NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

# 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 5 | 1 OF 0 4 |

TITLE (4) Incorrect Replacement Part Installed on the Turbine Driven Feedwater Pump, Caused by Inadequate Program Controls

| 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 9 | 1 7 | 8 5 | 8 5 | - 0 4 8 | - 0 3 | 1 0 | 0 3 | 8 6 | D.C. Cook, Unit 2 | 0 5 0 0 0 3 1 6 |
| | | | | | | | | | | 0 5 0 0 0 |

OPERATING MODE (9): 5

POWER LEVEL (10): 0 0 0

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

| | | | |
|---|---|---|---|
| 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)

| NAME | TELEPHONE NUMBER (AREA CODE) |
|---|---|
| A. A. Blind - Assistant Plant Manager | 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 | B A | S O L | G 0 8 0 | N | | | | | |
| | | | | | | | | | |

| 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)


This revision is submitted to report on the completion of testing and analysis of the subject solenoid.

The subject LER concerns the installation of a modified version of General Electric Model 9503206BAG2 solenoid, in lieu of Model 9503206BAF2 as should have been used per the origninal design requirements for the Turbine Driven Auxiliary Feedwater Pump Trip and Throttle Valve. The time of discovery was September 17, 1985, at 1100 hours with both Units 1 and 2 in Mode 5 (Cold Shutdown).

The normally energized solenoid failed a total of only 9 times in 17 and one half years of operation. The completed testing and analysis of the modified solenoid concluded that it can be expected to function as reliably as Model 9503206BAF2 on an operational basis. The pump availability would not reasonably be expected to be degraded by the modified solenoid installation.

Preventive actions include; 1) replacement of GE Model 9503206BAG2 with the appropriate Model 9503206BAF2, 2) all of the non-certified solenoids have been removed from the Plant's spare parts inventory, and 3) training of Plant personnel in appropriate procedures used in component replacement procedures.




IE22
1/1




☆U.S.GPO:1984-0-454-481/18759

This revision is submitted to report on the completion of testing and analysis of the subject solenoid.

Conditions Prior to Event

Unit 1 and Unit 2 in Mode 5 (Cold Shutdown).

Description of Event

On September 17, 1985, at 1100 hours it was discovered that a modified electric trip solenoid (EIIS/JK) was installed on the Turbine Driven Auxiliary Feedwater Pump (TDAFP) trip and throttle valve (EIIS/BA). This LER concerns the installation of a modified version of General Electric Model 9503206BAG2 solenoid in lieu of Model 9503206BAF2 as should have been used per the original design requirements for the Turbine Driven Auxiliary Feedwater Pump trip and throttle valve. The solenoids were incorrect in that (1) the plunger was modified without appropriate review, and (2) the solenoids were not certified to the appropriate requirements.

Cause of the Event

The root cause was inadequate program controls in 1976 which allowed the initial installation of the incorrect solenoid. Once the incorrect solenoid was used it was replaced in kind.

Analysis of Event

The 9503206BAF2 solenoid was a "pull-type". The replacement 9503206BAG2 solenoid was a "push-type", and thus required removing, from the plunger, the guides that would otherwise protrude through the top of the coil and hit the arc shield and mounting bracket (which were originally installed for 9503206BAF2 solenoid). Both solenoids are normally energized for this application. The qualified solenoid 9503206BAF2 has subsequently been reinstalled on the trip and throttle valve for both units.

The purpose of the subject solenoid is to control the latching position of the TDAFP trip and throttle valve. Normally, the solenoid is energized which allows the trip and throttle valve to be latched. This allows steam to be supplied through the valve to allow pump operation when required. Under adverse

conditions where the TDAFP may fail, such as electrical or mechanical overspeed, the solenoid de-energizes, unlatching the trip and throttle valve. This action shuts off the pump and thus protects it from the adverse condition.

The TDAFP supplies feedwater to the Steam Generators during times when normal feedwater is unavailable. This includes normal as well as emergency conditions. The pump is backed up by two Motor Driven Auxiliary Feedwater Pumps. In the event of an accidental loss of feedwater during power operation, either of the Motor Driven Pumps is sufficient for decay heat removal purposes.

The operability of the TDAFP, including the trip and throttle valve, is verified by surveillance testing at least once every 31 days per Technical Specification 4.7.1.2. Additionally, the position of the latching mechanism is checked once per shift as part of the operations tour of the area. The normally energized solenoid failed a total of only 9 times in 17 and one half years unit years of operation.

While it appeared that solenoid 9503206BAG2 could be modified to make it interchangeable with solenoid 9503206BAF2, a Licensee Event Report was initiated when it was determined that solenoid 9503206BAG2 did not have the qualification documentation of solenoid 9503206BAF2. The original changeover occurred in 1976. Normal procedure subsequent to this has been to replace the solenoid coils, and use the old plunger.

The modified solenoid 9503206BAG2 was studied to determine if the installation of this solenoid in lieu of Model 9503206BAF2 would have degraded the TDAFP reliability. The study compares the two solenoids and describes the functions and acceptance criteria required to maintain TDAFP availability. The conclusion drawn from the actual test and test data was that the modified General Electric Model 9503206BAG2 solenoid can be expected to function as reliably as Model 9503206BAG2 on an operational basis. It's installation would not reasonably be expected to degrade the availability of the TDAFP.

The test report entitled "Operational Reliability Study on the Installation of An Incorrect Replacement Part on the Turbine Driven Auxiliary Feed Pump" is available for further review at the plant site.

| FACILITY NAME (1) | DOCKET NUMBER (2) | LER NUMBER (6) YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | PAGE (3) |
|---|---|---|---|---|---|
| D. C. Cook Nuclear Plant, Unit 1 | 0 5 0 0 0 3 1 5 | 8 5 | — 0 4 8 | — 0 3 | 0 4 OF 0 4 |

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

Corrective Actions

To prevent recurrence of this specific case, the following has been performed; 1) the modified solenoid number 9503206BAG2 has been replaced with the correct solenoid number 9503206BAF2 which meets certification requirements, 2) all of the non-certified solenoids have been removed from the Plants spare parts inventory, and 3) permanent identification tags have been mounted adjacent to the installed solenoids specifying the correct solenoid to be used if replacement is necessary. In addition to the above, the following references have been stressed in recent training to be used to identify equipment and parts as safety grade; 1) the Plants "N" List, 2) elementary drawings, 3) flow diagrams, 4) D.C. Cook Nuclear Plant Specifications, 5) vendors manuals, and 6) if doubt still exists, the appropriate engineering guidance will be sought. If a timely determination cannot be made, the equipment will be treated as safety grade.

Failed Component Identification

General Electric Solenoid Model 9503206BAG2.

Previous Similar Events

Three previus LERs have been submitted on the Turbine Driven Auxiliary Feed Pump Trip Solenoid. They are LER number, 316/80-017, 315/78-077, and 315/76-035.

American Electric Power System
INDIANA & MICHIGAN ELECTRIC COMPANY
Donald C. Cook Nuclear Plant
P.O. Box 458, Bridgman, Michigan 49106

October 2, 1986

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 10CFR50.73 entitled Licensee Event Reporting System, the following report/s are being submitted:

85-048-03

Sincerely,

W.G. Smith, Jr.
Plant Manager

/mg

Attachment

cc: John E. Dolan
J.G. Keppler, RO:III
M.P. Alexich
R.G. Kroeger
H.B. Brugger
R.W. Jurgensen
NRC Resident Inspector
R.C. Callen, MPSC
G. Charnoff, Esq.
D. Hahn
INPO
PNSRC
A.A. Blind
Dottie Sherman, ANI Library
File

IE22
1/1