

ENCLOSURE 1

SUPPLEMENT NO. 2 TO THE FEBRUARY 14, 1979  
FIRE PROTECTION SAFETY EVALUATION REPORT  
BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
U. S. NUCLEAR REGULATORY COMMISSION  
PROVISIONAL OPERATING LICENSE NO. DPR-18  
ROCHESTER GAS AND ELECTRIC CORPORATION  
ROBERT E. GINNA NUCLEAR POWER PLANT  
DOCKET NO. 50-244

Date: February 6, 1981

8102270116

## INTRODUCTION

On February 14, 1979, the Commission issued Amendment No. 24 to Provisional Operating License No. DPR-18 for the R. E. Ginna Nuclear Power Plant. This amendment added a license condition regarding completion of facility modifications to improve the fire protection program. These modifications were identified in Paragraphs 3.1.1 through 3.1.49 of the NRC's Fire Protection Safety Evaluation (FPSE) for the Ginna Plant, also dated February 14, 1979.

The FPSE identified certain items as incomplete and requiring further information from the licensee and evaluation by the NRC staff. In letters dated April 30, 1979, September 28, 1979, and June 30, 1980, the licensee provided information concerning open fire protection items in addition to those discussed in Supplement 1 dated December 17, 1980. This supplement to the FPSE addresses the remainder of those items that were either previously identified as incomplete or for which written evaluations had not been provided. The only exception is Item 3.2.3, Halon System Discharge Test, for which the licensee has requested an extension of the schedule. This request, contained in the licensee's January 26, 1981 letter, is presently under review.

## DISCUSSION AND EVALUATION

The section numbers indicated are those corresponding to the section numbers in the FPSE.

### Detector Testing, Item 3.1.43

In the SER, it was our concern that the smoke detector systems may not respond to a fire due to such factors as ceiling height and configuration, ventilation and air flow patterns, and location and arrangement of plant equipment and combustibles. We recommended that the licensee perform an in-situ smoke detector test.

By letter dated April 30, 1979, the licensee indicated that the smoke detection systems would be designed and installed in accordance with the NFPA 72 series fire codes which cover fire detector systems.

The required methodology for the in-situ smoke detector test is beyond the current state-of-the-art and, therefore, an in-situ test cannot be performed at this time.

We find that with acceptable bench testing of smoke detectors, and considering that the smoke detection systems meet appropriate NFPA codes, the existing smoke detectors are acceptable.

Auxiliary Boiler, Item 3.1.46

SER Section 3.1.46 indicates that the licensee will verify that the auxiliary boiler conforms to all of the applicable provisions of the current edition of NFPA-85, or will identify and justify deviations.

By letter dated September 28, 1979, the licensee discussed the deviations of the auxiliary boiler from the current edition of NFPA-85, and also indicated that the boiler meets the requirements of both American Nuclear Insurers and the Hartford Steam Boiler Inspection and Insurance Company. The boiler was purchased to conform to the ASME Boiler Code, and the requirements of FM and UL.

We have reviewed the deviations and conclude that the present arrangement of the auxiliary boiler is acceptable. The staff will include consideration of the auxiliary boiler in the evaluation of the safe shutdown capability of the plant.

Electrical Cable Insulation, Item 3.2.4

SER Section 3.2.4 indicates that the licensee is investigating the fire characteristics, including fire resistance, of the cable insulation used in the plant.

By letter dated April 30, 1979, the licensee provided a list of cable insulation types and quantities used in the plant.

The assumptions on Page I-1 of the licensee's study performed in response to SER Section 3.23.1 obviate the need for a separate staff analysis of the fire characteristics of electrical cable insulation.

We conclude that this item is acceptable.

Exposed Structural Steel, Item 3.2.8

In the SER, it was our concern that an unmitigated fire could cause structural failures that could jeopardize the safe shutdown capability of the plant.

By letter dated June 30, 1980, the licensee provided the results of a study on the effects of fire on the structural integrity of exposed structural steel in areas of high fire load.

In the analysis the licensee assumed that, based on the rate of combustion, high heat release rate, and close proximity to structural steel, an oil fire was the only type of fire that could result in the failure of steel structures before the actuation of fixed fire suppression systems or manual fire fighting efforts. A fire involving either cable insulation, charcoal filters, or ordinary combustibles should be a slow developing fire and should not threaten the structural integrity of the exposed steel and, therefore, we agree with the licensee's assumption.

The licensee evaluated the effects of oil fires in all areas of the plant which contain volumes of oil. In the Turbine Building, the licensee evaluated the effects of an oil fire at the turbine lube oil reservoir, hydrogen seal oil unit, and the turbine island and condenser pit. The licensee proposed to protect the structural steel in the vicinity of the turbine lube oil reservoir. For the other locations, the licensee indicated that the failure of the structural steel will be prevented by the detector alarm and actuation of the suppression system. As part of defense-in-depth philosophy, the fire protection features should be such that in the event a fire burns for a considerable length of time, in spite of fire suppression activities, the fire should not prevent essential plant safety functions from being performed. Therefore, the reliance on fixed suppression systems alone to prevent the failure of the exposed steel in the vicinity of the hydrogen seal oil unit and the turbine island and condenser pit is not acceptable. The licensee should protect the structural steel in these areas such that a structural failure would not affect the safe shutdown capability of the plant.

The diesel generator rooms have independent roof structures. The collapse of a diesel generator room roof would not cause the collapse of an adjacent roof structure. The collapse of a diesel generator room ceiling would not impair safe shutdown since the redundant diesel would not be affected. Therefore, no additional protection of the exposed structural steel for the diesel generator rooms is required since all steel for each room is independent and failure would not jeopardize safe shutdown.

The Turbine Oil Storage Room is similar in construction to the Diesel Generator Buildings. The steel roof structure is independent of all adjacent steel in the Diesel Generator Building and Turbine Building. A failure of the exposed structural steel would not jeopardize safe shutdown and, therefore, additional fire protection is not required.

The Screen House is constructed of unprotected steel columns supporting a steel roof assembly. The Screen House contains four service water pumps, one of which is required for safe shutdown. The licensee relies on area detection and automatic suppression systems to assure structural integrity in the event of a fire. As discussed in the evaluation of the Turbine Building, these fire protection features do not provide adequate assurance that a fire would not affect the exposed steel. The licensee should protect the structural steel forming a part of or supporting fire barriers with an approved UL or FM design to provide a fire resistance equivalent to that required of the barrier.

In the Containment Building, each reactor coolant pump lube oil system will be provided with an oil collection system. The oil collection system should provide adequate protection for the exposed steel and additional modifications are not required.

Based on our review, we conclude that the licensee's protection for the exposed structural steel in the vicinity of the hydrogen seal oil unit, turbine island and condenser pit, and in the Screen House does not meet Section III, Paragraph G.2(a) of Appendix R to 10 CFR Part 50 and, therefore, is not acceptable. The licensee should protect the structural steel forming a part of or supporting fire barriers to provide a fire resistance equivalent to that required of the barrier.

#### CONCLUSION

Based on our review, we conclude that, except for items 3.2.1 (See FPSE Supplement 1), 3.2.3, and 3.2.8, all of the incomplete items in the FPSE have been acceptably resolved subject to implementation of the approved modifications. The required completion dates for the modifications associated with the items accepted in this supplement are specified by Paragraph (d) of 10 CFR 50.48 using the date of this supplement as the date of the NRC staff Fire Protection Safety Evaluation Report accepting or requiring such features.

ENCLOSURE 2

UNRESOLVED FIRE PROTECTION ITEMS

R. E. GINNA

DOCKET NO. 50-244.

- 3.2.1 Dedicated Safe Shutdown System
- 3.2.3 Halon System Discharge Test
- 3.2.8 Exposed Structural Steel

FEB 11 1981