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FACIL:50-362 San Onofre Nuclear Station, Unit 3, Southern Californ 05000362
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RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-004-00:on 880511,spurious containment purge isolation sys on failure circuit actuation due to circuit errors.
W/8 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 6
TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

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LICENSEE EVENT REPORT (LER)

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

Title (4)

SPURIOUS CONTAINMENT PURGE ISOLATION SYSTEM (CPIS) ON FAILURE CIRCUIT ACTUATION DUE TO CIRCUIT ERRORS

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 5	1 1	8 8	8 8	--- 0 0 4	--- 0 0		0 6	1 0	8 8	NONE	0 5 0 0 0
											0 5 0 0 0

OPERATING MODE (9)	6
POWER LEVEL (10)	0 0 0

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

___ 20.402(b)	___ 20.405(c)	X 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)
___ 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
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)	X NO				

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

On May 11, 1988, at 0855 while Unit 3 was in Mode 6 preparing for refueling with containment purge in progress, CPIS Train "A" actuated on monitor failure when the iodine filter cartridge was removed from iodine detector 3RI-7804A for routine replacement.

After determining that containment radiation levels were normal and that the CPIS actuation resulted from monitor failure, the CPIS was reset and containment ventilation was restored at 0905.

The cause of the actuation has been determined to be incorrect vendor drawings which resulted in an incorrect capacitor being installed in the 3RI-7804A failure circuit. As a result, the failure circuit actuated on a decreasing count-rate as the filter cartridge was removed. The failure circuit should only have actuated at a pre-set low count-rate indicative of monitor failure.

Action has been initiated to correct the vendor drawings and conform installed and spare equipment to the drawings. SCE Quality Assurance (QA) has previously reviewed the vendor's QA program and identified design and document control problems. SCE (QA) will review the adequacy of resulting corrective actions taken by the vendor. If necessary, appropriate additional corrective action will be developed and implemented.

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Plant: San Onofre Nuclear Generating Station
Unit: Three
Reactor Vendor: Combustion Engineering
Event Date: May 11, 1988
Time: 0855

A. CONDITIONS AT TIME OF THE EVENT:

Mode: 6, Refueling
RCS Temperature: 98 F

B. BACKGROUND INFORMATION:

There are two independent Containment Purge Isolation System (CPIS) trains which isolate containment ventilation system penetrations when an abnormal amount of radiation is detected in containment. Each train is comprised of a containment airborne radiation monitor (EIIS Component Code RIT), an area radiation monitor and a set of containment purge isolation valves (EIIS Component Code V). Each train is actuated by: (a) a remote manual push button; (b) either of the monitors on high radiation; (c) instrument failure; or (d) loss of power.

Each containment airborne radiation monitor is provided with three independent detectors designed to detect gaseous, particulate and iodine radioactivity. The instrument failure circuits for the CPIS monitors continuously examine the count-rate produced by the detector. These failure circuits will initiate CPIS (e.g., fail-safe) when the count-rate drops to a pre-established set point.

During the start up testing of Units 2 and 3, the circuits of the installed iodine monitors were modified by the vendor and SCE in order to resolve operability problems with the monitors. The vendor did not fully reflect these changes in the design drawings. As a result, it has been necessary for SCE to conform previously procured replacement modules to the as-built design of the installed monitors.

C. DESCRIPTION OF THE EVENT:

1. Event:

On May 11, 1988 at 0855 while Unit 3 was in Mode 6 preparing for refueling with containment purge in progress, CPIS Train "A" actuated on monitor failure when the iodine filter cartridge was removed from iodine detector 3RI-7804A for routine replacement.

After determining that containment radiation levels were normal and that the CPIS actuation resulted from monitor failure, the CPIS was reset and containment ventilation was restored at 0905.

At approximately 0940 the Train "B" iodine monitor 3RI-7807A filter cartridge was similarly replaced without the initiation of a CPIS actuation.

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

None.

3. Sequence of Events on May 11, 1988:

TIME	ACTION
0855	CPIS Train "A" actuates during replacement of the 3RI-7804A iodine filter cartridge.
0905	After determining the containment radiation levels are normal and that the actuation resulted from filter replacement, Train "A" CPIS is reset and containment purge is restored.
~0940	The CPIS Train "B" iodine detector 3RI-7807A filter cartridge is replaced without actuating CPIS.

4. Method of Discovery:

Annunciation of Train "A" CPIS actuation and 3RI-7804A failure.

5. Personnel Actions and Analysis of Actions:

The iodine filter cartridge replacements were performed in accordance with procedural requirements. Operator actions were appropriate and in accordance with procedural requirements.

6. Safety System Responses:

All CPIS components operated as designed and isolated the containment purge system.

D. CAUSE OF THE EVENT:

1. Immediate Cause:

The immediate cause of the CPIS was removal of the iodine filter cartridge which substantially reduced the 3RI-7804 count-rate.

2. Intermediate Cause:

a. To prepare for the present Unit 3 refueling, replacement radiation monitor modules were withdrawn from stores, inspected, conformed to the as-built design, and re-calibrated for the refueling. These re-calibrated modules were installed in CPIS iodine monitors 3RI-7804A and 3RI-7807A on May 9, 1988.

b. When the contaminated iodine filter cartridges were removed from both of these monitors on May 11, 1988, as described above, the detector count-rate started decreasing. However, monitor 3RI-7804A incorrectly failed safe and actuated CPIS as the result of the count-rate decrease.

3. Root Cause:

a. Investigation of the 3RI-7804A actuation revealed that both of the above mentioned replacement modules contained one incorrect capacitor. The incorrect capacitance changed the failure circuit's time constant enough to initiate a fail-safe actuation on the count-rate decrease caused by removal of an iodine filter cartridge.

Although the replacement module installed in 3RI-7807A similarly contained an incorrect capacitor, 3RI-7807A did not actuate when the iodine filter cartridge was removed. The differences in the responses of 3RI-7804A and 3RI-7807A is attributed to variations in the failure circuits resulting from the allowable component tolerances.

b. As a result of this investigation, it has been determined that the vendor's schematic drawings, as modified by SCE, correctly represent the design. However, the parts list drawings were not updated to reflect the design changes implemented by the vendor and SCE during start up.

c. Replacement modules furnished by the vendor have not necessarily been in conformance with either the schematic or the parts list drawings. As a result, it has often been necessary for SCE to modify the replacement modules to meet operability requirements.

The plan to modify the circuits of the replacement modules which were installed in 3RI-7804A and 3RI-7807A, specified that the circuits be conformed to the parts list drawing. As a result of the above mentioned discrepancies in the parts list drawing, a capacitor having the correct value was removed from the circuits and replaced by an incorrect capacitor.

E. CORRECTIVE ACTIONS:

a. Corrective Actions Taken:

1. The 3RI-7804A failure circuits have been modified to the as-built design.

2. SCE Quality Assurance (QA) reviewed the vendors's QA program in January 1988 and issued Corrective Action Requests for QA problems which included design and document control. The vendor's proposed corrective action appears to adequately address the vendor related causes of this event.

b. Planned Corrective Action:

a. The design drawings will be conformed to the as-built design configuration.

b. After conforming the design drawings, all on-hand replacement and installed modules affected by the design change will be modified and inspected to ensure that the circuits conform to the design.

c. Subsequent replacement modules will be procured in accordance with the revised design.

d. SCE Quality Assurance (QA) will review the vendor's implementation of the above discussed corrective action. If necessary, appropriate corrective action will be developed and implemented to preclude recurrence.

F. SAFETY SIGNIFICANCE OF THE EVENT:

There is no safety significance to this event since all CPIS components operated as designed.

G. ADDITIONAL INFORMATION:

1. Component Information:

The radiation monitoring module was manufactured by Nuclear Measurements Corporation, model number CRA-44.

2. Previous LERs on Similar Events:

None.

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

June 10, 1988

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

Subject: Docket No. 50-362
30-Day Report
Licensee Event Report No. 88-004
San Onofre Nuclear Generating Station, Unit 3

Pursuant to 10 CFR 50.73(a)(2)(iv), this submittal provides the required 30-day written Licensee Event Report (LER) for an occurrence involving a spurious actuation of the Containment Purge Isolation System. Neither the health and safety of plant personnel or the public was affected by this occurrence.

If you require any additional information, please so advise.

Sincerely,

HEMorg

Enclosure: LER No. 88-004

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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