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April 8, 1996

U.S. Nuclear Regulatory Commission
Document Control Desk
Attn: Allen R. Johnson
PWR Project Directorate I-1
Washington, D.C. 20555

Subject: LER 96-004, Decrease in Steam Generator Level, Caused by Failed Open Atmospheric Relief Valve, Results in Automatic Start of Auxiliary Feedwater Pump on Lo-Lo Level
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 a manual or automatic actuation of any engineered safety feature (ESF), including the reactor protection system (RPS)", the attached Licensee Event Report LER 96-004 is hereby submitted.

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

Very truly yours,

Robert C. Mecredy

xc: U.S. Nuclear Regulatory Commission
Mr. Allen R. Johnson (Mail Stop 14B2)
PWR Project Directorate I-1
Washington, D.C. 20555

U.S. Nuclear Regulatory Commission
Region I
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NRC FORM 366 (4-95)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 EXPIRES 04/30/98 ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)		

FACILITY NAME (1) R.E. Ginna Nuclear Power Plant	DOCKET NUMBER (2) 05000244	PAGE (3) 1 OF 6
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TITLE (4)
 Decrease in Steam Generator Level, Caused by Failed Open Atmospheric Relief Valve, Results in Automatic Start of Auxiliary Feedwater Pump on Lo-Lo Level

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
03	09	96	96	-- 004	-- 00	04	08	96	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	3	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
		20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)
POWER LEVEL (10)	000	20.2203(a)(1)	20.2203(a)(3)(i)	50.73(a)(2)(ii)	50.73(a)(2)(x)
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)	50.73(a)(2)(iii)	73.71
		20.2203(a)(2)(ii)	20.2203(a)(4)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	OTHER
		20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME John T. St. Martin - Technical Assistant	TELEPHONE NUMBER (include Area Code) (716) 771-3641
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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
B	SB	PM	F012	YES					

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)		
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On March 9, 1996, with the plant in Mode 3 with the reactor coolant system being maintained at a temperature of 547 degrees F and a pressure of 2235 PSIG, the "A" steam generator atmospheric relief valve failed open. This resulted in steam flow from the "A" steam generator, causing a decrease in "A" steam generator water level. At approximately 2123 EST, the "A" steam generator decreased below the Lo-Lo level setpoint of 17%, and there was an expected autostart of the "B" auxiliary feedwater pump.

Immediate action was to close the upstream manual block valve for the atmospheric relief valve to stop the steam flow from the "A" steam generator.

The underlying cause of the failed open atmospheric relief valve was particulate material buildup on the internal pilot valve for the volume booster relay to the air actuator for the atmospheric relief valve.

This event is NUREG-1022 Cause Code (B).

Corrective action to prevent recurrence is outlined in Section V.B.

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

I. PRE-EVENT PLANT CONDITIONS:

On March 9, 1996, the plant was in Mode 3 (hot shutdown), as a result of a reactor trip that occurred on March 7, 1996 (reported in LER 96-002). (Refer to Ginna Docket No. 50-244, LER 96-002.) The reactor coolant system (RCS) was being maintained at a temperature of 547 degrees F and a pressure of 2235 PSIG in preparation for plant startup. The "A" auxiliary feedwater (AFW) pump was operating to maintain water inventory in the steam generators. The Control Room operators were in the process of opening the "A" main steam isolation valve (MSIV) to warm up the secondary plant. To equalize pressure across the MSIV disc prior to opening it, the Control Room operator manually opened the atmospheric relief valve (ARV) for the "A" steam generator (SG) from the Main Control Board (MCB).

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II. DESCRIPTION OF EVENT:

A. DATES AND APPROXIMATE TIMES OF MAJOR OCCURRENCES:

- o March 9, 1996, 2120 EST: "A" steam generator atmospheric relief valve (ARV) fails open.
- o March 9, 1996, 2123 EST: Event date and time.
- o March 9, 1996, 2123 EST: Discovery date and time.
- o March 9, 1996, 2127 EST: Upstream manual block valve for ARV is closed.

B. EVENT:

On March 9, 1996, at approximately 2120 EST, with the plant in Mode 3, the Control Room operators manually opened the ARV for the "A" SG from the MCB to reduce pressure upstream of the MSIV. The ARV failed open (to approximately 60% full open).

Attempts to manually close the ARV from the MCB were unsuccessful. During the time the ARV was open with the upstream manual block valve open, steam flow from the "A" SG caused a decrease in SG level. Level in the "A" SG decreased below the Lo-Lo level setpoint of 17%, resulting in autostart of the "B" AFW pump at approximately 2123 EST. (The "A" AFW pump also received an autostart signal, but was already operating.) An auxiliary operator locally closed the block valve for the ARV at approximately 2127 EST on March 9. After the block valve for the ARV was closed, the Control Room operators restored "A" SG level above 17% and manually stopped the "B" AFW pump.

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

None

D. OTHER SYSTEMS OR SECONDARY FUNCTIONS AFFECTED:

None

E. METHOD OF DISCOVERY:

This event was immediately apparent when the "A" SG ARV failed open and "A" SG level began to decrease. The autostart of the "B" AFW pump was an expected response to Lo-Lo level in the "A" SG.

F. OPERATOR ACTION:

The Control Room operators promptly identified the failed open "A" SG ARV and performed appropriate actions to stop the steam flow and restore SG levels. The Control Room operators notified the NRC per 10CFR50.72 (b) (2) (ii), non emergency four hour notification, at approximately 2319 EST on March 9, 1996.

G. SAFETY SYSTEM RESPONSES:

All safeguards equipment functioned properly. The "B" AFW pump started when "A" SG level decreased below 17%. (The "A" AFW pump also received an autostart signal, but was already operating.)

III. CAUSE OF EVENT:

A. IMMEDIATE CAUSE:

The immediate cause of the autostart of the "B" AFW pump was Lo-Lo level in the "A" SG.

B. INTERMEDIATE CAUSE:

The intermediate cause of Lo-Lo level in the "A" SG was steam flow through the failed open "A" SG ARV. The ARV was estimated to have failed at approximately 60% full open, based on valve position indication identified during troubleshooting of the ARV after it failed to close.

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C. ROOT CAUSE:

The underlying cause of the failed open "A" SG ARV was a continuous supply of air pressure to the air actuator for the ARV. Continuous air was supplied because the volume booster relay was sticking from particulate material buildup on the internal pilot valve for this pneumatic relay, which maintained the ARV in the open position.

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This event is NUREG-1022 Cause Code (B), "Design, Manufacturing, Construction / Installation".

The failure of the "A" S/ G ARV does not meet the NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants", definition of a "Maintenance Preventable Functional Failure".

V. 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 a manual or automatic actuation of any engineered safety feature (ESF), including the reactor protection system (RPS)". The start of an AFW pump is an actuation of an ESF.

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 autostart of the "B" AFW pump on Lo-Lo SG level because:

- o The Ginna Station Updated Final Safety Analysis Report (UFSAR) does not specifically evaluate a stuck open SG ARV in Mode 3. However, this event is bounded by the combined SG ARV and main feedwater regulating valve (MFRV) failure evaluated in UFSAR Section 15.1.6. The UFSAR evaluation discusses five scenarios in which one or both ARVs are stuck open with (and without) a coincident MFRV failure. The results of these evaluations demonstrated that they were all bounded by the steam line rupture event (UFSAR Section 15.1.5). Therefore, the stuck open ARV in Mode 3 is bounded by previously evaluated scenarios.
- o The autostart of the "B" AFW pump occurred at the required SG level, with SG levels being quickly stabilized.

Based on the above, it can be concluded that the plant operated as designed, that there were no unreviewed safety questions, and that the public's health and safety was assured at all times.

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V. CORRECTIVE ACTION:

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

- o The SGs were returned to their normal operating levels by addition of auxiliary feedwater.
- o The "B" AFW pump was stopped after SGs were restored to their normal operating levels.
- o The volume booster relay for the "A" SG ARV was replaced.

B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE:

- o The volume booster relay for the "B" SG ARV will be replaced during the 1996 refueling outage.
- o There is one other application of this type of volume booster relay. This relay will also be replaced.
- o Particulate and hydrocarbon air quality checks will be performed on the Instrument Air system during the 1996 outage.
- o The composition of the material buildup on the internal pilot valve will be identified. Additional corrective actions will be initiated, based on the source of this material.
- o The need for more frequent particulate and hydrocarbon air quality checks will be evaluated.
- o Lessons learned were identified and shared with the industry via Nuclear NETWORK (entry OE 7735).
- o Lessons learned will be included in future operator training. Procedure enhancements will be considered to assure more timely isolation of an ARV.
- o The frequency of preventive maintenance performed on components in the instrument air system will be evaluated.

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VI. ADDITIONAL INFORMATION:

A. FAILED COMPONENTS:

The "A" SG ARV is a Masoneilan valve and operator Model 38-40413-8a. The volume booster relay is a Fairchild Industrial Products Division, Model 20.

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 could be identified.

C. SPECIAL COMMENTS:

None