

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8707220032 DDC DATE: 87/07/13 NOTARIZED: NO DOCKET #  
 FACIL: 50-361 San Onofre Nuclear Station, Unit 2, Southern Californ 05000361  
 AUTH. NAME AUTHOR AFFILIATION  
 MORGAN, H. E. Southern California Edison Co.  
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 87-008-00: on 870613, determined that one of two rod position indication channels required by Tech Spec 3.1.3.2 inoperable. Caused by delay in programmed time for computer to receive data. Computer reprogrammed. W/870713 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 4  
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: ELD Chandler 1cy.

05000361

RECIPIENT		COPIES		RECIPIENT		COPIES	
ID CODE/NAME		LTTR	ENCL	ID CODE/NAME		LTTR	ENCL
PD5 LA		1	1	PD5 PD		1	1
ROOD, H		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/ADE		1	0
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/BMAS/ILRB		1	1	NRR/PMAS/PTSB		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) SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 2										DOCKET NUMBER (2) 0 5 0 0 0 3 6 1				PAGE (3) 1 OF 0 3	
TITLE (4) ENTRY INTO TECHNICAL SPECIFICATION 3.0.3 - CONTROL ROD POSITION INDICATION INOPERABLE															
EVENT DATE (5)			LER NUMBER (6)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)					
MONTH	DAY	YEAR	YEAR	SEQ. NUMBER	REV. NUMBER	MONTH	DAY	YEAR	FACILITY NAMES				DOCKET NUMBER(S)		
0 6	1 3	8 7	8 7	0 0 8	0 0	0 7	1 3	8 7					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)													
POWER LEVEL (10)		1 0 0		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)										TELEPHONE NUMBER					
NAME H. E. MORGAN, STATION MANAGER										AREA CODE 7 1 4		3 6 8 - 6 2 4 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				
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 13, 1987, at 0500, with the unit at 100% power, it was determined, as a result of performing a surveillance, that one of the two rod position indication channels required by Technical Specification 3.1.3.2 had not correctly tracked Part Length Control Element Assembly (PLCEA) movement performed earlier, and was thereby declared inoperable. Since the LCO action statement requires operation of at least two position indicating channels, this constituted entry into Technical Specification 3.0.3. At 0537, the correct rod positions were entered into the rod position indication pulse counter of the back-up Core Operating Limit Supervisory System (COLSS) computer, and Technical Specification 3.0.3 was exited.

Testing revealed the programmed time delay for the computer to receive rod control pulse data was insufficient to reset spurious interrupts which inhibit pulse counting. It was determined an interrupt may have prevented the back-up COLSS computer from recording movement of any CEA. Therefore, during the period from 0537 to 0637 (when additional redundant indication was placed in operation), high reliability of the back-up COLSS position indication was not assured.

Corrective action was implemented on 6/25/87 to reprogram the back-up COLSS computers on units 2 and 3, to increase the data acquisition time delay. Testing has shown this action to be effective in not only ensuring the accuracy of the pulse counting circuit, but also in protecting the back-up COLSS from being affected by spurious interrupts.

The health and safety of plant personnel, or the public was not affected.

# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

SAN ONOFRE NUCLEAR GENERATION STATION UNIT 2	DOCKET NUMBER 05000361	LER NUMBER 87-008-00	PAGE 2 OF 3
---	---------------------------	-------------------------	----------------

On June 13, 1987, at 0500, with the unit at 100% power, it was determined, as a result of performing a surveillance, that one of the two rod position indication channels required by Technical Specification 3.1.3.2 had not correctly tracked Part Length Control Element Assembly (PLCEA) (EIIS System Code AA)(EIIS Component Code ROD) movement performed earlier, and was thereby inoperable. Since the LCO action statement requires operation of at least two position indicating channels, this constituted entry into Technical Specification 3.0.3. At 0537, the correct rod positions were entered into the rod position indication pulse counter of the back-up Core Operating Limit Supervisory System (COLSS) computer (EIIS System Code ID)(EIIS Component Code CPU), and Technical Specification 3.0.3 was exited.

## Background

Control rod position can be directly determined from the Reed Switch Position Transmitters (RSPT), as read by two CEACs, or from the rod movement pulse counting program in the Plant Monitoring System (PMS) computer (this function is similarly performed by the back-up COLSS computer and is employed if PMS is unavailable). Technical Specification 3.1.3.2 requires two of these position indication channels be operable, and to be in agreement within a 5 inch tolerance.

On 6/12/87, at 1308, CEAC #1 was removed from service to replace a failed optical isolation circuit card. With one CEAC in operation, Technical Specification Table 3.3-1, Action Statement 6 requires that a four hour surveillance be conducted to verify CEA group alignment. In addition to satisfying this requirement, the surveillance procedure includes verification that the position indication channels for each CEA agree within 5 inches.

At 1850, a memory module in PMS failed, and at 1902 the back-up COLSS computer was switched into the circuits which normally receive input from PMS COLSS program. At 2100, reactor power was reduced for one hour for scheduled Turbine Stop and Governor Valve surveillance testing. The resulting change in core power distribution necessitated inserting the PLCEAs at about 0130 on 6/13/87. The four hour surveillance test data was reviewed at 0500, and it was found that three of the PLCEA indicated positions exceeded the 5 inch tolerance, indicating that the back-up COLSS computer pulse counter had not fully tracked the rod movement.

Control room operators took immediate action to contact the computer operator on duty, and the correct data was entered into the back-up COLSS computer pulse counter at 0537. At 0530 Technicians placed CEAC #1 in service, and it was formally declared operable at 0637, at which time the two channels relied upon for position indication were CEACs #1 and #2.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

SAN ONOFRE NUCLEAR GENERATION STATION UNIT 2	DOCKET NUMBER 05000361	LER NUMBER 87-008-00	PAGE 3 OF 3
---	---------------------------	-------------------------	----------------

Evaluation

As a result of the event, analysis and testing was conducted to investigate the operation of the pulse counting circuitry in the back-up COLSS computer. It was confirmed that the back-up COLSS computer was operating as designed, however, in this instance pulses were not counted by the back-up COLSS computer because of the programming which determines how the computer receives input from the data acquisition hardware. It was identified that at times when the computer is very active, higher priority circuits can generate spurious interrupts, inhibiting the pulse counting until the interrupt signal clears. The time allotted by the computer software to service interrupts was insufficient to reset the interrupt and continue to receive additional pulse data. Testing has shown that increasing the time delay allows the computer to reset the interrupts as they occur.

Although it was not apparent at the time of the event, the position indication for all eight PLCEAs was affected because the deviations resulted from the failure of the back-up COLSS computer pulse counter to track the rod motion. The actual rod motion was small enough that the position indication for five of the eight PLCEAs satisfied the surveillance criteria, however, based upon the analysis of the failure mode, it has been determined that during a spurious interrupt, the back-up COLSS computer may have been temporarily prevented from recording movement of any CEA. Therefore, during the period from 0537 to 0637, high reliability of the back-up COLSS position indication was not assured.

The health and safety of plant personnel, or the public was not affected since the event involved a back-up indication system, and there was no affect on the operation of the facility.

Corrective Action

Corrective action was implemented on 6/25/87 to reprogram the back-up COLSS computers on units 2 and 3, to increase the data acquisition time delay. Testing has shown this action to be effective in not only ensuring the accuracy of the pulse counting circuit, but also in protecting the back-up COLSS from being affected by spurious interrupts.

Although no additional failure modes have been identified, an evaluation of the response of back-up COLSS data acquisition software to spurious interrupts will be performed.



**Southern California Edison Company**

SAN ONOFRE NUCLEAR GENERATING STATION

P. O. BOX 128

SAN CLEMENTE, CALIFORNIA 92672

H. E. MORGAN  
STATION MANAGER

TELEPHONE  
(714) 368-6241

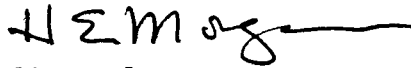
July 13, 1987

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

Subject: Docket No. 50-361  
30-Day Report  
Licensee Event Report No. 87-008  
San Onofre Nuclear Generating Station, Unit 2

Pursuant to 10 CFR 50.73(a)(2)(i)(B), this submittal provides the required 30-day written Licensee Event Report (LER) for an entry into Technical Specification 3.0.3. Neither the health and safety of plant personnel nor the health and safety of the public was affected by this event.

If you require any additional information, please so advise.

  
Sincerely,

Enclosure: LER No. 87-008

cc: F. R. Huey (USNRC Senior Resident Inspector, Units 1, 2 and 3)  
J. B. Martin (Regional Administrator, USNRC Region V)  
Institute of Nuclear Power Operations (INPO)

IE22  
11