

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8001310299 DOC. DATE: 80/01/28 NOTARIZED: NO DOCKET #  
 FACIL: 50-261 H. B. Robinson Plant, Unit 2, Carolina Power and Light 05000261  
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SUBJECT: Requests suppl to NRC fire protection safety evaluation,  
 originally issued as OL Amend 31. Description of proposed  
 mods encl.

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Carolina Power & Light Company

January 28, 1980

FILE: NG-3514(R)

SERIAL: NO-80-132

Office of Nuclear Reactor Regulation  
Mr. A. Schwencer, Chief  
Operating Reactors Branch No. 1  
United States Nuclear Regulatory Commission  
Washington, D.C. 20555

H. B. ROBINSON STEAM ELECTRIC PLANT  
UNIT NO. 2  
DOCKET NO. 50-261  
LICENSE NO. DPR-23

REQUEST FOR SUPPLEMENT TO FIRE PROTECTION SAFETY EVALUATION REPORT

Dear Mr. Schwencer:

The purpose of this letter is to request a supplement to the H. B. Robinson Unit No. 2 Fire Protection Safety Evaluation Report which was originally issued as part of Amendment 31 to the Unit No. 2 operating license. For each requested change, there is a short description of the original requirements and a discussion of the reasons for the change. Proposed revisions of affected Safety Evaluation Report (SER) pages are attached to this letter for your review. Proposed changes are indicated by vertical lines in the margin.

1. Sections 3.1.2 and 4.2 of the SER require that the existing high voltage fire detection system be connected to an emergency power source as part of the expansion and modification of the fire detection systems.

This requirement was made when the original intent was to expand the existing high voltage system. The actual modification consisted of installing a completely new, low voltage fire detection system. This new system, which is powered from emergency power, is in no way connected to the old detection system. The new system covers all areas required to be protected by the SER and is designed to completely replace the old system. The new system exceeds all the functional requirements of the old system.

We, therefore, request that the requirement that the existing high voltage fire detection system be powered from emergency power be deleted and replaced by a requirement that the new low voltage fire detection system be powered from emergency power.

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2. Sections 2.3.3, 5.25.6, and 5.27.6 of the SER require that large pressurized water and/or foam extinguishers be installed inside containment for additional fire protection. It was discovered that such extinguishers are no longer manufactured. We, therefore, request that this requirement be deleted. CP&L is considering an alternate means of fire suppression inside containment. The exact nature of this suppression system has not yet been determined, but the final design will provide a suppression capability equal to or better than that provided by large pressurized water extinguishers. The final design of the alternate suppression system will be available by May 1980.
3. Sections 4.4 and 5.16.6 of the SER require that fire dampers for zones protected by gas suppression systems be closed automatically by motor-operators with the actuation of the gas system. The UL approved dampers which have been installed in areas protected by gas suppression systems are gravity or spring closed and are released by the firing of electro-thermal links or frangible links by the same automatic actuation signal which actuates the gas suppression systems. The system installed provides for faster and more reliable actuation of automatic dampers than the original design.

We therefore request that the requirement that fire dampers in zones protected by gas suppression systems be closed by motor actuators be changed to show that the dampers are gravity or spring closed upon actuation of automatically fired links.

4. Section 4.4 of the SER requires that of the ten self-contained breathing units provided for emergency use, eight be stored at the entrance to the Auxiliary Building and the remaining two be stored in the Control Room. CP&L, however, has purchased five additional Scott "4.5" Air Paks, along with ten spare bottles, which are dedicated for fire brigade use only. These Air Paks are stored in the fire fighting equipment storage building along with all fire brigade equipment. The ten SCBAs referred to in the SER will be used primarily for respiratory protection and not for fire brigade use unless required.

We therefore wish to delete any storage requirements for the ten SCBAs referred to in the SER and include a commitment to provide five dedicated SCBAs for use by the fire brigade. Furthermore, we wish to include a commitment that these five SCBAs be permanently stored in the fire fighting equipment building.

5. Section 5.1.6 of the SER requires that the portion of the fuel oil makeup line to the "A" diesel generator which passes through the "B" diesel generator be insulated. As a result of recent modifications, the fuel oil makeup line to the "A" diesel generator was removed from the "B" diesel generator room and was rerouted outside the Auxiliary Building. Therefore, a fire in the "B" diesel generator room will in no way affect the "A" diesel generator fuel oil makeup line. We therefore request that the requirement that the "A" diesel generator fuel oil makeup line be insulated be deleted.

6. Sections 5.14.6 and 3.1.23 of the SER require that an alarm be provided to indicate the position of the Battery Room fan exhaust louvers. This alarm would be located in the Control Room.

Current modifications are replacing the existing single fan with two fans. Each fan has a separate alarm in the Control Room to indicate fan status. The configuration of these fans are such that there are no exhaust louvers.

We therefore request that the requirement that there be an exhaust louver position alarm in the Control Room be deleted.

7. Section 5.19.6 of the SER requires that a dry standpipe hose station served by a motor operated deluge valve be located at the corner of the Control Room adjacent to the door to the Hagan Room. The hose reel proposed for this use proved to be too large to manipulate adequately in the confined space behind the control board. In order to give adequate space for use of the hose, its location was changed to inside the Hagan Room. In addition, it was found that there existed no UL listed or FM approved motor operated deluge valves. Therefore the dry standpipe is isolated by an air operated Grinnell deluge valve which is UL listed and FM approved. The valve is operated by opening the Hagan Room hose station isolation valve, thus releasing the air pressure in the dry standpipe and resulting in the actuation of the deluge valve. The dry standpipe is provided with a low air pressure supervisory alarm which indicates when the air pressure has been released.

We request that all requirements for a dry standpipe hose station be moved from the Control Room (Section 5.19.6 of the SER) to the Hagan Room (Section 5.20.6 of the SER) and that the requirement for using a motor operated deluge valve be changed to require the use of an air operated deluge valve.

8. Table 3.1 of the SER requires that the Halon System for the Unit No. 2 Cable Spread Room and the E1-E2 Room be completed by the end of the 1979 refueling outage.

The Halon System, as it is presently designed and installed, does not provide an adequate soak. Although the proper 50% concentration (NFPA 12-A) was achieved by the system, sufficient time at that concentration was not maintained. The soak time achieved, however, is sufficient to allow the plant fire brigade to respond to a fire in the subject fire zones. This was verified by actual plant drills. As a result of the less than designed soak time, further engineering was necessary to determine the best way to increase the soak time capability of the Halon System. The best available information indicates that, based on procurement and installation requirement, all modifications necessary to achieve the proper Halon soak time should be accomplished by the end of the 1980 refueling outage.

We therefore request that the completion date for the Halon System be extended to the end of the 1980 refueling outage.

9. Section 5.25.6 of the SER requires that the cables in the Containment Cable Penetration Area (Fire Zone 24) be coated with a flame retardant coating.

CP&L's response to Branch Technical Position APCSB 9.5.1 details that the only combustible in this area is the cable itself. Due to separation of cable trains in this area and the fire resistant quality of the silicon-rubber cable jacket, it is highly unlikely that a fire in the cable tray would spread to include redundant safety related cables. In lieu of coating the cables in this area, CP&L is investigating some method of automatic fire suppression which would actuate upon detection of a fire in this area. The exact design or type of system has not been chosen. However, the final system will provide fire protection for this zone which will be equal to or better than that provided by cable coating. The final design of the proposed suppression system will be available by May 1980.

For these reasons we request that the requirement for coating the cables in this area with a flame retardant coating be deleted.

10. Sections 3.1.27, 4.5, and 5.1.6 of the SER require that backflow prevention devices be installed in the floor drains for the diesel generator rooms to prevent spilled diesel fuel oil from one room from entering the other room. Since backflow devices may become clogged with debris, we have provided for separate, unconnected drains for each diesel generator room.

We request that the requirement for installing backflow prevention devices be deleted and replaced with a requirement for providing separate drainage systems for each diesel generator room.

11. Section 5.2.7.6 of the SER requires that smoke detectors be installed in the Containment air recirculation units (HVH-1 through HVH-4). The purpose of these smoke detectors was to provide general area fire detection and backup fire detection for the containment electrical penetration area and the reactor coolant pump bays by detecting products of combustion circulating through the containment air recirculation system.

It has been determined, from input by various fire detection system vendors, that the use of smoke detection devices in large capacity, high velocity, air recirculation systems is largely ineffective. Most smoke detectors are not sensitive enough to detect products of combustion or particulates in high velocity air where any smoke would become diluted.

In addition, the fire detection equipment installed in the Containment Electrical Penetration Area and the Reactor Coolant Pump bays is more than adequate to detect a fire in the areas during the early stages of development. Therefore, a backup system is not necessary.

We therefore request that the requirement for installing smoke detectors inside the containment air recirculation system be deleted.

12. Section 5.11.6 of the SER states that smoke and heat detectors will be provided to activate the preaction sprinkler system to be installed in the Solid Waste Handling Room (zone 13). Due to the presence of cement dust in this zone resulting from routine waste handling, it is impractical to utilize smoke detectors in these areas. The dust results in spurious alarming of this type detector.

We therefore request that alarm and actuation function for the preaction sprinkler system be provided through the use of heat detectors only.

These changes reflect conditions which we feel will result in fire protection systems which are equal to or better than those systems committed to in the SER.

Please feel free to contact our staff should you have any questions regarding the requested revisions.

Yours very truly,



E. E. Utley

Executive Vice President  
Power Supply & Customer Services

JJS/jcb

Attachment

cc: Mr. J. P. O'Reilly (NRC)

### 3.0 SUMMARY OF MODIFICATIONS AND INCOMPLETE ITEMS

#### 3.1 Modifications

The licensee plans to make certain plant modifications to improve the fire protection program as a result of both his and the staff's evaluations. The proposed modifications are summarized below. The implementation schedule for these modifications is in Table 3.1. The licensee has agreed to this schedule. The sections of this report which discuss the modifications are noted in parentheses.

\* Certain items listed below are marked with an asterisk to indicate that the NRC staff will require additional information in the form of design details, test results, or acceptance criteria to assure that the design is acceptable prior to actual implementation of these modifications. The balance of other modifications has been described in an acceptable level of detail.

##### 3.1.1 Fire Dampers

Firedampers will be added to duct work penetrations in rated fire barriers of 16 different fire areas within the plant (4.9).

##### 3.1.2 Fire Detectors\*

Automatic fire detection devices will be added in 18 fire areas within the Plant (4.2). The new low-voltage fire detection system, which will replace the existing high-voltage detection system, will be connected to an emergency power source (4.2).

##### 3.1.3 Fire Doors

Fire doors will be upgraded in 18 different fire areas in the plant. Seventeen of these fire doors will be upgraded to 3-hour ratings, the remaining door will be upgraded to 3/4-hour rating (4.9).

##### 3.1.4 Fire Retardant Cable Coating\*

Fire retardant coating will be applied to cables located in 13 different fire areas of the Plant (4.8).

Table 3.1

Implementation Date for Licensee  
Proposed Modifications

<u>Item</u>	<u>Date</u>
3.1.1 Fire Dampers .....	End of 1979 Refueling Outage
3.1.2 Fire Detectors .....	End of 1979 Refueling Outage
3.1.3 Fire Doors .....	End of 1979 Refueling Outage
3.1.4 Fire Retardant Cable Coating .....	End of 1979 Refueling Outage
3.1.5 Carbon Dioxide Extinguishing System ....	End of 1979 Refueling Outage
3.1.6 Automatic Sprinkler System .....	End of 1979 Refueling Outage
3.1.7 Preaction Sprinkler System .....	End of 1979 Refueling Outage
3.1.8 Storage of Combustible Materials .....	February 1978
3.1.9 Halon Extinguishing System .....	End of 1980 Refueling Outage
3.1.10 Interior Hose Stations .....	End of 1979 Refueling Outage
3.1.11 Portable Fire Extinguishers .....	End of 1979 Refueling Outage
3.1.12 Hydrogen Piping .....	End of 1979 Refueling Outage
3.1.13 Separate Fire Water Connection .....	End of 1979 Refueling Outage
3.1.14 Self-Contained Breathing Apparatus .....	End of 1979 Refueling Outage
3.1.15 Fire Fighting Equipment Storage Building .....	End of 1979 Refueling Outage
3.1.16 - Portable Ventilation Equipment .....	End of 1978
3.1.17 Insulation of Pipes .....	End of 1979 Refueling Outage
3.1.18 Diesel Generator Room Ventilation Fans..	End of 1979 Refueling Outage
3.1.19 Computer Tape Storage Cabinet .....	End of 1978
3.1.20 Control Room Kitchen .....	End of 1979 Refueling Outage
3.1.21 Lube Oil Shielding System .....	October 31, 1980
3.1.22 Sound Powered Telephone Cable .....	End of 1979 Refueling Outage
3.1.23 Battery Room Ventilation Air Flow Monitor .....	October 1979
3.1.24 Electrical Cable Penetrations .....	End of 1979 Refueling Outage
3.1.25 Diesel Generator Fuel Supply .....	July 1978
3.1.26 Diesel Room Fire Door .....	End of 1979 Refueling Outage
3.1.27 Diesel Room Floor Drain Backflow Prevention .....	End of 1979 Refueling Outage



3.1.20 Control Room Kitchen

Permanent kitchen appliances will be installed in the kitchen area of the Control Room, in lieu of the temporary equipment presently there. A class "C" fire door and a fire detector will also be installed in the kitchen (5.20.6).

3.1.21 Lube Oil Shielding System\*

A lube oil spill protection and control system has been proposed to be installed around each reactor coolant pump motor to prevent contact of lube oil, with hot pump surfaces (5.27.6).

3.1.22 Sound Powered Telephone Cable

The sound powered telephone cable will be relocated to a penetration in the north cable vault to provide physical separation between this cable and the cable serving the public address system.

3.1.23 Battery Room Ventilation Monitoring

The existing Battery Room fan will be replaced by two fans. Each fan will have a status alarm in the Control Room. Each fan will be of adequate capacity to ventilate the Battery Room, thus providing redundancy in the ventilating system. (5.14.6)

3.1.24 Electrical Cable Penetrations\*

Electrical cable penetrations of fire barriers will be upgraded to provide fire resistance commensurate with that of the barrier (4.9).

3.1.25 Diesel Generator Fuel Supply

The licensee will revise his operating procedure for the diesel generator fuel supply system to provide improved assurance of termination of the fuel supply to a diesel generator which is involved in a fire while the fuel supply to the unaffected diesel is maintained (5.1).

3.1.26 Diesel Room Fire Door

The licensee has committed to provide two ultraviolet type flame detectors in each diesel generator room. These detectors, which are independent of air flow patterns in the room and independent of the Cardox system, will be connected in 1-of-2 logic to release the gravity-operated diesel generator room door upon occurrence of a fire (5.1).

3.1.27 Diesel Room Floor Drain Backflow Prevention

The licensee has committed to provide separate drainage paths for each diesel generator room floor drain. This will prevent spilled fuel in one diesel generator room from entering the other diesel generator room via the floor drain system (5.1).

connected to plant emergency power. However, since the installed system is to be replaced by a new system, only the new system will be required to be connected to an emergency power source.

At present, 10 ionization type smoke detectors and 15 fixed temperature/rate of rise heat detectors are installed in seven areas of the plant. Except in the north cable vault and the turbine building switchgear room where local alarms are not provided, these detectors alarm locally as well as in the electrical equipment room and the analog instrument room. The analog instrument room also receives signals indicating waterflow in the automatic deluge systems, actuation of the automatic carbon dioxide system, and operation of the fire pumps. A local alarm is also provided at each riser for waterflow in deluge systems, and at the carbon dioxide system.

The plant presently does not have a complete fire detection coverage and some areas containing safety-related systems or open to areas which contain such systems, do not have fire detection systems. To protect these areas, the licensee will provide additional detectors and detection systems.

Where ionization type smoke detectors are presently installed or are proposed to be installed, the licensee has committed to supply for each area, available manufacturer's test data or certifications confirming that the detectors are appropriate for the types of combustibles likely to be present in that area. In addition, the licensee has committed to audit the installation design for all types of smoke detectors to assure that proper consideration has been given to the effect of room geometry and air flow patterns per NFPA 72E. We will request the licensee to furnish us with a report of the audit describing the audit procedure, the installation criteria and the results of the audit. If our review of the licensee's submittals indicates the need for modifications, we will act to ensure prompt implementation of the needed modifications.

We find that, subject to implementation of the above described modifications, the fire detection system satisfies the objectives identified in Section 2.1 of this report and is, therefore, acceptable.

#### 4.3.1 Water Systems

##### 4.3.1.1 Water Supply

Fire water is obtained directly from Lake Robinson via a single intake structure. Two physically separated automatic fire pumps are provided with separate suction lines.

In the unlikely event that blockage of the intake structure should occur, the licensee could open the isolation valves connecting the Unit No. 1 fire loop with the Unit No. 2 fire loop. The Unit No. 1 fire loop is supplied from a separate intake structure on Lake Robinson, with separate automatic fire pumps. The Unit 1 fire pumps are more than 50 feet from the Unit No. 2 fire pumps. The distance between the connections to the Unit No. 2 fire loop from the Unit No. 2 intake structure line, and the connection from the Unit No. 1 fire loop is approximately 150 ft. If required, an offsite fire department could pump water from the discharge canal into the fire loop; a suitable adapter coupling is provided in the nearest hose house for connection between the pumper and the fire hydrant.

on cables, cable trays or equipment. Operation of the system will be initiated automatically by cross-zoned fire detectors. Manual actuation will be provided for each cable vault immediately outside the area. Automatic fire dampers in all ventilation penetrations of these areas will be supplied and all dampers in either cable vault will be closed automatically upon initiation of a fire alarm signal in that cable vault.

To provide additional fire protection capability in the cable spreading room and electrical equipment room, Halon 1301 extinguishing systems will be installed in each room. The Halon systems will be total flooding and will be designed in accordance with the applicable requirements of NFPA 12A. Operation of the system shall be initiated automatically by cross-zoned fire detectors. In addition, manual actuation will be provided for each area immediately outside the area. Automatic fire dampers in all ventilation penetrations of these areas will be supplied and all dampers in either room will be closed automatically upon initiation of two fire alarm signals for that area.

We find that, subject to the implementation of the above described modifications, the gas suppression systems satisfy the objectives identified in Section 2.1 of this report and are, therefore, acceptable.

#### 4.3.3 Portable Fire Extintuishers

Both hand held and wheeled dry chemical and carbon dioxide portable fire extinguishers are provided throughout the plant in accordance with the guidelines contained in NFPA 10.

The licensee will install a 2-1/2 gallon, portable water extinguisher in the Control Room.

We find that the portable fire extinguishers satisfy the objectives identified in Section 2.1 of this report and are, therefore, acceptable.

#### 4.4 Ventilation Systems and Breathing Equipment

Ventilation systems are provided for all plant areas except the turbine-generator area, which is located out-of-doors. These ventilation systems are, however, neither designed nor constructed to remove smoke and heat in the event of a fire. In most plant areas where the ventilation duct penetrates the fire barrier, fusible link fire dampers are to be provided. There are no provisions to reopen these dampers, once automatically closed to allow smoke venting via the ventilation system. In the other areas where automatic gas systems are either currently installed or proposed, the dampers will be modified to be gravity and/or spring closed upon firing of automatic links which actuate with the actuation of the gas system.

Portable air handling units, consisting of fire service smoke ejectors and flexible ducting, will be provided for smoke and heat removal.

Five self-contained breathing units, with two spare bottles for each unit, have been provided at the Facility, dedicated for fire brigade use. All five units are stored in the fire fighting equipment building. A recharging system will be provided to conform with the requirement of Appendix A to BTP 9.5-1.

We find that subject to the implementation of the above described modifications the breathing air units and portable ventilation equipment will conform to the provisions of Appendix A to BTP 9.5-1 and are, therefore, acceptable.

#### 4.5 Floor Drains

Floor drains have been provided in areas protected by automatic water suppression systems. Drains are also provided in all areas where manual hoses are likely to be used, with the exception of the Control Room, the cable spreading room and the electrical equipment room. In these areas, fire water will be drained out through the door openings.

In areas where large quantities of combustible liquids are stored, floor drains are available to remove possible leakage and/or spill of the liquid. None of these drains are equipped with back flow valves. However, all drains except those in the diesel generator rooms are in nonsafety-related areas. Drains from diesel generator rooms are connected into a single line before being routed outdoors to a storm drain. The licensee has committed to provide separate flow paths for the diesel generator room drains to prevent a possible backflow of flammable liquids from one diesel generator room to the other via the drain system.

We find that subject to the implementation of the above described modification, the floor drain systems will conform to the provisions of Appendix A to BTP 9.5-1 and are, therefore, acceptable.

#### 4.6 Lighting System

In addition to the normal plant lighting, emergency lighting is provided by the station d.c. power. Because the plant lighting systems are divided into a number of circuits, a fire in an area could cause loss of both normal and emergency lighting in the fire area, but would not cause loss of lighting to areas served by other circuits.

A number of battery-operated portable lanterns are stored in the Control Room and the Auxiliary Building; these lanterns are dedicated for emergency use and are sufficient in number for the fire brigade.

We find that the emergency lighting provided for both the operating personnel and the fire brigade is sufficient to deal with emergency conditions.

makeup, and floor drain system does not insure that the fire will not affect both redundant divisions.

#### 5.1.6 Modifications

The licensee has proposed to modify this area as follows:

- (1) Insulate those portions of the service water lines to the "B" diesel generator which are in the "A" room to provide three-hour protection for these lines. Relocate the fuel oil makeup line to the "A" diesel generator which is located in the "B" diesel generator room to the outside of the Auxiliary Building.
- (2) Provide two ultraviolet type flame detectors connected in 1-of-2 logic for each diesel generator room. These are in addition to the existing heat detectors.
- (3) Modify the controls for the room ventilation systems and dampers so that these systems are shut down and the dampers closed upon detection of a fire by one of the UV flame detectors in the room.
- (4) Modify the controls for the normally open gravity-powered sliding door for each room so that it is released to close upon detection of a fire by one of the UV flame detectors in the room.
- (5) Modify the valve alignment in the diesel fuel supply system to improve the assurance that the fuel supply to a diesel generator room experiencing a fire will be terminated.
- (6) Install a smoke seal in the bus bar penetrations in the diesel generator room walls. Although the seal will not have a defined fire rating, it will consist of fire resistant material similar to that employed in cable penetration seals.
- (7) Provide separate drainage paths for each diesel generator room floor drain.

With regard to item 6 above, although we would prefer a smoke seal with a defined fire rating, the licensee has been unable to obtain a unit which meets both the extended fire resistance and electrical requirements of such a seal. Inasmuch as the principal purpose of the seal is to prevent excessive loss of the CO<sub>2</sub> extinguishing agent so that the fire can be promptly extinguished, we conclude that an unrated seal with basic fire resistant properties is acceptable.

We find that, subject to implementation of the above described modifications, the fire protection for this area satisfies the objectives identified in Section 2.1 of this report and is, therefore acceptable.

#### 5.2 Safety Injection Pump Room (Fire Area No. 3)

##### 5.2.1 Safety-Related Equipment

The safety-related equipment in this area includes the containment spray pumps, and the safety injection pumps.

##### 5.2.2 Combustibles

The combustibles in this area are limited to cable insulation and lube oil. Lube oil contained in the pumps is less than 10 gallons total.

#### 5.11.6 Modification

The licensee has proposed the following modifications. A preaction sprinkler system actuated by heat detectors will be installed in the area. The licensee will also install a three-hour rated fire door, and install fire dampers in the ventilating system.

We find that, subject to implementation of the above described modifications, the fire protection for this area satisfies the objectives identified in Section 2.1 of this report and is, therefore, acceptable.

#### 5.12 Auxiliary Building Hallway, Upper Level (Fire Areas 14A through 14G except 14D)

##### 5.12.1 Safety-Related Equipment

Redundant divisions of safety related cables are routed along the sides of the hallway with a spatial separation of a minimum of three feet. Other equipment in the area are the volume control tank, the waste gas system, the containment purge and hydrogen control systems and the auxiliary building ventilation system.

##### 5.12.2 Combustibles

Combustibles in this area include cable insulation and charcoal in the filters.

##### 5.12.3 Consequences of No Fire Suppression

Both divisions of redundant safety-related cables could be damaged by an unsuppressed fire in this area, thereby possibly precluding safe shutdown. Loss of other equipment in the area will not affect the safe shutdown of the plant.

##### 5.12.4 Fire Protection Systems

Portable extinguishers and hose stations are available for manual fire fighting.

##### 5.12.5 Adequacy of Fire Protection

Existing fire protection would not be adequate to control fires and prevent damage to redundant equipment.

##### 5.12.6 Modifications

The licensee has proposed the following modifications. An automatic fire detection system will be installed in the hallway, electrical cables in the hallway area will be coated with a flame retardant coating and an auxiliary shutdown system with equipment and electrical cabling independent of this fire area will be installed.

5.14.3 Consequences of No Fire Suppression

An unsuppressed fire in the room could affect redundant divisions of the safety-related d.c. power system.

5.14.4 Fire Protection Systems

A portable CO2 extinguisher and the hose station in a nearby area are available for manual fire fighting. One heat and one smoke detector are installed in the area.

5.14.5 Adequacy of Fire Protection

The existing fire protection would not be adequate to control fires in this area and prevent the loss of redundant safe shutdown equipment.

5.14.6 Modifications

The licensee has proposed the following modifications. The door to the room will be replaced with a door having a three-hour fire rating, the ventilation system will be upgraded to compensate for the reduction in air flow caused by the installation of the fire door. The existing fan will be replaced by two fans. Each fan will have a status alarm in the Control Room. Each fan will be of adequate capacity to provide ventilation for the Battery Room. The licensee has also committed to provide an auxiliary shutdown system utilizing a separate source of D.C. power which is independent of this area.

We find that, subject to implementation of the above described modifications, the fire protection for this area satisfies the objectives identified in Section 2.1 of this report and is, therefore, acceptable.

5.15 Heating and Ventilation Equipment Room for the Control Room (Fire Area No. 17)

5.15.1 Safety-Related Equipment

The Control Room emergency ventilation system is the only safety-related equipment in the area.

5.15.2 Combustibles

The combustibles in this area include 210 pounds of charcoal in the charcoal filters and a metal cabinet containing paper computer tapes.

The licensee will install a self-closing Class "C" fire door at the entrance to the kitchen, and install a single station smoke detector in the kitchen. A 2-1/2 gallon pressurized water extinguisher will be added. The licensee also committed to modify circuits as necessary to assure that a fire in the Control Room could not disable the proposed auxiliary shutdown system.

We find that, subject to implementation of the above described modifications, the fire protection for this area satisfies the objectives identified in Section 2.1 of this report and is, therefore, acceptable.

5.20 Relay Room - "Hagan" Room (Fire Area No. 21C)

5.20.1 Safety-Related Equipment

Safety-related instrumentation for both electrical divisions are located in this area.

5.20.2 Combustibles

The combustibles in the area include cable insulation and paper.

5.20.3 Consequences of No Fire Suppression

In the unlikely event of a large exposure fire, redundant instrumentation for functions essential for safe shutdown could be damaged.

5.20.4 Fire Protection Systems

Portable extinguishers are provided for manual fire fighting.

5.20.5 Adequacy of Fire Protection

The existing fire protection would not be adequate to control fires in this area and prevent the loss of redundant safe shutdown equipment.

5.20.6 Modifications

The licensee has proposed the following modifications. An automatic fire detection system will be installed in this room, and an auxiliary shutdown system will be provided which is independent of this room.

A manual hose station will be added in this room. The flow of water into the dry standpipe serving this station will be controlled by an air operated deluge valve outside the Hagan Room with control for this valve being the opening of the hose station valve in the Hagan Room.

We find that, subject to implementation of the above described modifications, the fire protection for this area satisfies the objectives identified in Section 2.1 of this report and is, therefore, acceptable.



#### 5.16.4 Fire Protection Systems

Portable extinguishers and hose stations are available for manual fire fighting. An automatic fire detection system is installed in this area, consisting of two heat and two smoke detectors. Isolation of the area is provided by a wall and a door with a fire rating of 1-1/2 hours.

#### 5.16.5 Adequacy of Fire Protection

The existing fire protection would not be adequate to control fires in this area and prevent loss of control of redundant safe shutdown equipment.

#### 5.16.6 Modifications

The licensee has proposed the following modifications. An automatic total flooding Halon extinguishing system and four additional fire detectors will be installed in the area. Automatic fire dampers will be installed in the ventilation system to isolate the area upon actuation of the Halon system. All exposed cables in the area will be coated with a flame retardant coating. An auxiliary shutdown system will be installed to provide a safe shutdown capability independent of this area.

We find that, subject to implementation of the above described modifications, the fire protection for this area satisfies the objectives identified in Section 2.1 of this report and is, therefore, acceptable.

#### 5.17 Electrical Equipment Area (Fire Area No. 19)

##### 5.17.1 Safety-Related Equipment

Safety-related equipment in this area includes both divisions of emergency power buses, safety-related cabling, safety-related relays, motor control centers (MCC's) and the seal water injection tank.

##### 5.17.2 Combustibles

Combustible material in the area consists of a large quantity of cable insulation

##### 5.17.3 Consequences of No Suppression

An unsuppressed fire in this area could involve both divisions of safety-related equipment and jeopardize the capability for safe shutdown.

##### 5.17.4 Fire Protection Systems

Automatic fire detection is available in this area with a total of six heat and four smoke detectors. A manual hose station and portable extinguishers are available for manual fire fighting.

5.24.6 Modifications

No modification to the existing fire protection will be made in this area.

We find that the fire protection for this area satisfies the objectives identified in Section 2.1 of this report and is, therefore, acceptable.

5.25 Containment Cable Penetration Area (Fire Area No. 27A)

5.25.1 Safety-Related Equipment

Both divisions of safety-related cabling from the north and the south cable vaults are located in the area.

5.25.2 Combustibles

Cable insulation is the only combustible in the area under normal operating conditions.

5.25.3 Consequences of No Fire Suppression

An unsuppressed fire in the area might involve both divisions of safety-related cables and affect instrumentation necessary to safely shut down the reactor.

5.25.4 Fire Protection Systems

Portable dry chemical extinguishers are the only means presently available for suppressing a fire in the area.

5.25.5 Adequacy of Fire Protection

The existing fire protection would not be adequate to control fires in this area and prevent the loss of redundant safe shutdown equipment.

5.25.6 Modifications

The licensee has proposed the following modifications. An automatic fire detection system will be installed in this area. A suppression system will be provided for this area. The final design of this system will be available by May, 1980. The acceptability of the fire protection measures provided for this area will be addressed in a supplement to this evaluation.

5.27.2 Combustibles

Combustibles in this area include electrical cable insulation and filter charcoal.

5.27.3 Consequences of No Fire Suppression

Effects of an unsuppressed fire inside containment is still under study. We will report on the results of such study in a supplement to this report.

5.27.4 Fire Protection Systems

Manual hose stations located outside containment and portable extinguishers are available to combat fires inside containment.

5.27.5 Adequacy of Fire Protection

The adequacy of the fire protection in the containment will be reported as a supplement to this report.

5.27.6 Modifications

A method of fire suppression will be provided for this area. The final design of the system will be available by May, 1980. Our evaluation of the fire protection for the area is not complete. We will report on the result of our evaluation in a supplement to this report.

5.28 RHR Pump Pit (Fire Area No. 28)

5.28.1 Safety-Related Equipment

The two RHR pumps in the area are safety-related. At least one RHR pump is required for safe shutdown.

5.28.2 Combustibles

Combustibles in the area include approximately 16 gallons of lube oil and a small amount of electrical cable insulation.

5.28.3 Consequences of No Fire Suppression

The two pumps are separated by a 12-foot high concrete barrier. Accordingly, there is little likelihood a fire involving one pump could spread to the other. Power cables above the pit are not separated by a fire barrier and are vulnerable to damage from a single well-developed exposure fire.