REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8705130127 DOC. DATE: 87/05/08 NOTARIZED: NO DOCKET #
FACIL: 50-315 Donald C. Cook Nuclear Power Plant, Unit 1, Indiana & 05000315
AUTH. NAME AUTHOR AFFILIATION
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SMITH, W. G. Indiana & Michigan Electric Co.
RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 87-006-00: on 870409, ESF actuation, main steam line isolation occurred. Caused by failure of current to current converter. Bistables for Channel IV restored to untripped condition. W/870504 ltr.

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

NOTES:

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NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

# LICENSEE EVENT REPORT (LER)

| FACILITY NAME (1) | DOCKET NUMBER (2) | PAGE (3) |
|---|---|---|
| D. C. COOK NUCLEAR PLANT - UNIT 1 | 0 5 0 0 0 3 1 6 | 1 OF 0 3 |

TITLE (4) Engineered Safety Features Actuation (Main Steam Line Isolation) Actuation Due To Component Failure

| 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 0 0 0 |
| 0 4 | 0 9 | 8 7 | 8 7 | — 0 0 6 | — 0 0 | 0 5 | 0 8 | 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) | | | |
|---|---|---|---|---|---|
| 4 | | 20.402(b) | 20.405(c) | X 50.73(a)(2)(iv) | 73.71(b) |
| POWER LEVEL (10) | | 20.405(a)(1)(i) | 50.36(c)(1) | 50.73(a)(2)(v) | 73.71(c) |
| 0 0 0 | | 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) | 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 |
|---|---|
| T. P. Beilman<br>I&C/Planning Department Superintendent | AREA CODE<br>6 1 6 4 6 5 - 5 9 0 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 |
|---|---|---|---|---|---|---|---|---|---|
| K | J E | I B | F 1 8 0 | Y | | | | | |
| K | J E | F T | F 1 8 0 | Y | | | | | |

| 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 April 9, 1987 at 0543 hours with Unit 1 in Mode 4 (Hot Shutdown) and the Reactor Coolant System Average Temperature (TAVG) at 330°F, an Engineered Safety Features Actuation (Main Steam Line Isolation) occurred. The event was the result of the failure of IFY 512E, the current to current (I/I) converter which fed the Channel I high steam flow bistable. At the time of the event, the high steam flow bistable for Channel IV was already tripped because MFC-140, the Channel IV instrument, was inoperable due to a high indication. The failure of the Channel I I/I converter caused the Channel I high steam flow bistable to trip making up the required Main Steam Isolation Actuation coincidence of two of four channels high steam flow coincident with low low TAVG (<541°F).

In order to prevent further spurious actuations, the bistables for MFC-140 (Channel IV) were restored to the untripped configuration. This is allowed by Technical Specification 3.3.2 which requires operability only in Modes 1, 2 and 3.

On April 15, 1987 the I/I converter for Channel I was replaced. Also on April 15, 1987, MFC-140 was recalibrated following replacing of a new O-ring.




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| FACILITY NAME (1) | DOCKET NUMBER (2) | LER NUMBER (6) | | | PAGE (3) |
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| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | |
| D. C. COOK NUCLEAR PLANT - UNIT 1 | 0 5 0 0 0 3 1 5 | 8 7 | — 0 0 6 | — 0 0 | 0 2 OF 0 3 |

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

## Conditions Prior to Occurrence

Unit One was in Mode 4 (Hot Shutdown) with the Reactor Coolant System Average Temperature (TAVG) at 330°F.

## Description of Event

On April 9, 1987 at 0543 hours an Engineered Safety Features Actuation (Main Steam Line Isolation) occurred. A spurious high steam flow signal had been received on #11 Steam Generator (Channel I) (EIIS/CH) with no high flow indicated.

The event was the result of the failure of IFY 512E, the current to current (I/I) converter (EIIS/IB) which fed the Channel I high steam flow bistable (EIIS/IS). At the time of the event, the high steam flow bistable for Channel IV was already tripped because MFC-140, the Channel IV instrument (EIIS/FT) was inoperable due to a high indication. The bistables for MFC-140 had been placed in the tripped condition on April 8, 1987. The failure of the Channel I I/I converter caused the Channel I high steam flow bistable to trip making up the required Main Steam Isolation Actuation coincidence of two of four channels high steam flow coincident with low low TAVG (<541°F).

All main steam stop valves closed as required upon actuation of the Main Steam Line Isolation signal. Following the event, the bistables for MFC-140 were restored to the untripped condition as MFC-140 is required to be operable in Modes 1, 2 and 3 only. This was done to prevent further spurious actuations.

The failure of the I/I converter was determined to be the cause of the spurious signal on Channel I, following troubleshooting by Instrumentation and Control personnel. The I/I converter was replaced and procedure **1 THP 4030 STP.019 "Steam Generator 1 and 2 Mismatch Set I" was performed to verify operability. MFC-140 was calibrated on April 15, 1987 following installation of a new O-ring.

There were no other structures, components or systems which contributed to this event.

## Cause of Event

The root cause of the event was the failure of the I/I converter that feeds the high steam flow bistable for Channel I which occurred while the bistable for Channel IV was in a tripped condition.



★U.S.GPO:1986-0-624-538/455

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| D. C. COOK NUCLEAR PLANT - UNIT 1 | 0 5 0 0 0 3 1 6 | 8 7 | — 0 0 6 | — 0 0 | 0 3 OF 0 3 |

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

## Analysis of Event

This event was determined to be reportable per 10 CFR 50.73 (a)(2)(iv). The Main Steam Line Isolation actuation is an Engineered Safety Feature designed to mitigate the effects of a steam line break. Main steam line isolation may be initiated by manual action, high high containment pressure, and high steam flow on two out of four channels coincident with low low TAVG or low steam line pressure. The steam line isolation actuation from the high steam flow may be bypassed in Mode 3 below Permissive 12 (two out of four TAVG channels less than 540°F). During this event the RCS was being cooled down to cold shutdown and TAVG was at 330°F. The actuation of the main steam isolation did not adversely affect plant operations or equipment and the public health and safety were not affected.

## Corrective Action

The bistables for Channel IV were restored to the untripped condition to prevent a second actuation. The I/I converter for Channel I was replaced on April 15, 1987. MFC-140 was calibrated on April 15, 1987 following installation of a new O-ring.

## Failed Component Identification

Component: IFY 512E
EIIS: IB
Manufacturer: Foxboro
Model Number: 66BC-0

Component: MFC-140
EIIS: FT
Manufacturer: Foxboro
Model Number: N-E 13DM-HIH2

## Previous Similar Events

LER 316/86-024

American Electric Power System
INDIANA & MICHIGAN ELECTRIC COMPANY
DONALD C. COOK NUCLEAR PLANT
P.O. Box 458, Bridgeman, MI 49106
Telephone (616) 465-5901

May 8, 1987

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Operating License DPR-58
Docket No. 50-315

Document Control Manager:

In accordance with the criteria established by 10 CFR 50.73 entitled Licensee Event Reporting System, the following report is being submitted:

87-006-0

Sincerely,

W. G. Smith, Jr.
Plant Manager

/afh

Attachment

cc: John E. Dolan
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