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## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8906230250 DOC.DATE: 89/06/19 NOTARIZED: NO DOCKET #
FACIL:50-244 Robert Emmet Ginna Nuclear Plant, Unit 1, Rochester G 05000244
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BACKUS,W.H. Rochester Gas & Electric Corp.
MECREDY,R.C. Baltimore Gas & Electric Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 89-003-00:on 890518,during performance of periodic test PT-32.1,procedural inadequacy causes safety injection.
W/8 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 10
TITLE: 50.73/50.9 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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June 19, 1989

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

Subject: LER-89-003, During The Performance Of Periodic Test (PT-32.1), A Procedural Inadequacy In This Procedure Causes An Inadvertent Safety Injection
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

In accordance with 10 CFR 50.73, Licensee Event Report System, item (a)(2)(iv) which requires a report of, "any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF) including the Reactor Protection System (RPS)", the attached Licensee Event Report LER-89-003 is hereby submitted.

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

Very truly yours,

Robert C Mecredy

Robert C. Mecredy
General Manager
Nuclear Production

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King of Prussia, PA 19406

Ginna USNRC Senior Resident Inspector

Cert No. P340956943

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NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES 8/31/85

# LICENSEE EVENT REPORT (LER)

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TITLE (4) During Performance of Periodic Test (PT-32.1) A Procedural Inadequacy In This Procedure Causes An Inadvertent Safety Injection

| 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) |
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| 0 5 | 1 8 | 8 9 | 8 9 | — 0 0 3 | — 0 0 | 0 6 | 1 9 | 8 9 | | 0 5 0 0 0 |

| | |
|---|---|
| OPERATING MODE (9) | N |
| 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) | ☐ | 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 |
|---|---|
| Wesley H. Backus<br>Technical Assistant to the Operations Manager | 3 1 5 5 2 4 - 4 4 4 6 |

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

| CAUSE | SYSTEM | COMPONENT | MANUFAC-TURER | REPORTABLE TO NPRDS | | CAUSE | SYSTEM | COMPONENT | MANUFAC-TURER | REPORTABLE TO NPRDS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| B | J E | R L Y | W 1 2 0 | Y | | | | | | | |
| | | | | | | | | | | | |

| SUPPLEMENTAL REPORT EXPECTED (14) | | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|---|---|---|---|---|---|
| ☐ YES (If yes, complete EXPECTED SUBMISSION DATE) | ☒ NO | | | | |

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

On May 18, 1989 at 0518 EDST, with the reactor in the cold/refueling condition, an inadvertent safety injection occurred.

Only the A train SI logic actuated and no containment ventilation isolation signal was received. All A train equipment not in pull stop operated as designed. Other SI equipment did not operate as it was either in pull stop for testing or was "B" train actuated.

The underlying cause of the inadvertent SI was determined to be procedural inadequacy. The underlying cause of the failure of the "B" train SI logic to actuate was determined to be mechanical interference due to inadequate installation and inspection requirements.

After the cause of the event was identified, the SI and containment isolation signals were reset and equipment was restored to its pre-event condition.

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

## I. PRE-EVENT PLANT CONDITIONS

The unit was in cold/refueling shutdown for the Annual Refueling Maintenance Outage. Results and Test personnel were performing PT-32.1 (Plant Safeguard Logic Test - "A" or "B" Trains) and RSSP-15.13 (Inservice Inspection Hydro Test of "B" Loop Accumulator (Class B). The "B" Safety Injection Pump was operating for the accumulator hydro.

## II. DESCRIPTION OF EVENT

### A. DATES AND APPROXIMATE TIMES FOR MAJOR OCCURRENCES:

- May 18, 1989, 0518 EDST: Event date and time.
- May 18, 1989, 0518 EDST: Discovery date and time.
- May 18, 1989, 0544 EDST: Safety Injection and Containment Isolation reset.

### B. EVENT:

On May 18, 1989 at 0518 EDST, the reactor was in the cold/refueling shutdown condition. Plant safeguard logic test A or B train was in progress on the A train per step 6.9.2 of Periodic Test Procedure PT-32.1.

During the performance of step 6.9.2 of PT-32.1, which states, "Simulate pressurizer pressure to 2100 psig (~ 30MA) for P-429, P-430, and P-431", an Automatic Safety Injection (SI) occurred from 2/3 Logic Pressurizer Pressure less than 1750 psig.

Only the A train SI logic actuated and no containment ventilation isolation signal was received. All A train equipment not in pull stop operated as designed. Other SI equipment did not operate as it was either in pull stop for the test or was B train actuated.

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Because the B SI pump was operating for the accumulator hydro, MOV-825A, one of the SI pump redundant suction valves from the Refueling Water Storage Tank (RWST) was open. When the inadvertent SI occurred, MOV-826B, SI pump suction from the Boric Acid Storage Tanks (BAST), opened resulting in RWST water back-flowing to the BAST's diluting them below the 12% by weight boric acid. The Control Room operators stopped the 1B SI pump and closed MOV-825A to stop the BAST's dilution.

After the cause of the event was identified, the SI and containment isolation signals were reset and equipment was restored to its pre-event condition.

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 indications in the Control Room.

F. OPERATOR ACTION:

Following the inadvertent SI, the Control Room operators observed the abnormal responses of only the A train SI actuation and no containment ventilation isolation actuation. The Control Room operators stopped the B SI pump and closed MOV-825A (SI pump suction from the RWST).

After the cause of the event was identified the SI and containment isolation signals were reset and equipment was restored to its pre-event condition.

G. SAFETY SYSTEM RESPONSES:

Only the A train SI logic actuated and the containment ventilation isolation signal was not received as designed. All A train equipment not in pull stop operated as designed. Other SI equipment did not operate as it was either in pull stop or was B train actuated.

## III. CAUSE OF EVENT

A. IMMEDIATE CAUSE:

The inadvertent SI actuation was caused by the following actions performed for PT-32.1:

- Pressurizer pressure channel P-429 injected with simulated signal of approximately 2100 psig.
- Pressurizer pressure channel P-430 low pressure SI bistable tripped prior to injecting simulated signal of approximately 2100 psig.
- Pressurizer pressure channel P-430 injected with simulated signal of approximately 2100 psig.
- With 2 out of the selected 3 pressurizer pressure channels greater than 1992 psig, auto SI from low pressurizer pressure or low steam line pressure auto unblocks. All the steam line pressure channels had simulated signals of greater than 700 psig injected into them, to satisfy test conditions and prevent auto SI when the auto unblock occurred.

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- o With pressurizer channel P-430 low pressure SI bistable in the trip mode and pressurizer pressure channel P-431 at 0 psig, this completed the 2 out of 3 low pressurizer pressure SI logic thus actuating SI.

The failure of the B train SI logic to actuate was due to mechanical interference between the plunger of a relay installed during the 1989 outage and a wire moved subsequent to the relay installation. This wire was moved for Engineering Work Request (EWR) 4769.

The failure of the containment ventilation isolation to actuate was due to an incomplete circuit because of a wire being removed during the performance of EWR-4769.

## B. ROOT CAUSE:

The underlying cause of the inadvertent SI was determined to be procedural inadequacy in that the PT-32.1 procedure did not explicitly state how to simulate the pressurizer pressure signal. With the procedure not explicitly stating how to simulate the pressure signal, the Instrument and Control Technician followed the normal practice of placing the affected channel in defeat prior to injecting the simulated signal. This was contrary to what was required because it set up part of the logic for the inadvertent SI.

The underlying cause of the failure of the "B" train SI logic to actuate due to the mechanical interference was because the installation and inspection requirements of the system modification overlooked the possibility of mechanical interference.

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The underlying cause of the failure of the containment ventilation isolation to actuate, due to the incomplete circuit, was because of the incomplete knowledge of the wiring configuration in the relay rack involved, making it difficult to give specific installation requirements for EWR-4769.

## IV. ANALYSIS OF EVENT

This event is reportable in accordance with 10 CFR 50.73, Licensee Event Report System, item (a)(2)(iv) which requires a report of, "any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF) including the Reactor Protection System (RPS)". The inadvertent SI was an automatic actuation of a ESF system.

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 or implications attributed to the inadvertent SI, or the failure of the B train SI logic to actuate, or the failure of the containment ventilation isolation to actuate because:

- The SI signal was not a valid signal.
- The plant was in cold shutdown and the SI system was not required to be operational.
- Other SI equipment did not operate because it was either in pull stop or held.
- The inadvertent SI did not operationally affect the plant.

- o The failure of the B train SI logic and the containment ventilation isolation to actuate was due to modifications performed during the outage. The scheduled post modification testing would have identified the above problems.

Based on the above, it can be concluded that the public's health and safety was assured at all times.

## V. CORRECTIVE ACTION

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

- o After the cause of the event was identified the SI and containment isolation signals were reset and equipment was restored to its pre-event condition.
- o Removed pressurizer channel P-430 low pressure SI bistable from the trip mode thus terminating the SI actuating signal.
- o The Instrument and Control (I&C) personnel removed the mechanical interference for the affected relay and investigated and found no other interferences with these plungers.
- o Engineering and I&C personnel investigated and directed the termination of the missing wire on the containment ventilation isolation relay.
- o Post modification testing was satisfactorily performed for all affected components.
- o The Boric Acid Storage Tank solution was returned to greater than 12 percent by weight boric acid.

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B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE:

- Labels have been installed on appropriate latching type relays to warn not to obstruct relay plunger.
- The Results and Test Department has evaluated the use of simulated signals, for both online and outage conditions. No improvements are needed for online conditions. They will evaluate and establish an improved process to provide clearer direction for methods of simulating signals for outage activities. The completion date for this activity is January 1, 1990.
- A meeting was held between Design Engineering, Construction, Liaison Engineers, Quality Control, and Maintenance to evaluate ways to prevent inadvertent mechanical blocking of relays. Suggestions resulting from this meeting will be evaluated for further actions.
- Corrective action for the missing wire that caused the failure of the containment ventilation isolation to actuate will be tracked by another Corrective Action Report (CAR) 1963.

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## VI. ADDITIONAL INFORMATION:

### A. FAILED COMPONENTS:

The affected component was a Westinghouse Electric Corporation Relay W/Magnetic Latch, part number: BFD66S/BFMLS.

### B. PREVIOUS LERs ON SIMILAR EVENTS:

A similar LER event historical search was conducted with the following results:

LER 85-004, Automatic Actuation of Engineered Safety Feature (ESF).

This LER was written due to an inadvertent SI at cold shutdown because of a procedure deficiency. The Corrective Action taken for LER 85-004 did not prevent the occurrence described in LER 89-003 because the circumstances and procedures involved were totally different.

### C. SPECIAL COMMENTS:

None.