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ACCESSION NBR: 8901200173 DOC. DATE: 89/01/10 NOTARIZED: NO DOCKET #
 FACIL: 50-244 Robert Emmet Ginna Nuclear Plant, Unit 1, Rochester G 05000244
 AUTH. NAME: BACKUS, W.H. AUTHOR AFFILIATION: Rochester Gas & Electric Corp.
 RECIP. NAME: RECIPIENT AFFILIATION

SUBJECT: LER 88-010-00: on 881211, simultaneous loss of two "B" SG pressure channels due to sensing line freezing. W/8 1tr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 11
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: License Exp date in accordance with 10CFR2,2.109(9/19/72). 05000244

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APPROVED OMB NO 3150-0104
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R.E. Ginna Nuclear Power Plant.

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

I. PRE-EVENT PLANT CONDITIONS

The unit was at approximately 100% steady state full power with no major activities in progress. A cold weather walkdown per Administrative Procedure A-54.4.1 had been completed at 0842 EST December 11, 1988.

II. DESCRIPTION OF EVENT

A. DATES AND APPROXIMATE TIMES FOR MAJOR OCCURRENCES:

- o December 11, 1988, 1124 EST: "B" Steam Generator Pressure Channel PT-479 started to drift high and was declared inoperable and defeated per Equipment Restoration Procedure ER-INST.1 (Reactor Protection Bistable Defeat After Instrumentation Loop Failure).
- o December 11, 1988, 1144 EST: "B" Steam Generator Pressure Channel PT-483 started to drift high and was declared inoperable.
- o December 11, 1988, 1144 EST: Event date and time.
- o December 11, 1988, 1144 EST: Discovery date and time.
- o December 11, 1988, 1230 EST: Started unit load reduction.
- o December 11, 1988, 1428 EST: "B" Steam Generator Pressure Channel PT-483 declared operable.
- o December 11, 1988, 1428 EST: Stopped unit load reduction.
- o December 11, 1988, 1522 EST: "B" Steam Generator Pressure Channel PT-479 declared operable.

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B. EVENT:

On December 11, 1988 at 1124 EST with the reactor at approximately 100% full power, steam generator 1B pressure channel PT-479 began drifting high and was declared inoperable and defeated per Equipment Restoration Procedure ER-INST.1, (Reactor Protection Bistable Defeat After Instrumentation Loop Failure). At 1144 EST, steam generator 1B pressure channel PT-483 also started drifting high and was declared inoperable.

At this time, the Control Room operators determined that the probable cause of the 1B steam generator pressure channel problems was freezing of the transmitter sensing lines, as all other indication of plant status was normal. Auxiliary operators were dispatched to the area where the 1B steam generator pressure transmitters were located and reported back that it was extremely cold in the area. This condition was found to be due to outside cold air, (approximately 10°F) being drawn into the building through the inlet air dampers located near the affected pressure transmitters. Actions were immediately taken to reclose the outside air dampers and supply additional heat to the area.

At 1230 EST, a load reduction of 20% per hour was commenced due to Technical Specifications section 3.5, action statement 9, which requires, "at any time the number of operable channels is less than the minimum operable channels required, be at hot shutdown within the next 6 hours and at an RCS temperature less than 350°F within the following 6 hours, (i.e. the number of channels at this time was one less than the minimum operable channels required.)"

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At approximately 1300 EST, the 1B steam generator pressure channel PT-479 started decreasing from its highest pressure reached of 1091 psig. It was thought at this time that the sensing lines for PT-479 were thawing and that the channel pressure would return to actual steam generator pressure but PT-479 indication continued to decrease below actual steam generator pressure. At approximately 1315 EST, the 1B steam generator pressure channel PT-483 started decreasing from its pegged high position. With PT-479 defeated and PT-483 decreasing, the possibility existed of an inadvertent safety injection signal being generated from 2/3 lo lo steam generator pressure of 514 psig if PT-483 continued to decrease in the same manner as PT-479. With PT-479 at approximately 120 psig, the Operations Shift Supervisor instructed the Instrument and Control (I&C) Technician to insert a simulated signal of approximately 700 psig into the defeated channel PT-479. PT-479 was to remain defeated until it was determined whether PT-483 would decrease past the safety injection initiation setpoint of 514 psig. When PT-483 decreased below 600 psig, PT-479's low and lo lo pressure bistables were reinstated and PT-483 was placed in the defeat mode. The 1B steam generator pressure channel PT-483 did decrease below 514 psig but safety injection was not actuated due to the simulated signal in PT-479. With PT-483 defeated the safety injection coincidence was 1/1 with 1B steam generator pressure channel PT-478 being the only operable channel.

At approximately 1410 EST the I&C department had completed thawing the sensing lines to PT-479 and PT-483 and their pressure indication had returned to normal. At approximately 1428 EST the I&C department completed calibration and return to operable status of PT-483. As the Technical Specifications for minimum operable channels was met with the return of PT-483 to operable status the load reduction was terminated. PT-479 was calibrated and returned to operable status at approximately 1522 EST.

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TEXT (If more space is required, use additional NRC Form 368A's) (17)

C. INOPERABLE STRUCTURES, COMPONENTS, OR SYSTEMS THAT CONTRIBUTED TO THE EVENT:

None.

D. OTHER SYSTEMS OR SECONDARY FUNCTIONS AFFECTED:

None.

E. METHOD OF DISCOVERY:

The event was immediately apparent due to alarms and indication in the Control Room.

F. OPERATOR ACTION:

Immediate operator action was to defeat the inoperable 1B steam generator pressure channel PT-479 and with the failure of the second 1B steam generator pressure channel, to determine the cause of these two pressure channels failing simultaneously.

The Control Room operators, after determining that freezing of the pressure channel sensing lines was the probable cause, took immediate action to reduce the amount of cold air coming into the pressure channel sensing line area and to supply additional heat to this area.

After declaring two of the three 1B steam generator pressure channels inoperable, the Control Room operators started reducing unit power per technical specification action statement.

During this event period, the plant was operating with known system integrity which would not warrant the need for safety injection actuation.

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Because the pressure indication was decreasing toward the safety injection initiation setpoint in the two inoperable 1B steam generator pressure channels, the Operations Shift Supervisor instructed the I&C Technician to insert a simulated signal into one of the inoperable pressure channels to avoid an inadvertent safety injection actuation. The decision that a safety injection actuation was not needed and the simulator should be installed was reviewed and concurred on by the Shift Supervisor (SRO), the Control Room Foreman (SRO), and the Reactor Engineer/Technical Manager acting as Shift Technical Advisor. During the time this signal was inserted the Control Room operators were monitoring the 1B steam generator parameters and reactor coolant system parameters very closely for the steam break accident.

G. SAFETY SYSTEM RESPONSES:

None.

III. CAUSE OF EVENT

A. IMMEDIATE CAUSE:

The immediate cause of the event was the common mode failure of two of the three 1B steam generator pressure channels.

B. INTERMEDIATE CAUSE:

The common mode failure of the two 1B steam generator pressure channels was due to the freezing of the pressure channels sensing lines.

C. ROOT CAUSE:

The freezing of the two 1B steam generator pressure channels sensing lines was due to inadequate cold weather operations and procedures.

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TEXT (If more space is required, use additional NRC Form 364A's) (17)

IV. ANALYSIS OF EVENT

This event is reportable in accordance with 10 CFR 50.73, Licensee Event Report System, item (a)(2)(vii)(D) which requires a report of, "any event where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a system designed to mitigate the consequences of an accident". The common mode failure of the two independent 1B steam generator pressure channels was an event where a single condition caused two independent channels to become inoperable in a system designed to mitigate the consequences of an accident.

An assessment was performed considering both the safety consequences and implications of this event with the following results and conclusions:

There were no operational or safety consequences attributed to the common mode failure of the two 1B steam generator pressure channels because:

- o The failures and failure mode were determined very quickly.
- o One pressure channel remained fully operable throughout the event.
- o Unit load was reduced in preparation for taking unit off the line in 6 hours per plant Technical Specification action statement.
- o A simulated signal was inserted into one of the inoperable pressure channels to avoid an inadvertent safety injection actuation and potential for a subsequent detrimental transient on the plant.
- o The inoperable pressure channels were repaired, calibrated and returned to service quickly.

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There was the following safety implication attributed to the common mode failure of the two 1B steam generator pressure channels:

- o Was the plant still protected against the steam line break accident with the 2 inoperable 1B steam generator pressure channels?

The R.E. Ginna Nuclear Power Plant Updated Final Safety Analysis Report (Ginna/UFSAR) section 15.1 states in part that the following systems provide the necessary protection against a steam pipe rupture.

1. Safety injection system actuation on the following:
 - a. Two-out-of-three pressurizer low pressure signals.
 - b. Two-out-of-three low pressure signals in any steam line.
 - c. Two-out-of-three high containment pressure signals.

Based on this review of the UFSAR, blocking of the steam generator low pressure safety injection signal has negligible effect on the most limiting transient involved.

Based on the above it can be concluded that safety injection actuation for the steam line break would still have taken place from either low pressurizer pressure or high containment pressure thus assuring the public's health and safety at all times.

V. CORRECTIVE ACTION

A. ACTION TAKEN TO RETURN AFFECTED SYSTEMS TO PRE-EVENT NORMAL STATUS:

- o The cold air situation in the area of the affected pressure transmitter sensing lines was immediately rectified.

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- o The frozen sensing lines were thawed out and the affected pressure channels calibrated satisfactorily and returned to service.
- o Unit load was returned to full power.

B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE:

- o Rewrite Administrative Procedure A-54.4.1 (Cold Weather Walkdown Procedure) to provide a better trigger mechanism for initiation and to provide specific quantitative guidance for areas, components, and temperature criteria.
- o Add thermometers in temperature sensitive areas of affected buildings.
- o Add temperature readings of temperature sensitive areas to Aux. Operators Log.
- o Initiate Engineering Work Request to review the adequacy of HVAC systems in the Intermediate Building.
- o Evaluate the integrity of the affected steam generator pressure instrument tubing.
- o Evaluate relocation/replacement of the affected steam generator pressure instrument tubing.
- o Replace existing outside air louver with manual positive sealing louver.
- o Review other potential corrective action to preclude freezing of instrument lines.

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VI. ADDITIONAL INFORMATION:

A. FAILED COMPONENTS:

None

B. PREVIOUS LERs ON SIMILAR EVENTS:

A similar LER event historical search was conducted with the following results: No documentation of similar LER events with the same root cause at Ginna Station could be identified.

C. SPECIAL COMMENTS:

Sensing line for PT-479 also froze on 12-5-80, which did not result in a LER. A main feedwater instrument line also froze on 12-7-84. This entire issue of instrument line operability is discussed in NRC Inspection Report 88-26.



ROCHESTER GAS AND ELECTRIC CORPORATION • 89 EAST AVENUE, ROCHESTER, N.Y. 14649-0001

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January 10, 1989

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

Subject: LER-88-010, Simultaneous Loss of Two Safety Related
"B" Steam Generator Pressure Channels, Due to Sensing
Line Freezing, Causes a Common Mode Failure Condition
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

In accordance with 10 CFR 50.73, Licensee Event Report System, item (a)(2)(vii)(D) which requires a report of, "any event where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a system designed to mitigate the consequences of an accident", the attached Licensee Event Report LER 88-010 is hereby submitted.

This event has in no way affected the public's health and safety.

Very truly yours,


Robert C. McCreedy
General Manager
Nuclear Production

xc: U.S. Nuclear Regulatory Commission
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Ginna USNRC Senior Resident Inspector

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