ATTACHMENT A

REVISE APPENDIX A TECHNICAL SPECIFICATIONS BY REMOVING THE PAGES IDENTIFIED BELOW AND INSERTING THE ENCLOSED PAGES.

REMOVE	INSERT
i	i
ii	ii
1-5	1-5
3.14-1	3.14-1
3.14-2	---
3.14-3	---
3.14-4	---
3.14-5	---
3.14-6	---
3.14-7	---
3.14-8	---
3.14-9	---
3.14-10	---
4.15-1	4.15-1
4.15-2	---
4.15-3	---
4.15-4	---
4.15-5	---
6.2-3	6.2-3
6.5-4	6.5-4

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TABLE OF CONTENTS (CONT'D)

1.10 Hot Channel Factors

F_Q, Heat Flux Hot Channel Factor, is defined as the maximum local heat flux on the surface of a fuel rod divided by the average fuel rod heat flux allowing for manufacturing tolerances on fuel pellets and rods.

F^N_Q, Nuclear Heat Flux Hot Channel Factor, is defined as the maximum local fuel rod linear power density divided by the average fuel rod linear power density assuming nominal fuel pellet and rod dimensions.

F^E_Q, Engineering Heat Flux Hot Channel factor, is defined as the ratio between F_Q and F^N_Q and is the allowance on heat flux required for manufacturing tolerances.

$F^N_{\Delta H}$, Nuclear Enthalphy Rise Hot Channel Factor, is defined as the ratio of the integral of linear power along the rod on which minimum DNBR occurs to the average rod power.

1.11 (DELETED)

3.14 (DELETED)

INTENTIONALLY LEFT BLANK

4.15 (DELETED)

INTENTIONALLY LEFT BLANK

f. (DELETED)

g. Adequate shift coverage shall be maintained without routine heavy use of overtime. Administrative procedures shall be developed and implemented to limit the working hours of unit staff who perform safety-related functions including senior reactor operators, reactor operators, health physicists, auxiliary operators, and key maintenance personnel. Changes to the guidelines for the administrative procedures shall be submitted to the NRC for review.

RESPONSIBILITIES (Continued)

h. Review of the Plant Security Plan and shall submit recommended changes to the Chairman of the Nuclear Safety Audit and Review Board.

i. Review of the Radiation Emergency Plan and shall submit recommended changes to the Chairman of the Nuclear Safety Audit and Review Board.

j. Review of implementing procedures for the Plant Security Plan and the Radiation Emergency Plan and proposed changes thereto.

k. Review of all Reportable Events.

l. Review of the Fire Protection Program and Implementing Procedures and submittal of recommended Program changes to the Chairman of the Nuclear Safety Audit and Review Board (NSARB).

AUTHORITY

6.5.1.7 The PORC shall:

a. Recommend in writing to the Plant Manager, Ginna Station approval or disapproval of items considered under 6.5.1.6(a) through (d) and (l) above.

b. Render determinations in writing with regard to whether or not each item considered under 6.5.1.6(a) through (d) and (l) above constitutes an unreviewed safety question as defined in 10 CFR Section 50.59.

TABLE 1

DETAILED TECHNICAL SPECIFICATION CHANGES

LOCATION	DESCRIPTION OF CHANGE	REASON FOR CHANGE
page 1-5 para 1.11	Delete "Fire Suppression Water System" definition	These changes are made in accordance with the guidance provided in Generic Letters 86-10 and 88-12. Fire Protection and Fire Brigade staffing requirements are being removed from Technical Specification (TS) and incorporated into the UFSAR and plant procedures. This change also adds administrative control to TS consistent to those for other programs implemented by the license condition.
page 3.14-1 thru 3.14-4, para's 3.14 thru 3.14.7.1	Delete "Fire Suppression Systems" in its entirety	
page 3.14-5 thru 3.14-6	Delete fire suppression system "Basis" in its entirety	
page 3.14-7 thru 3.4-8, Table 3.14-1	Delete "Table 3.14-1, Fire Detection Instruments" in its entirety	
page 3.14-9 thru 3.14-10 Table 3.14-2	Delete "Table 3.14-2 Fire Service Water Hose Reel Location" in its entirety	
page 4.15-1 thru 4.15-4 para's 4.15 thru 4.15.7	Delete "Fire Suppression System Test" in its entirety	
page 4.15-5	Delete fire suppression system test "Basis" in its entirety	
page 6.2-3, para 6.2.2.(f)	Delete fire brigade staffing requirement indicated in para. f including "*" portion at bottom of page	
page 6.5-4 para 6.5.1.6(l) 6.5.1.7 a. and b.	Add "Review of the Fire Protection Program and Implementing procedures and submittal of recommended program changes to the Nuclear Safety Audit and Review Board"	

ATTACHMENT B

Revise Facility Operating License by removing the paragraph identified below and inserting the enclosed pages.

Remove	Insert
3	3
4	4

(5) Pursuant to the Act of 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear material as may be produced by the operation of the facility.

C. This license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is subject to all applicable provisions of the Act and rules, regulations and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified below:

(1) Maximum Power Level

RG&E is authorized to operate the facility at steady-state power level up to a maximum of 1520 megawatts (thermal).

(2) Technical Specifications

The Technical Specifications contained in Appendix A are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

(3) Fire Protection

(a) The licensees shall implement and maintain in effect all fire protection features described in the licensee's submittals referenced in and as approved or modified by the NRC's Fire Protection Safety Evaluation (SE) dated February 14, 1979 and SE supplements dated December 17, 1980, February 6, 1981, June 22, 1981, February 27, 1985 and March 21, 1985 or configurations subsequently approved by the NRC, subject to provision (b) below.

(b) The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

(c) Deleted

(4) Secondary Water Chemistry Monitoring Program

The licensee shall implement a secondary water chemistry monitoring program to inhibit steam generator tube degradation. This program shall be described in the plant procedures and shall include:

(a) Identification of a sampling schedule for the critical parameters and control points for these parameters;

(b) Identification of the procedures used to measure the values of the critical parameters;

(c) Identification of process sampling points;

(d) Procedure for the recording and management of data;

(e) Procedures defining corrective actions for off control point chemistry conditions; and

(f) A procedure identifying (i) the authority responsible for the interpretation of the data, and (ii) the sequence and timing of administrative events required to initiate corrective action.

(5) Systems Integrity

The licensee shall implement a program to reduce leakage from systems outside containment that would or could contain highly radioactive fluids during a serious transient or accident to as low as reasonably achievable levels. This program shall include the following:

ATTACHMENT C

Discussion

The purpose of the proposed change to the license and Amendment to the Technical Specifications is to incorporate the Ginna Fire Protection Program into the Updated Final Safety Analysis Report (UFSAR) as encouraged by Generic Letter 86-10, Implementation of Fire Protection Requirements, and Generic Letter 88-12, Removal of Fire Protection Requirements from Technical Specifications. This generic letter also encouraged licenses to apply for an amendment to their operating licenses (1) to replace current license conditions regarding fire protection with a new standard condition and (2) to remove unnecessary fire protection Technical Specifications (TS).

From 1986 to 1988 the NRC staff gained experience with implementation of Generic Letter 86-10 for new operating licenses. In addition, lead-plant proposals for this license change were submitted and approved for the Callaway , Wolf Creek, and Perry nuclear plants. On this basis, the Commission staff developed additional guidance in Generic Letter 88-12, Removal of Fire Protection Requirements from Technical Specifications, for preparation of a license amendment request to implement Generic Letter 86-10.

This license amendment submittal requests removal of the applicable portions of Fire Protection from the Technical Specifications (TS) and incorporates them into the UFSAR and plant procedures.

Specifically, the following sections are removed:

1.11	DEFINITION - Fire Suppression Water System
3.14	LIMITING CONDITIONS FOR OPERATION - Fire Suppression System
3.14.1	Fire Detection Instruments
3.14.2	Fire Suppression Water System
3.14.3	Spray and/or Sprinkler Systems
3.14.4	Halon Systems
3.14.5	Fire Hose Stations
3.14.6	Fire Barrier Penetration Seals
3.14.7	Yard Hydrant-Southeast Corner
4.15	SURVEILLANCE REQUIREMENT - Fire Suppression System Test
4.15.1	Fire Detection Instruments
4.15.2	Fire Suppression Water System
4.15.3a	Spray Systems
4.15.3b	Sprinkler Systems
4.15.4	Halon System
4.15.5	Fire Hose Stations

4.15.6 Penetration Seals
4.15.7 Yard Fire Hydrant - Southeast Corner

6.2.2(f) Administrative Controls/Organization - Fire Brigade

The following section is added to the Technical Specifications:

6.5.1.6(1) Administrative Controls/Review and Audit - PORC Review of the Fire Protection Program and Implementing Procedures

Table 1 of Attachment A depicts the specific Technical Specification changes.

In addition to the requirements being added to the UFSAR as proposed Tables 9.5-1, 9.5-2 and 9.5-3, a proposed new Table 9.5-4 entitled Spray/Sprinkler System Operability has been added for clarity. Details are provided in Attachment D.

The Fire Protection Program will be incorporated into the Updated Final Safety Analysis Report (UFSAR) either by references or description. This will include the fire protection and post-fire safe shutdown systems, fire hazard analysis, commitments to Appendix A to Branch Technical Position (BTP) APCSB 9.5-1, descriptions of the methodology for assuring safe plant shutdown following a fire, and the Nuclear Regulatory Commissions Safety Evaluation Reports. Descriptions of the methodology for assuring safe plant shutdown following a fire are described in the UFSAR Sections 7.4 and 9.5 and plant procedures; these requirements remain unchanged. Commitments to Appendix A to BTP APCSB 9.5-1, and to 10 CFR 50, Appendix R remain unchanged. Administrative controls have been enhanced by the changes to Section 6.5.1.6(1), and 6.5.1.7a. and b. of the Technical Specifications. Technical controls are governed by the Ginna Quality Assurance Program Appendix D. Fire Brigade staffing requirements have been incorporated verbatim into the UFSAR from the Technical Specifications. Administrative requirements for the Fire Protection technical staff remain unchanged.

Surveillance Requirements associated with fire detection systems, fire suppression systems, fire barriers, yard hydrant and the administrative controls that address fire brigade staffing were relocated from the Technical Specifications and incorporated into the UFSAR without altering their intent or requirements. The Limiting Conditions for Operation (LCO) for the fire protection system will be incorporated into plant procedures without alteration of intent. Existing administrative controls related to fire protection audits are retained in the Technical Specifications under the requirement in 6.5.2.8(g).

All operational conditions, remedial actions, and test requirements included in the Technical Specifications for these systems, as well as the fire brigade staffing requirements of the Fire Protection Program will be incorporated into the UFSAR and plant procedures. The remedial actions will be incorporated into plant procedures, including shutdown currently required by Technical Specification 3.0.1 if an LCO and its associated Action Requirement cannot be met. Also, changes subsequent to this amendment will be subject to the new standard license condition as described in Section F of GL 86-10.

Proposed UFSAR Tables 9.5-1 thru 9.5-4 tabulate the fire protection system requirements currently included in the Technical Specifications with the exception of the Limiting Condition for Operation (LCO) for the fire protection system which will be incorporated into plant procedures. UFSAR Table 9.5-1 is TS table 3.14-2 Fire Service Water Hose Reel Location; UFSAR Table 9.5-2 is a tabular arrangement of the Fire Protection System Requirements; UFSAR Table 9.5-3 is TS Table 3.14-1 Fire Detection Instruments; UFSAR Table 9.5-4 Spray/Sprinkler System Operability is a new table and is provided for clarity. These tables and plant procedures will maintain the existing requirements without change.

The standard fire protection license condition has been included as a proposed change to the license. The current fire protection license conditions 2.C.(3) (b) and (c) have been removed. Proposed Section 2.C.(3)(b) now conforms to the guidance provided in Generic Letter 86-10 stated as follows: RG&E may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire. Section 2.C.(3)(a) has also been updated to include Safety Evaluation Reports dated February 27, 1985 and March 21, 1985.

Administrative controls in Technical Specification 6.5.1.6(1) have been augmented to support the fire protection program. This is accomplished by delegating the Plant Operations Review Committee (PORC) responsibility for review of the fire protection program and implementing procedures and submittal of recommended program changes to the Nuclear Safety Audit and Review Board (NSARB).

Justification for Changes

These proposed changes are made without altering the intent of the license condition, fire brigade staffing requirements or the requirements of the fire protection portion of the Technical Specifications. After the relocation of fire protection system requirements from the Technical Specifications, events which may be potentially reportable would still be evaluated relative to the criteria of 10CFR50.72, 10CFR50.73 and 10CFR21 on an individual basis. A reportability determination would be made based on this

evaluation process. Events involving significant degradation of the fire protection system would be reportable. Therefore, the proposed change will not result in loss of regulatory control.

Systems Affected

This change has no effect on any plant systems. Fire protection requirements in the Technical Specifications are removed and incorporated into the UFSAR and plant procedures without alteration of their intent or requirements. Administrative controls in the Technical Specifications are enhanced to support the fire protection program and to ensure conformance.

Conclusion:

Based on the above discussion and the following significant hazard evaluation, RG&E has determined that the changes to the license and Technical Specification do not involve an unreviewed safety question, do not reduce the margin of safety nor involve a significant hazard consideration.

Significant Hazards Evaluation

This evaluation covers the deletions of Technical Specifications 3.14, 4.15, 6.2.2(f), the section Bases for 3.14 and 4.15, the corresponding Definition Section 1.11, Table 3.14-1 Fire Detection Instruments, Table 3.14-2 Fire Service Water Hose Reel Location, and relocation of these requirements to the Updated Final Safety Analysis Report and plant procedures. Detail changes are listed in Table 1 of Attachment A. The Limiting Conditions for Operation (LCO) for the fire protection system will be incorporated into plant procedures. In addition, a proposed new UFSAR Table 9.5-4, Spray/Sprinkler System Operability, has been added to provide clarity on these systems. The addition of Technical Specification 6.5.1.6(1) and revisions to License Conditions 2.C.(3) have also been proposed. The following discussion addresses these changes and their significant hazard evaluation.

1. Technical Specification 3.14, 4.15, 6.5.1.6(1), 6.5.1.7a. and b., 1.11, Table 3.14-1, Table 3.14-2, and new UFSAR Table 9.5-4.

   a. These changes do not involve a significant increase in the probability or consequences of an accident previously evaluated. The accident analysis assumes that a design basis accident does not occur simultaneously with a fire. The fire hazard analysis does not solely rely on automatic fire suppression systems and/or fire detection systems as fire-rated assemblies; manual fire suppression and redundant safe shutdown trains are also available.

No change to the requirements have been made. These changes simply relocate the fire detection instrumentation, fire suppression water system and its definition, spray and/or sprinkler systems, halon systems, fire hose station, fire barrier penetration fire seals, yard fire hydrant, the existing fire protection tables, and applicable bases and places them into the UFSAR and plant procedures without altering their intent. Implementing procedures provide the administrative controls over the requirements.

The proposed new Table 9.5-4 to the UFSAR adds clarity by providing identification of the spray/sprinkler systems by plant location, system identifying number and system flow type (automatic, manual or pre-action). This information is derived from and duplicates that which is currently included in implementing procedures.

Because no requirements are being changed, there will be no increase in the probability or radiological consequences of an accident previously evaluated. Review of the Fire Protection Program, its implementation, and

revisions will be the responsibility of the Plant Operations Review Committee (PORC). PORC shall be responsible for reviewing changes to fire protection requirements and submitting recommended program changes to the Nuclear Safety Audit and Review Board (NSARB).

b. These changes do not create the possibility of a new or different kind of accident from any previously evaluated. The proposed change does not alter the intent of the requirements; but rather, relocates them from the Technical Specifications to the UFSAR and plant procedures. No modifications are being made to any plant system, structure or component which may be relied upon for safe shutdown. Operational, maintenance, and procedural requirements are not decreased.

The fire protection program is covered by the R.E. Ginna Quality Assurance Program. Plant procedures continue to provide the specific instructions for implementing the LCO, action, and surveillance requirements.

Since approval of this amendment will transfer Technical Specification requirements to the UFSAR and implementing procedures for the Fire Protection Program, we believe that subsequent changes to the Fire Protection Program should be promptly included as part of the UFSAR as well as the affected implementing procedure. We expect to implement this process such that the UFSAR and implementing procedures are in agreement within a reasonably prompt time frame.

c. These changes do not involve a significant reduction in the margin of safety. No change is being proposed for the requirements themselves. Plant procedures continue to provide specific instructions necessary for implementation of the requirements consistent with that currently in place.

Fire protection reporting requirements would still be made relative to the criteria of 10 CFR 50.72, 10 CFR 50.73 and 10 CFR 21 on an individual basis. Therefore the proposed changes would not result in a reduction of regulatory requirements. The proposed Technical Specification 6.5.1.6(1) delegates PORC with responsibility for review of the Fire Protection Program and submittal of recommended program changes to NSARB. Consequently, the appropriate level of controls over the change process under 10CFR50.59 will be implemented.

2. Technical Specification 6.2.2(f), Site Fire Brigade Requirements, has been deleted from Technical Specifications and transferred to plant procedures and the UFSAR. New Technical Specification 6.5.1.6(1), PORC Responsibilities, has been proposed as an addition.

a) These changes do not involve a significant increase in the probability or consequences of an accident previously evaluated. No changes to the requirements have been made. These changes simply remove the site fire brigade requirements from the Technical Specifications and places them into plant procedures and the UFSAR without altering them. Review of the Fire Protection Program and its revisions will be the responsibility of PORC. PORC shall be responsible for reviewing changes to fire protection requirements and submitting recommended program changes to the NSARB. This will ensure that implementing procedures contain the proper level of administrative control over the Fire Protection Program and that subsequent changes are appropriately evaluated under 10CFR50.59.

b) These changes do not create the possibility of a new or different kind of accident from any previously evaluated. The proposed change does not alter the requirements. Plant procedures will continue to provide the specific instructions for implementing the administrative requirements. The number and qualifications of the Fire Brigade members has not changed.

c) These changes do not involve a significant reduction in the margin of safety. No change is being proposed for the requirements. Plant procedures will continue to provide the specific instructions necessary for implementation of the requirements consistent with that currently in place.

Fire Protection Program reporting requirements will still be made relative to the criteria of 10 CFR 50.72, 10 CFR 50.73 and 10 CFR 21 on an individual basis, therefore the proposed change will not result in a reduction of regulatory requirements.

The proposed Technical Specification 6.5.1.6(1) delegates PORC with responsibility for review of the Fire Protection Program and submittal of recommended program changes to NSARB. Consequently, the appropriate level of controls over the change process under 10CFR50.59 will be implemented.

3. License conditions 2.C.(3) (a),(b) and (c), Fire Protection, have been revised in accordance with the guidance provided in Section F of Generic Letter 86-10, Implementation of Fire Protection Requirements, and as clarified in Generic Letter 88-12, Removal of Fire Protection Requirements from Technical Specifications.

Specifically, 2.C.(3)(a) has been updated to include Safety Evaluation Reports dated February 27, 1985 and March 21, 1985. Sections 2.C.(3)(b) and (c) have been removed and a new section 2.C.(3)(b) has been proposed which allows changes to be made to the approved Fire Protection Program only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

a) This change does not involve a significant increase in the probability or consequences of an accident previously evaluated. The change in license conditions from those previously incorporated into the license to the one presented in Generic Letter 86-10 and 88-12 does not result in any change in technical requirements of the change process.

Previously, changes to the Fire Protection Program that decreased the level of fire protection in the plant could only be made with prior commission approval utilizing the license amendment process (10 CFR 50.90). The proposed license condition allows the licensee to make changes to the approved fire protection program under the provisions of 10 CFR 50.59 without prior approval of the Commission and only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

The original license condition also required that the licensee maintain an auditable record of all changes made to the fire protection program that do not require prior Commission approval. The proposed license condition does not specifically levy this requirement; but, since the Fire Protection Program and the former Tech Specs are now incorporated into the UFSAR, their changes fall under 10

CFR 50.59, and section 10 CFR 50.59 (b) contains the same record keeping requirements.

The current license condition required an annual report to the Commission on all changes to the Fire Protection Program made without prior approval. The same annual reporting requirements are imposed by 10 CFR 50.59(b)(2) and 10 CFR 50.71(e).

b) This change does not create the possibility of a new or different kind of accident from any previously evaluated. The proposed standard license conditions do not involve any significant change in requirements and conform to the guidance in Generic Letters 86-10 and 88-12. Any change being made will still require an evaluation pursuant to 10 CFR 50.59 to determine the existence of any unreviewed safety question.

Transfer of technical requirements for the limiting conditions for operation, and surveillance of Fire Protection Systems and components ensures implementation of the 10CFR50.59 process.

c) This change does not involve a significant reduction in the margin of safety. A standard license condition is implemented. This requires that no change can be made to the fire protection program that will adversely affect the ability to achieve and maintain safe shutdown in the event of a fire without prior commission approval. Therefore the license condition does not involve any significant change in requirements and follows the guidance in Generic Letters 86-10 and 88-12.

Fire Protection Program reporting requirements will still be made relative to the criteria of 10 CFR 50.72, 10 CFR 50.73 and 10 CFR 21 on an individual basis, therefore the proposed change will not result in a reduction of regulatory requirements.

ATTACHMENT D

PROPOSED CHANGES TO THE UPDATED FINAL SAFETY ANALYSIS REPORT

The entire Section 9.5.1 Fire Protection Systems is included although not all sections required a change. New sections which are being transferred from Technical Specifications are appropriately annotated as to the Technical Specification section from which they came. (Refer to Attachment E.)

Chapter 9

AUXILIARY SYSTEMS

TABLE OF CONTENTS (Continued)

9.5.1.2.5.2 Fire Brigade

9.5.1.3 Operability and Surveillance Requirements

Chapter 9

AUXILIARY SYSTEMS

LIST OF TABLES (Continued)

9.5 OTHER AUXILIARY SYSTEMS

9.5.1 FIRE PROTECTION SYSTEMS

9.5.1.1 Design Criterion

9.5.1.1.1 General Design Criterion 3 | 6.

The design criterion used during the licensing of Ginna Station was General Design Criterion 3 (GDC 3), included in the Atomic Industrial Forum (AIF) version of proposed criteria issued by the AEC for comment on July 10, 1967. The criterion was as follows:

Criterion: The facility is designed so that the probability of fires and explosions and the potential consequences of such events does not result in undue risk to the health and safety of the public. Noncombustible and fire resistant materials shall be used throughout the facility wherever necessary to preclude such risk, particularly in areas containing critical portions of the facility such as containment, control room, and components of engineered safety features (AIF-GDC 3).

With respect to this criterion, fire prevention in all areas of the plant was provided by structure and component design which optimized the containment of combustible materials and maintained exposed combustible materials below their ignition temperature in the design atmosphere. Fire control requires the capability to isolate or remove fuel from an igniting source, to reduce the combustible temperature below the ignition point, to exclude the oxidant, and to provide a combination of the three basic control means. The latter two means were fulfilled by providing fixed or portable fire-fighting equipment of capacities proportional to the energy that might credibly be released by fire.

Ginna Station was designed on the basis of limiting the use of combustible materials in construction and of using fire-resistant materials to the greatest extent possible.

The fire protection system was designed to have the capability to extinguish any probable combination of simultaneous fires which might have occurred at the station. The system was designed in accordance with the standards of the

National Fire Protection Association (NFPA) and was based generally on the recommendations of the Nuclear Energy Property Insurance Association.

Procedures were developed for fighting fires in all the plant areas and were included in the Plant Emergency (now designated "Site Contingency") Procedures. Fire prevention was controlled by administrative methods to prevent accumulations of combustible materials and to practice good safety methods. Periodic practice exercises were employed to ensure that plant personnel were familiar with the proper corrective procedures.

Fire detection and fire fighting systems of appropriate capacity and capability were provided in the original design to minimize the adverse effects of fire on structures, systems, and components important to safety. Sensing devices included both ionization chambers and temperature detectors. Fire-fighting equipment included automatic water deluge in appropriate areas. A Halon 1301 total flooding system was installed. Appropriate hoses and portable fire fighting equipment were provided and placed throughout the plant.

The design of the fire protection system was reviewed in 1972[1] on the basis of GDC 3 of Appendix A to 10 CFR 50 which was promulgated after the licensing of Ginna Station. It was determined that the requirements of GDC 3 were appropriately met by the plant design.

9.5.1.1.2 Branch Technical Position 9.5-1 |6

In May 1976, the NRC Branch Technical Position 9.5-1 was published for comment as Regulatory Guide 1.120, and in August 1976, Appendix A to Branch Technical Position 9.5-1 was published for use by plants docketed prior to July 1, 1976. The design of the fire protection system was reviewed against the criteria of the Branch Technical Position in a submittal to the NRC in February 1977.[2] The submittal included a fire hazards analysis and several proposed design modifications in compliance with the regulatory guidance. A safety evaluation report was issued by the NRC in February 1979[3] with supplements in December 1980,[4] February 1981,[5] and June 1981.[6]

Automatic smoke detection systems are provided in all plant locations containing safety-related equipment and/or concentrations of combustible materials. In addition, automatic preaction sprinklers or automatic water spray nozzles are installed for all cable trays where large concentrations of cable trays exist. All areas with flammable liquids are protected by a detection system and an automatic water suppression system. The relay room is protected by a detection system, an automatic Halon system, and three manual water spray systems.

Flamemastic, a fire-retardant coating, has been applied in locations containing concentrations of cable trays such as in the vault below emergency diesel generator 1B and at the entrances of the cable tunnel from the intermediate building, air handling room, and auxiliary building. New cables which meet IEEE-383 have also been added in various locations. These cables do not need to be coated with Flamemastic.

Manual fire-fighting equipment exists at the station in the form of manual hose stations and portable extinguishers. Should any manual hose station be out of service, the location and spacing of other hose stations ensure effective coverage of the affected area by adding one additional hose length to the nearest hose station not out of service.

The plant utilizes two separate fire water systems. Redundant electric- and diesel-driven fire pumps are provided onsite to ensure that pressure and water flow requirements of the automatic and manual suppression capabilities are maintained. In addition, an offsite supplied underground yard fire water system with diesel-backed redundant pumps is available. Each of these sources is capable of supplying all the water required for suppression of a fire in each plant area. A cross-tie capability exists between these two sources so that the manual hose stations and automatic suppression systems can be supplied even with the failure of both onsite pumps.

Additional plant modifications include the upgrading of detection and suppression systems, fire area penetration seals, reactor coolant pump oil collection systems, fire area dampers, drain backflow protection, emergency lighting, and fire door supervision.

Rochester Gas and Electric Corporation has a fire penetration seal program at Ginna Station, which ensures that all penetrations required to be sealed to specific hourly ratings are identified, sealed, tagged, and maintained in good condition.

9.5.1.1.3 Safe Shutdown Criteria | 6

In February 1981, the fire protection rule (10 CFR 50.48 and Appendix R to 10 CFR 50) became effective, which promulgated criteria related to the safe shutdown capability following a potential fire and other fire protection features. The evaluation of the fire protection system against the safe shutdown capability criteria is discussed in Section 9.5.1.3.

9.5.1.2 System Design

9.5.1.2.1 General

Fire detection instrumentation is located in all areas of the plant containing safety-related equipment and in areas containing large amounts of combustible or flammable materials. Actuation of fixed suppression systems and early warning alarms are provided by these detectors.

Normal fire protection is provided by fixed water deluge spray systems, fixed sprinkler systems, fixed Halon 1301 systems, hose lines, and portable and wheeled extinguishers suitably located in the required areas. | 5

Water to the fire suppression system is supplied, via a header, by two fire pumps. The source of water is Lake Ontario. The yard loop and fire hydrants are supplied by the town of Ontario water supply. | 5

Fire barriers are located throughout the plant to separate established fire areas from each other and also to separate certain safety areas from the remainder of the plant. These barriers are designed to stop a fire from propagating from one area to the other. All penetrations in these barriers are sealed with appropriate materials to match the requirements of the barrier. Fire areas have been defined based upon separation of equipment and cables to ensure that at least one path of safe shutdown systems is always available. | 5

Fire prevention and mitigation considerations have been included in the design of ventilation systems, drain systems, lighting systems, communication systems, electrical and instrument cables, layout and materials, and oil collection systems.

Fire prevention is controlled by administrative methods to prevent accumulation of combustible materials and to practice good safety methods.

9.5.1.2.2 Fire Detection and Signaling Systems

The plant has a protective signaling system which alarms locally in selected parts of the plant and transmits fire alarm, supervisory, and trouble signals to the control room. In addition to signals from fire detection devices in various rooms or ventilating systems, the system transmits signals indicating water flow in water spray or sprinkler systems, fire pump operation, fire pump trouble, and low fire water tank level or pressure. Fire alarms are initiated by the smoke and heat detectors and by water flow or pressure switches in the water fire suppression systems. Additional protection is available by the installation of tamper switches on all major valves, unless they are locked in position. 5 6

The signaling system is powered by the emergency power supply system and automatically transfers to a 4-hr battery backup supply if its normal power source is interrupted.

Fire detection and signaling systems are generally designed and installed in accordance with NFPA 72D.

Smoke detectors and/or heat detectors have been provided in every area that contains safety-related equipment. Some detectors provide early warning fire detection and notification only. Others provide fire suppression system actuation in addition to detection and notification. These detectors are supervised to detect and annunciate circuit breaks, ground faults, and power supply failures. Remote test panels, which allow remote testing of the sensitivity of the detectors, are installed in the vicinity of smoke detectors that are difficult or hazardous to reach. 5 6

The list of instruments required to be operable for fire detection and suppression systems actuation and their locations are shown in the Technical Specifications. Periodic inspection and tests of the fire detection devices are in accordance with NFPA 72E and the Technical Specifications. 5

Fire alarm signals are provided as an integral part of the fire suppression systems to indicate an alarm in case of equipment malfunction, tampering, or in case of fire in any protected area. Additional audio and visual alarms and operating switches are provided in the control room, together with such pressure gauges, test, and reset switches as are required to completely monitor the fire protection system. The fire alarm signals in the control room are distinctive from other equipment alarms.

9.5.1.2.3 Fire Suppression Systems

Fire suppression is provided by fixed water spray and sprinkler systems, fixed gas systems, hose lines, and portable and wheeled extinguishers suitably located in the required areas. The water systems associated with the fire protection system are shown in Figures 9.5-1, 9.5-2, 9.5-2a, 9.5-2b, and 9.5-2c. The fixed gas systems for the relay and MUX rooms are shown in Figure 9.5-3. 6

9.5.1.2.3.1 Water Supply. The fire protection water supply for the automatic and manual water suppression systems and hose stations inside the plant is pumped from Lake Ontario.

A fire header of sufficient size is provided to deliver an adequate quantity of water throughout the plant at a pressure of no less than 75 psi at the highest nozzle. The water supply for the fire hydrants on the yard fire main are supplied with water from the Town of Ontario. The yard hydrant system can be used as a backup to the fixed protection systems and inside hose stations through wall hydrants in four locations. Figure 9.5-4 shows the fire protection system yard loop (yard fire main). See also Section 9.5.1.2.3.5. 3 5

9.5.1.2.3.2 Fire Pumps. The water supply is delivered by a combination of two vertical shaft centrifugal fire pumps located in the screen house. Both pumps take suction from the circulating water intake. One pump is diesel-engine driven and the other is electric-motor driven. Each pump has a rated output of

2000 gpm at 125 psig, which is adequate to meet the largest anticipated water demand.

An automatic sprinkler system supplied by the yard fire main is provided in the area of the screen house that contains the two fire pumps. A curb has been installed around the diesel fire pump and the diesel oil storage tank to control any diesel oil leaks. The curbed area is equipped with a floor drain which drains to a holding tank buried outside the screen house.

A 15,000-gal pressure tank (10,000 gal of water) and a 120-gpm centrifugal jockey pump maintain system pressure at a minimum of 100 psig. When the system pressure drops below 95 psig the electric-motor-driven fire pump starts. If the pressure drops below 85 psig, the diesel-driven fire pump starts.

An automatic controller is located with each fire pump. Each pump can be manually started from the control room or at the individual controller. Each pump can be manually stopped at the controller. In addition, the electric-driven fire pump can also be manually stopped by opening a circuit breaker located in the screen house near the fire pumps. Pump running and pump power loss or engine trouble signals are annunciated in the control room as well as at the individual pump controllers.

The diesel fire pump is provided with an engine coolant heater and filter. The function of the heater is to raise the engine block temperature to a level at which the engine can start more easily and which would result in reduced wear on engine components. The coolant filter removes corrosion particles from the engine coolant.

The diesel fire pump engine is started by redundant 24-V batteries. The batteries are maintained fully charged and ready for service by an automatic dual battery charger operating in the float mode. The charger can charge one battery on high rate while maintaining the other battery on float or charge both batteries on high rate simultaneously. The charger automatically switches from float to high rate and back in order to recharge the batteries when necessary. The 120-V ac power is supplied to the battery charger from the screen house lighting panel. 6

Specific procedures covering the diesel fire pump testing and maintenance include battery surveillance, testing of diesel oil in the day tank, and the requirement that the diesel engine be operated for a minimum of 15 min each month.

9.5.1.2.3.3 Piping and Valves. A separate 10-in. discharge line from each fire pump supplies the 8-in. and 10-in. interior loop main. All automatic and manual fixed water suppression systems and interior hose stations are supplied by this loop main. Outside screw and yoke gate valves subdivide the loop into a number of sections so that a single section can be isolated without impairing the entire loop. The design is such that isolation of a section of fire water piping system does not cause a loss of both the fixed suppression system protection and the manual hose coverage for the same area. Key-operated sectional valves are provided on the exterior yard main to subdivide it into a number of sections so that a single section can be isolated without impairing the entire system. Electrical supervision is provided for valves controlling water flow into sprinkler or deluge systems. Sectional valves on the interior loop and valves controlling fire pump discharge are locked open and/or are provided with electrical supervision (valve tamper switches).

9.5.1.2.3.4 Fire Hydrants. Yard fire hydrants are provided at approximately 250-ft intervals around the exterior of the plant. The lateral to each hydrant is controlled by a key-operated (curb) valve. Threads on hydrant outlets and hose couplings are compatible with those of fire departments which serve the plant. Impact barriers protect those fire hydrants and post-indicator valves which are located within 25 ft of roadways.

The ground area surrounding each exterior hydrant is graded to provide a clearance of at least 12 in. between the ground and the center of the lowest hydrant port.

Fire-fighting equipment is housed within hose houses. Administrative procedures cover snow removal operations and inspection of all outdoor fire hydrants for drainage immediately prior to freezing winter weather and for proper function immediately after the winter season. A yard hydrant on the southeast corner of the yard loop provides backup fire suppression capability

for the transformers and primary fire suppression capability for the standby auxiliary feedwater building.

9.5.1.2.3.5 Yard Loop. The fire protection system yard loop (yard fire main) is shown in Figure 9.5-4. The yard loop supplies water to the yard fire hydrants (Section 9.5.1.2.3.4) and as a backup to the water suppression systems inside the plant (Section 9.5.1.2.3.1). The yard loop provides a backup source of cooling water if service water is lost. It provides a backup to the condensate storage tanks for feedwater to the motor-driven or turbine-driven auxiliary feedwater pumps. It provides a backup to the condensate supply tanks for feedwater to the standby auxiliary feedwater pumps. It can be used to provide cooling water to the emergency diesel generators. The yard loop is equipped with manual isolation gate valves, as shown in Figure 9.5-4, to provide segment isolation in the case of line failures. The yard loop is supplied water from the town of Ontario water system. 7 5

9.5.1.2.3.6 Interior Hose Stations. A total of 42 interior hose stations, each equipped with 100 ft of 1.5-in. diameter UL-approved municipal fire hose, are provided to protect various areas of the plant. The nozzles are 1.5-in. fog nozzles designed specifically for use in electrical fires and have a fog pattern range from 30° to 90° with no straight stream capability. A list of the hose station locations and operability is provided in Table 9.5-1. 5 7 2

9.5.1.2.3.7 Water Suppression Systems. Water suppression systems include water spray systems and water sprinkler systems with open or closed-head nozzles and sprinkler heads. The water suppression systems meet the design installation requirements of NFPA 13 and/or NFPA 15. Each sprinkler system has an outside screw and yoke shutoff valve. All control valves for spray or sprinkler systems are electrically supervised with alarms in the control room. Other important valves on the water supply are either electrically supervised or locked in the proper position. The water flow rates follow NFPA 15 guidelines. The water suppression systems and the areas covered are tabulated below. 5

Automatic water spray systems (which can also be manually actuated) provide protection for

1. The turbine lube-oil system in the turbine building.

2. The hydrogen seal-oil system in the turbine building.
3. The oil storage room in the turbine building.
4. The oil filled transformers outside the turbine building.
5. The cable trays in the screen house.
6. The cable tunnel.
7. The charcoal filter unit in the auxiliary building ventilation system.
8. Control room-turbine building wall.
9. The cable trays in the air handling room.

Manually actuated water spray systems provide protection for

1. The turbine-driven auxiliary feedwater pump and feedwater pump oil tank area. | 7
2. The condenser pit area.
3. The relay room.

| 7

The relay room water suppression systems serve as backup to the automatic Halon system that provides primary protection.

Automatic preaction sprinkler systems provide protection for

1. The cable entrance area at the auxiliary building.
2. The cable tray area in the basement of the auxiliary building (elevation 235 ft 8 in.).
3. The cable tray area at elevation 253 ft 6 in. of the auxiliary building.
4. The cable tray area in the intermediate building.
5. The diesel generator rooms.

The sprinkler systems for these areas have closed-head sprinklers with preaction trim on the deluge valves in accordance with NFPA 13.

Automatic sprinkler systems provide protection for the following.

1. The service water pumps in the screen house.
2. The fire pumps in the screen house.
3. The turbine island.
4. The service building.
5. The technical support center diesel room. |5

An automatic and manual water curtain is provided for protection of the wall between the turbine building and the control room (superwall). The design of the water curtain is in accordance with NFPA 15. The system is actuated by heat detection.

Closed-head, close-spaced sprinklers are installed around the perimeters of the east and west stairwells and the equipment hatch, at the ceiling level of the auxiliary building mezzanine floor, as water curtain fire barriers to prevent |2 the spread of fire from one level to the other. The sprinkler systems are wet pipe systems, which open automatically at a fixed temperature of 165°F or less.

The containment postaccident charcoal filter units are protected with a water dousing system from the containment spray header, as described in Section 6.5.1.2.

The service building interior, including storage areas, shop areas, offices, locker rooms, and all rooms having combustible material, is protected by automatically operating wet-pipe sprinkler systems, with exterior water gauges and indication in the control room.

The turbine-driven auxiliary feedwater pump is protected with a water spray system consisting of six spray nozzles (Grinnell Mulsifyre Projector Type S-1 40-15) located in an array above the equipment. The north center and northwest corner nozzles are partially blocked by existing auxiliary feedwater piping in |7 the area. An analysis was performed which demonstrated that the original design had sufficient margin such that the existing configuration met RG&E's original criteria of 0.5 gpm/ft^2 water spray density and exceeds the NFPA 15 general range of 0.2-0.5 gpm/ft^2.

9.5.1.2.3.8 Gas Suppression Systems. Total flooding automatic Halon 1301 |5 extinguishing systems are provided in the relay room, MUX room, and technical |7

support center SAS/PPCS computer room. The systems are designed in accordance with NFPA 12A-1980, Section 1-5.4, to maintain a Halon concentration of 5% for at least 5 minutes following delivery (sufficient time to allow effective emergency action by trained personnel). Ionization type smoke detectors in each are a alarm and annunciate in the control room. Where appropriate, a reserve supply of Halon 1301 permits prompt restoration of automatic protection following a system discharge. The Halon fire extinguishing systems are controlled by electronic control systems that are interfaced with the station fire detection system. The control system coordinates the fire detection system with local alarm actuation, air conditioning and ventilation shutdown as appropriate, electrical power disconnection as appropriate, and Halon discharge. In addition to automatic activation, Halon can be released using local manual pull stations or by operation of manual key switches on the fire control panels in the main control room. Halon 1301 storage cylinders are weight tested semiannually. The relay room and MUX room systems are shown in Figure 9.5-3. 5 3

9.5.1.2.3.9 Portable Fire Extinguishers. Pressurized water, dry chemical, carbon dioxide portable extinguishers are distributed throughout the plant in accordance with the provisions of NFPA 10. 5

9.5.1.2.4 Other Design Considerations

9.5.1.2.4.1 Smoke Removal. The air handling systems of the ventilation systems are capable of exhausting volumes of smoke directly to the outside.

In addition, three portable smoke ejectors, each with 5000-cfm capacity, are provided for smoke removal. Flexible hose sections are provided to channel smoke and hot gases through the buildings.

9.5.1.2.4.2 Breathing Equipment. At least 10 self-contained breathing units dedicated to emergency use are provided. Each breathing unit has one spare bottle. The plant has the capability to supply breathing air to 10 men for 6 hr at the rate of two (1.0 hr) bottles per man per hour. A compressor and cascade system are provided onsite to supply the breathing air. 5 5

9.5.1.2.4.3 Control Building Ventilation. The control building ventilation system is designed to provide a safe, controlled environment for the control room, chart room, MUX room, and battery rooms under all required conditions, including high- and moderate-energy line breaks outside containment, as well as small fires in the relay room or control room. Further, the battery room ventilation system will maintain the concentration of free hydrogen in the battery rooms at a low level. In addition to the normal air conditioning system, the battery rooms have backup fans, powered from the batteries, which would exhaust air to the outside vent ductwork. |3

The control room ventilation system has controls which allow for manual actuation of dampers such that 25% of the return air is bypassed through the charcoal filter unit (see Figure 9.4-1). This mode of operation allows for removal of products of combustion from the control room atmosphere following the occurrence of a small fire.

9.5.1.2.4.4 Reactor Coolant Pump Motor Oil Collection System. The reactor coolant pump motor oil collection system consists of a package of splash guards, drip pans, and enclosures assembled as attachments to the reactor coolant pump motor at strategic locations to preclude the possibility of oil making contact with hot reactor coolant system components and piping. Any leaking oil is drained from each individual pump to its own collection tank, which is capable of handling the entire oil inventory of the motor. Strainers are placed at the drain of each drip pan or enclosure. The oil collection components are designed and attached to preclude dislodging during a seismic event.

9.5.1.2.4.5 Floor Drains and Curbs. Safety-related equipment is mounted on pedestals and floor drains provided in these areas are generally adequate to carry off fire water and prevent safety-related equipment from being flooded with standing water. In areas such as the control room, where floor drains are not provided, fire water will be drained out through door openings.

Curbs are provided in the screen house to prevent water or flammable liquid from flowing into the basement where both divisions of safety-related cables are routed. Additional curbs are provided around the diesel-driven fire pump area in the screen house.

A barrier has been installed around the turbine lube-oil reservoir area to contain possible oil spillage. The capacity of the enclosed area is large enough to retain the entire contents of the lube-oil system plus 10% margin for fire water.

Where drains from safety-related areas are tied into drains from areas which contain a large quantity of flammable liquid, backflow protection is provided to prevent possible spread of a liquid fire via the drain system.

9.5.1.2.4.6 Lighting Systems. See Section 9.5.3. 3

9.5.1.2.4.7 Communications. There are three communication systems within the plant. The primary system is the combination paging and party system; in addition, there is a sound powered phone system and a radio paging system.

The sound powered system is hard wired with separate wires from the combination paging and party system. The radio paging system provides communication with areas inside the containment with the help of a radio antenna mounted in the containment. Additionally, a repeater located in the yard area allows for greater flexibility with radio communications. There is adequate redundancy with these three systems to ensure good communications throughout the plant during any fire emergency (see Section 9.5.2). 2

9.5.1.2.4.8 Electrical Cable Insulation. The cable insulation used at Ginna Station includes Kerite, oil-based rubber, neoprene, and polyvinyl chloride.

The cables have, as a minimum, passed the ASTM and UL horizontal and vertical flame tests. Power cables and polyvinyl chloride control cables have passed the Consolidated Edison Bonfire Test. The majority of the electrical cables were purchased and installed prior to the publication of the IEEE 383 standard for flame testing of electrical cables; however, the potential combustion products for the materials used at the station have been evaluated from generic test reports and do not exhibit an unusual or significantly hazardous nature. All cables used for modifications meet IEEE 383 criteria unless specifically excepted. The spent fuel pit bridge crane motive and control power cable is payed in and out from a spring-loaded storage reel assembly. Cable meeting IEEE 383-1974 flame retardant requirements and meeting the 6

flexing duty requirements of the bridge crane cable was not available at the time replacement was required. The replacement cable was reviewed and it was determined that the proposed replacement would not adversely impact existing 10 CFR 50 Appendix R compliance methods or options used to maintain compliance (Reference 7). This determination will be made whenever it is impracticable to meet IEEE-383 criteria for cables used in modifications. 6

9.5.1.2.4.9 Fire Barriers. The fire hazards analysis submitted to the NRC in February 1977 (Reference 2) identifies the fire barriers in the plant and the requirements for maintaining their integrity. These barrier requirements were determined by the fire loadings calculated for each area subject to a potential fire hazard. As a result of this analysis, several design modifications were implemented at the plant including upgrading of the rating of original barriers and installing new barriers. Additional definition of fire areas and barriers and analysis of fire zones were conducted as part of the 10 CFR 50, Appendix R, review effort. The addition of the water curtain around the perimeters of the stairwells and equipment hatch at the ceiling level of the auxiliary building mezzanine floor is a part of this effort. See Section 9.5.1.2.3.7. Also, 3-hr-rated dampers were installed in ducts penetrating these fire areas. New fire barriers were installed in the emergency diesel-generator cable vault, battery room 1B, the charging pump room, the auxiliary building, the intermediate building, and the containment. Fire barriers associated with power and instrument cable systems are discussed in Section 8.3.3. 2 5 2

Fire protective coatings have been applied to the structural steel members forming or supporting a designated fire barrier. In this regard, the structural steel roof beams and a column that supports the roof of the A and B battery room and the floor of the relay room are provided with a fire protective coating, which will ensure that adequate margins of safety will be maintained for at least 1 hr during a fire emergency. 2

9.5.1.2.4.10 Electrical Cable Penetrations. The fire seals installed at Ginna Station fall into two major categories:

1. Seals installed in 1975 using BISCO SF-20 silicone room temperature vulcanizing foam rubber.

2. Seals installed since September 1979 using Dow Corning 3-6458 silicone room temperature vulcanizing foam rubber.

The adequacy of several fire endurance tests and their applicability to cable tray and conduit penetration fire seals has been demonstrated in a submittal to the NRC in June 1980,[8] with the conclusion that the seal designs at the station are either similar to or more conservative than the seal designs tested by the ASTM E-119 fire test method for a 3-hr rating. The NRC concurred with the evaluation.[4] NRC Information Notice 88-04 alerted licensees that some fire barrier penetration seal designs may not be adequately qualified for the design rating of the penetrated fire barriers. As part of RG&E's review in response to Information Notice 88-04, a program was established to evaluate fire barrier penetrations against a tested configuration and examine the qualification test documentation. Branch Technical Position (BTP)-APCSB 9.5-1 requires that cable and cable tray penetrations of fire barriers (vertical and horizontal) be sealed to give protection at least equivalent to that of the fire barrier. Although not specifically stated in APCSB 9.5-1 that penetration designs must be qualified by tests, RG&E proceeded with this program in order that the penetrations would continue to meet a tested configuration, when being maintained or involved in a plant modification, thereby ensuring the barrier would not be degraded.

For fire barrier penetration seals for which it is not possible to achieve a duplication of a specific tested configuration, appropriate compensatory measures are taken, such as posting fire watch patrols when required by the Technical Specifications, temporarily repairing and qualifying the penetration until it can be reworked, and performing technical evaluations to demonstrate that the penetration meets an equivalent level of protection. Guidance from General Letter 86-10 is employed in these cases.

9.5.1.2.4.11 Piping and Duct Penetrations. Piping penetration of fire barriers are either poured in place or sealed by one of the following methods: grout, silicone RTV foam seals, or flexible reinforced silicone-rubber boots. The piping and duct penetrations have fire resistance ratings commensurate with the fire hazards on either side of the penetration determined by the fire hazards analysis.[2] The fire rating adequacy of the seals was demonstrated in a submittal of fire test reports to the NRC in June 1980.[8] Based on the data of

these reports, the NRC concurred that the piping and duct penetration seals provide adequate resistance to prevent a fire from propagating through the rated fire barriers.[4]

9.5.1.2.4.12 Cable Separation. The design and construction of Ginna Station predates current industry standards of physical separation. The criteria and design features related to cable separation at the plant are discussed in Section 8.3.1.4. Cable separation as it relates to the safe shutdown capability of the plant under a fire emergency is discussed in the references cited in Section 9.5.1.3.

9.5.1.2.4.13 Spray Shields. Water spray shields are provided in the intermediate building over the control rod drive motor control center and switch-gear, and in the auxiliary building over switchgear, motor control centers, and other electrical equipment to help protect this equipment from damage or undesirable effects from the application of fire water.

9.5.1.2.4.14 Construction Joints. The construction joints between containment and the surrounding buildings provide fire resistance commensurate with the hazards in the area. |2

9.5.1.2.5 Administrative Controls

The administrative controls for fire protection consist of the fire protection organization, fire brigade training, the controls over combustibles and ignition sources, the prefire plans and procedures for fighting fires, and the quality assurance provisions for fire protection. These controls are discussed in Sections 9.5.1.2.5.1 through 9.5.1.2.5.6. The fire protection program is in conformance with the guidelines of Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls, and Quality Assurance and is updated in the Fire Protection Plan as indicated in References 9 and 10. |6

9.5.1.2.5.1 Organization. The fire protection organization defines the organizational responsibilities and lines of communication between the various positions involved in the fire protection program, the qualification requirements of the key positions in the fire protection program, and the composition of the fire brigade. The fire protection organization encompasses positions

extending from the Vice President of Ginna Nuclear Production to the Station Shift Supervisor. The organization includes a dedicated Fire Protection Engineer who reports directly to the Ginna Superintendent of Support Services. These management and staff positions are responsible for formulation, implementation, and assessment of the fire protection program. 7

9.5.1.2.5.2 [INSERT (A) and INSERT (B)] FIRE BRIGADE

9.5.1.2.5.3 Fire Brigade Training. The fire brigade training program consists of classroom instruction, practice in fire fighting, and fire brigade drills. The classroom instruction is provided quarterly and includes instruction in the types of fires that could occur in the plant, their particular hazards, location and use of the plant fire-fighting equipment, and fire-fighting strategies and techniques. Brigade members participate annually in training sessions in actual fire extinguishment; at quarterly intervals the station conducts preplanned fire drills..

Fire brigade training is provided for all members. In addition to the training and drills conducted onsite, the program includes 8 hr per year of hands-on training for each brigade member at the Rochester Fire Academy, an academy which is used to train members of the local paid and volunteer fire departments: Additional training is also conducted at the Niagara Mohawk training facility in Oswego. The local fire department is approximately 4 miles offsite and is included in an annual training session onsite to ensure its ability to respond quickly and effectively to fire situations at the plant. Other surrounding departments periodically respond to the site and participate in this drill. A good working relationship has been established between the plant staff and these fire departments.

9.5.1.2.5.4 Control of Combustibles. Administrative controls have been established to limit the amount of combustibles to which a safety-related area may be exposed. These controls include housekeeping procedures, periodic inspections to determine the effectiveness of housekeeping practices, procedures and guidelines for use and storage of combustible materials, and a review of proposed work activities to identify potential transient fire loads to evaluate the need for additional fire protection provisions in the work activity procedure. Administrative procedures have been established to ensure that all wood products such as boxes, staging forms, construction lumber, shelves, and benches used in safety-related areas are fire-retardant treated.

9.5.1.2.5.4 Control of Ignition Sources. Administrative controls have been established to protect safety-related equipment from fire damage or loss resulting from work involving ignition sources. These controls include station procedures which require a work permit to perform welding, grinding, or flame cutting operations and the posting of a fire watch during such operations, and controls that prohibit smoking in safety-related areas and in areas containing flammable or potentially explosive materials. Administrative controls have been established to prohibit the use of open flame or combustion-generated smoke for leak testing.

Administrative controls have been established to ensure that before issuing the open flame, welding, and grinding permit, a foreman or supervisor trained in basic industrial fire fighting and fire prevention physically surveys the area where the work is to be performed and establishes that the following precautions have been accomplished:

1. All movable combustible material below and within a 35-ft radius of the cutting, welding, grinding, or open flame work has been removed.

2. All immovable combustible material below and within a 35-ft radius has been thoroughly protected by asbestos curtains, metal guards, or flameproof covers, and fire extinguishers, hose, or other fire-fighting equipment are provided at the work site.

9.5.1.2.5.6 Fire-Fighting Procedures. Procedures have been established to prescribe the actions to be taken by the individual discovering the fire, the control room operators, and the members of the fire brigade.

Plans covering fire-fighting strategies for safety-related fire areas and areas presenting a hazard to safety-related equipment have been developed and documented. Such plans include a discussion of the combustibles, appropriate extinguishing agents, location of nearby fire-fighting equipment, likely approach routes, location and protection of safety-related and necessary auxiliary equipment, fire-fighting hazards, handling of radiological and toxic hazards, and methods to ventilate the fire area. The fire brigade members' responsibilities associated with the prefire plans have been delineated. |2

A written agreement with the local fire company is maintained to ensure adequate support for a fire emergency. Members of the local fire company have received training in basic radiation principles, typical radiation hazards, and precautions to be taken in a fire involving radioactive materials in the plant; they also participate in fire brigade drills at least once per year. Station procedures have been established to provide for the recall of off-duty fire brigade members to assist the on-shift brigade in the event of a fire emergency.

9.5.1.2.5.7 Quality Assurance. The design, procurement, installation, testing, and administrative controls for the fire protection program are controlled in accordance with Ginna Station Quality Assurance Program, Appendix D, implementing the quality assurance provisions contained in Branch Technical Position 9.5-1, Appendix A. | 5

9.5.1.3 OPERABILITY AND SURVEILLANCE REQUIREMENTS [INSERT C]

9.5.1.4 Safe Shutdown Capability

9.5.1.4.1 Safe Shutdown Requirements | 6

The requirements for protecting safe shutdown systems and their respective components and associated circuits are specified in 10 CFR 50, Appendix R, and the NRC Generic Letter 81-12. The objective of the requirements is to limit damage to safe shutdown systems resulting from an unmitigated fire to the extent that the ability to achieve safe shutdown is ensured.

Rochester Gas and Electric submitted an evaluation report in January 1984[11] describing alternative safe shutdown capability in accordance with Appendix R, Section III.G. This report was revised in October 1984[12] and in January 1985;[13] the revisions included a request for twelve specific exemptions from the retrofit requirements of Appendix R, Section III.G. In safety evaluation reports of February 1985[14] and March 1985[15] the NRC accepted the alternative safe shutdown proposals and granted the requested exemptions. Thus, all areas of the plant either meet the retrofit requirements of Appendix R (as exempted) or are provided with acceptable alternative safe shutdown capability. | 6

Subsequent to the implementation of the Appendix R modifications during the 1986 refueling outage, the RG&E alternative safe shutdown report was revised

(March 1986) to incorporate deviations from the original design and compliance methods. These revisions were in accordance with the previously approved safety evaluation reports mentioned above and with NRC guidance for reviewing compliance methods. |2 |2

9.5.1.4.2 Alternative Shutdown Capability |6

Alternative shutdown capability is provided for the control room, relay room, air handling room, battery rooms, cable tunnel, and auxiliary building basement/mezzanine. Alternative shutdown is accomplished independent of these areas by procedural means with required actions performed at local shutdown stations or locally at the equipment. These procedures are designed to ensure that the following shutdown functions would be available following a fire: reactivity control, primary system makeup control, primary system pressure control, decay heat removal, process monitoring, and support services. If a shutdown function could be potentially lost due to a fire, a procedure to restore the shutdown function is included. The procedure delineates the operator actions necessary to restore the lost function.

To ensure continued operation of the onsite diesel generators in the event of a fire, control circuits in the diesel generator A room are isolated so that fire damage in other fire areas cannot inhibit proper diesel control and operation. Also, sufficient control features have been provided so as to allow for local control of the 1A diesel generator. Alternative controls and instrumentation including start/stop controls; voltage and speed controls; voltage, current, and rpm indication are provided in the diesel generator A room. See Section 7.4.4 for a discussion of alternative shutdown instrumentation and control. |2

In addition to the actions necessary to restore or compensate for lost functions, the procedures for several areas also identify the fire's potential effect on other equipment not necessarily needed to provide a shutdown function and identify what, if any, operator actions should be taken. Further, the procedures provide the operators with the necessary guidance for initial plant cooldown and subsequent cold shutdown. All necessary actions to achieve hot shutdown can be performed by onsite personnel. All necessary materials are stored onsite. |2

Procedures are provided for all fire areas where an unmitigated fire could disrupt needed shutdown functions. As an example, the procedure for the control room (which identifies the actions necessary to achieve and maintain cold shutdown) is discussed below.

9.5.1.4.3 Shutdown From Outside the Control Room | 6

In the event of a control room fire that results in evacuation of the control room, safe shutdown capability is provided by a procedure that describes the | 2
operator actions necessary to achieve hot shutdown conditions. The procedure uses four plant personnel exclusive of the fire brigade and provides for local | 2
control of a charging pump, auxiliary feedwater pump, and service water pump; local operation of a diesel generator; and local indications for process | 2
monitoring. Reactivity control, reactor coolant makeup control, and primary system pressure control will be provided by the charging system in conjunction with the refueling water storage tank and the pressurizer safety valves. Initial decay heat removal will be provided by a turbine-driven auxiliary feedwater pump and the atmospheric dump valves. The condensate storage tanks | 2
and service water will ensure a long-term supply of water for the auxiliary feedwater pump. Diesel generators and the service water system will provide the necessary support services. The process monitoring function will be provided by the following instrumentation: reactor coolant hot and cold temperature, reactor coolant system pressure, pressurizer level, and steam | 2
generator pressure and level. Additionally, turbine-driven auxiliary feedwater flow and source range neutron monitoring are available.

9.5.2 COMMUNICATIONS SYSTEMS

A broad range of communications equipment is available at Ginna Station. Several systems are installed for communications between RG&E Emergency Centers, and for communications with outside agencies. Equipment is periodically verified operable by plant procedures. The use of particular types is specified in the appropriate implementing procedures as first choice and backup systems. All services other than radio are underground between centers. Communications systems are tested periodically.

9.5.2.1 Public Address System

A special warbling tone on the GAI-Tronics page system is sounded from the control room to warn personnel of a site evacuation. Warning is immediate to all persons onsite at the time of an accident. High noise areas have, in addition to the public address system, red warning lights with signs to direct personnel to evacuate. Special announcements on the page and special tones are used for other emergencies. The plant evacuation alarm, plant fire alarm, and plant attention signal are each distinct tones over the GAI-Tronics page system and are actuated from the control room by pushbutton or switch.

9.5.2.2 Telephone Systems

Communications between the control room, technical support center, emergency survey center, and other operations centers can be established using either telephone, two-way intercom, radio, or the plant public address system.

The AT&T System 75 telephone system at Ginna affords a great deal of flexibility and capacity. Calls can be received or made to either the Rochester telephone system or the Ontario system (New York Telephone Company). The System 75 system has its own power supply located onsite which could maintain house phones independent of offsite lines. There are also Rochester direct lines that are powered by Rochester Telephone and Ontario direct lines that are powered by New York Telephone. During an emergency, phone usage can be controlled by an operator at the System 75 console located in the technical support center.

In case of an emergency, personnel not at the plant can be summoned using either the System 75 telephones or direct lines to the Ontario and Rochester systems. If necessary, control room personnel may use the direct lines to a Rochester located dispatcher who would then make the necessary offsite calls. A base radio transmitter in the control room may be used to call the electric line operator who can also call personnel to the plant.

A Cobbs sound powered phone system consisting of headsets, battery-operated amplifiers, and wall-mounted jacks provides party-line two-way communications throughout the plant for system tests, etc.

9.5.2.3 Radio Systems

There are three radio frequencies available for use at Ginna Station. They are assigned to the fire brigade, security, and radiation survey teams. The base stations and antennae are located for maximum transmission coverage of the areas of use. The security channel is monitored at central security and at the guardhouse. The radiation survey teams have operator capability at the emergency survey center, the technical support center, and the emergency operations facility recovery center. The fire brigade operator will be in the control room. Three-channel portable radio sets are available for the use of survey teams in the field.

The Ginna control room also has a receiving and broadcasting station on a frequency which is monitored offsite by electric power control and line maintenance personnel. This channel is available for indirect communication to the State Police, Monroe and Wayne County Sheriffs, and Wayne or Monroe County emergency operations facilities.

Portable low power hand radio sets are located in the technical support center to be distributed in the event of an emergency for backup or for mobile communications. Portable hand radio sets are also located in the emergency survey center for the use of survey teams. Offsite survey teams can communicate through these portable radio sets to a base station which may be set up at either the emergency survey center, technical support center, or emergency operations facility/recovery center. The base station is capable of operating with 12-V dc power (an automobile system) as an alternative power source. Additionally, portable radio sets are available for Operation's use following an Appendix R worst-case fire scenario. The two-channel radio sets are located at various safe shutdown stations and can be operated through a repeater system to provide communications between any areas of the plant. 2

9.5.2.4 Offsite Communications

Notification to state and county emergency response organizations is available 24 hr per day. The State Warning Point is staffed during normal working hours by the Office of Disaster Preparedness. Monroe County Office of Emergency Preparedness and Wayne County Office of Emergency Management answer the RECS

line during the work day. During nonbusiness hours, weekends, and holidays, the same telephone line is covered for the state by the State Police Warning Point for Monroe County at the Rochester Fire and Public Safety Building. For Wayne County the sheriff's office covers the warning system during off hours.

At Ginna Station there are always control room personnel to originate calls. New York State has responsibility for communications to other counties which may fall within the ingestion exposure zone. Any contacts with Canada or Ontario Province would also be through the state agencies.

To contact appropriate offsite agencies the telephones would normally be used as discussed in Section 9.5.2.2, with direct lines or the System 75 system. If necessary, the power control dispatcher or electric line operator may be contacted as described above and instructed to notify the state police or sheriff and relay messages through their radio systems. 5

Communications with federal emergency response organizations consist of telephone contact to the Department of Energy, Brookhaven Radiological Assistance Program. This call would be made by the emergency coordinator. Their assistance may also be requested by the state or counties.

NRC "red phones" are installed in the control room, the emergency survey center, the emergency operations facility/recovery center, and the technical support center. The NRC health physics network phones are also available in the emergency survey center, technical support center, and emergency operations facility dose assessment area.

Ginna Station uses the simulated control room in the training center instead of the actual plant control room for annual emergency plan drills. To support the use of the simulated control room for these drills, the GAI-Tronics page system, Cobbs sound powered phone, System 75 phone, New York State Radiological Emergency Communication system (RECS), and NRC "red phone" are installed in the simulated control room. 5

9.5.2.5 Emergency Communications With the NRC

Two systems exist for emergency communications between Ginna Station personnel and NRC authorities: the emergency notification system ("red phone") and the health physics network. |5

The emergency notification system is intended for use as the primary means for the site to report emergencies and other significant events to NRC/IE headquarters. When the NRC operations center is activated in response to a site emergency, the emergency notification system becomes the dedicated and continuous line for the transmission of operational data.

The health physics network is intended for use as the dedicated line between the NRC headquarters and the site for health physics data during site emergencies and other significant events.

The emergency notification system is powered through equipment of the New York Telephone Company by a 48-V dc supply in their central office in Ontario. Loss of offsite power would not affect most of the phones in the network.

9.5.3 LIGHTING SYSTEMS

Fixed emergency lighting units are provided in safety-related areas and other areas which contain fire hazards to facilitate emergency operations, manual fire fighting, and access to and egress from each designated fire area. The lighting units are 8-hr rated. In addition to the fixed lighting systems, portable battery-powered handlights are provided.

Ginna safe shutdown panels are located in several areas of the plant. The lighting at the safe shutdown areas has been determined to be sufficient to perform all required safe shutdown tasks. This determination was made by a lighting survey conducted in conjunction with 10 CFR 50, Appendix R, compliance efforts. |3

The control room normal and emergency lighting systems provide adequate illumination in accordance with the guidelines of NUREG 0700, Section 6. The control room normal lighting system is capable of functioning at all times, excluding loss of ac power, at which time the 125-V dc emergency lighting |3

system is automatically turned on. The control room emergency lighting fixtures are fed from either the A or B station batteries. In the event of loss of either battery there is a transfer switch in the control room by which the operators can manually switch the emergency lighting feed from one train to the other. Should loss of either battery occur in the emergency lighting mode, an 8-hr-rated emergency light fixture located near the transfer switch shall remain functional to provide sufficient lighting to perform the transfer. The 125-V dc power supply up to the point of termination at the emergency lighting fixtures is Class 1E and Seismic Category I. The emergency lighting fixtures are standard. A prototype fixture has been seismically tested in accordance with IEEE 344-1975 to ensure continued operation of the fixtures in the event of an earthquake. In addition, an analysis of the seismically reinforced suspended ceiling has been performed to ensure that the ceiling, including the normal and emergency lighting fixtures, does not create a hazard to control room personnel or safety-related equipment during a seismic event. 3

A security lighting system along the fence at Ginna Station has been provided. The system has been designed to meet the requirements of ANSI 18.17, Industrial Security Plans for Nuclear Power Plants (see Section 13.6).

9.5.4 DIESEL GENERATOR FUEL OIL STORAGE AND TRANSFER SYSTEM

The diesel generator fuel oil storage and transfer system is shown in Figure 9.5-5. 3

The minimum permissible onsite fuel inventory is 10,000 gal. This quantity is sufficient for operation under loss-of-coolant accident conditions of two engineered safety feature trains for 40 hr, one train for 80 hr, or operation under hot standby nonaccident conditions for 111 hr.

Fuel oil is provided to each diesel engine by a 350-gal day tank located at the engine. When the engine starts, the engine-driven fuel pump provides fuel from the day tank. Each diesel generator day tank is normally supplied from its 6000-gal underground storage tank. A 480-V fuel oil transfer pump for each diesel engine pumps fuel oil at approximately 23 gpm at a discharge pressure of 15 psig from either storage tank to either day tank. A cross-connection allows each transfer pump to supply either day tank. The suction line to each fuel 6

oil transfer pump includes a duplex strainer that can be serviced without interrupting flow. One fuel oil transfer pump has the capacity to supply both diesel generators at 110% load. One diesel generator uses 2.62 gpm at 110% load. The plant process computer system provides alarms on high and high-high differential pressure across each duplex strainer and on low and low-low fuel oil level in each day tank. 7

A local control switch in the diesel room for the transfer pump has two positions. In RUN, the pump will run until the day tank is full, then a fill line valve closes and a bypass valve opens to recirculate back to the storage tank. When the level in the day tank decreases, the valves will reposition to supply the day tank. In AUTO, the transfer pump starts when its diesel is running and the level in the respective day tank falls to a low level. The pump continues to run until its diesel is stopped. Again when the diesel day tank is full, the fill line valve closes and the bypass valve opens. Low level in either day tank is alarmed in the control room. 5 Heat tracing is provided to maintain the fuel oil temperature in exposed pump suction piping in the event of a loss of heat in the diesel generator rooms. The heat tracing is thermostatically controlled to maintain the fuel oil in the pipe above 40°F. This provides sufficient margin above the point at which this portion of the suction piping could be considered inoperable based on the cloud point of the fuel oil, typically 0°F. 6 7

Watertight doors have been installed on the concrete manways of the underground diesel-oil storage tanks. These doors prevent the accumulation of water in the manways that might seep into the oil through the flanged manhole on the top of each storage tank.

The diesel generator fuel oil storage and transfer system surveillance tests and conditions for operation are provided in the Technical Specifications.

9.5.5 DIESEL GENERATOR COOLING SYSTEM

The diesel generator cooling system is shown in Figure 9.5-5. 3

The diesel generators are supplied with cooling water from the service water system. Service water is directed to the lube-oil cooler and jacket water

coolers for each diesel generator. The service water lineup is made reliable by ensuring that the service water crossover valves remain open at all times. This ensures that no matter which service pump is selected to automatically start during an emergency, and no matter which diesel starts, the diesel that is running will receive cooling water. The 1A and 1C service water pumps are powered from bus 18 which can be supplied by diesel generator 1A. A selector switch in the screen house allows selection of either pump to automatically start. The 1B and 1D service water pumps receive their power from bus 17 which can be supplied from diesel generator 1B. Another selector switch in the screen house is provided for this set of pumps automatic start feature.

An alternative means for diesel generator cooling is provided via a valve installed in the service water cooling to each diesel generator. The valve allows the connection of fire hoses from a fire hydrant located outside the turbine building in case of failure of the service water pump during diesel generator operation. |3

The cooling water is heated by jacket water heaters. Below each diesel is a subbasement which contains the buswork for that diesel. To prevent flooding of this area, a vault pump is provided for each diesel. This runs automatically as required to remove any accumulation of water.

9.5.6 DIESEL GENERATOR STARTING SYSTEM

The diesel generator starting system is shown in Figure 9.5-5. |3

Two air receivers are provided to start each diesel. The receivers for each diesel are charged by a 480-V air compressor. Diesel generator 1A air compressor receives its power from the motor control center which can be supplied from diesel generator 1B. Diesel generator 1B air compressor receives its power from the motor control center which can be supplied from diesel generator 1A. |7

Each air system is utilized to crank the diesel with air to start the diesel within 10 sec. The compressors will automatically start at 220 psig to charge the receivers, and will automatically stop at normal receiver pressure of 245 psig. A relief valve set at 275 psig provides overpressure protection. |7

Starting air at 245 psig is supplied to two air regulators. The air regulators reduce the pressure to 140 psig to supply the air distributors. Nominal air pressure required for starting the engine is 80 to 150 psig. 7

Parallel dc-powered solenoid valves will open to admit air to the air start motor for each diesel. One solenoid valve is supplied from battery 1A and the other from battery 1B. The diesel air start systems can be cross-connected by two valves in series.

Periodic testing requirements of the diesel generator starting systems are provided in the Technical Specifications.

9.5.7 DIESEL GENERATOR LUBRICATION SYSTEM

A simplified diagram of the diesel generator engine lubrication system is shown in Figure 9.5-6. Lubrication of the engine is accomplished by a prelube pump and an engine-driven lube-oil pump. The engine must be kept prelubed and preheated to provide immediate starting. A sensor is provided for each diesel generator to detect the loss of prelube oil and to alarm on this condition. When the engine starts, the prelube pump and heater are deenergized and the engine-driven lube-oil pump provides oil flow. 3 2

9.5.8 DIESEL GENERATOR COMBUSTION AIR INTAKE AND EXHAUST

Fresh air for combustion is drawn into the engine through a filter and distributed to the cylinders by an air intake manifold. Correct air to fuel ratio is maintained by sensing the manifold gas pressure and throttling air intake dampers according to the diesel load and speed. Turbocharging is used to increase flow or volume of air. This consists of a turbocharger driven by exhaust gases of the engine. Compressing the air with the turbocharger increases the temperature of the air. Since air intake temperature should be as low as possible for maximum operating efficiency, the air must be cooled before entering the cylinders. The system is shown in Figure 9.5-5. 3

REFERENCES FOR SECTION 9.5

1. Rochester Gas and Electric Corporation, Technical Supplement Accompanying Application for Full-Term Operating License, August 1972.

2. Letter from L. D. White, Jr., RG&E, to A. Schwencer, NRC, Subject: Fire Protection at R. E. Ginna Nuclear Power Plant, dated February 24, 1977.

3. Letter from D. L. Ziemann, NRC, to L. D. White, Jr., RG&E, Subject: Transmittal of Fire Protection Safety Evaluation Report (enclosure), dated February 14, 1979.

4. Letter from D. M. Crutchfield, NRC, to J. E. Maier, RG&E, Subject: Supplement 1 to Fire Protection Safety Evaluation Report, dated December 17, 1980.

5. Letter from D. M. Crutchfield, NRC, to J. E. Maier, RG&E, Subject: Supplement 2 to Fire Protection Safety Evaluation Report, dated February 6, 1981.

6. Letter from D. M. Crutchfield, NRC, to J. E. Maier, RG&E, Subject: Fire Protection, Ginna, dated June 22, 1981.

7. RG&E Appendix R Conformance Review, Ginna Station, Spent Fuel Pit Bridge Crane Cable, Number WR/TR 9020864, Revision 0, dated March 2, 1990. | 6

8. Letter from L. D. White, Jr., RG&E, to D. M. Crutchfield, NRC, Subject: Fire Protection at R. E. Ginna Nuclear Power Plant, dated June 4, 1980.

9. Letter from L. D. White, Jr., RG&E, to D. L. Ziemann, NRC, Subject: Fire Protection at R. E. Ginna Nuclear Power Plant, dated May 15, 1978. | 6

10. R. E. Ginna Nuclear Power Plant Fire Protection Plan, dated April 29, 1986.

11. Letter from J. E. Maier, RG&E, to D. M. Crutchfield, NRC, Subject: Transmittal of Appendix R, Alternative Shutdown System, dated January 16, 1984.

REFERENCES FOR SECTION 9.5 (Continued)

12. Letter from R. W. Kober, RG&E, to W. Paulson, NRC, Subject: 10 CFR 50, Appendix R, Alternative Shutdown System, Revision 1, dated October 4, 1984.

13. Letter from R. W. Kober, RG&E, to J. A. Zwolinski, NRC, Subject: Appendix R, Alternative Shutdown System, dated January 16, 1985. 6

14. Letter from J. A. Zwolinski, NRC, to R. W. Kober, RG&E, Subject: Safety Evaluation for Appendix R to 10 CFR Part 50, Items III.G.3 and III.L, dated February 27, 1985.

15. Letter from J. A. Zwolinski, NRC, to R. W. Kober, RG&E, Subject: Exemptions to Section III.G of Appendix R, dated March 21, 1985.

Table 9.5-1 |2

FIRE SERVICE WATER HOSE REEL LOCATIONS

Hose Reel Number	Building	Floor	Location
1	Turbine	Basement	Elevator
2	Turbine	Basement	Battery room
3	Turbine	Basement	Oil storage room
4	Turbine	Basement	Steam generator feed-water pumps
5	Turbine	Intermediate	Elevator
6	Turbine	Intermediate	4160 bus
7	Turbine	Intermediate	Air ejector
8	Turbine	Intermediate	5A heater
9	Turbine	Turbine	Elevator
10	Turbine	Turbine	Control room
11	Turbine	Turbine	North wall
12	Intermediate	Level four	West
13	Intermediate	Level four	East
14	Intermediate	Level three	East
15	Intermediate	Level three	West
16	Intermediate	Level two	West
17	Intermediate	Level two	East
18	Intermediate	Level one	East
19	Intermediate	Level one	West
20	Intermediate	Level one	South
21	Intermediate	Level two	Nuclear sample room
22	Auxiliary	Operating	West
23	Auxiliary	Operating	Center

Table 9.5-1 |2

FIRE SERVICE WATER HOSE REEL LOCATIONS (Continued)

Hose Reel Number	Building	Floor	Location
24	Auxiliary	Operating	East
25	Auxiliary	Intermediate	East
26	Auxiliary	Intermediate	Center
27	Auxiliary	Intermediate	West
28	Auxiliary	Basement	West
29	Auxiliary	Basement	Center
30	Auxiliary	Basement	East
31	Screen house	Main	Fire pumps
32	All-volatile-treatment building	Resin tank area	Northwest center
33	Containment	Operating	West
34	Containment	Operating	East
35	Containment	Mezzanine	West
36	Containment	Mezzanine	East
37	Containment	Basement	West
38	Containment	Basement	East
39	Service	Main	North hall
40	Service	Ground	North hall
41	All-volatile-treatment building	Technical support center	East
42	All-volatile-treatment building	Technical support center	West

4

(FROM TECHNICAL SPECIFICATIONS 6.2.2)

9.5.1.2.5.2

Insert A: Fire Brigade of 5 members shall be maintained on site at all times. This excludes the two members of the minimum shift crew necessary for safe shutdown.

Insert B: Fire Brigade composition may be less than the minimum requirements for a period of time not to exceed 2 hours to accommodate unexpected absence of Fire Brigade members provided immediate action is taken to restore the Fire Brigade to the minimum requirements.

INSERT C

9.5.1.3 Operability and Surveillance Requirements

Table 9.5-2 lists the operability requirements for the Fire Protection Systems, required actions to be taken when equipment is inoperable and surveillance requirements. These requirements were previously included in the Ginna Station Technical Specifications (Appendix A to Operating License DPR-18) but were removed in accordance with Generic Letter 86-10, Implementation of Fire Protection Requirements and Generic Letter 88-12, Removal of Fire Protection Requirements from Technical Specifications. The bases for the requirements listed in Table 9.5-2 are described in sections 9.5.1.3.1 through 9.5.1.3.4.

The list of spray and/or sprinkler systems shown on Table 9.5-4 are required to be operable when the equipment in the area is required to be operable.

9.5.1.3.1 General

[From TS Bases 3.14(1)]

The fire protection system has the capability to extinguish any probable fire which might occur at the station. The system is designed in accordance with the standards of the National Fire Protection Association.

[From TS Bases 3.14(2)]

Procedures have been developed for fighting fires in all the plant areas and are contained in the plant's emergency procedures. Fire prevention is controlled by administrative methods to prevent accumulations of combustible materials and to practice good safety methods. Periodic practice exercises will be employed to insure plant personnel are familiar with the proper corrective procedures.

[From TS Bases 4.15(1)]

Sufficient tests will be made to be certain that fire detection instruments and associated circuitry are operable such that fires in areas which would jeopardize the safe shutdown of the plant are detected.

9.5.1.3.2 Fire Detection System

[From TS Bases 3.14(3)]

Detection is located in all areas of the plant containing safety related equipment and in areas containing large amounts of combustible or flammable materials. Actuation of fixed suppression systems and early warning alarms are provided by these detectors.

The list of instruments required to be operable for fire detection and their locations are shown on Table 9.5-3.

9.5.1.3.3 Fire Suppression System (Water, Spray and/or Sprinklers, Halon, Fire Hose Stations, and Yard Loop)

[From TS Bases 3.14(5)]

Normal fire protection is provided by a fixed-fire fog system, fixed Halon 1301 system, sprinklers, hose lines, and portable and wheeled extinguishers suitably located in the required areas.

[From TS Definition 1.11]

The fire suppression water system consists of Lake Ontario water supply, pumps and distribution piping with associated sectionalizing control or isolation valves. Valves include valves between the fire pumps and the first valve ahead of the water flow alarm device on each sprinkler, or spray system riser.

[From TS Bases 3.14(7)]

Water to the fire system is supplied via the header by two vertical, centrifugal fire pumps of 2000 gpm capacity each. One of these pumps is driven by an electric motor and the other by a combustion engine. Both are automatic starting through fire pump controllers with indication, alarm and manual starting from the central control room fire panel. The combustion engine local fuel supply capacity is designed for 8 hours of operation.

[From TS Bases 3.14(8)]

A fire header is installed of sufficient size to deliver an adequate quantity of water throughout the plant at a pressure of no less than 75 psi at the highest nozzle.

[From TS Bases 3.14(9)]

The header system is normally pressurized through the use of a hydro-pneumatic tank using house service air and having an active water capacity of 10,000 gallons. Loss of header pressure and/or opening of any deluge system activates the fire pumps and the alarm system.

[From TS Bases 3.14 (10)]

A backup fire suppression water system would be used to provide protection in the event the fire suppression water system were inoperable. A backup system could, for example, be comprised of a backup pump, and yard hydrant system supplying water to wall hydrants, or other equipment or measures.

[From TS Bases 3.14(6)]

Readily accessible 1-1/2 inch rubber covered hose lines and continuous flow type hose reels are distributed throughout the station so that all areas in the station are within 20 feet of a fog nozzle when attached to not more than 125 foot lengths of hose. All nozzles are 1-1/2 inch variable fog-off nozzles.

[From TS Bases 3.14(11)]

The yard hydrant on the south-east corner of the yard loop provides the secondary fire suppression capability for the transformers and the primary fire suppression capability for the standby auxiliary feedwater building.

[From TS Bases 4.15(2)]

The fire suppression water system testing will assure the capability of the system to meet its requirements.

[From TS Bases 4.15(3)]

The Halon System is used to protect those areas that would be damaged by the use of water. The 90% of full charge pressure is based on a temperature of 70°F. Pressures at temperatures other than 70°F will be corrected by Chart ULE 2671 March 1, 1973 ANSUL 1301 Clean Agent Free Control System Manual P/N17210-02.

9.5.1.3.4 Fire Barrier Penetrations

[From TS Bases 3.14(4)]

Fire barriers are located throughout the plant to separate major areas from each other and also to separate

certain safety related areas from the remainder of the plant. These are designed to stop a fire from propagating from one area to another. All penetrations in these barriers are sealed with appropriate materials to match the requirements of the barrier.

[From TS Bases 4.15(4)]

Visual inspection of fire barrier penetration seals will be made to insure the containment of any fire that may start until it can be extinguished either automatically or manually. There are no fire barriers that perform a pressure sealing function.

Table 9.5-1
FIRE SERVICE WATER HOSE REEL LOCATIONS
AND OPERABILITY

Hose Reel Number	Building	Floor	Location	Required to be Operable*
1	Turbine	Basement	Elevator	
2	Turbine	Basement	Battery Room	x
3	Turbine	Basement	D/G Rooms	x
4	Turbine	Basement	Steam Generator Feedwater Pumps	
5	Turbine	Intermediate	Elevator	
6	Turbine	Intermediate	4160 Bus	x
7	Turbine	Intermediate	Air Ejector	
8	Turbine	Intermediate	5A Heater	
9	Turbine	Turbine	Elevator	
10	Turbine	Turbine	Control Room	x
11	Turbine	Turbine	North Wall	
12	Intermediate	Level Four	West	x
13	Intermediate	Level Four	East	x
14	Intermediate	Level Three	East	x
15	Intermediate	Level Three	West	x
16	Intermediate	Level Two	West	x
17	Intermediate	Level Two	East	x
18	Intermediate	Level One	East	x
19	Intermediate	Level One	West	x
20	Intermediate	Level One	South	x
21	Intermediate	Level Two	Nuclear Sample Room	x
22	Auxiliary	Operating	West	x
23	Auxiliary	Operating	Center	x
24	Auxiliary	Operating	East	x
25	Auxiliary	Intermediate	East	x
26	Auxiliary	Intermediate	Center	x
27	Auxiliary	Intermediate	West	x
28	Auxiliary	Basement	West	x
29	Auxiliary	Basement	Center	x
30	Auxiliary	Basement	East	x
31	Screen House	Main	Fire Pumps	x
32	All-volatile-Treatment Bldg	Resin Tank Area	Northwest Center	

* See Table 9.5-2 for Required Actions if Inoperable

Table 9.5-1
FIRE SERVICE WATER HOSE REEL LOCATIONS
AND OPERABILITY (continued)

Hose Reel Number	Building	Floor	Location	Required to be Operable
33	Containment	Operating	West	x
34	Containment	Operating	East	x
35	Containment	Mezzanine	West	x
36	Containment	Mezzanine	East	x
37	Containment	Basement	West	x
38	Containment	Basement	East	x
39	Service	Main	North Hall	
40	Service	Ground	North Hall	
41	All-volatile-Treatment Bldg	TSC	North	
42	All-volatile-Treatment Bldg	TSC	South	

* See Table 9.5-2 for Required Actions if Inoperable

Table 9.5-2
FIRE PROTECTION SYSTEM REQUIREMENTS

SYSTEM	REQUIREMENT	APPLICABLE MODES	CONDITION	REQUIRED ACTION	TIME REQUIREMENT	TESTING/INSPECTION REQUIREMENT
1. Fire Detection Instruments	Instrumentation for each fire detection zone shown in Table 9.5-3 shall be operable.	At all times.	Any of the instruments in Table 9.5-3 inoperable.	a.1 Outside containment a) Establish an hourly fire watch in the affected fire zone, except during emergency conditions which prohibit access.	a) Within 1 hour	a.2 The fire detection instruments listed in Table 9.5-3 which are accessible during plant operation shall be demonstrated operable by performance of tests at least once every six months. Fire detectors which are not accessible during plant operation shall be demonstrated operable by the performance of tests during each cold shutdown exceeding 24 hours unless performed in the previous 6 months. The functional test for RTD detectors inside containment will be performed by verifying detector circuit continuity and detector temperature indication in the control room.
				b) Restore to operable status or c) Prepare and submit a Special Report* outlining the cause of the inoperability and plans for restoring the instruments(s) to operable status.	b) Within 14 days c) Within next 30 days	b.2 The supervised circuits supervision associated with the detector alarms of each of the detection instruments listed in Table 9.5-3 which are accessible during plant operation shall be demonstrated OPERABLE at least once per 6 months. The non-supervised circuits between the local alarm panels and the control room shall be demonstrated OPERABLE at least once per 31 days. Circuit supervision which is not accessible during plant operation shall be demonstrated operable by the performance of tests during each cold shutdown exceeding 24 hours unless performed in the last 6 months.
				b.1 Inside containment a) Inspect affected containment zone once every 8 hours or b) monitor containment air temperature at least once per hour at a minimum of 16 representative locations	a) Within 1 hour b) Within 1 hour	
				c) restore to operable status or d) prepare and submit a Special Report* outlining the cause of the inoperability and plans for restoring the instrument(s) to operable status.	c) Within 14 days d) Within next 30 days	* Special Report are submitted in accordance with 10 CFR 50.4.

Table 9.5-2
FIRE PROTECTION SYSTEM REQUIREMENTS

SYSTEM	REQUIREMENT	APPLICABLE MODES	CONDITION	REQUIRED ACTION	TIME REQUIREMENT	TESTING/INSPECTION REQUIREMENT
2. Fire Suppression Water System	The fire suppression water system shall be operable with: a) two fire pumps each with a capacity of 2000 gpm with their discharge aligned to the fire suppression header. b) Automatic initiation logic for each fire pump	At all times	a. With an inoperable redundant component	a.1 In the operating mode a) restore the inoperable component to operable status or b) Run the remaining pump continuously and c) Prepare and submit a Special Report* outlining the cause of the inoperability and plans for restoring the component to operable status. a.2 In cold or refueling shutdown a) Restore the inoperable component to operable status or b) Prepare and submit a Special Report* outlining the cause of the inoperability and plans for restoring the component to operable status.	a) Within 7 days b) Until the inoperable component is restored to operable status c) Within the next 30 days a) Within 7 days b) Within the next 30 days	The fire suppression water system shall be demonstrated operable: a.2 At least once per 31 days by starting each pump and operating it for at least 15 minutes on recirculation flow. b.2 At least once per 31 days verifying that each valve (manual, power operated, or automatic) in the flow paths is in its correct position. c.2 At least once per 31 days by verifying the level of the diesel driven fire pump fuel tank. d.2 At least once per 31 days by inspecting and testing the diesel fire pump starting batteries to determine the condition of the battery cells. e.2 At least once per 92 days by verifying that a sample of diesel fuel from the diesel fire pump fuel oil day tank is within the ASTM D975 recommended limits for number 2 diesel fuel oil when checked for viscosity, water and sediment. f.2 At least once per year by cycling each testable valve in the flow path (except for hydrant isolation valves) through at least one complete cycle of full travel. A further exception is the containment isolation valve which shall be done at a minimum of at least once per 18 months. g.2 At least opce per 18 months by performing a system functional test which includes simulated actuation of the system, throughout its operating sequence, and: (i) verifying that each automatic valve in the flow path actuates to its correct position on a test signal; (ii) verifying that each fire pump develops at least 2000 gpm at 210 Ft. Hd.; (iii) cycling each valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel; (iv) verifying that each high pressure pump starts (sequentially) to maintain the fire suppression water system pressure at or above 210 Ft. Hd. h.2 At least once per 18 months by subjecting the diesel engine to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for the class of service. i.2 At least once every 3 years a flow test of the fire suppression water system shall be performed. With one fire pump running the static pressure will be recorded at the test connection for the fire suppression water
			b. With the fire suppression water system inoperable	b.1 Establish a backup fire suppression water system or b.2 Place the reactor in Hot Shutdown and b.3 In cold shutdown	b.1 Within 24 hours b.2 Within the next 6 hours b.3 Within the next 30 hours	

*Special Reports are submitted in accordance with 10CFR50.4.

Table 9.5-2
FIRE PROTECTION SYSTEM REQUIREMENTS

SYSTEM	REQUIREMENT	APPLICABLE MODES	CONDITION	REQUIRED ACTION	TIME REQUIREMENT	TESTING/INSPECTION REQUIREMENT
3. Spray and/or Sprinkler System	Spray and/or Sprinkler Systems shown on Table 9.5-4 shall be operable	Whenever the equipment being protected is required to be operable	Any of the systems shown on Table 9.5-4 inoperable	a.1 Those areas in which redundant systems or components necessary for safe shutdown could be damaged.		a.2 The spray systems shall be demonstrated to be operable:
				a) Establish a continuous fire watch with backup fire suppression equipment, except during emergency conditions which prohibit access, or for testing.	a) Within 1 hour	a) At least once per 12 months by verifying the loss of locking pressure manual operation.
				b) Restore the inoperable system to operable status or	b) Within 14 days*	b) At least once per 18 months: (i) By performing a system functional test which includes simulating actuation of the system and verifying that the valves in the flow path are capable of going to their correct positions. (ii) By visual external inspection of spray headers to verify their integrity. (iii) By visual external inspection of eachnozzle to verify no blockage.
				c) Prepare and submit a Special Report* outlining the cause of the inoperability and plans for restoring the system to operable status.	c) Within the next 30 days	c) At least once per 3 years by performing an air flow test through each spray heater and verifying each spray nozzle is unobstructed.
				b.1 Other plant areas		b.2 The sprinkler systems shall be demonstrated to be operable at least once per 12 months by opening the inspectors test valves and verifying water flow and system alarm.
				a) Establish a fire watch patrol to inspect the zone with the inoperable system at least once per hour and place backup fire suppression equipment in the unprotected area(s), except during emergency conditions which prohibit access, or for testing.	a) Within 1 hour	
				b) Restore the inoperable system to operable status or	b) Within 14 days	
				c) Prepare and submit a Special Report* outlining the cause of the inoperability and plans for restoring the system to operable status.	c) Within the next 30 days	* Special Reports are submitted in accordance with 10CFR50.4.

Table 9.5-2
FIRE PROTECTION SYSTEM REQUIREMENTS

SYSTEM	REQUIREMENT	APPLICABLE MODES	CONDITION	REQUIRED ACTION	TIME REQUIREMENT	TESTING/INSPECTION REQUIREMENT
4. Halon System	Halon systems in the following areas shall be operable and the storage tanks shall have at least 95% of the full charge weight and 90% of full charge pressure at 70°F a. Computer Room (S07) b. Relay Room (S08)	Whenever the equipment in the area is required to be operable	A halon system inoperable	a.1 Those areas in which redundant systems or components necessary for safe shutdown could be damaged. a) Establish a continuous fire watch with backup fire suppression equipment, except during emergency conditions which prohibit access. b) Restore the inoperable system to operable status. or c) Prepare and submit a Special Report* outlining the cause of the inoperability and plans for restoring the system to operable status. b.1 Other plant areas a) Establish a fire watch patrol to inspect the zone with the inoperable system and place portable equipment in the unprotected area(s), except during emergency conditions which prohibit access. b) Restore the inoperable system to operable status or c) Prepare and submit a Special Report* outlining the cause of the inoperability and plans for restoring the system to operable status.	 a) Within 1 hour b) Within 14 days c) Within the next 30 days a) Within 1 hour b) Within 14 days c) Within the next 30 days	The Halon system shall be demonstrated to be operable: a.2 At least once per 6 months by verifying each Halon storage tank pressure. b.2 At least once per 6 months by verifying each Halon storage tank weight. c.2 At least once per 18 months by verifying the system including associated ventilation dampers actuate in response to a simulated actuation signal. A flow test with gas through headers and nozzles shall be performed to assure no blockage. The operability of the manual initiating system will also be verified. * Special Reports are submitted in accordance with 10CFR50.4

Table 9.5-2
FIRE PROTECTION SYSTEM REQUIREMENTS

SYSTEM	REQUIREMENT	APPLICABLE MODES	CONDITION	REQUIRED ACTION	TIME REQUIREMENT	TESTING/INSPECTION REQUIREMENT
5. Fire Hose Stations	Fire hose stations indicated on Table 9.5-1 shall be operable	At all times	Any of the hose stations required operable by Table 9.5-1, including water service to them, inoperable	a.1 Route a hose to the unprotected area from an operable hose station except for those stations inside containment.	a) Within 1 hour	Each Fire hose station listed in Table 9.5-1 shall be verified to be operable: a.2 At least once per month by visual inspection of the station to assure all equipment is available and the fire water header system pressure is recorded. The hose stations in containment are an exception and shall be inspected once per month during the refueling shutdown.
				b.1 Return the hose station to operable status or	b) Within 14 days	b.2 At least once per 18 months by unrolling the hose for inspection and re-racking and replacing gaskets in the couplings, as required.
				c.1 Prepare and submit a Special Report* outlining the cause of the inoperability and plans for restoring the system to operable status	c) Within the next 30 days	c.2 At least once per 18 months, partially open hose station valves to verify valve operability and no blockage. d.2 At least every 3 years by pressure testing each hose to 50 psi greater than the Maximum Working Pressure. * Special Reports are submitted in accordance with 10CFR50.4.

Table 9.5-2
FIRE PROTECTION SYSTEM REQUIREMENTS

SYSTEM	REQUIREMENT	APPLICABLE MODES	CONDITION	REQUIRED ACTION	TIME REQUIREMENT	TESTING/INSPECTION REQUIREMENT
6. Fire Barrier Penetration	Fire barrier penetration fire seals which protect safety related areas shall be intact	At all times	Any of the fire barrier penetrations not intact	a.1 Establish a continuous fire watch on one side of the penetration	a) Within 1 hour	Penetration seals in fire barriers which protect a safety related area shall be verified to be intact by visual inspection:
				or		a.2 At least once per 18 months, and
				b.1 Establish an hourly fire watch patrol and verify that fire detectors on at least one side of the inoperable seal are in service	b) Within 1 hour	b.2 Prior to declaring a penetration seal in a fire barrier intact following repairs or maintenance.
				c.1 Restore the system to operable status	c) Within 7 days	
				or		
				d.1 Prepare and submit a Special Report* outlining the cause of the inoperability and plans for restoring the system to operable status.	d) Within the next 30 days	*Special Reports are submitted in accordance with 10CFR50.4.

Table 9.5-2
FIRE PROTECTION SYSTEM REQUIREMENTS

SYSTEM	REQUIREMENT	APPLICABLE MODES	CONDITION	REQUIRED ACTION	TIME REQUIREMENT	TESTING/INSPECTION REQUIREMENT
7. Yard Fire Loop	The yard hydrant on the southeast corner of the yard loop shall be operable to provide fire protection to the transformers and the standby auxiliary feedwater building.	At all times	The yard hydrant on the southeast corner of the yard loop inoperable	a.1 Place sufficient lengths of 2-1/2 inch diameter hose in an adjacent operable hydrant hose house.	a) Within 1 hour	The yard fire hydrant on the southeast corner of the yard loop and its associated hydrant hose house shall be demonstrated OPERABLE: a.2 At least once per 31 days by visual inspection of the hydrant hose house to assure all required equipment is at the hose house.
				b.1 Restore the system to operable status or	b) Within 14 days	b.2 At lest once during March, April or May and once during September, October or November by visually inspecting the yard fire hydrant and verifying that the hydrant barrel is dry and that the hydrant is not damaged.
				c.1 Prepare and submit a Special Report* outlining the cause of the inoperability and plans for restoring the system to operable status.	c) Within the next 30 days	c.2 At least once per 12 months by: (i) Conducting a hose hydrostatic test at a pressure at least 50 psig greater than the maximum pressure available at the yard fire hydrant. (ii) Replacement of all degraded gaskets in couplings. * Special Reports are submitted in accordance with 10CFR50.4.

TABLE 9.5-3
FIRE DETECTION INSTRUMENT OPERABILITY

Instrument Location	Minimum Instruments Operable***	
	Heat	Smoke
1. Containment		
a. "A" Post-Accident Charcoal Bank (Z09, Z10)	3*	N/A
b. "B" Post-Accident Charcoal Bank (Z11, Z12)	3*	N/A
c. "A" Aux. Filter Charcoal Bank (Z06)	1*	N/A
d. "B" Aux. Filter Charcoal Bank (Z07)	1*	N/A
e. Cable Trays Basement Elev. (Z08)	1**	N/A
f. Cable Trays Intermed. Elev.(Z15)	2**	N/A
g. Cable Trays Operating Floor (Z16)	1**	N/A
h. "A" RCP Intermediate Floor (Z13)	1**	N/A
i. "B" RCP Intermediate Floor (Z14)	1**	N/A
j. Area Detection Operating Floor (Z16)	N/A	7
2. Control Room		
a. Area and Cabinet (Z19)	1	17
b. Control Room/Turb. Bldg. Wall (S29)	4	N/A
3. Relay Room (Z18, S08)	3	16
4. Computer (MUX) Room Ceiling (S07)	N/A	3
5. Battery Rooms A&B (Pyrotronics Zone 8)	N/A	3
6. Control Building		
a. Air Handling Room (S06)	N/A	3
7. Diesel Generator		
a. "A" Generator Room (S12)	2	N/A
b. "A" Generator Vault (Z20)	N/A	1
c. "B" Generator Room (S13)	2	N/A
d. "B" Generator Vault (Z21)	N/A	1
8. Intermediate Building		
a. Motor Driven Aux. Fd. Pump Area (Z22)	N/A	9
b. Turb. Driven Aux. Fd. Pump & Res. (S14)	1	N/A
c. Cable Trays Basement North (S15)	N/A	14
d. "A" Purge Filter Elev. 315'-4" (Z23)	N/A	1
e. "B" Purge Filter Elev. 315-4" (Z24)	N/A	1

TABLE 9.5-3

FIRE DETECTION INSTRUMENT OPERABILITY (continued)

Instrument Location	Minimum Instruments Operable***	
	Heat	Smoke
9. Screen House		
a. Area Detection Serv. Water Pump and Bus Area (Z26)	N/A	11
b. Cable Trays Basement (S17)	N/A	4
10. Standby Auxiliary Feedwater Bldg. (Z25)	N/A	8
11. Cable Tunnel (Z05, S05)	10	8
12. Auxiliary Building		
a. General Area (Pyrotronics Zones 1,2,3)	N/A	8
b. Area Basement East (Z01)	N/A	5
c. Area Basement West and RHR Pit (Z02)	N/A	9
d. Cable Trays/SI Pumps Basement (S01)	N/A	5
e. Penetration Area Cable Trays Mezz. (Z03)	N/A	2
f. Cable Trays, Elec. Cab. Mezz. Center (S03)	N/A	4
g. Cable Trays Mezz. East (S04)	N/A	4
h. Area Operating Floor (Z04)	N/A	13
i. 1G Charcoal Filter (S02)	11	N/A

* Resistance Temperature Detectors (RTD) Only

** Line Type Detectors

*** The fire detection instruments located within the containments are not required to be operable during the performance of Type A containment leakage rate tests.

See Table 9.5-2 for required actions if the minimum number of instruments are not operable.

Table 9.5-4

Spray/Sprinkler System Operability

The spray and/or sprinkler systems located in the following areas are required to be operable when the equipment in the area is required to be operable. See Table 9.5-2 for required actions if any of these systems are inoperable.

System Location	System No.	System Flow (Automatic, Manual Pre-Action
a. Auxiliary Building Basement Cable Trays Sprinkler System	S01	Pre-Action
b. Auxiliary Building Intermediate 1G Filter Spray System.	S02	Automatic
c. Auxiliary Building Intermediate at Cable Tunnel Entrance. Sprinkler System	S03	Pre-Action
d. Auxiliary Building Intermediate Cable Trays Sprinkler System	S04	Pre-Action
e. Cable Tunnel Spray System	S05	Automatic
f. Air Handling Room Cable Trays Spray System	S06	Automatic
g. Relay Room Spray System Southeast	S09	Manual
h. Relay Room Spray System West	S10	Manual
i. Relay Room Spray System Northeast	S11	Manual
j. Diesel Generator 1A Sprinkler System	S12	Pre-Action
k. Diesel Generator 1B Sprinkler System	S13	Pre-Action
l. Turbine Driven Auxiliary Feed-water Pump & Oil Reservoir	S14	Manual
m. Intermediate Building East Cable trays sprinkler system	S15	Pre-Action

	Screenhouse Basement Cable Trays Spray System	S17	Automatic
o.	Screenhouse Service Water Pumps Sprinkler System	S18	Automatic
p.	Control Room Turbine Building Wall Spray System	S29	Automatic

ATTACHMENT E

CURRENT TECHNICAL SPECIFICATIONS
BEING REVISED BY ATTACHMENT A
FOR INFORMATION ONLY

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1.10 Hot Channel Factors

F_Q, Heat Flux Hot Channel Factor, is defined as the maximum local heat flux on the surface of a fuel rod divided by the average fuel rod heat flux allowing for manufacturing tolerances on fuel pellets and rods.

F_Q^N, Nuclear Heat Flux Hot Channel Factor, is defined as the maximum local fuel rod linear power density divided by the average fuel rod linear power density assuming nominal fuel pellet and rod dimensions.

F_Q^E, Engineering Heat Flux Hot Channel factor, is defined as the ratio between F_Q and F_Q^N and is the allowance on heat flux required for manufacturing tolerances.

$F_{\Delta H}^N$, Nuclear Enthalpy Rise Hot Channel Factor, is defined as the ratio of the integral of linear power along the rod on which minimum DNBR occurs to the average rod power.

1.11 Fire Suppression Water System

The fire suppression water system consists of Lake Ontario water supply, pumps and distribution piping with associated sectionalizing control or isolation valves. Valves include valves between the fire pumps and the first valve ahead of the water flow alarm device on each sprinkler, or spray system riser.

3.14 Fire Suppression System

Applicability

Applies to the operating status of the Fire Suppression System.

Objective

Define those conditions of the Fire Suppression System which provide adequate fire protection.

Specification

3.14.1 The fire detection instruments for each fire detection zone shown in Table 3.14-1 shall be operable.

3.14.1.1 With the number of operable instruments less than that required by Specification 3.14.1,

a. Except during emergency conditions which prohibit access, establish within an hour a fire watch patrol to inspect the zone with the inoperable instrument(s) at least once per hour, unless the instrument is located in containment, in which case inspect the containment once every 8 hours or monitor the containment air temperature at least once per hour at a minimum of 16 representative locations.

b. Comply with the requirements of Specification 3.14.1 within 14 days, or

c. Prepare and submit a Special Report within an additional 30 days in accordance with Specification 6.9.2 outlining the cause of the inoperability and the plans for restoring the instrument(s) to operable status.

3.14.2 The fire suppression water system shall be operable with:

a. Two fire pumps each with a capacity of 2000 gpm with their discharge aligned to the fire suppression header.

b. Automatic initiation logic for each fire pump.

3.14.2.1 With an inoperable redundant component,

a. In the operating mode, restore the component to operable status within 7 days. If the component is not restored to operable status within 7 days, run the remaining pump continuously and prepare and submit a Special Report within an additional 30 days in accordance with Specification 6.9.2 outlining the cause of the inoperability and

plans for restoring the component to operable status.

b. In cold or refueling shutdown, restore the component to operable status within 7 days or prepare and submit a Special Report within an additional 30 days in accordance with Specification 6.9.2 outlining the cause of inoperability and the plans for restoring the component to operable status.

3.14.2.2 With the fire suppression water system inoperable,

a. Establish within 24 hours a backup fire suppression water system, or

b. Place the reactor in Hot Shutdown within the next six (6) hours and in Cold Shutdown within the following thirty (30) hours.

3.14.3 The spray and/or sprinkler systems located in the following areas shall be operable when equipment in the area is required to be operable:

a. "A" Diesel Generator Room (S12)

b. "B" Diesel Generator Room (S13)

c. Turbine Driven Auxiliary Feedwater Pump and its Oil Reservoir (S14)

d. Cable Tunnel (S05)

e. Air Handling Room Cable Spray System (S06)

f. Relay Room Spray System West (S10)

g. Relay Room Spray System Northeast (S11)

h. Relay Room Spray System Southeast (S09)

i. Turbine Bldg./Control Room Wall Spray System (S29)

j. Intermediate Bldg. Cable Trays Spray System (S15)

k. Auxiliary Bldg. at Cable Tunnel Spray System (S03)

l. Auxiliary Bldg. 253'-6" Cable Trays Spray System (S04)

m. Auxiliary Bldg. Basement Cable Trays Spray System (S01)

n. Screenhouse Basement Cable Trays Spray System (S17)

o. Screenhouse Sprinkler System (S18)

p. 1 G Charcoal Filter System (original system #14)

3.14.3.1 If a spray/sprinkler system is inoperable, except during emergency conditions which prohibit access, or for testing, within one hour, establish a continuous fire watch with backup fire suppression equipment for those areas in which redundant systems or components necessary for safe-shutdown could be damaged; for other areas, establish a fire watch patrol to inspect the zone with the inoperable system at least once per hour and place backup fire suppression equipment in the unprotected area(s).

a. Restore the system to operable status within 14 days or prepare and submit a Special Report within an additional 30 days in accordance with Specification 6.9.2 outlining the cause of the inoperability and the plans for restoring the system to operable status.

3.14.4 The Halon systems located in the following areas shall be operable when equipment in the area is required to be operable and the storage tanks shall have at least 95% of the full charge weight and 90% of full charge pressure at 70°F:

a. Computer Room (S07)

b. Relay Room (S08)

3.14.4.1 If a Halon system is inoperable, except during emergency conditions which prohibit access, within one hour, establish a continuous fire watch with backup fire suppression equipment for those areas in which redundant systems or components necessary for safe-shutdown could be damaged; for other areas establish a fire watch patrol to inspect the zone with the inoperable equipment at least once per hour and place portable equipment in the unprotected area(s).

a. Restore the system to operable status within 14 days or prepare and submit a Special Report within an additional 30 days in accordance with Specification 6.9.2 outlining the cause of the inoperability and the plans for restoring the system to operable status.

3.14.5 The fire hose stations in Table 3.14-2 shall be operable.

3.14.5.1 With a hose station listed in Table 3.14-2 inoperable, except for hose station(s) within containment, route a hose to the unprotected area from an operable hose station within an hour.

3.14.5.2 If the water service to containment is inoperable, comply with the requirements of Specification 3.14.5 within 14 days or prepare and submit a Special Report within an additional 30 days in accordance with Specification 6.9.2 outlining the cause of the inoperability and the plans for restoring the system to operable status.

3.14.6 All fire barrier penetration fire seals protecting safety related areas shall be intact.

3.14.6.1 With a fire barrier penetration fire seal which protects a safety related area not intact, a continuous fire watch shall be established on one side of the penetration within one hour or, verify that fire detectors on at least one side of the inoperable seal are in service and establish an hourly fire watch patrol.

a. Restore the system to operable status within 7 days or prepare and submit a Special Report within an additional 30 days in accordance with Specification 6.9.2 outlining the cause of the inoperability and the plans for restoring the system to operable status.

3.14.7 The yard hydrant on the southeast corner of the yard loop shall be operable.

3.14.7.1 With the yard hydrant on the southeast corner of the yard loop inoperable, within one hour have sufficient lengths of 2-1/2 inch diameter hose located in an adjacent operable hydrant hose house to provide fire protection to the transformers and the standby auxiliary feedwater building.

a. Restore the system to operable status within 14 days or prepare and submit a Special Report within an additional 30 days in accordance with Specification 6.9.2 outlining the cause of the inoperability and the plans for restoring the system to operable status.

Basis:

(1) The fire protection system has the capability to extinguish any probable fire which might occur at the station. The system is designed in accordance with the standards of the National Fire Protection Association.

(2) Procedures have been developed for fighting fires in all the plant areas and are contained in the plant's emergency procedures. Fire prevention is controlled by administrative methods to prevent accumulations of combustible materials and to practice good safety methods. Periodic practice exercises will be employed to insure plant personnel are familiar with the proper corrective procedures.

(3) Detection is located in all areas of the plant containing safety related equipment and in areas containing large amounts of combustible or flammable materials. Actuation of fixed suppression systems and early warning alarms are provided by these detectors.

(4) Fire barriers are located throughout the plant to separate major areas from each other and also to separate certain safety related areas from the remainder of the plant. These are designed to stop a fire from propagating from one area to another. All penetrations in these barriers are sealed with appropriate materials to match the requirements of the barrier.

(5) Normal fire protection is provided by a fixed fire-fog system, fixed Halon 1301 system, sprinklers, hose lines, and portable and wheeled extinguishers suitably located in the required areas.

(6) Readily accessible 1-1/2 inch rubber covered hose lines and continuous flow type hose reels are distributed throughout the station so that all areas in the station are within 20 feet of a fog nozzle when attached to not more than 125 foot lengths of hose. All nozzles are 1-1/2 inch variable fog-off nozzles.

(7) Water to the fire system is supplied via the header by two vertical, centrifugal fire pumps of 2000 gpm capacity each. One of these pumps is driven by an electric motor and the other by a combustion engine. Both are automatic starting through fire pump controllers with indication, alarm and manual starting from the central control room fire panel. The combustion engine local fuel supply capacity is designed for 8 hours of operation.

(8) A fire header is installed of sufficient size to deliver an adequate quantity of water throughout the plant at a pressure of no less than 75 psi at the highest nozzle.

(9) The header system is normally pressurized through the use of a hydro-pneumatic tank using house service air and having an active water capacity of 10,000 gallons. Loss of header pressure and/or opening of any deluge system activates the fire pumps and the alarm system.

(10) A backup fire suppression water system would be used to provide protection in the event the fire suppression water system were inoperable. A backup system could, for example, be comprised of a backup pump, the yard hydrant system supplying water to wall hydrants, or other equipment or measures.

(11) The yard hydrant on the south-east corner of the yard loop provides the secondary fire suppression capability for the transformers and the primary fire suppression capability for the standby auxiliary feedwater building.

Table 3.14-1
FIRE DETECTION INSTRUMENTS

Instrument Location	Minimum Instruments Operable***	
	Heat	Smoke
1. Containment		
"A" Post-Accident Charcoal Bank (Z09. Z10)	3*	N/A
"B" Post-Accident Charcoal Bank (Z11, Z12)	3*	N/A
"A" Aux. Filter Charcoal Bank (Z06)	1*	N/A
"B" Aux. Filter Charcoal Bank (Z07)	1*	N/A
Cable Trays Basement Elev. (Z08)	1**	N/A
Cable Trays Intermed. Elev. (Z15)	2**	N/A
Cable Trays Operating Floor (Z16)	1**	N/A
"A" RCP Intermediate Floor (Z13)	1**	N/A
"B" RCP Intermediate Floor (Z14)	1**	N/A
Area Detection Operating Floor (Z16)	N/A	7
2. Control Room		
Area and Cabinet (Z19)	1	17
Control Room/Turb. Bldg. Wall (S29)	4	N/A
3. Relay Room (Z18, S08)	3	16
4. Computer Room		
Ceiling (S07)	N/A	3
5. Battery Rooms (A&B) (Pyrotronics Zone 8)	N/A	3
6. Control Building		
Air Handling Room (S06)	N/A	3
7. Diesel Generator		
"A" Generator Room (S12)	2	N/A
"A" Generator Vault (Z20)	N/A	1
"B" Generator Room (S13)	2	N/A
"B" Generator Vault (Z21)	N/A	1
8. Intermediate Building		
Motor Driven Aux. Fd. Pump Area (Z22)	N/A	9
Turb. Driven Aux. Fd. Pump & Res. (S14)	1	N/A
Cable Trays Basement North (S15)	N/A	14
"A" Purge Filter Elev. 315'-4" (Z23)	N/A	1
"B" Purge Filter Elev. 315-4" (Z24)	N/A	1
9. Screen House		
Area Detection Serv. Water Pump and Bus Area (Z26)	N/A	11
Cable Trays Basement (S17)	N/A	4

INSTRUMENT LOCATION	MINIMUM INSTRUMENTS OPERABLE ***	
	HEAT	SMOKE
10. Standby Auxiliary Feedwater Bldg. (Z25)	N/A	8
11. Cable Tunnel (Z05,S05)	10	8
12. Auxiliary Building		
General Area (Pyrotronics Zones 1,2,3)	N/A	8
Area Basement East (Z01)	N/A	5
Area Basement West and RHR Pit (Z02)	N/A	9
Cable Trays/SI Pumps Basement (S01)	N/A	5
Penetration Area Cable Trays Mezz. (Z03)	N/A	2
Cable Trays, Elec. Cab. Mezz. Center (S03)	N/A	4
Cable Trays Mezz. East (S04)	N/A	4
Area Operating Floor (Z04)	N/A	13
1G Charcoal Filter (#14)	11	N/A

* Resistance Temperature Detectors (RTD) Only

** Line Type Detectors

*** The fire detection instruments located within the containment are not required to be operable during the performance of Type A containment leakage rate tests.

TABLE 3.14-2

FIRE SERVICE WATER HOSE REEL LOCATION

BUILDING	FLOOR	LOCATION
Turbine	Basement	Battery Room
Turbine	Basement	D/G Rooms
Turbine	Intermediate	4160 Bus
Turbine	Operating	Control Room
Intermediate	Level Four	West
Intermediate	Level Four	East
Intermediate	Level Three	East
Intermediate	Level Three	West
Intermediate	Level Two	West
Intermediate	Level Two	East
Intermediate	Level One	East
Intermediate	Level One	West
Intermediate	Level One	South
Intermediate	Level Two	Nuclear Sample Room
Auxiliary	Operating	West
Auxiliary	Operating	Center
Auxiliary	Operating	East
Auxiliary	Intermediate	East
Auxiliary	Intermediate	Center
Auxiliary	Intermediate	West
Auxiliary	Basement	West
Auxiliary	Basement	Center
Auxiliary	Basement	East
Screen House	Main	Fire Pumps

BUILDING	FLOOR	LOCATION
Containment	Basement	East
Containment	Basement	West
Containment	Intermediate	East
Containment	Intermediate	West
Containment	Operating	East
Containment	Operating	West

4.15 Fire Suppression System Test

Applicability

Applies to periodic testing and surveillance requirements of the Fire Suppression System.

Objective

To verify that the Fire Suppression System will respond properly, if required.

Specification

4.15.1 The fire detection instruments listed in Table 3.14-1 which are accessible during plant operation shall be demonstrated operable by performance of tests at least once every six months. Fire detectors which are not accessible during plant operation shall be demonstrated operable by the performance of tests during each cold shutdown exceeding 24 hours unless performed in the previous 6 months. The functional test for RTD detectors inside containment will be performed by verifying detector circuit continuity and detector temperature indication in the control room.

4.15.1.1 The supervised circuits supervision associated with the detector alarms of each of the detection instruments listed in Table 3.14.1 which are accessible during plant operation shall be demonstrated OPERABLE at least once per 6 months. The non-supervised circuits between the local alarm panels and the control room shall be demonstrated OPERABLE at least once per 31 days. Circuit supervision which is not accessible during plant operation shall be demonstrated operable by the performance of tests during each cold shutdown exceeding 24 hours unless performed in the last 6 months.

4.15.2 The fire suppression water system shall be demonstrated operable:

a. At least once per 31 days by starting each pump and operating it for at least 15 minutes on recirculation flow.

b. At least once per 31 days by verifying that each valve (manual, power operated, or automatic) in the flow paths is in its correct position.

c. At least once per 31 days by verifying the level of the diesel driven fire pump fuel tank.

d. At least once per 31 days by inspecting and testing the diesel fire pump starting batteries to determine the condition of the battery cells.

e. At least once per 92 days by verifying that a sample of diesel fuel from the diesel fire pump fuel oil day tank is within the ASTM D975 recommended limits for number 2 diesel fuel oil when checked for viscosity, water and sediment.

f. At least once per year by cycling each testable valve in the flow path (except for hydrant isolation valves) through at least one complete cycle of full travel. A further exception is the containment isolation valve which shall be done at a minimum of at least once per 18 months.

g. At least once per 18 months by performing a system functional test which includes simulated actuation of the system, throughout its operating sequence, and:

(i) verifying that each automatic valve in the flow path actuates to its correct position on a test signal;

(ii) verifying that each fire pump develops at least 2000 gpm at 210 Ft. Hd.;

(iii) cycling each valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel;

(iv) verifying that each high pressure pump starts (sequentially) to maintin the fire suppression water system pressure at or above 210 Ft. Hd.

h. At least once per 18 months by subjecting the diesel engine to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for the class of service.

i. At least once every 3 years a flow test of the fire suppression water system shall be performed. With one fire pump running the static pressure will be recorded at the test connection for the fire suppression water system. The four exterior wall hydrants will be flowed individually with the residual pressure at the test connection and the flow from each hydrant recorded.

4.15.3a The spray systems shall be demonstrated to be operable:

a. At least once per 12 months by verifying the loss of locking pressure manual operation.

b. At least once per 18 months:

(i) By performing a system functional test which includes simulating actuation of the system and verifying that the valves in the flow path are capable of going to their correct positions.

(ii) By visual external inspection of spray headers to verify their integrity.

(iii) By visual external inspection of each nozzle to verify no blockage.

c. At least once per 3 years by performing an air flow test through each spray header and verifying each spray nozzle is unobstructed.

4.15.3b The sprinkler systems shall be demonstrated to be operable at least once per 12 months by opening the inspectors test valve and verifying water flow and system alarm.

4.15.4 The Halon System shall be demonstrated to be operable:

a. At least once per 6 months by verifying each Halon storage tank pressure.

b. At least once per 6 months by verifying each Halon storage tank weight.

c. At least once per 18 months by verifying the system including associated ventilation dampers actuate in response to a simulated actuation signal. A flow test with gas through headers and nozzles shall be performed to assure no blockage. The operability of the manual initiating system will also be verified.

4.15.5 Each fire hose station listed in Table 3.14-2 shall be verified to be operable:

a. At least once per month by visual inspection of the station to assure all equipment is available and the fire water header system pressure is recorded. The fire hose stations in containment are an exception and shall be inspected once per month during the refueling shutdown.

b. At least once per 18 months by unrolling the hose for inspection and re-racking and replacing gaskets in the couplings, as required.

c. At least once per 18 months, partially open hose station valves to verify valve operability and no blockage.

d. At least every 3 years by pressure testing each hose to 50 psi greater than the Maximum Working Pressure.

4.15.6 Penetration seals in fire barriers which protect a safety related area shall be verified to be intact by visual inspection:

a. At least once per 18 months, and

b. Prior to declaring a penetration seal in a fire barrier intact following repairs or maintenance.

4.15.7 The yard fire hydrant on the southeast corner of the yard loop and its associated hydrant hose house shall be demonstrated OPERABLE:

a. At least once per 31 days by visual inspection of the hydrant hose house to assure all required equipment is at the hose house.

b. At least once during March, April or May and once during September, October or November by visually inspecting the yard fire hydrant and verifying that the hydrant barrel is dry and that the hydrant is not damaged.

c. At least once per 12 months by:

(i) Conducting a hose hydrostatic test at a pressure at least 50 psig greater than the maximum pressure available at the yard fire hydrant.

(ii) Replacement of all degraded gaskets in couplings.

Basis:

(1) Sufficient tests will be made to be certain that fire detection instruments and associated circuitry are operable such that fires in areas which would jeopardize the safe shutdown of the plant are detected.

(2) The fire suppression water system testing will assure the capability of the system to meet its requirements.

(3) The Halon System is used to protect those areas that would be damaged by the use of water. The 90% of full charge pressure is based on a temperature of 70°F. Pressures at temperatures other than 70°F will be corrected by Chart ULE 2671 March 1, 1973 ANSUL 1301 Clean Agent Free Control System Manual P/N 17210-02.

(4) Visual inspection of fire barrier penetration seals will be made to insure the containment of any fire that may start until it can be extinguished either automatically or manually. There are no fire barriers that perform a pressure sealing function.

f. ~~A Fire Brigade of 5 members shall be maintained on site at all times.* This excludes the two members of the minimum shift crew necessary for safe shutdown.~~

g. Adequate shift coverage shall be maintained without routine heavy use of overtime. Administrative procedures shall be developed and implemented to limit the working hours of unit staff who perform safety-related functions including senior reactor operators, reactor operators, health physicists, auxiliary operators, and key maintenance personnel. Changes to the guidelines for the administrative procedures shall be submitted to the NRC for review.

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* ~~Fire Brigade composition may be less than the minimum requirements for a period of time not to exceed 2 hours to accommodate unexpected absence of Fire Brigade members provided immediate action is taken to restore the~~ Fire Brigade to the minimum requirements.

RESPONSIBILITIES (Continued)

h. Review of the Plant Security Plan and shall submit recommended changes to the Chairman of the Nuclear Safety Audit and Review Board.

i. Review of the Radiation Emergency Plan and shall submit recommended changes to the Chairman of the Nuclear Safety Audit and Review Board.

j. Review of implementing procedures for the Plant Security Plan and the Radiation Emergency Plan and proposed changes thereto.

k. Review of all Reportable Events.

l. REVIEW of the FIRE PROTECTION PROGRAM AND IMPLEMENTING PROCEDURES AND SUBMITTAL OF RECOMMENDED PROGRAM CHANGES TO THE CHAIRMAN OF THE NUCLEAR SAFETY AUDIT AND REVIEW BOARD.

AUTHORITY

6.5.1.7 The PORC shall:

a. Recommend in writing to the Plant Manager, Ginna Station approval or disapproval of items considered under 6.5.1.6(a) through (d) and (l) above.

b. Render determinations in writing with regard to whether or not each item considered under 6.5.1.6(a) through (d) above constitutes an unreviewed safety question as defined in 10 CFR Section 50.59.