A Subsidiary of RGS Energy Group, Inc.

ROCHESTER GAS AND ELECTRIC CORPORATION • 89 EAST AVENUE, ROCHESTER, N.Y. 14649-0001 • 716 546-2700 www.rge.com

ROBERT C. MECREDY
Vice President
Nuclear Operations

October 19, 2000

U.S. Nuclear Regulatory Commission
Document Control Desk
Attn: Guy S. Vissing
Project Directorate I
Washington, D.C. 20555

Subject: LER 2000-002, Assumed Plant Fire May Cause Multiple Shorts and Result in Loss of Emergency Diesel Generator, Which is an Unanalyzed Condition
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Vissing:

The attached Licensee Event Report LER 2000-002, is submitted in accordance with 10 CFR 50.73, Licensee Event Report System, item (a) (2) (ii), which requires a report of, "Any event or condition ... that resulted the nuclear power plant being ... In an unanalyzed condition that significantly compromised plant safety".

Very truly yours,

Robert C. Mecredy

Robert C. Mecredy

xc: Mr. Guy S. Vissing (Mail Stop 8C2)
Project Directorate I-1
Division of Licensing Project Management
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

U.S. NRC Ginna Senior Resident Inspector

1000195

IE22

NRC FORM 366 (6-1998)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001
Estimated burden per response to comply with this mandatory information collection 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-6 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.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
R. E. Ginna Nuclear Power Plant	05000244	1 OF 8

TITLE (4)
Assumed Plant Fire May Cause Multiple Shorts and Result in Loss of Emergency Diesel Generator, Which is an Unanalyzed Condition

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
09	19	2000	2000	- 002 -	00	10	19	2000		05000
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9): 5

POWER LEVEL (10): 000

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)
	20.2203(a)(1)		20.2203(a)(3)(i)	X	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)		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	TELEPHONE NUMBER (Include Area Code)
John T. St. Martin - Technical Assistant	(716) 771-3641

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

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-spaced typewritten lines) (16)

On September 19, 2000, the plant was in Mode 5. In activities unrelated to plant conditions, it was discovered that, for a postulated fire in the Screen House, there could be a loss of control power to the "B" emergency diesel generator due to postulated shorting of undervoltage cables from the 480 volt AC safeguards bus 17.

This condition created the potential for no emergency diesel generators being available to provide emergency AC power, which is not an analyzed condition. The cause of this condition dates back to the original fire protection analyses which took place in the late 1970's and early 1980's for R.E. Ginna Nuclear Power Plant.

Additional isolation fuses have been installed to isolate the specific cables. In the event a fire occurs in the Screen House, these fuses will open to isolate the cables from postulated faults, thus preventing the downstream control power fuses from opening.

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

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
R. E. Ginna Nuclear Power Plant	05000244	2000	- 002 -	00	2 OF 8

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

I. PRE-EVENT PLANT CONDITIONS:

On September 19, 2000, at approximately 1400 EDST, the plant was in Mode 5 for the 2000 refueling outage at Ginna Station. In activities unrelated to plant conditions, engineers from Nuclear Engineering Services (NES) had been conducting an internal Appendix R conformance review. During this review, it was discovered that, for a postulated fire in the Screen House, there could be a loss of control power to the "B" emergency diesel generator (EDG) due to postulated shorting of undervoltage cables from 480 volt AC safeguards bus 17. Shorting of these cables could open fuses supplying 125 volt DC to the EDG controls.

II. DESCRIPTION OF EVENT:

A. DATES AND APPROXIMATE TIMES OF MAJOR OCCURRENCES:

- December 28, 1979: Letter is sent to the NRC, forwarding "Fire Protection - Shutdown Analysis" for R.E. Ginna Nuclear Power Plant.
- 1982 Refueling Outage: Modification to relocate undervoltage relays to the Screen House is completed.
- 1982 through 1984: Various analyses are performed to support Appendix R Alternative Shutdown System Report.
- January 16, 1984 and October 4, 1984: Appendix R Alternative Shutdown System Report and revised report are forwarded to the NRC.
- September 19, 2000, 1400 EDST: Event date and time.
- September 19, 2000, 1400 EDST: Discovery date and time.
- September 19, 2000, 1630 EDST: PORC determines this condition is reportable to the NRC.
- September 19, 2000, 1653 ESDT: NRC is notified of this condition per 10CFR50.72 (b) (2) (i).

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

- October 4, 2000, 1000 EDST: Modification to install additional isolation fuses was completed, and the modification is turned over for use.

B. EVENT:

On September 19, 2000, at approximately 1400 EDST, the plant was in Mode 5 for the 2000 refueling outage at Ginna Station. In activities unrelated to plant conditions, engineers from Nuclear Engineering Services (NES) had been conducting an internal Appendix R conformance review. During this review, it was discovered that, for a postulated fire in the Screen House, there could be a loss of control power to the "B" emergency diesel generator (EDG) due to postulated shorting of undervoltage cables from 480 volt AC safeguards bus 17. Shorting of these cables could open fuses supplying 125 volt DC to the EDG controls.

More specifically, the fire could cause multiple grounds on the cables for circuits for the safeguards bus 17 undervoltage system. Grounds on these cables could result in opening the DC control power fuses for the "B" EDG, thus preventing the start of the "B" EDG. For safe shutdown contingencies involving this postulated fire, it is assumed that the "A" EDG is not available because of the effects of the fire and that no repair actions are needed for the "B" EDG to provide emergency 480 volt AC power to the safeguards buses. In this postulated scenario, there is the potential for no EDGs being available to provide emergency AC power. Performing any repairs such that the "B" EDG becomes available to provide emergency AC power is not incorporated in the Appendix R compliance strategy.

The Plant Operations Review Committee (PORC) met at approximately 1615 EDST on September 19, 2000 to review this condition. The PORC determined that this condition was reportable to the NRC per 10CFR50.72 (b) (2) (i). PORC directed that administrative controls be established to ensure resolution of this condition prior to the plant leaving Mode 5 during the current refueling outage.

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

None

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
R. E. Ginna Nuclear Power Plant	05000244	2000	-- 002 --	00	4 OF 8

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

D. OTHER SYSTEMS OR SECONDARY FUNCTIONS AFFECTED:

None

E. METHOD OF DISCOVERY:

This condition was self-identified by an NES engineer during an internal Appendix R conformance review. This condition was reviewed by the PORC and was determined to be a condition that was not analyzed.

F. OPERATOR ACTION:

After review of this condition by PORC, Operations supervision notified the Control Room operators. The Shift Supervisor subsequently notified the NRC per 10CFR50.72 (b) (2) (i), non-emergency four hour notification, at approximately 1653 EDST on September 19, 2000. Operators maintained the Mode 5 restriction, pending resolution of this condition. The restriction was lifted October 4, 2000, when the plant change that installed additional isolation fuses was completed and turned over for use.

G. SAFETY SYSTEM RESPONSES:

None. This condition meets the definition for the NRC Performance Indicator (PI) "Safety System Functional Failure".

III. CAUSE OF EVENT:

A. IMMEDIATE CAUSE:

The immediate cause of the plant being in an unanalyzed condition was not meeting the compliance strategy for an Appendix R safe shutdown. Repair actions would have been needed to provide emergency AC power from the "B EDG. Repairing the "B" EDG is not incorporated in the Appendix R compliance strategy.

B. ROOT CAUSE:

The underlying cause of the unanalyzed condition dates back to the original fire protection analyses which took place in the late 1970's and early 1980's for R.E. Ginna Nuclear Power Plant.

The original analyses concerning safe shutdown after postulated fires were performed during the 1977 to 1979 time frame. These analyses evaluated cable separation and the capability to safely shut down the R.E. Ginna Nuclear Power Plant following postulated fires. A computerized listing of electrical cables and equipment necessary to achieve safe shutdown was prepared during this time.

During the baseline Appendix R reviews, a modification was performed to the safeguards buses 17 and 18 undervoltage systems during the 1982 refueling outage. This modification changed the physical location of the auxiliary undervoltage relays from the relay room in the Control building to the Screen House and installed two new undervoltage cables from the bus 17 auxiliary undervoltage relays in the Screen House to the "B" EDG control circuits, and two new undervoltage cables from bus 18 auxiliary undervoltage relays to the "A" EDG. After the relocation of these relays, an elementary wiring diagram was released as the "as-built" drawing. This "as-built" was available during the time the analyses were being performed However, the updated elementary wiring diagram was not utilized during these analyses and the fire effects on these new cables were not considered. Therefore, the Appendix R Alternative Shutdown System Report (first forwarded to the NRC in a letter dated January 16, 1984, and subsequently revised and resubmitted on October 4, 1984) was based on an incorrect physical location for the Screen House undervoltage relays.

IV. ANALYSIS OF EVENT:

This event is reportable in accordance with 10 CFR 50.73, Licensee Event Report System, item (a) (2) (ii), which requires a report of, "Any event or condition ... that resulted the nuclear power plant being ... In an unanalyzed condition that significantly compromised plant safety". The potential loss of AC emergency power due to this postulated fire scenario is not an analyzed condition (performing repairs such that the "B" EDG becomes available to provide emergency AC is not incorporated in the Appendix R compliance strategy).

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

There were no operational or safety consequences or implications attributed to the scenario of this postulated fire because:

- At no time did a significant fire occur in the Screen House that could have created fire-induced circuit failures.
- In the unlikely event that a significant fire had actually occurred in the Screen House, the following factors would have mitigated the severity of the consequences:

    a. To achieve the amount of cable damage that would be capable of opening the "B" EDG DC control power fuses requires multiple grounds to occur. This cable would have to fail to ground coincident with a ground on the negative side of the "B train 125 volt DC system.

    b. There are automatic fire detection and suppression capabilities in the area.

- The restoration actions needed for returning the "B" EDG to required status are relatively uncomplicated: change the position of one switch on the "B" EDG control panel in the "B" EDG room (to provide local control of the "B" EDG), and install fuses in the "B" EDG Control Panel.
- The impact of the corrective actions taken in response to this condition on the Ginna Station Probabilistic Safety Analysis (PSA) was evaluated. Both Core Damage Frequency (CDF) and Large Early Release Frequency (LERF) will increase only slightly, by a factor not exceeding 2E-4, or 0.02%.

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:

Additional isolation fuses have been installed in the "B" EDG Control Panel, to isolate the specific cables that are routed in the Screen House. In the event a fire occurs in the Screen House, these fuses will isolate the associated cables from postulated faults, and the remainder of the "B" EDG control circuitry will continue to function with no interruption. The fuses will function in a manner to ensure that circuit integrity is maintained for all normal conditions, and will protect the "B" EDG control circuit from an event that could otherwise make the equipment unable to operate.

B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE:

NOTE: There are no NRC regulatory commitments in this Licensee Event Report.

- Reliance on an outdated cable listing will not recur because the 20 year old listing was abandoned and is no longer available. A new database ("Cable and Raceway and Tracking System" or "CRTS") has taken its place. CRTS has been manually populated from controlled drawing sources and is the source of cable and equipment information for the Appendix R conformance review that is in progress.

- Using superseded revisions of controlled documents will not recur because of drawing controls, procedure controls and the configuration management information system (CMIS) database. Procedures require that NES engineers only use the current drawing revisions, and NES engineers are aware of these procedural requirements. All engineers have access to the CMIS database that lists the current revisions and status of each document.

- The Appendix R conformance review project includes checks against controlled drawings to ensure that all applicable cables to Appendix R electrical equipment are considered in the Safe Shutdown Analysis. This process will identify any other cases of cables not considered in the original analysis, if they exist.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
R. E. Ginna Nuclear Power Plant	05000244	2000	-- 002 --	00	8 OF 8

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

- Nuclear Engineering Services (NES) has implemented the Change Impact Evaluation process to review all modifications for their potential impact on Appendix R and other programs.

VI. ADDITIONAL INFORMATION:

A. FAILED COMPONENTS:

None

B. PREVIOUS LERs ON SIMILAR EVENTS:

A similar LER historical search was conducted with the following results: LER 96-014 was a similar LER event with a similar root cause. Corrective actions for LER 96-014 occurred after the events that caused LER 2000-002.

C. SPECIAL COMMENTS:

None

D. IDENTIFICATION OF COMPONENTS REFERRED TO IN THIS LER:

COMPONENT	IEEE 803 FUNCTION	IEEE 805 SYSTEM IDENTIFICATION
fuse	FU	EK
circuit breaker	52	ED
Bus 17	BU	ED
diesel generator	DG	EK
screen house	BLDG	NN
cable	CBL	ED