

LICENSEE EVENT REPORT (LER)

Facility Name (1)				Docket Number (2)				Page (3)			
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 2				0 5 0 0 0 3 6 1				1 of 0 5			

Title (4)
 FUEL HANDLING ISOLATION SYSTEM (FHIS) ACTUATIONS DUE TO TECHNICIAN ERROR DURING CALIBRATION

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 6	1 4	8 8	8 8	0 1 5	0 0	0 7	1 4	8 8	NONE		0 5 0 0 0		

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)									
POWER LEVEL (10)		20.402(b)		20.405(c)		X 50.73(a)(2)(iv)		73.71(b)			
1 0 0		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)			
		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)(iii)(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			
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 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) NO

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

On 6/14/88, at 1252, and on 6/23/88, at 1238, Fuel Handling Isolation System (FHIS) Train "A" was inadvertently actuated. A technician, while attempting to realign the key-lock bypass switch to a Containment Purge Isolation System monitor from the "bypass" position to the "normal" position in accordance with the calibration procedure, inadvertently operated the bypass switch associated with FHIS monitor 2RT-7822B1. Since the signal processing module for 2RT-7822B? was removed for planned maintenance, an instrument failure signal was initiated when the bypass switch was placed in the "normal" position. On both occasions, FHIS was reset after verifying that all FHIS Train "A" equipment had properly actuated, as designed.

The cause of the errors was the lack of attention to detail during the execution of the procedural step. Human factors with respect to the design of the switches contributed to these errors. Specifically, the switches are on panels having the same physical layout and are in close proximity with each other, and the switch keys are not unique to a specific monitor. Due to these factors, a second error in switching manipulation occurred even though the technician, after reviewing the first event, paid particular attention to the correct switch identification prior to executing the step.

The technicians involved were counseled, and a training meeting was held with all radiation monitor technicians, stressing the importance of attention to detail. Corrective actions to be taken include: 1) adding caution statements and double verifications to procedures; 2) modifying the switches so that each switch has a unique key; and 3) implementing administrative controls for the keys.

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Plant: San Onofre Nuclear Generating Station
 Unit: Two
 Reactor Vendor: Combustion Engineering
 Event Date/Time: 06-14-88 at 1252, and 06-23-88 at 1238

A. CONDITIONS AT TIME OF THE EVENT:

Mode 1, 100% reactor power.

B. BACKGROUND INFORMATION:

The Fuel Handling Isolation System (FHIS) (EIIS System Code VG) consists of two independent "trains" of radiation monitors (2RT-7822 for Train "A" and 2RT-7823 for Train "B") (EIIS Component Code RIT), associated dampers and recirculation air filtration units. Each train consists of a particulate/iodine channel (2RT-7822A1 and 2RI-7823A2, Train "A" and "B", respectively) and a gas channel (2RI-7822B1 and 2RI-7823B2, Train "A" and "B" respectively). Only one channel is required to initiate an actuation. Each train is actuated by either a remote manual push button or by one of the radiation monitors sensing high radiation, instrument failure, or loss of power. A FHIS actuation is designed to isolate normal ventilation to the Fuel Handling Building (FHB) and initiate recirculation and cooling of the FHB.

The instrumentation panels for the various radiation monitors are located along one wall in a hallway adjacent to the Control Room. Monitors associated with FHIS, Control Room Isolation System (CRIS) (EIIS System Code VI), and Containment Purge Isolation System (CPIS) (EIIS System Code VA) are located on these panels in close proximity to each other. These monitors contain an "alarm defeat" feature which blocks the automatic actuation signal during calibration and testing. As a result of previous Engineered Safety Feature (ESF) actuations caused by inadvertent operation of the spring loaded "alarm defeat" push button during maintenance activities (see previous LERs on similar events under Section G), a design change was implemented installing key-lock bypass switches (EIIS Component Code HS) on these monitors.

C. DESCRIPTION OF THE EVENT:

1. Event:

On June 14, 1988, at 1252, with Unit 2 at 100% power, FHIS Train "A" was inadvertently actuated. A radiation monitor technician, while attempting to realign the key-lock bypass switch to Containment Purge Isolation System (CPIS) Monitor 2RT-7807 from the "bypass" position to the "normal" position in accordance with the calibration procedure, inadvertently operated the bypass switch associated with FHIS monitor 2RT-7822B1. Since the signal processing module for 2RT-7822B1 was removed for planned maintenance, an instrument failure signal was initiated when the bypass switch was placed in the "normal" position. At 1300, FHIS was reset after verifying that all FHIS Train "A" equipment had properly actuated, as designed.

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On June 23, at 1238, with Unit 2 at 100% power and with the module to 2RT-7822B1 removed for maintenance, FHIS Train "A" was again inadvertently actuated. Similar to the previous actuation, a radiation monitor technician (not the same individual) operated the bypass switch for 2RT-7822B1 while implementing a procedural step for the calibration of CPIS monitor 2RT-7807. At 1304, FHIS was reset after verifying that all FHIS Train "A" equipment had properly actuated, as designed.

2. Inoperable Structures, Systems or Components that Contributed to the Event:

None.

3. Sequence of Events:

<u>DATE (TIME)</u>	<u>ACTION</u>
6/14 (1252)	FHIS Train "A" actuated.
6/14 (1300)	FHIS Train "A" reset.
6/23 (1238)	FHIS Train "A" actuated.
6/23 (1304)	FHIS Train "A" reset.

4. Method of Discovery:

Control Room indications and alarms alerted the operators to the FHIS actuations. Additionally, upon each actuation, the I&C technician who had made the incorrect switching operation recognized that an error had been made and promptly notified the Control Room operators and the I&C Supervisor of Radiation Monitoring.

5. Personnel Actions and Analysis of Actions:

The operators responded properly to the FHIS actuations by verifying proper system operation prior to returning the FHIS to the standby mode and restoring normal FHB ventilation.

6. Safety System Responses:

All FHIS Train "A" equipment properly actuated to their emergency mode operation as designed.

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D. CAUSE OF THE EVENT:

1. Immediate Cause:

In both instances, an instrument failure signal initiated the FHIS actuation when the key-lock bypass switch for monitor 2RT-7822B1 was erroneously moved from the "bypass" position to the "normal position" with the signal processing module removed. The technicians were attempting to operate bypass switches associated with CPIS monitors 2RT-7804 and 2RT-7807 during the execution of procedural steps for the calibration of those monitors.

2. Root Cause:

Following the first actuation, the cause of the error was attributed to the lack of attention to detail on the part of the technician during the execution of the procedural step. The switches are clearly labeled and the procedure being implemented clearly identified the switch to be operated. A training meeting was held with all the radiation monitor technicians stressing the importance of attention to detail, attention to the proper identification of the switches, and reducing ESF actuations in general.

Procedural instructions and monitor labels were determined to be adequate for human factors considerations following the first incident; however, because the second inadvertent actuation occurred, additional review of human factors was conducted. From this review, it was determined that human factors with respect to the design of the switches were a contributing component of these errors. Specifically, the subject switches are on panels having the same physical layout which are in close proximity with each other. The switches are designed such that the keys, which are not unique to a specific monitor, can not be removed from the switch in the "bypass" position. Due to these factors, a second error in switching manipulation occurred even though the technician, after reviewing the first event, paid particular attention to the correct switch identification prior to executing the step.

E. CORRECTIVE ACTIONS:

1. Corrective Actions Taken:

- a. The technicians involved have been counseled as to the importance of attention to detail.
- b. A training meeting was held with all radiation monitor technicians to discuss the importance of maintaining strict attention to detail.
- c. As interim corrective action, caution tags were placed by the bypass switches instructing the technicians to obtain verification of proper switch manipulation from their supervisor before operating the switch. These tags will remain in place until supplemental corrective is taken.

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2. Planned Corrective Actions:

- a. To ensure manipulation of the correct key-lock bypass switch, appropriate procedures for ESF radiation monitors will be revised to include a caution statement, as well as double verification, for all steps that have the technician position the switch to the "Normal" position.
- b. The key-lock switches will be modified so that the keys are unique for each switch and can be removed from the switch while in the "bypass" position. The keys will then be administratively controlled such that technicians will have only the key for the instrument on which work is to be performed.

F. SAFETY SIGNIFICANCE OF THE EVENT:

There is no safety significance to these events since FHIS Train "A" components operated in accordance with design. Additionally, during each event airborne activity remained at normal levels and no fuel movement was conducted inside the Unit 2 FHB.

G. ADDITIONAL INFORMATION:

1. Component Failure Information:

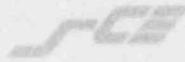
Not Applicable.

2. Previous LERs on Similar Events:

Previous radiation monitor ESF actuations due to technician error in the manipulation of the spring-loaded "alarm defeat" push button were reported in Unit 2 LERs 84-064, 84-077 and 87-012. As a result of these events, to simplify the manipulations, key-lock bypass switches were installed on appropriate radiation monitors to eliminate the possibility of error. However, the two actuations described in this LER, unlike the previous events, were caused by manipulating a switch on an incorrect monitor.

3. Results of NPRDS Search:

Not Applicable.



Southern California Edison Company

SAN ONOFRE NUCLEAR GENERATING STATION

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STATION MANAGER

July 14, 1988

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

Subject: Docket No. 50-361
30-Day Report
Licensee Event Report No. 88-015
San Onofre Nuclear Generating Station, Unit 2

Pursuant to 10 CFR 50.73(a)(2)(iv), this submittal provides the required 30-day written Licensee Event Report (LER) involving two actuations of the Fuel Handling Isolation System. Neither the health and safety of plant personnel or the public was affected by these occurrences.

If you require any additional information, please so advise.

Sincerely,

Enclosure: LER No. 88-015

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)

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