

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8912120120 DOC.DATE: 89/11/07 NOTARIZED: NO DOCKET #
 FACIL:50-263 Monticello Nuclear Generating Plant, Northern States 05000263
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SUBJECT: LER 89-037-00:on 891107,ESF actuation caused by mode switch misoperation.

W/8 ltr.

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404



Northern States Power Company

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December 7, 1989

Report Required by
10 CFR Part 50, Section 50.73

Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

ESF Actuation Caused by Mode Switch Misoperation

The Licensee Event Report for this occurrence is attached.

This event was reported via the Emergency Notification System in accordance with 10 CFR Part 50 Section 50.72 on November 7, 1989.

Thomas M Parker
Manager
Nuclear Support Services

c: Regional Administrator - III NRC
Sr Resident Inspector, NRC
NRR Project Manager, NRC
MPCA
Attn: Dr J W Ferman

Attachment

8912120120 891107
FDR ADOCK 05000263
S PDC

IE22
11

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) MONTICELLO NUCLEAR GENERATING PLANT DOCKET NUMBER (2) 050002631 OF 04 PAGE (3)

TITLE (4) ESF Actuation Caused by Mode Switch Misoperation

| 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) | | | | | | | | | | | | | | |
| 1 | 1 | 0 | 7 | 8 | 9 | 8 | 9 | 0 | 3 | 7 | 0 | 0 | 1 | 2 | 0 | 7 | 8 | 9 | | 0 | 5 | 0 | 0 | 0 |

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

| OPERATING MODE (9) | 20.402(b) | 20.405(c) | 50.73(a)(2)(iv) | 73.71(b) |
|--------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| N | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| POWER LEVEL (10) | 20.405(a)(1)(i) | 50.36(c)(1) | 50.73(a)(2)(v) | 73.71(c) |
| 0 | 20.405(a)(1)(ii) | 50.36(c)(2) | 50.73(a)(2)(vii) | <input type="checkbox"/> |
| 0 | 20.405(a)(1)(iii) | 50.73(a)(2)(ii) | 50.73(a)(2)(viii)(A) | <input type="checkbox"/> |
| 0 | 20.405(a)(1)(iv) | 50.73(a)(2)(iii) | 50.73(a)(2)(viii)(B) | <input type="checkbox"/> |
| | 20.405(a)(1)(v) | 50.73(a)(2)(iii) | 50.73(a)(2)(ix) | <input type="checkbox"/> |

OTHER (Specify in Abstract below and in Text, NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12)

| NAME | TELEPHONE NUMBER |
|----------------------------------|------------------|
| David Alan Dilley, Shift Manager | 612 219 5111 |

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUF. TURER | REPORTABLE TO NPROS | CAUSE | SYSTEM | COMPONENT | MANUF. TURER | REPORTABLE TO NPROS |
|-------|--------|-----------|--------------|---------------------|-------|--------|-----------|--------------|---------------------|
| A | J | C | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

SUPPLEMENTAL REPORT EXPECTED (14)

| YES (If yes, complete EXPECTED SUBMISSION DATE) | NO | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|---|--------------------------|-------------------------------|-------|-----|------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | |

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

During reactor startup after a refueling outage with the reactor in cold shutdown and all control rods fully inserted, a Main Steam Line Isolation and Reactor Protection System actuation occurred. When the mode switch was turned from REFUEL to STARTUP by a senior licensed Control Room operator, it was moved past the STARTUP position to the RUN position. The Main Steam Line Isolation and Reactor Protection System actuation were immediately reset and the main steam isolation valves 2-80, A through D, and 2-86, A through D, were re-opened, returning the reactor to normal cold shutdown conditions. A mode switch of improved design has been ordered and will be installed as part of the human factors improvements to the reactor control panel. This event will be reviewed during operations training. Operating procedures have been revised to bypass the Main Steam Line Low Pressure interlock (less than 840 PSIG in RUN mode) when moving the mode switch to STARTUP from REFUEL if primary containment integrity is not required.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

DOCKET NUMBER (2)

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Monticello Nuclear Generating Plant

05000263

YEAR SEQUENTIAL REVISION

NUMBER NUMBER NUMBER

89-037-00

02 OF 04

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

DESCRIPTION

At 1244 CST on November 7, 1989, with the reactor in cold shutdown and all control rods fully inserted, a Main Steam Line Isolation and Reactor Protection System (EIIS System Code: JC) actuation occurred. The reactor mode switch (EIIS Component Code: HS) was being turned from REFUEL to STARTUP by a senior licensed Control Room operator in preparation for plant startup after a refueling outage. The operator stated that he apparently used too crisp a motion when turning the mode switch and thus went past the STARTUP position to the RUN position. The Main Steam Line Low Pressure interlock (less than 840 PSIG in RUN mode) initiated the Main Steam Line Isolation. The Main Steam Isolation Valve Closure Interlock (MSIVs less than 90% open) caused the Reactor Protection System actuation. No rod motion occurred since control rods were already fully inserted. The operator was immediately aware of these events via the Control Room annunciators and indicators. The Main Steam Line Isolation and Reactor Protection System actuation were reset and the Main Steam Isolation Valves were reopened. All systems involved in the event operated as designed.

CAUSE

The cause of the event was the design of the mode switch. It has four stacks of contacts geared to a common shaft connected to the handswitch. This arrangement along with imprecise mode switch detentes, makes it difficult to feel proper switch movement.

ANALYSIS

There were no safety consequences resulting from this event because the reactor was already in cold shutdown. All systems performed according to design and the causes of the inadvertent actuations were immediately reset returning the reactor to normal cold shutdown conditions.

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YEAR SEQUENTIAL REVISION

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

This event could have been more severe if the plant were in hot shutdown at the time of occurrence. In order to evaluate this condition, the consequences of the event and the probability of occurrence must be considered. For this event to occur, the mode switch needs to be in REFUEL. Then the switch must be attempted to be placed in STARTUP. If the mode switch is mispositioned into RUN during this process, while in hot shutdown with reactor pressure less than 840 PSIG, the Main Steam Isolation Valve closure could have produced a reactor pressure increase. If the Main Steam Isolation Valves were not reopened the reactor pressure could slowly rise to the safety/relief valve setpoint which would open the safety/relief valves and limit any pressure increase to within plant design limits.

The probability of mispositioning the mode switch to RUN while in hot shutdown with reactor pressure less than 840 PSIG is low since this would only be possible for a hot restart (such as scram recovery) which typically would not occur more than twice per year. Therefore, the consequences of this condition occurring with the plant in hot shutdown are minimal and the probability occurrence is small.

The probability of mispositioning the mode switch to RUN while at power is zero. Since the mode switch must be in REFUEL for this event to occur and only one control rod can be withdrawn in REFUEL, this event could not occur at power.

CORRECTIVE ACTION

The Reactor Protection System actuation and Main Steam Line Isolation were reset and the Main Steam Isolation Valves were reopened. A new reactor mode switch is on order which will be an improved design of a standard General Electric SB-9 control switch. The improved design was developed by a Boiling Water Reactor Owner's Group activity, and will have improved detentes for each position and more positive cam action for smoother movement between positions. These changes will enhance the man/machine interface. It is planned to replace the present mode switch with the improved design in conjunction with human factors improvements to the reactor control panel in the main Control Room. As a reminder to exercise special caution when moving the present mode switch, this event will be reviewed in the course of normal periodic training of operations personnel. In the interim, operating procedures have been revised to bypass the Main Steam Line Low Pressure interlock (less than 840 PSIG in RUN mode) when placing the mode to STARTUP from REFUEL if primary containment integrity is not required.

LICENSEE EVENT REPORT (LER)
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TEXT (If more space is required, use additional NRC Form 365A's) (17)

ADDITIONAL INFORMATION

FAILED COMPONENT IDENTIFICATION

1. The mode switch involved is a GE SB-1 model, furnished as part of the original equipment of the plant.

PREVIOUS SIMILAR EVENTS

1. Reportable Event 83-12 similarly involved the design of the reactor mode switch, wherein a relay race was created due to switch contacts closing during rapid motion of the handswitch. Corrective action was the installation of a spare relay contact to prevent a relay race which could defeat the insertion of a reactor scram signal to Reactor Protection System with the mode switch in the SHUTDOWN position.
2. Reportable Event 88-08 similarly involved the operator going past the STARTUP position while going from the REFUEL to STARTUP position. This event caused a Main Steam Line Isolation and resultant Reactor Protection System actuation. The corrective actions included reviewing the event with operations personnel and the planned replacement of the mode switch. The operator involved in the current event was aware of this previous event.