arizona Public Serv
HAYNES,J.G. Arizona Nuclear Power Project (formerly Arizona Public Serv
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 87-016-01:on 870609,both trains of ESF pump room air exhaust cleanup sys inoperable due to personnel error.

W/8 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 5
TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:Standardized plant. 05000528

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	PD5 LA	1	1	PD5 PD	1	1
	LICITRA,E	1	1	DAVIS,M	1	1
INTERNAL:	ACRS MICHELSON	1	1	ACRS MOELLER	2	2
	AEOD/DOA	1	1	AEOD/DSP/NAS	1	1
	AEOD/DSP/ROAB	2	2	AEOD/DSP/TPAB	1	1
	ARM/DCTS/DAB	1	1	DEDRO	1	1
	NRR/DEST/ADS	1	0	NRR/DEST/CEB	1	1
	NRR/DEST/ELB	1	1	NRR/DEST/ICSB	1	1
	NRR/DEST/MEB	1	1	NRR/DEST/MTB	1	1
	NRR/DEST/PSB	1	1	NRR/DEST/RSB	1	1
	NRR/DEST/SGB	1	1	NRR/DLPQ/HFB	1	1
	NRR/DLPQ/QAB	1	1	NRR/DOEA/EAB	1	1
	NRR/DREP/RAB	1	1	NRR/DREP/RPB	2	2
	NRR/DRIS/SIB	1	1	NRR/PMAS/ILRB	1	1
	REG FILE 02	1	1	RES DEPY GI	1	1
	RES TELFORD,J	1	1	RES/DE/EIB	1	1
	RGN5 FILE 01	1	1			
EXTERNAL:	EG&G GROH,M	5	5	FORD BLDG HOY,A	1	1
	H ST LOBBY WARD	1	1	LPDR	1	1
	NRC PDR	1	1	NSIC HARRIS,J	1	1
	NSIC MAYS,G	1	1			
NOTES:		1	1			

TOTAL NUMBER OF COPIES REQUIRED: LTTR 48 ENCL 47

R I D S / A D D S

R I D S / A D D S

Arizona Nuclear Power Project
P.O. BOX 52034 • PHOENIX, ARIZONA 85072-2034

192-00325-JGH/JEM
January 7, 1988

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

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 1
Docket No. STN 50-528
Licensee Event Report 1-87-016-00
File: 87-020-404

Attached please find Supplement No. 1 to Licensee Event Report (LER No. 87-016-00 prepared and submitted pursuant to the requirements of 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 J. E. Malik, (Acting) Compliance Lead at (602) 393-3531.

Very truly yours,

J. G. Haynes
Vice President
Nuclear Production

JGH/JEM/kj

Attachment

cc: O. M. DeMichele (all w/a)
E. E. Van Brunt, Jr.
J. B. Martin
J. R. Ball
R. C. Sorensen
E. A. Licitra
A. C. Gehr
INPO Records Center

IE22
1/1

NRC Form 366 (9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Palo Verde Unit 1	0 5 0 0 0 5 2 8	1 OF 0 4

TITLE (4) Both Trains of ESF Pump Room Air Exhaust Cleanup System Inoperable Due to Personnel Error in Scheduling Maintenance Activities

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 6	0 9	8 7	8 7	— 0 1 6	— 0 1	0 1	0 7	8 8	N/A	0 5 0 0 0

OPERATING MODE (9)	1
POWER LEVEL (10)	1 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

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)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.405(a)(1)(iii)	X 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
J. E. Malik, (Acting) Compliance Lead	AREA CODE 6 0 2 — 3 9 3 - 3 5 2 7

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
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On June 11, 1987 it was discovered that between 1700 and 2330 MST on June 9, 1987, with Palo Verde Unit 1 in Mode 1 (POWER OPERATION) operating at 100 percent power, both trains of the Engineered Safety Feature (ESF) Pump Room Air Exhaust Cleanup System (PRAECS) were rendered inoperable at the same time.

While reviewing the work completed during a recent Fuel Building Essential Ventilation Train "B" online outage, the on-shift Shift Supervisor discovered that the combination of two separate maintenance activities may have rendered both trains of the ESF PRAECS inoperable. Based on further evaluation, if the operable Train "A" of the ESF PRAECS had been started following a Safety Injection Actuation Signal, the ability to exhaust the Technical Specification required flowrate from the Auxiliary Building below the 100' elevation would have been impaired.

The root cause of the event was a cognitive personnel error by the Work Control Shift Supervisor who did not recognize that concurrent maintenance activities such as these would render the system inoperable.

As corrective action to prevent recurrence, a report of the event has been issued to the appropriate Operations, Maintenance and Work Control personnel, warning tags have been placed on the appropriate equipment to help prevent cross ties between ventilation systems, and a procedure will be developed to provide guidance for the preparation of Online Outages.

IE22 1/1

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Palo Verde Unit 1	0 5 0 0 0 5 2 8	8 7	— 0 1 6	— 0 1	0 2 OF 0 4

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

On June 22, 1987, it was discovered that between 1700 and 2330 MST on June 9, 1987, with Palo Verde Unit 1 in Mode 1 (POWER OPERATION) operating at 100 percent power, both trains of the Engineered Safety Feature (ESF) Pump Room Air Exhaust Cleanup System (PRAECS)(VF) were rendered inoperable. With both trains of ESF PRAECS inoperable, the ACTION Statement for Technical Specification 3.7.8 was exceeded and Limiting Condition for Operation 3.0.3 should have been entered.

During ESF PRAECS operation following the receipt of a Safety Injection Actuation Signal (SIAS)(JE), the levels below the 100' elevation of the Auxiliary Building (NF) are isolated from the upper levels by the automatic closure of essential isolation dampers (BDMP). Air is then exhausted from the lower levels of the Auxiliary Building via a common connecting tunnel to the Fuel Building (ND) Air Filtration Units (AFU)(HFA-J01 and HFB-J01) and then to the atmosphere. Technical Specification Surveillance Requirement 4.7.8.b.3 requires that an ESF PRAECS flowrate of 6000 cubic feet per minute (cfm) +/- 10 percent be maintained from the Auxiliary Building.

While reviewing the work completed during a recent Fuel Building Essential Ventilation System (FBEVCS)(VG) Train "B" online outage, the onshift Shift Supervisor (utility-licensed) identified that the combination of having the Train "B" essential AFU (HFB-J01) door(s) open and the Train "B" essential isolation damper (HFB-M06)(BDMP) open may have rendered both trains of ESF PRAECS inoperable. AFU HFB-J01 door(s) were open for door seal replacement and damper HFB-M06 (which is located inside of HFB-J01) was intentionally opened to rework the damper's actuator (HCU). If the operable Train "A" of the ESF PRAECS had to be started following a SIAS, the ability to exhaust the Technical Specification required flowrate from the Auxiliary Building below the 100' elevation would have been impaired. Subsequent testing conducted under an approved work order in Palo Verde Unit 3 on June 16, 1987 confirmed that approximately 3000 cfm could be exhausted from the Auxiliary Building under worst case system configuration vice the required 6000 cfm.

The original June Online Outage Schedule identified a work order to replace damper HFB-M06, at that time there was no work order for HFB-J01 door seal replacement listed. On June 9, 1987, the damper work order was amended to rework the damper actuator. During this time parts became available for the HFB-J01 door seal replacement and it was added to the outage schedule. The clearance was hung and the damper was de-energized (fails open) at approximately 0540 on June 9, 1987 and remained this way until 2212 on June 10, 1987. The work order for the seal replacement was initiated at 1700 on June 9, 1987 and the seals replaced by 2330 on June 9, 1987. Therefore, both trains of ESF PRAECS could have been inoperable for up to 6 1/2 hours. The root cause of the event was determined to be a cognitive personnel error by the Work Control Shift Supervisor (utility-licensed) who did not recognize that concurrent maintenance activities such as these would render the system inoperable. There were no specific procedural guidelines governing the development and approval of the Online Outage Schedule.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Palo Verde Unit 1	0 5 0 0 0 5 2 8	8 7	— 0 1 6	— 0 1	0 3 OF 0 4

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

At the time the event was discovered, the system configuration, as previously described, no longer existed since the AFU door(s) had been closed and the isolation damper had been shut. As corrective action to prevent recurrence, the following actions will/have been taken for Palo Verde Units 1, 2, and 3.

1) An Operations Department Experience Report and several Night Orders have been developed and issued to all Shift Supervisors to discuss this event with their crews. In addition, a copy of one of the Night Orders has been distributed to Work Control and Maintenance Control Center (HVAC) personnel for their information.

2) Warning tags have been placed on the doors of the Fuel Building essential AFUs, the Fuel Building Suction Dampers, and the large plugs which could cross tie the Fuel Building and Auxiliary Building as well as cross tie the Auxiliary Building above and below the 100' elevation.

3) Operation's Procedure "FUEL BUILDING HVAC (HF)" has been revised to include specific guidelines for allowing certain Fuel Building doors/inspection panels to be opened.

4) Engineering is conducting a design study to determine the allowable size of penetration openings within the system in order to ensure ESF PRAECS operability. The study will also include a review of the basis for Technical Specification flow requirements since the Unit 3 testing indicated that system operability is more dependent upon the relative pressures in the area than upon the amount of flow being exhausted from the Auxiliary Building.

5) The Plant Manager has issued a letter to onsite Managers and Supervisors discussing the precautions being implemented to ensure ESF PRAECS operability until the Engineering design study is completed and requesting that all personnel are made aware of the information.

6) The Day Shift Supervisor (utility-licensed) has discussed the event with the responsible Work Control Supervisor.

7) An administrative control procedure will be developed to provide guidance for the preparation of Online Outages. This procedure will address the concern regarding maintenance activities being conducted on one train of safety related equipment potentially rendering the other train of equipment inoperable.

The ESF PRAECS is required to control the release of airborne activity caused by leakage from below the 100' elevation in the Auxiliary Building (including the ESF pumps in the ESF equipment rooms) following a Loss of Coolant Accident (LOCA). Control of airborne radioactivity includes filtering releases from below the 100' elevation of the Auxiliary Building to the atmosphere as well as limiting releases to above the 100' elevation.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Palo Verde Unit 1	0 5 0 0 0 5 2 8	8 7	— 0 1 1 6	— 0 1	0 4 OF 0 4

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

Testing was performed in Palo Verde Unit 3 to measure the actual air flow from the Auxiliary Building and differential pressure between the ESF pump room area and the atmosphere under worst case conditions. The results indicate that 3000 cfm was being evacuated to the essential AFU (consisting of both High Efficiency Particulate Air and Charcoal Filters [FLT]) obtaining a subatmospheric pressure of -0.120" (water gauge). Based on a review of the test results and the Final Safety Analysis Report LOCA analysis, the releases to the atmosphere would still be within the allowable 10 CFR Part 100 limits and therefore would not adversely affect the health and safety of the public.

Engineering Evaluation 87-HA-020 has been dispositioned and it has been determined that dose contributions to PASS habitability from the area below the 100 foot level are negligible.

Tracer gas testing was performed with both the normal and essential ventilation in service simulating a SIAS without a loss of power in order to determine transport from below the 100 foot level to above the 100 foot level of the Auxiliary Building. On August 22, 1987 gas was injected into the "A" High Pressure Safety Injection (HPSI)(BQ), "A" Low Pressure Safety Injection (LPSI)(BP), and "A" Containment Spray (CS)(BE) pump rooms. Samples were then taken on the 100 foot and above levels. No tracer gas was detected above the 100 foot level. The test was repeated on August 23, 1987 with the injection gasses in the "B" HPSI, "B" LPSI, and "B" CS pump rooms. Again, no tracer gas was detected above the 100 foot elevation.

Based upon the sensitivity of the chromatographs used and the injection concentrations, isolation of better than 50,000 to one was achieved. Therefore, dose contributions to PASS habitability from the area below the 100 foot level are negligible.

There were no structures, components, or systems that were inoperable at the start of the event, other than those previously described, that contributed to the event. There were no unusual characteristics of the work location which contributed to the event. There were no automatic or manually initiated safety system responses.

There have been no previous similar events reported regarding the inoperability of two independent trains of a safety related system due to the inappropriate scheduling of maintenance activities.