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December 18, 2000



Energy to Serve Your WorldSM

Docket No.: 50-364

NEL-00-0302

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

**Joseph M. Farley Nuclear Plant - Unit 2
Licensee Event Report 2000-004-00 Reactor Trip Due to
Degraded Main Feedwater Regulating Valve Transient Response**

Ladies and Gentlemen:

Joseph M. Farley Nuclear Plant - Unit 2 Licensee Event Report No. 2000-004-00 is being submitted in accordance with 10 CFR 50.73 (a)(2)(iv). This letter supercedes our letter of December 12, 2000, which submitted the subject Licensee Event Report with the report date inadvertently omitted. Aside from this correction, the attached Licensee Event Report is unchanged from our December 12, 2000 submittal. There are no NRC commitments in the Licensee Event Report.

If you have any questions, please advise.

Respectfully submitted,

Dave Morey

EWC/maf: ler2.doc

Attachment

IE22

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U. S. Nuclear Regulatory Commission

cc: Southern Nuclear Operating Company
Mr. L. M. Stinson, General Manager – Farley

U. S. Nuclear Regulatory Commission, Washington, D. C.
Mr. L. M. Padovan, Licensing Project Manager – Farley

U. S. Nuclear Regulatory Commission, Region II
Mr. L. A. Reyes, Regional Administrator
Mr. T. P. Johnson, Senior Resident Inspector – Farley

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|---|--------|---|----------------|--------------------|--|-------------------|---|--|-------------------------------|--------------------|------|
| NRC FORM 366 (6-1998) | | U.S. NUCLEAR REGULATORY COMMISSION | | | APPROVED OMB NO. 3150-0104 EXPIRES: 06/30/2001 Estimated burden per response to comply with this mandatory information request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-8 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection. | | | | | | |
| LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block) | | | | | FACILITY NAME (1) Joseph M. Farley Nuclear Plant - Unit 2 | | DOCKET NUMBER (2) 0 5 0 0 0 3 6 4 | | PAGE (3) 1 OF 4 | | |
| TITLE (4) Reactor Trip due to Degraded Main Feedwater Regulating Valve Transient Response | | | | | | | | | | | |
| 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 NAME | DOCKET NUMBER | |
| 1 | 1 | 16 | 2 | 0 | 0 | 1 | 2 | 12 | | 0 5 0 0 0 | |
| | | | | | | | | | FACILITY NAME | DOCKET NUMBER | |
| | | | | | | | | | | 0 5 0 0 0 | |
| OPERATING MODE (9) | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11) | | | | | | | | | |
| POWER LEVEL (10) | | 20.2201(b) | | 20.2203(a)(2)(v) | | 50.73(a)(2)(i) | | 50.73(a)(2)(vii) | | | |
| 1 | | 20.2203(a)(1) | | 20.2203(a)(3)(i) | | 50.73(a)(2)(ii) | | 50.73(a)(2)(x) | | | |
| 1 0 0 | | 20.2203(a)(2)(i) | | 20.2033(a)(3)(ii) | | 50.73(a)(2)(iii) | | 73.71 | | | |
| | | 20.2203(a)(2)(ii) | | 20.2033(a)(4) | | X 50.73(a)(2)(iv) | | OTHER | | | |
| | | 20.2203(a)(2)(iii) | | 50.38(c)(1) | | 50.73(a)(2)(v) | | Specify in Abstract below | | | |
| | | 20.2203(a)(2)(iv) | | 50.38(c)(2) | | 50.73(a)(2)(vi) | | or in NRC Form 366A | | | |
| LICENSEE CONTACT FOR THIS LER (12) | | | | | | | | | | | |
| NAME L. M. Stinson, General Manager Nuclear Plant | | | | | | | | TELEPHONE NUMBER (include area code) 3 3 4 - 8 9 9 - 5 1 5 6 | | | |
| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13) | | | | | | | | | | | |
| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX | | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX | |
| D | S J | F C V | F 1 3 0 | Y | | | | | | | |
| X | S J | S C | W 1 2 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 15 single-space typewritten lines) (16) | | | | | | | | | | | |
| <p>On November 16, 2000, at 0323, Unit 2 experienced an automatic reactor trip resulting from a turbine trip from high steam generator (SG) water level in the 2A SG. At 0318, approximately 5 minutes prior to the event, both Steam Generator Feedwater Pumps (SGFP) had decreased to minimum speed due to a failure in the master speed control circuit. The operator manually recovered speed control, but due to sluggish response of the 2A SG main feedwater regulating valve (MFRV), too much water was supplied to the 2A SG and the high level turbine trip was actuated. The turbine trip provides a direct reactor trip signal at power greater than 35%. All safety systems functioned as designed following the trip.</p> <p>The transient leading to the trip was initiated by a failed card (failed soldier joint) in the feedwater pump speed control circuit. Nevertheless, had the 2A MFRV responded normally, a trip should not have occurred. The sluggish response of the 2A MFRV was due to the air bleed path filter within the positioner being clogged as a result of inadequate preventive maintenance on the positioner. Feedwater isolation, the safety function of this valve, was unaffected by this condition.</p> <p>The 2A MFRV positioner was replaced. The 2B and 2C MFRV positioner air bleed paths were verified clear, and the positioners were setup to preclude the valves from going into saturation. The failed feed pump speed control circuit card was replaced.</p> <p>To prevent recurrence, preventive maintenance practices for the MFRV will be revised to provide adequate guidance by February 24, 2001. The Unit 1 MFRVs were verified to have a positioner type not susceptible to this type failure.</p> | | | | | | | | | | | |

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

Westinghouse — Pressurized Water Reactor
Energy Industry Identification Codes are identified in the text as [XX].

Description of Event

On November 16, 2000, at 0323, Unit 2 experienced an automatic reactor trip resulting from a turbine trip from high steam generator (SG) water level in the 2A SG. This high-high SG level turbine trip occurs at 78.5 % steam generator narrow range level. At 0318, both Steam Generator Feed Pumps (SGFPs)[SJ] decreased to minimum speed due to a failure of their master automatic speed control circuit. The operator manually recovered SGFP speed control. The Main Feedwater Regulating Valves (MFRVs)[SJ] had opened as designed during this transient and SG levels began increasing as SGFP speed was increased. The combination of increased SGFP speed and opening MFRVs resulted in increasing SG water levels.

The operator placed the 2C MFRV in manual control to reduce its level. The 2C MFRV did not initially respond, due to positioner saturation and then over-responded to the manual close signal due to a misadjusted volume booster. The 2C MFRV closed before the operator reopened it in manual control. This full closure of the 2C MFRV diverted additional water into the 2A SG. The operator placed the 2A MFRV in manual control and attempted to close the 2A valve to reduce feedwater flow. With the previous slow speed of the SGFPs, the 2A valve had gone full open and entered saturation. With the full open valve at less than the positioner-demanded position, the positioner supplied excess air in an attempt to open the valve to the demanded position. Consequently, when the valve was subsequently demanded closed, the excess air had to be bled off before the valve could begin to move. This condition is called saturation. The saturation condition and the clogged air vent port filter resulted in a much slower response of the valve. The valve did not move immediately in response to the manual close signal, and once it began to close, the clogged vent port filter caused the valve to stroke in the close direction very slowly. As a result the 2A SG high-high level trip setpoint was reached resulting in a feedwater isolation, turbine trip and coincident reactor trip.

Cause of Event

This event was caused by the 2A MFRV positioner air bleed path filter being clogged. The clogged filter was a result of inadequate preventive maintenance. Air bleed path filter inspection and cleaning for this specific type of positioner was not specified in the procedure and had not been performed since positioner installation.

Contributing to the event was the span setting on the MFRVs. The span setting was such that on a full open demand signal, the positioner would attempt to drive the valve beyond its full open position, causing saturation. The clogged bleed path filter reduced the bleed flow, delaying start of valve motion, and slowing the valve movement when it did move.

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

Cause of Event (Continued)

The initiating event was the decrease in speed of both SGFPs. The decrease resulted from a failed solder joint on the feed pump master controller automatic setpoint lead/lag card. Upon failure of this card, the speed input signal to the automatic controller failed low causing the SGFP speed to respond accordingly and decrease to minimum speed. This transient should not have resulted in a reactor trip had the 2A MFRV responded properly.

Safety Assessment

Main feedwater isolation, the safety function of the MFRVs, is initiated by solenoid valve actuation versus positioner venting and thus was not affected by this event.

All safety systems functioned as designed following the trip. The health and safety of the public were unaffected by this event.

This event does not represent a Safety System Functional Failure.

Corrective Action

The 2A MFRV positioner was replaced and stroke time verified satisfactory. The 2B and 2C MFRV positioner air bleed paths were verified clear and stroke time verified satisfactory.

Unit 2 MFRV positioners were setup to preclude the valve positioner from going into saturation.

The SGFP master speed control circuit cards, including the failed setpoint lead/lag card, were replaced.

The Unit 1 MFRVs were verified to have a positioner type not susceptible to this type failure.

The preventive maintenance program and valve positioner maintenance procedures for these valves will be revised to provide specific detailed guidance by February 24, 2001.

Training has been provided to appropriate plant personnel on this event.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

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

Additional Information

The following LERs have been submitted in the past two years on reactor trips:

LER 2000-006-00 Unit 1, Reactor Trip from 4% Power Due to Unexpected Turbine Electrohydraulic Control System Response;

LER 1999-002-00 Unit 1, Unit 1 Reactor Trip Following Loss of the 1A Steam Generator Feedwater Pump;

LER 1999-001-00 Unit 2, Reactor Trip Due to Loss of Condenser Vacuum on Steam Dump Drain Line Failure; and

LER 1998-004-00 Unit 1, Reactor Protection System Card Failure Caused Turbine Trip and Consequent Reactor Trip.