

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9812290115 DOC. DATE: 98/12/21 NOTARIZED: NO DOCKET #
 FACIL: 50-244 Robert Emmet Ginna Nuclear Plant, Unit 1, Rochester G 05000244
 AUTH. NAME AUTHOR AFFILIATION
 ST MARTIN, J. Rochester Gas & Electric Corp.
 MECREDY, R.C. Rochester Gas & Electric Corp.
 RECIP. NAME RECIPIENT AFFILIATION

VISSING, G.S.

SUBJECT: LER 98-005-00: on 981120, loss of 34.5 KV offsite power
 circuit 751, resulted in automatic start of "B" EDG. Caused by
 faulted cable splice. Performed appropriate actions of
 Abnormal Procedure AP-ELEC.1. With 981221 ltr.

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 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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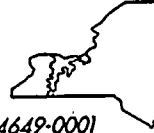
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ROBERT C. MECREDY
Vice President
Nuclear Operations

December 21, 1998

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Project Directorate I-1
Washington, D.C. 20555

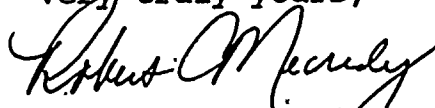
Subject: LER 1998-005, Loss of 34.5 KV Offsite Power Circuit
751, Due to Faulted Cable Splice, Results in Automatic
Start of "B" Emergency Diesel Generator
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Vissing:

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 1998-005 is hereby submitted.

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

Very truly yours,



Robert C. Mecredy

xc: Mr. Guy S. Vissing (Mail Stop 14B2)
Project Directorate I-1
Division of Reactor Projects - I/II
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

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PDR ADDCK 05000244
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LICENSEE EVENT REPORT (LER)

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

APPROVED BY OMB NO. 3150-010 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
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person is not required to respond to, the information collection.

FACILITY NAME (1)

R. E. Ginna Power Plant

DOCKET NUMBER (2)

05000244

PAGE (3)

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TITLE (4)

Loss of 34.5 KV Offsite Power Circuit 751, Due to Faulted Cable Splice, Results in Automatic Start of "B" Emergency Diesel Generator

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
11	20	1998	1998	-- 005	-- 00	12	21	1998	FACILITY NAME	DOCKET NUMBER
										05000
									FACILITY NAME	DOCKET NUMBER
										05000
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)										
OPERATING MODE (9)		1		20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)
POWER LEVEL (10)		100		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)		X 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 St.Martin - Technical Assistant

TELEPHONE NUMBER (Include Area Code)

(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
B	EA	CBL5	X000	N					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
---	---	----	-------------------------------------	-------	-----	------

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

On November 20, 1998, at approximately 2259 EST, the plant was in Mode 1 at approximately 100% steady state power. Power from Circuit 751 (34.5 KV offsite power source) was lost. This resulted in deenergization of 4160 Volt bus 12B and "B" train 480 Volt safeguards buses 16 and 17. The "B" Emergency Diesel Generator automatically started and reenergized buses 16 and 17 as per design. There was no change in reactor power or turbine load.

Immediate corrective action was to perform the appropriate actions of Abnormal Procedure AP-ELEC.1 (Loss of 12A And/Or 12B Buses) to stabilize the plant and to verify that the "B" Emergency D/G had started and reenergized buses 16 and 17.

The cause of the loss of power from Circuit 751 was determined to be a faulted splice in underground cable for Circuit 751. This faulted splice was subsequently reconstructed.

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

LICENSEE EVENT REPORT (LER)

TEXT CONTINUATION

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R. E. Ginna Nuclear Power Plant	05000244	1998	-- 005 --	00	2 OF 7

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

I. PRE-EVENT PLANT CONDITIONS

On November 20, 1998, at approximately 2259 EST, the plant was in Mode 1 at approximately 100% steady state reactor power. There were no significant activities in progress. The offsite power configuration to the plant was in the alternate "50% / 50%" offsite power lineup:

- o Circuit 751 (34.5 KV offsite power source) was supplying power to the "B" train 480 Volt safeguards buses 16 and 17 through 34.5 KV to 4160 Volt transformer 12A (12A transformer), via circuit breaker 52/12AX, to 4160 Volt bus 12B, and through the safeguards bus 4160 Volt to 480 Volt transformers 16 and 17.
- o Circuit 767 (34.5 KV offsite power source) was supplying power to the "A" train 480 Volt safeguards buses 14 and 18 through 34.5 KV to 4160 Volt transformer 12B (12B transformer), via circuit breaker 52/12BY, to 4160 Volt bus 12A, and through the safeguards bus 4160 Volt to 480 Volt transformers 14 and 18.

See the attached sketch of the offsite power distribution system.

II. DESCRIPTION OF EVENT

A. DATES AND APPROXIMATE TIMES OF MAJOR OCCURRENCES:

- o November 20, 1998, 2259 EST: Event date and time.
- o November 20, 1998, 2259 EST: Discovery date and time.
- o November 20, 1998, 2259 EST: Control Room operators verify the "B" Emergency Diesel Generator (D/G) operation and that safeguards buses 16 and 17 are energized.
- o November 20, 1998, 2314 EST: Safeguards buses 16 and 17 were transferred to Circuit 767 from the "B" Emergency D/G.
- o November 20, 1998, 2319 EST: The "B" Emergency D/G was stopped and realigned for auto standby.
- o November 22, 1998, 0052 EST: Offsite power configuration was restored to the alternate "50% / 50%" lineup.
- o November 22, 1998, 0059 EST: Circuit 751 was declared operable.

B. EVENT:

On November 20, 1998, at approximately 2259 EST, the plant was in Mode 1 at approximately 100% steady state full power. The Control Room operators received numerous Main Control Board annunciator alarms. Among these alarms were E-3 (INVERTER TROUBLE), L-20 (12A XFMR OR 12A BUS TROUBLE), J-7 (480V MAIN OR TIE BREAKER TRIP), J-9 (SAFEGUARD BREAKER TRIP), E-20, (CV OR PLANT VENT MONITOR PUMP TRIP) and J-32 (EMERGENCY DIESEL GEN 1B PANEL). The Control Room operators determined that the following events had occurred:

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- o Circuit 751 (34.5 KV offsite power source) was deenergized
- o "B" train 480 Volt safeguards buses 16 and 17 had lost their power supply from 4160 Volt bus 12B (buses 16 and 17 had been momentarily deenergized)
- o The "B" Emergency D/G had automatically started and was tied to safeguards buses 16 and 17

The Control Room operators verified that reactor coolant system temperature and pressure were stable, and that there was no change in reactor power or turbine load. They performed the appropriate actions of Abnormal Procedure AP-ELEC.1 (Loss of 12A And/Or 12B Buses) to stabilize the plant. They verified that the "B" Emergency D/G was operating and that safeguards buses 16 and 17 were energized. The Control Room operators observed that Circuit 751 and bus 12B displayed zero (0) voltage. The loss of power from Circuit 751 resulted in undervoltage on safeguards buses 16 and 17, and the "B" Emergency D/G automatically started as per design and reenergized these buses.

The Control Room operators referred to Operating Procedure O-6.9.2 (Establishing and/or Transferring Offsite Power to Bus 12A/Bus 12B) to restore offsite power to 4160 Volt bus 12B and 480 Volt safeguards buses 16 and 17. They referred to Equipment Restoration Procedure ER-ELEC.1 (Restoration of Offsite Power) to restore components to service as needed. The Control Room operators closed 4160 Volt circuit breaker 52/12BX to energize bus 12B from Circuit 767, via the 12B transformer. At approximately 2314 EST, safeguards buses 16 and 17 were transferred to Circuit 767 from the "B" Emergency D/G. (Circuit 767 had remained in operation, supplying "A" train 480 Volt safeguards buses 14 and 18, throughout the event.)

At approximately 2319 EST on November 20, the "B" Emergency D/G was stopped and realigned for auto standby.

Energy Delivery Department personnel inspected Circuit 751 and determined that Circuit 751 incurred a cable fault in "Manhole # 2". The fault was in a splice on the "A" phase of the "B" cable for Circuit 751. The faulted cable splice was reconstructed. After the splice was reconstructed, Circuit 751 was lined up to supply plant loads and reenergized. The offsite power configuration was restored to the alternate "50% / 50%" offsite power lineup at approximately 0052 EST on November 22. Following restoration, Circuit 751 was declared operable at approximately 0059 EST on November 22.

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 due to numerous Main Control Board alarms and other indications in the Control Room when power from Circuit 751 was lost.

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F. OPERATOR ACTION:

Following the undervoltage condition on buses 16 and 17, the "B" Emergency D/G automatically started and reenergized these buses. The Control Room operators performed the appropriate actions to verify that the "B" Emergency D/G was operating and safeguards buses 16 and 17 were energized.

The Control Room operators manually started the "D" containment recirculation fan to restore normal cooling to containment. Subsequently, they manually restarted the "B" containment recirculation fan, which had tripped due to the loss of bus 16. The Control Room operators also started (or verified automatic start of) other plant equipment, including charging pumps, component cooling water pump, and service water pumps.

The Control Room operators restored offsite power (from Circuit 767) to buses 16 and 17, stopped the "B" Emergency D/G, and realigned it for auto standby.

The momentary loss of power to buses 16 and 17 caused the trip of the common sample pump for monitoring of the containment (CNMT) atmosphere by channels R-10A (iodine), R-11 (particulate) and R-12 (noble gas). The Control Room operator manually restarted the common sample pump.

Concurrent with events surrounding the undervoltage condition on buses 16 and 17, the 1B inverter Main Control Board Annunciator E-3 was received when power was lost to Bus 16. Control Room operators assumed that the E-3 alarm indicated a potential loss of the 1B inverter, and conservatively entered Ginna Station Improved Technical Specifications (ITS) Limiting Condition for Operation (LCO) 3.8.7 Condition A. In fact, the inverter was still operable, and the E-3 alarm only indicated that there had been a momentary loss of bypass power to the inverter. Upon resetting of the alarm for the 1B inverter (at approximately 2330 EST on November 20), it was administratively documented that the inverter was restored to service.

The communications link between the Plant Process Computer System (PPCS) and the SPING radiation monitor console failed as per design on loss of power to Bus 16, and was automatically restored when the "B" Emergency D/G reenergized the bus. The communications link failed again during the transfer of Bus 16 to offsite power. As per design, the link required manual action to reset after this fast bus transfer. The link was restored to service at approximately 2350 EST.

The Shift Supervisor notified higher supervision of the loss of offsite Circuit 751. Subsequently, the Shift Supervisor notified the NRC Headquarters Operations Officer (HOO) and Ginna Resident Inspector. The NRC HOO was notified per 10 CFR 50.72 (b) (2) (ii), non-emergency four hour notification, at approximately 2349 EST on November 20, 1998.

G. SAFETY SYSTEM RESPONSES:

All safeguards equipment functioned properly. The "B" Emergency D/G automatically started due to the undervoltage condition on buses 16 and 17, displayed proper voltage and frequency, and reenergized safeguards buses 16 and 17 to supply emergency power.

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Running containment recirculation fans on bus 16 tripped as designed and fans were manually restarted as needed to restore normal cooling to the Containment. The running service water pump on bus 17 tripped as designed and the pump selected for autostart started when power was restored to bus 17.

III. CAUSE OF EVENT

A. IMMEDIATE CAUSE:

The automatic actuation of the "B" Emergency D/G was due to undervoltage on safeguards buses 16 and 17.

B. INTERMEDIATE CAUSE:

The undervoltage on safeguards buses 16 and 17 was due to the loss of power from Circuit 751.

C. ROOT CAUSE:

The underlying cause of the loss of power from Circuit 751 was a cable fault, specifically a faulted cable splice at "Manhole #2" for Circuit 751. The faulted splice was on the "A" phase of the "B" cable for Circuit 751. The faulted splice is an original splice in the cable, installed approximately thirty (30) years ago, and is the only operational fault of a splice on this circuit.

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

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 a manual or automatic actuation of any engineered safety feature (ESF), including the reactor protection system (RPS)", in that the starting of the "B" Emergency D/G was an automatic actuation of an 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 loss of Circuit 751 and start of the Emergency D/G because:

- o All reactor control and protection systems performed as designed.
- o The "B" Emergency D/G was available for operation and functioned as designed to reenergize "B" train safeguards buses 16 and 17.
- o While in this condition, the plant electrical power systems (offsite power sources and the Emergency D/Gs) remained within the requirements of ITS LCO Required Actions 3.8.1.A and 3.4.15.B.

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- o Circuit 767 remained in operation supplying power to the "A" train safeguards buses; subsequently, Circuit 767 was lined up to supply power to the "B" train safeguards buses also.
- o Radiation monitor channels R-10A, R-11, and R-12 were temporarily lost. The common sample pump was manually restarted within a few minutes. This response complied with the requirements of ITS LCO Required Action 3.3.5.B.1.

Based on the above, it can be concluded that the plant operated as designed, and 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 Offsite power was restored to safeguards buses 16 and 17 from Circuit 767, and the "B" Emergency D/G was stopped and realigned for auto standby.
- o The faulted splice was reconstructed by Energy Delivery Department personnel.
- o Circuit 751 was cleared for use by Energy Operations and Circuit 751 was reenergized.

B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE:

The cable for Circuit 751 tested satisfactorily, however, the cable will be replaced as part of the Energy Delivery Department cable replacement program.

VI. ADDITIONAL INFORMATION

A. FAILED COMPONENTS:

The failed component was a splice in a 34.5 KV 250 MCM electrical cable, with XLP insulation. The cable was installed approximately 30 years ago.

B. PREVIOUS LERs ON SIMILAR EVENTS:

An historical search of LERs was conducted with the following results: LERs 91-002, 92-007, 94-012, 95-006, 95-007 and 97-002 were similar events with similar root causes (start of an Emergency D/G due to loss of offsite power from external causes). However, none of the external causes for these LERs were due to faulted underground cables or faulted splices in the cable.

C. SPECIAL COMMENTS:

None

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