Southern California Edison Company

SAN ONOFRE NUCLEAR GENERATING STATION

P. O. BOX 128

SAN CLEMENTE, CALIFORNIA 92674-0128

R. W. KRIEGER
STATION MANAGER

TELEPHONE
(714) 368-6255

July 23, 1992

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

Subject: Docket No. 50-361
Supplemental Report
Licensee Event Report No. 88-015, Revision 1
San Onofre Nuclear Generating Station, Unit 2

Reference: Letter, H. E. Morgan (SCE) to USNRC Document Control Desk, dated July 14, 1988

The referenced letter provided Licensee Event Report (LER) No. 88-015, (Revision 0), for an occurrence involving two actuations of the Fuel Handling Isolation System. The enclosed supplemental LER retracts a previously proposed corrective action which was determined to be contradictory to Regulatory Guide 1.22, "Periodic Testing of Protection System Actuation Functions." Neither the health nor the 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, Rev. 1

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



IE22

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) |
| | | | | | | | | | | NONE | 0 5 0 0 0 |
| 0 6 | 1 4 | 8 8 | 8 8 | - 0 1 1 5 - | 0 1 | | 0 7 | 2 3 | 9 2 | | 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) | | | |
|---|---|---|---|---|---|
| | 1 | ___ 20.402(b) | ___ 20.405(c) | X 50.73(a)(2)(iv) | ___ 73.71(b) |
| POWER LEVEL (10) | 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)(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 |
| R. W. Krieger, Station Manager | 7 1 4 3 6 8 - 1 6 2 5 |

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) | XX 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-7822B1 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. To ensure manipulation of the correct key-lock bypass switch, appropriate procedures for ESF radiation monitors have been revised to include a caution statement, as well as independent verification, for all steps that have the technician position the switch to the "Normal" position.

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 purpose in this revision is to update the corrective actions. Prior to implementation, during the design review process, a previously planned corrective action (LER 88-015, Rev. 0, Docket 50-361) to modify the key-lock switches in order to allow removal of the key while in the "bypass" position was determined to be contrary to the requirements specified in Regulatory Guide 1.22, "Periodic Testing of Protection System Actuation Functions (Revision 0, 2/72)." Thus, the planned action was removed in this LER supplement.

Fuel Handling Isolation System

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 noble 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.

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:

| DATE (TIME) | ACTION |
|---|---|
| 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.

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 TAKEN:

1. The technicians involved have been counseled as to the importance of attention to detail.

2. A training meeting was held with all radiation monitor technicians to discuss the importance of maintaining strict attention to detail.

3. To ensure manipulation of the correct key-lock bypass switch, appropriate procedures for ESF radiation monitors were 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.

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 or an incorrect monitor.

3. Results of NPRDS Search:

Not Applicable.