

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

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 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-009-00: on 880930, inadequate fire barrier insp  
 procedure identified through breaches.

W/8 ltr.

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## LICENSEE EVENT REPORT (LER)

APPROVED ONS NO. 3100-0104  
EXPIRES 8/31/88

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R.E. Ginna Nuclear Power Plant										0 6 0 0 0 2 4 4										1 OF 0 8																													
TITLE (4) Inadequate Fire Barrier Inspection Procedure Identified only through Breaches causing partial Breaches to go Undetected																																																	
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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OPERATING MODE (9)										THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § 150.101 (Check one or more of the following) (10)																																							
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POWER LEVEL (11)										20.402(1)										20.406(1)										60.736(1)(11)										73.716(1)									
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LICENSEE CONTACT FOR THIS LER (12)																																																	
NAME Richard C. Biedenbach Fire Protection and Safety Coordinator																				TELEPHONE NUMBER AREA CODE 7 1 1 6 5 1 2 1 4 1 - 1 4 1 4 1 4 6																													
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																																	
CAUSE			SYSTEM			COMPONENT			MANUFAC TURE			REPORTABLE TO NRC			CAUSE			SYSTEM			COMPONENT			MANUFAC TURE			REPORTABLE TO NRC																						
SUPPLEMENTAL REPORT EXPECTED (14)																				EXPECTED SUBMISSION DATE (15)										MONTH DAY YEAR																			
YES (If yes, complete EXPECTED SUBMISSION DATE)																				X NO																													

ABSTRACT (Limit to 1600 words, i.e., approximately fifteen single space typewritten lines) (16)

On September 30, 1988, at approximately 0850 EDST, two six inch diameter pipes were found to have degraded blocks around the pipe sleeves, and improper fire barrier fill. It was later determined that nine twelve inch blocks were degraded so the exposed face on one side was intact but the unexposed was not completely intact. Immediate action was to set up a fire watch within one hour, while the insulators temporarily installed ceramic fiber fire seals. The cause of the event was determined to be inadequate fire barrier inspection procedures. Corrective action will be taken to upgrade the deficient procedure. Follow-up action is to permanently seal the identified breaches.

Due to an NRC concern regarding fire wrap conduit supports, an Engineering Analysis was performed. On October 20, 1988, based on this analysis it was concluded that one redundant circuit could possibly reach its short circuit temperature if the supports were exposed to a fire of one hour, as committed in Appendix "R". The cause of the event, was inadequate Engineering Specification. Corrective action will be a revision of specifications and placing of additional fire wrap for conduit support.

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TEXT (If more space is required, use additional NRC Form 366A (11/71))

## I INITIAL PLANT CONDITIONS

The plant was at approximately 100% steady state full power with no major activities in progress.

## II DESCRIPTION OF EVENT

### A. Dates and approximate times for major occurrences:

- September 16, 1988, 13:45 EDST: A-25.1, Ginna Station Event Report 88-107: Re: Partial penetrations and open conduit
- September 16, 1988, 13:45 EDST: Discovery date and time
- September 16, 1988, 14:00 EDST: M-56.1 initiated to temporarily seal Fire Barrier Penetrations
- September 16, 1988, 14:30 EDST: M-56.1 completed and barriers in compliance with Technical Specifications
- September 30, 1988, 08:50 EDST: A-25.1, Ginna Station Event Report 88-100: Re: Fiberglass insulation for fire seal and partial penetrations.
- September 30, 1988, 08:50 EDST: Discovery date and time
- September 30, 1988, 09:00 EDST: M-56.1 initiated to temporarily seal Fire Barrier Penetrations
- September 30, 1988, 09:00 EDST: Fire watch initiated, M-56.1 completed at 12:00 EDST and all barriers in compliance with Technical Specifications
- October 20, 1988, 00:00 EDST: A-25.1, Engineering Work Request EWR-3986 - Design Analysis: "Effects of Heat Transfer to Fire Wrapped Conduit Through Conduit Supports During Potential Fires"

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TEXT (If more space is required use additional NRC Form 365A (1))

## B. EVENT

On September 16, 1988 at approximately 13:45 EDST, during a routine inspection augmented with information on industry events and NRC inspectors identification of certain configurations, it was identified that seven (7) partial penetrations approximately 1" in diameter existed in the Turbine building basement south wall. This Technical Specification wall separates the Turbine building from the Intermediate building. These partial penetrations appeared to have been left by the removal of equipment from the wall.

Also identified was one (1) open conduit approximately 1" in diameter in the Turbine building Intermediate level east wall. The open conduit is required to have a smoke seal per Station procedure EE-24. This Appendix R wall separates the Turbine building from the Technical Support Center. An M-56.1, Placement of Temporary Ceramic Fiber Penetration Fire Seals, was initiated within one (1) hour after identification of the deficient fire barriers and was completed at 14:30 EDST.

On September 30, 1988 at approximately 08:50 EDST during a routine inspection it was identified that two (2) six (6) inch diameter pipes had degraded block around the pipe sleeves which penetrated the Service building east wall. This Technical Specification wall separates the Service building from the Intermediate building. Upon further investigation, it was determined the two (2) penetrations were packed with fiberglass. Continuing the inspection, access was gained above the ceiling where nine (9) partial penetrations were identified. The nine (9) partial penetrations appear to have been from the original construction of the plant where approximately 50% of the original blocks had been cross sectionalized and installed in such a manner that the inspection would not disclose the partial penetration configuration from the accessible side. On the unexposed side of the wall, in the Service building,

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TEXT (If more space is required, use additional NRC Form 366A (9-83))

the cross sectionalized portion of the block was filled with an approximate 8 inch block.

A Fire watch was initiated at 09:00 hours and an M-56.1, Placement of Temporary Ceramic Fiber Penetration Fire Seals was completed.

On October 20, 1988 a study was completed on the effects of heat transfer to fire wrap conduit through conduit supports during postulated fires. It was concluded from this study that one redundant circuit could possibly reach or exceed its short circuit temperature by the conduction of heat through conduit supports in a postulated 1 hour fire as required by Appendix "R". Although the fire wrap is not a Technical Specification requirement, the wrapping of conduit supports was a commitment in our Appendix "R" submittal and is included in this LER for your information.

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

Inoperable Fire Barrier Penetration I-199A-9.

D. OTHER SYSTEMS OR SECONDARY FUNCTIONS AFFECTED:

None.

E. METHOD OF DISCOVERY:

These events were discovered as a result of routine Fire Barrier Inspections and as a result of asbestos inspection in a service corridor.

The fire wrap conduit support event was discovered through an NRC concern which resulted in an Engineering Analysis.

F. OPERATOR ACTION:

The Control Room Operators were notified by the Fire Protection and Safety Coordinator at which time they performed the following:

Initiated an A-25.1 Ginna Station Event Report

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- Notified Plant Superintendent
- Notified NRC Resident Inspector

### III CAUSE OF EVENT

#### A. IMMEDIATE CAUSE:

Nine (9) of the partial penetrations were caused as a result of poor original construction practices.

Two (2) of the penetrations were packed with fiberglass insulation as per acceptable procedures at time of installation. The fiberglass insulation was missed as a part of our upgrade program.

Seven (7) of the partial penetrations were caused as a result of equipment being removed from the wall.

One (1) of the penetrations was a result of an open conduit failing to be capped or filled with a fire retardant material.

Where fire wrap encapsulation was not acceptal or adequate, field installation directions and Engineering specifications were not adequate.

#### B. INTERMEDIATE CAUSE:

None.

#### C. ROOT CAUSE:

The root cause was determined to be an inadequate procedure. ISI-100 was to provide instructions to visually inspect fire barrier penetration seals and fire retardant coating for cables to insure that they are intact. A Procedure Change Notice has been submitted to provide instructions to visually inspect Fire Barriers, Fire Barriers Penetrations Seals and Fire Retardant Coating for Cables.

- The root cause for the fire wrap was determined to be inadequate specification after re-analysis of the transmission of heat through support members.

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IV ANALYSIS OF EVENT

Two (2) six (6) inch diameter pipe penetrations were sealed with fiberglass insulation so Technical Specification 3.14.6 could not be met. This event is reportable in accordance with 10CFR50.73, Licensee Event Report System, item (a)(2)(i)(B), which requires reporting of, "Any operation or condition prohibited by the plants Technical Specification".

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

There were no operational or safety consequences or implications attributed to the partial penetrations in the fire barrier wall because:

- The north fire area for the Intermediate building has a maximum permissible fire load of 240,000 BTU/Sq.ft. The actual fire load of 74,198 BTU/Sq.ft. is considered low. (<80,000 BTU/Sq.ft.). The fire area is protected by a pre-action sprinkler system for the north and west cable trays. The fire area is also protected by a manual deluge system over the Turbine Driven Feedwater Pump and Tank. The area is also protected by smoke detectors throughout.
- The fire area for the Service building basement has a maximum permissible fire load of 240,000 BTU/Sq.ft. with an actual fire load of 7,919 BTU/Sq.ft. The actual fire load of 7,919 BTU/Sq.ft. is considered low (<80,000 BTU/Sq.ft.). The fire area of the Service building is protected by a wet pipe sprinkler system throughout.
- The southwest fire area for the Turbine building has a maximum permissible fire load of 240,000 BTU/Sq.ft. with an actual fire load of 191,403 BTU/Sq.ft. The actual fire load of 191,403 BTU/Sq.ft. is considered high. (>180,000 BTU/Sq.ft.) However, the reason for the high fire load in this fire area is the turbine lube oil reservoir. The turbine lube oil accounts for 182,417 BTU/Sq.ft. of the 191,403 BTU/Sq.ft. The lube oil reservoir is contained in a diked area and any fire would be controlled by the deluge water spray system. Taking into consideration this controlled hazard, a residual fire hazard of 8,986 BTU/Sq.ft. exists,

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMS NO. 3160-0104  
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which is considered low (<80,000 BTU/Sq.ft). This area is protected by a partial wet pipe sprinkler system and by smoke detectors throughout.

- The partial penetrations were in a 12" concrete block wall on the non safety related side. The one exception was the open ended conduit in the Turbine building east wall. This penetration required a smoke stop inside the conduit, by in house policy only. Further investigation determined the conduit to have been installed at the time the wall was constructed. (Poured concrete wall)
- The conduit supports were evaluated and was determined that one redundant circuit could possibly reach its short circuit temperature by the conduction of heat through the supports in 55 minutes rather than 1 hour as required by Appendix "R". However, the existing fire load based on combustibles within the fire area would only produce a fire of 13 minutes, therefore producing a temperature well below the duration limits of the fire wrap.

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

V CORRECTIVE ACTIONS

- A. Action taken to return fire barriers to three (3) hour status:
  - A fire watch was established until the holes were packed with Kaowool using procedure M-56.1, Placement of Temporary Ceramic Fiber Penetration Fire Seals.
  - A Maintenance Work request was assigned to permanently seal the penetration using M-56.3, Permanent Fire Barrier Penetration Seal Installation/Repairs.
  - Actions taken to bring the conduit support fire wrap to one (1) hour status:
  - Revision of the specification for fire wrap of supports.
  - Additional fire wrap will be added to the supports.



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U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104  
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TEXT (If more space is required, use additional NRC Form 366a (1-77))

## B. Action taken or planned to prevent recurrence:

- As the root cause was determined to be inadequate procedures. A Procedure Change Notice was written for ISI-100.
- A Non-Conformance Report (NCR) was written to address penetration problems and corrective actions for permanent repairs.

VI ADDITIONAL INFORMATION

## A. Failed Components:

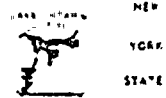
- None.

## B. Previous LER's on similar events:

- None.

## C. Special Comments:

- None.



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

October 31, 1988

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

Subject: LER 88-009, Inadequate Fire Barrier Inspection Procedure  
Identified Only Through Breaches Causing Partial  
Breaches To Go Undetected.  
R.E. Ginna Nuclear Power plant  
Docket No. 50-244

In accordance with 10CFR50.73, Licensee Event Report System, item  
(a)(2)(i)(B), which requires reporting of, "Any operation or  
condition prohibited by the plants Technical Specifications", the  
attached Licensee Event Report LER 88-009 is hereby submitted.

In accordance with NUREG 1022 the 16 partial fire barrier  
penetrations and the design analysis on the effects of heat  
transfer to fire wrap conduit through conduit supports during a  
potential fire is voluntarily submitted.

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

Very Truly Yours,

*Robert C. Mecredy*  
Robert C. Mecredy  
General Manager  
Nuclear Production

xc: U.S. Nuclear Regulatory Commission  
Region I  
475 Allendale Road  
King of Prussia, PA 19406  
Ginna USNRC Senior Resident Inspector

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