

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8710080068 DOC. DATE: 87/10/01 NOTARIZED: NO DOCKET #
 FACIL: STN-50-528 Palo Verde Nuclear Station, Unit 1, Arizona Public 05000528
 AUTH. NAME AUTHOR AFFILIATION
 BRADISH, T. R. 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 87-024-00: on 870902, two DMA interface cards providing
 input to core operating limit supervisory sys found
 incorrectly installed. Caused by cognitive personnel error.
 Computer technician counseled. W/871001 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 ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR 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
	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	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

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Palo Verde Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 5 2 8										PAGE (3) 1 OF 0 4							
TITLE (4) Core Operating Limit Supervisory System Rendered Inoperable Due to Reversed Circuit Cards																											
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	9	0	2	8	7	0	2	4	0	0	1	0	0	1	8	7	N/A					0 5 0 0 0					
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																									
1		20.402(b)				20.406(c)				50.73(a)(2)(iv)				73.71(b)													
POWER LEVEL (10)		20.406(a)(1)(i)				50.36(e)(1)				50.73(a)(2)(v)				73.71(c)													
2		20.406(a)(1)(ii)				50.36(e)(2)				50.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 368A)													
		20.406(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(vii)(A)																	
		20.406(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(vii)(B)																	
		20.406(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(ix)																	
LICENSEE CONTACT FOR THIS LER (12)																											
NAME												TELEPHONE NUMBER															
Thomas R. Bradish, Compliance Supervisor												AREA CODE 6 0 2 3 9 3 - 3 5 3 1															
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																	
X	I	G	C	P	U	H	2	6	0	N																	
X	I	G	C	P	U	H	2	6	0	N																	
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)															
YES (If yes, complete EXPECTED SUBMISSION DATE)												X NO															
												MONTH DAY YEAR															

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

On September 2, 1987 at 0815 MST, with Unit 1 in Mode 1 (POWER OPERATION) operating at approximately 59 percent power, it was identified that two DMA Interface Cards providing input to the Core Operating Limit Supervisory System (COLSS) had been incorrectly installed. This rendered the COLSS inoperable. Technical Specifications 4.2.1.2 and 4.2.4.2 which require monitoring of certain reactor core operating characteristics every 2 hours when COLSS is inoperable above 20 percent rated thermal power were not met beginning at 0106 through 0815 on September 2, 1987.

The root cause of the event has been determined to be a cognitive personnel error by a computer technician who inadvertently reversed the two cards during troubleshooting under approved work order documents. The technician did not obtain independent verification of the serial numbers and addresses for the cards which were being changed during the troubleshooting efforts. This is contrary to an approved procedure (work order).

As immediate corrective action, the cards were returned to their correct locations and COLSS was restored to an operable status. In order to prevent recurrence, the computer technician has been counselled on the importance of the accuracy of his work as well as when it is necessary to have independent verifications conducted.

There have been no previous similar events reported.

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PDR ADDCK 05000528
S PDR

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO 3150-0104

EXPIRES: 8/31/88

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 2 4	- 0 0 0	0 2	OF 0 4	

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

On September 2, 1987 at 0815 MST, with Unit 1 in Mode 1 (POWER OPERATION) operating at approximately 59 percent power, it was identified that two DMA Interface Cards (CPU) had been incorrectly installed in Remote Input Subsystems (RIS) "B" and "D". This resulted in the Core Operating Limit Supervisory System (COLSS)(IG) receiving reversed incore detector (DET) signals for detectors processed through RIS's "B" and "D", thereby rendering COLSS inoperable. With COLSS inoperable, Technical Specification Surveillance Requirements (TSSR) 4.2.1.2 and 4.2.4.2 require monitoring of the reactor core (AC) operating characteristics Linear Heat Rate (LHR) and Departure from Nucleate Boiling Ratio (DNBR) margin every 2 hours when the unit is operated at greater than 20 percent rated thermal power. Unit 1 increased power above 20 percent at approximately 0106 on September 2, 1987. Therefore, for approximately 7 hours COLSS was inoperable and the TSSRs were not met. In addition, the ACTION Statement for Technical Specification 3.3.3.2 was exceeded since approximately 50 percent of the incore detectors were rendered inoperable due to the reversed cards.

While conducting routine monitoring of plant status during startup of Unit 1 on September 1, 1987, Operations identified that portions of the COLSS data being obtained were not as expected, but were still within the Technical Specification limits. Following discussions with Reactor Engineering, Unit 1 continued power ascension beyond 20 percent. On the morning of September 2, 1987, Reactor Engineering was comparing the results of the previous surveillance tests for incore detectors (72ST-9RX08) with data obtained at approximately 8 percent power and identified a potential discrepancy. Incore detectors which were known to be out of service were now operating and detectors which had been operating were now out of service. The Operations Computer Department investigated the problem and discovered that two DMA Interface Cards were reversed. This resulted in the computer (CPU) system considering RIS "B" incore detectors to be in the "D" quadrant of the reactor core and RIS "D" detectors in the "B" quadrant. The discovery of the improperly installed cards resulted in the COLSS being declared inoperable at 0815.

The root cause of the event has been determined to be a cognitive personnel error by a computer technician (utility non-licensed) who inadvertently reversed the cards while troubleshooting under approved work order documents. The troubleshooting consisted of changing cards between different RISs to determine which, if any, card(s) were not functioning properly. The technician did not obtain independent verification of the serial numbers and addresses for the cards which were being changed during the troubleshooting efforts. This is contrary to an approved procedure (work order). The cards which were identified as not functioning properly (Honeywell, Inc., Model Nos. 51302564 and 51302567) will be evaluated/reworked under the existing work control program.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO 3150-0104
EXPIRES: 8/31/88

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

TEXT (If more space is required, use additional NRC Form 368A's) (17)

As immediate corrective action, the required surveillance test (72ST-9RX03) was initiated at 0820 to meet the applicable Technical Specification ACTION Statements for the inoperable COLSS. Concurrently, the computer technician reinstalled the two cards in their correct locations and obtained independent verification of this action. Independent verification was also performed on those cards which had been removed/reinstalled during the troubleshooting work orders to ensure they were in their correct locations. The incore detector surveillance test (72ST-9RX08) was successfully completed and COLSS was declared operable at 1256 on September 2, 1987.

As corrective action to prevent recurrence, the technician has been counselled on the importance of the accuracy of his work as well as when it is necessary to have independent verifications conducted. As a prudent measure, the work order forms utilized for removal/reinstallation of components will be evaluated for adequacy. Upon completion of this evaluation, computer technicians who perform similar types of work will be briefed on the event, the requirements for independent verification of their work, and planned changes to the removal/reinstallation forms, if any.

The COLSS provides the plant operators a means of directly monitoring the reactor core status (LHR and DNBR) in order to ensure that the Technical Specification Limiting Conditions for Operation are maintained. However, it is the Core Protection Calculators (CPC)(JC) which utilize the incore detectors (DET) and initiate the automatic protective function (reactor trip) when the predetermined values for Local Power Density (same as Linear Heat Rate) and DNBR are exceeded. Although the values for LHR and DNBR margin could not be correctly monitored from 0106 through 0815 using COLSS, the CPCs were unaffected by the mispositioned cards and available during the event to provide the automatic protective function.

CPC Channel "D" (which represents approximately one quadrant of the reactor core) was monitored during the event by the Control Room Operators every 2 hours for Local Power Density (LPD) and DNBR margin as required by Operating Department Guideline No. 46. These values were within the Technical Specification values. The shiftly surveillance test (41ST-1ZZ33) which was performed at 2325 on September 1, 1987 prior to the event and at 1235 on September 2, 1987 after the event verified that the maximum deviation between the four channels of LPD and DNBR margin were within the limits specified in the surveillance test. A review of the maximum deviation values and CPC Channel "D" monitoring results indicate that the values for LPD and DNBR for the other three CPC channels would have been within the limits specified in the Technical Specifications. Also, the values which were obtained for LHR and DNBR margin during the performance of surveillance test 72ST-9RX03 following the discovery of the reversed cards were found to be within the acceptance criteria for all four CPC channels. Therefore, this event posed no threat to the health and safety of the public or to the safe operation of the plant.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/86

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 2 4	0 0	0 4	OF	0 4

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

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. Should other concerns or information pertinent to this event be discovered, a supplement to this report will be issued.

There have been no previous similar events reported.



Arizona Nuclear Power Project

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192-00284-JGH/TRB/TJB

October 1, 1987

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

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 1
Docket No. 50-528
Licensee Event Report 1-87-024-00
File: 87-020-404

Attached please find Licensee Event Report (LER) No. 1-87-024-00 prepared and submitted pursuant to 10CFR 50.73. In accordance with 10CFR 50.73(d), we are herewith 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 Supervisor at (602) 393-3531.

Very truly yours,

J. G. Haynes
Vice President
Nuclear Production

JGH/TJB/cld

Attachment

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

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