



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

AUG 06 1986

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATING TO APPENDIX R, FULL COVERAGE DETECTION AND SUPPRESSION SYSTEMS
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT NUCLEAR STATION, UNIT NO. 1

DOCKET NO. 50-220

1.0 INTRODUCTION

Generic Letter 83-33 dated October 19, 1983, stated that to satisfy the requirements of Subsections III.G.2.b, III.G.2.c and III.G.2.e of Appendix R to 10 CFR Part 50, fire detectors and automatic suppression systems need to be installed throughout the fire area. By letter dated December 22, 1983, the licensee requested an exemption from these requirements, as interpreted in Generic Letter 83-33, for the Reactor Building. At the Appendix R Lessons Learned Workshop held in Region I on April 18, 1984, the NRC informed the industry of a draft revised interpretation of these subsections that would accept partial coverage detection and automatic suppression systems that were supported by a fire hazards analysis as meeting the requirements of the subsections.

By letter dated May 11, 1984, the licensee withdrew the exemption request dated December 22, 1983. The supporting analysis for the partial coverage detection and suppression systems remained for staff review. During the period January 21-25, 1985, the NRC inspected the facility and reviewed the licensee's analysis for the reactor building. The inspection team requested additional information and the subject (50-220/85-01-02) was referred to NRR for resolution. By letter dated February 11, 1985, the licensee provided the additional information requested by the inspection team.

The aforementioned interpretation was approved by the Commission on March 6, 1986 (SECY 85-306/306B). Therefore, we have evaluated the lack of full coverage detection and suppression systems for compliance with that interpretation.

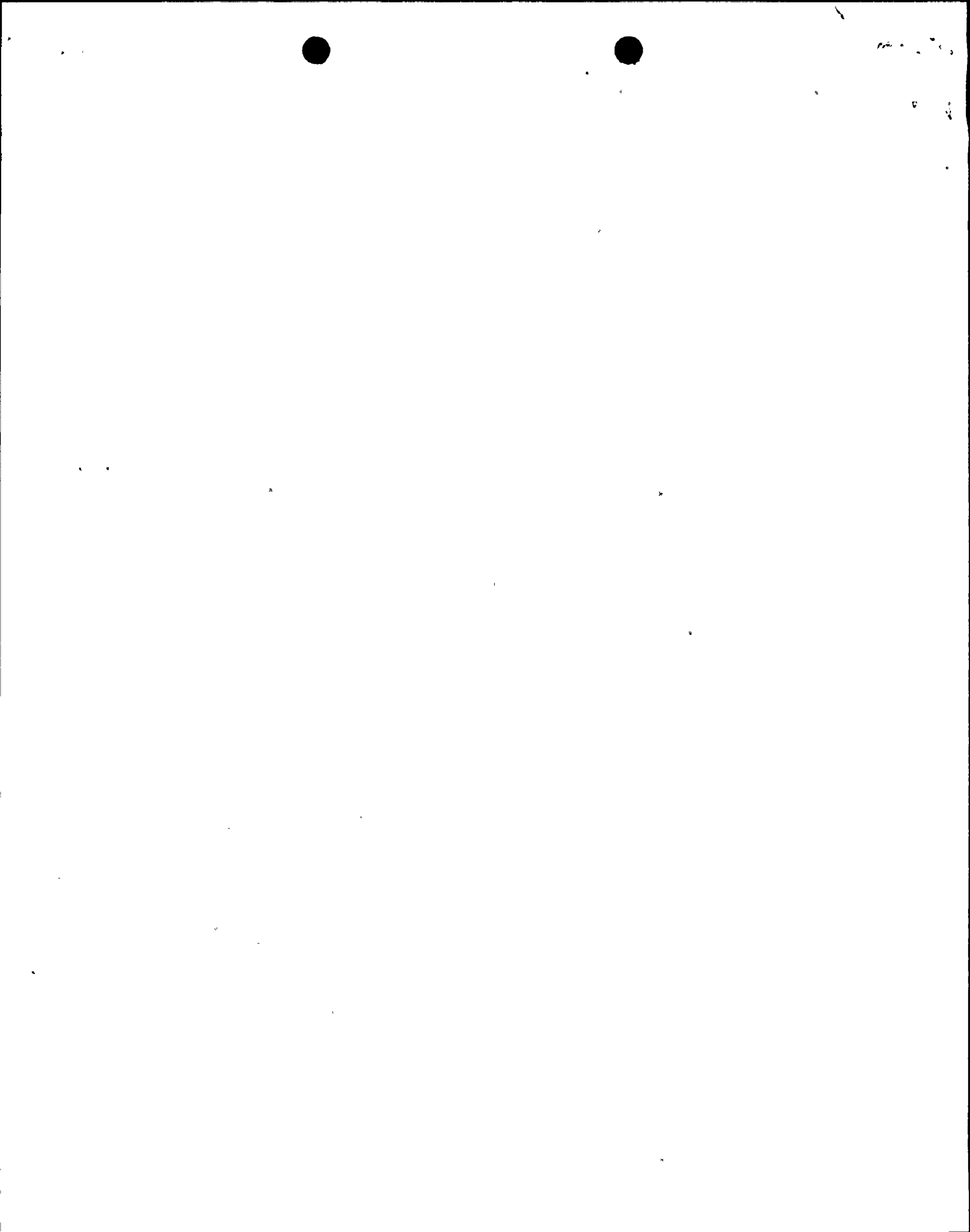
2.0 EVALUATION

8608190171 860806
PDR ADOCK 05000220
F PDR

2.1 General

Section III.G.2.b and III.G.2.c of Appendix R state that "In addition, fire detectors and automatic fire suppression system shall be installed in the fire area...." Other provisions of Appendix R also use the phrase "fire detectors and an automatic fire suppression system in the fire area...." (see e.g., Section III.G.2.e).

In order to comply with these provisions, suppression and detection sufficient to protect against the hazards of the area must be installed. In this regard, detection and suppression providing less than full area coverage may be adequate to comply with the regulation. Where full area



suppression and detection is not installed, licensees must perform an evaluation to assess the adequacy of partial suppression and detection to protect against the hazards in the area. The evaluation must be performed by a fire protection engineer and, if required, a systems engineer. Although not required, licensees may submit their evaluations to the staff for review and concurrence. In any event, the evaluations must be retained for subsequent NRC audits. Where a licensee is providing no suppression or detection, an exemption must be requested.

2.2 Description

The Reactor Building is considered to be one fire area. It is separated vertically into Fire Sub-Area 1 and Fire Sub-Area 2. Fire Sub-Area 1 consists of fire zones R1A, R1C, R1D, R2A, R3A, R4A, R5A and R6A; i.e., the east half of the building on all elevations. Fire Sub-Area 2 consists of fire zones R1B, R2B, R2C, R3B, R4B, R5B, and R6B; i.e., the west half of the Reactor Building.

One train of safe shutdown capability is located in Fire Sub-Area 1; a second train is located in Fire Sub-Area 2.

Fire Break Zones (FBZ) are provided on each elevation to separate Fire Sub-Area 1 and 2. These FBZ's are at least 20 feet wide with little or no in-site combustibles. These FBZ's have full coverage detection systems and automatic pre-action sprinkler systems designed in accordance with NFPA-13.

The combustible loading on each elevation is low. The corresponding maximum fire times range from 0.5 minute to 17 minutes.

Automatic detectors are installed throughout both Fire Sub-Area 1 and 2.

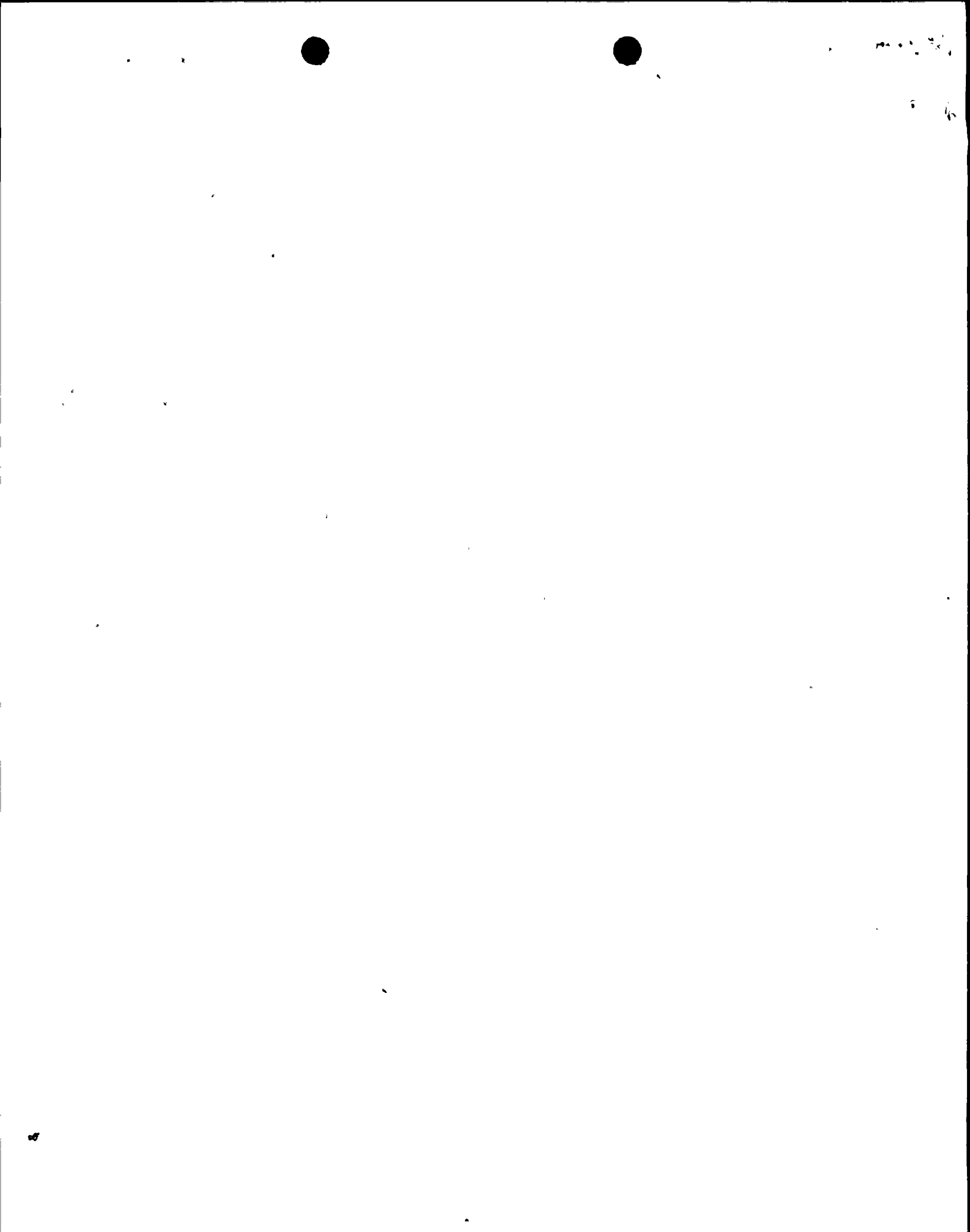
Automatic pre-action systems, or Halon 1301 systems, are provided for specific hazards; i.e., (1) heavy concentrations of cables, (2) designated storage area, (3) change rooms, and (4) emergency condenser valve room.

Cables in the FBZ's are coated with fire retardant material.

Floor penetrations at elevations 218, 298, 318 and 340 are sealed where the FBZ on adjacent elevations do not coincide.

2.3 Discussion

In regard to full coverage detection and suppression systems, automatic suppression systems are provided for specific hazards in the fire area. Further, the locations of the redundant shutdown trains on opposite sides of the Reactor Building provide substantial physical separation between the trains. Moreover, the automatic pre-action sprinkler throughout the FBZ provides additional protection for the redundant trains on each elevation. The intervening combustibles in the FBZ are negligible.



In addition, by letter dated February 11, 1985, the licensee committed that if new cable is installed in an FBZ, it will be run in conduit, be coated with a fire retardant coating, or will have approved cable tray fire stops at each boundary of the FBZ in tray fire stops that traverse the FBZ. It is our understanding that all new cable would be qualified to IEEE 383.

3.0 CONCLUSION

Based on the above evaluation, the configuration of protection complies with the aforementioned interpretation and is, therefore, acceptable.

Dated: AUG 06 1986

Principal Contributor: R. Ferguson

