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SAFETY EVALUATION REPORT

BY THE

OFFICE OF NUCLEAR REACTOR REGULATION

U. S. NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF

VIRGINIA ELECTRIC AND POWER COMPANY

FIRE PROTECTION PROGRAM

FOR

NORTH ANNA POWER STATION, UNITS 1 AND 2

DOCKET NOS. 50-338 AND 50-339

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I. INTRODUCTION

Our initial evaluation of the fire protection system for the North Anna Power Station, Units 1 and 2, was presented in the North Anna Safety Evaluation Report which was issued in June 1976. At that time we concluded that the fire protection system met Criterion 3 of the General Design Criteria and was, therefore, acceptable.

Subsequently, we issued revised guidelines for fire protection programs in Appendix A to Branch Technical Position APCSB 9.5-1, "Guidelines for Fire Protection for Nuclear Plants," dated August 23, 1976. As a result, we requested the licensee to perform a reevaluation of the fire protection system and a fire hazards analysis, including a comparison with the guidelines in Appendix A to Branch Technical Position APCSB 9.5-1. On April 1, 1977, the licensee submitted information regarding its fire protection program in response to our request.

Additional information was submitted by the licensee on December 15, 1977, January 2, 1978 and September 29, 1978 in response to our requests for information resulting from our review of the fire protection program. In addition to our review of all the information submitted by the licensee, we made a visit to the North Anna Power Station, Units 1 and 2, to discuss any potential fire hazards that could exist at the plant and, where appropriate, to evaluate the design features and protection systems provided to minimize those hazards.

The purpose of this report is to present the results of our evaluation of the fire protection program for the North Anna Power Station, Units 1 and 2, which are summarized in the following sections. This evaluation is also being presented in support of an amendment to Facility Operating License No. NPF-4 for Unit 1 of the North Anna Power Station. The operating license for Unit 2 will also address this matter. Our review of the fire protection program included an evaluation of the type of automatic and manually-operated water and gas fire suppression systems, the fire detection systems, fire barriers, fire doors and dampers, fire protection administrative controls, fire brigade training, and plant fire protection technical specifications. Since Unit 1 and Unit 2 are of the same design, the comments made in this report apply to both units, except where noted.

II. FIRE PROTECTION SYSTEMS

A. Water Supply System

The water supply system is common to both units and includes a motor-driven pump and a diesel engine-driven pump. Each pump is capable of delivering 2,500 gallons per minute at a head of 143 pounds per square inch and 117 pounds per square inch, respectively. The system also includes a 75-gallon per minute pressure maintenance pump (jockey pump), a yard loop with sectionalizing post-indicator isolation valves, and two separate water supply sources, i.e., Lake Anna and the service water reservoir.

The fire pumps take their suction from separate water supply sources. The fire pumps are located in separate fire protection pump houses and the pump installations are in accordance with the guidance in National Fire Protection Association (NFPA) Standard No. 20, "Installation of Centrifugal Fire Pumps." Separate alarms, which monitor pump running, drive availability or failure to start, are provided in the control room for the fire pumps. The power supply associated with the control signal, which starts the fire pump automatically, is supplied by the Class 1E station battery system.

A single fire pump can supply the largest fire water demand for either unit, namely, the automatic wet pipe sprinkler system in the turbine building plus flow for two hose stations.

We have reviewed the water supply system and conclude that the system meets the guidelines of Appendix A to Branch Technical Position APCS 9.5-1 and is, therefore, acceptable.

B. Water Suppression Systems

The water suppression systems consist of the sprinkler, fixed foam and standpipe systems.

The automatic/manual sprinkler systems and the hose stations each have a separate water supply connection to the site water supply system. The sprinkler and standpipe system supply header have redundant feed connections with Underwriters Laboratories/Factory Mutual approved isolation valves. Actuation of any of these systems will cause a fire pump to operate and initiate a pump-running signal to the control room. Additionally, the automatic sprinkler systems have a water flow alarm device attached.

The design and installation of the automatic sprinkler systems, such as the wet sprinkler system, the preaction sprinkler systems and the deluge and water spray systems, are in accordance with the guidance of NFPA Standard No. 13, "Installation of Sprinkler Systems," and NFPA Standard No. 15, "Water Spray Fixed System."

Manual hose stations are located throughout the plant or will be installed to assure that an effective hose stream can be directed to any safety-related area in the plant. These systems are consistent with the requirements of NFPA Standard No. "Standpipe and Hose Systems," for sizing, spacing, and pipe support requirements.

Areas that have been or will be equipped with automatic water suppression systems are:

- (1) Cable vault and tunnel,*
- (2) Component cooling water pump areas,*
- (3) Auxiliary boiler and service building warehouse,
- (4) Turbine building,
- (5) Main transformers,
- (6) Cooling towers,
- (7) Turbine oil room,
- (8) Records room,
- (9) Water house No. 2, and
- (10) Station service transformers.

A manually-actuated, fixed foam system is installed for the aboveground nonsafety-related fuel oil tank and is designed in accordance with the requirements of NFPA Standard No. 11, "Foam Extinguishing Systems." The two 50,000-gallon safety-related oil storage tanks are underground and do not pose a potential fire problem.

We have reviewed the design criteria and bases for the water suppression systems and conclude that these systems meet the guidelines of Appendix A to Branch Technical Position APCSB 9.5-1 and are, therefore, acceptable. Until the committed suppression systems are installed and operational, we find that the licensee's improved administrative procedures for control of combustibles and ignition sources, and the fire brigade training, provide adequate protection against a fire occurring in these areas. These areas have detection systems to provide an alarm in the event of a fire, and manual fire fighting equipment is available.

C. Gas Fire Suppression Systems

The gas fire suppression systems consist of the carbon dioxide systems and Halon systems.

*Sprinkler systems to be installed - see target schedule in Table 1.

Total flooding carbon dioxide systems are installed for the following areas:

- (1) Cable vault and tunnel,
- (2) Normal switchgear room,
- (3) Emergency diesel generator rooms, and
- (4) Fuel oil pump house, rooms 1 and 2.

Inadvertent actuation of a carbon dioxide system will not affect safety-related systems. The diesel generators are air-cooled and take their combustion air and cooling air directly from each room. Therefore, the carbon dioxide system for each diesel generator room is interlocked so that it will not automatically actuate when an emergency diesel generator is running. However, these carbon dioxide systems can be manually actuated.

A total flooding Halon system is provided for the new records room, which is not safety-related.

An underfloor Halon system is provided for the control room. For this system, the delivered Halon concentration, when activated, is six percent and is to be held for 10 minutes. The system has the capability for two separate and redundant discharges of Halon. System tests have verified that the concentration and duration recorded were in excess of the design criteria.

The carbon dioxide and Halon suppression systems are designed in accordance with the guidelines of NFPA Standard No. 12, "Carbon Dioxide Extinguishing Systems," and NFPA Standard No. 12A, "Halogenated Fire Extinguishing Agent Systems." Based on our review of the design criteria and bases for these fire suppression systems, we conclude that these systems satisfy the provisions of Appendix A to Branch Technical Position APCS 9.5-1 and are, therefore, acceptable.

D. Fire Detection System

The fire detection systems consist of the detectors, associated electrical power supplies, and the annunciation panels. The two types of detectors used at the North Anna Power Station, Units 1 and 2, are ionization (products of combustion) and thermal (heat sensors). The fire detection systems give an audible and visual alarm, and also annunciate in the control room. Local, audible and/or visual alarms are also provided. Both types of detectors for the fire detection systems are connected to the emergency power supply.

Areas that have been or will be equipped with fire detectors are as follows:

- (1) Reactor containment,*
- (2) Control room (including underfloor),*

*Additional detectors to be installed - see target schedule in Table 1.

- (3) Cable vault and tunnel,
- (4) Normal switchgear room,
- (5) Battery room,
- (6) Emergency diesel generator room,
- (7) Fuel oil pump house, rooms 1 and 2,
- (8) Records rooms,
- (9) Motor generator set house,
- (10) Spillway gate control house, and
- (11) Auxiliary building.

The licensee will survey the control room to verify detector location with respect to ventilation air flow. At our request, the licensee agreed to install additional smoke detectors on each level of the auxiliary building. These detectors are in addition to the ventilation duct fire detectors.

The fire detection systems have been or will be installed in accordance with the guidelines of NFPA Standard No. 72D, "Installation, Maintenance and Use of Proprietary Protection Signalling Systems."

We have reviewed the fire detection systems to assure that fire detectors are adequate to provide detection and alarm of fires that could occur. We have also reviewed the fire detection systems' design criteria to assure that they conform to the applicable sections of NFPA Standard No. 72D. We conclude that the design and installation of the fire detection systems, coupled with the additional detectors to be installed, meet the guidelines of Appendix A to Branch Technical Position APCS 9.5-1 and are, therefore, acceptable.

III. OTHER ITEMS RELATING TO THE STATION FIRE PROTECTION PROGRAM

A. Fire Barriers and Fire Barrier Penetrations

All floors, walls and ceilings enclosing fire areas are rated at a minimum of three-hour fire ratings. The licensee has provided documentation to substantiate the fire rating of the three-hour penetration seals used in the penetrations for cable trays, conduits and piping. Based on our review, we conclude that the fire barriers and barrier penetrations provided, or to be provided, are in accordance with the guidelines of Appendix A to Branch Technical Position APCSB 9.5-1 and are, therefore, acceptable.

B. Fire Doors and Dampers

We have reviewed the placement of fire doors and dampers to assure proper fire rating has been provided.

The licensee has stated that about 45 percent of all fire rated doors are locked and alarmed with the alarm signal terminating in the control room. All other fire doors are kept in the closed position and are controlled by administrative procedures.

The licensee has provided three-hour ventilation fire dampers for most of the 3-hour wall, ceiling/floor assemblies. Certain locations have 1½-hour fire dampers. These cases were analyzed and found acceptable where the fire load was small and the estimated fire duration was well below the damper rating; otherwise, dampers will be upgraded to three-hour dampers from the existing 1½-hour fire rating. Additionally for Unit 2, the air-handling duct that is routed through the chiller room will be provided with a three-hour fire rated barrier.

Based on our review, we conclude that the fire doors and dampers provided, or to be provided, are in accordance with the guidelines of Appendix A to Branch Technical Position APCSB 9.5-1 and are, therefore, acceptable.

IV. FIRE PROTECTION FOR SPECIFIC AREAS

A. Cable Vault and Tunnel Area

The cable vault and tunnel area for each unit is separated from the other unit's cable vault and tunnel area and from the balance of the plant by three-hour rated fire assemblies. There are two access doors to each unit's cable vault and tunnel area and the doors are located at opposite ends of the area.

Currently, a fixed automatic total flood carbon dioxide system is installed in this area. Due to the large quantity of redundant safety-division cable and poor access for manual fire fighting, we were concerned that a carbon dioxide flooding system could not suppress a deep seated cable fire. Therefore, at our request, the licensee has agreed to provide a ceiling-mounted sprinkler system to meet the guidelines of Appendix A to Branch Technical Position APCS 9.5-1 that will require manual actuation and will serve as a backup to the carbon dioxide system. Additional backup to these fire suppression systems is provided by standpipe systems and portable extinguishers.

The ventilation system is designed to isolate the cable vault and tunnel area and smoke venting can be started from manual control stations. In addition, smoke detectors are installed in the cable vault and tunnel areas which will alarm in the control room.

The licensee has committed to establishing an alternate shutdown method independent of the cable vault and tunnel area and the emergency switchgear and relay room. The proposed alternate shutdown system will use a cross connection between the charging pumps for both units. The net effect here is to be able to provide high pressure borated makeup water to the reactor coolant system in the event that normal charging for a single unit is incapacitated. The cross connection will be strictly manual in operation. In addition to the cross connection, the licensee will provide additional instrumentation that will monitor primary plant conditions, for example, pressurizer level and primary loop temperature. This instrumentation will be completely separate of any existing instrumentation and will have its own uninterruptible power supply. A written operational procedure will be developed for this alternate shutdown system. We have reviewed the proposed alternate shutdown system and find it to be acceptable.

We have reviewed the licensee's fire hazards analysis and fire protection to be provided for the cable vault and tunnel areas and conclude that, with the modifications to be implemented, appropriate fire protection will be provided

which conforms to the provisions of Appendix A to Branch Technical Position APCSB 9.5-1 and is, therefore, acceptable.

B. Component Cooling Pump Area

The component cooling water pumps are located in the auxiliary building. There are a total of four component cooling pumps, with two pumps for each unit. A cross-connection is provided between units. All four pumps are in the same fire area. The licensee has demonstrated to our satisfaction that these pumps are not required for hot shutdown, but are required only for cold shutdown. Additionally, only one pump is needed per unit. Therefore, even assuming a loss of both component cooling pumps in a unit, cooling can be provided by using the existing cross-connection.

At our request, the licensee has agreed to provide the following fire protection provisions to protect against an exposure fire:

- (1) Area smoke detection system,
- (2) A sprinkler system that will provide coverage on the pumps and extend at least 15 feet beyond each pump and a similar area on the floor level above the pumps, and
- (3) Hose stations for manual fire fighting.

We have reviewed the component cooling pump area from a fire hazards analysis viewpoint and find the licensee's fire protection provisions to be in accordance with Appendix A to Branch Technical Position APCSB 9.5-1 and are, therefore, acceptable.

C. Fire Protection Inside Containment

One major fire hazard inside containment is associated with a reactor coolant pump because of the potential for oil spraying under pressure. Each reactor coolant pump is located in its own cubicle. To prevent an oil fire, the licensee has agreed to provide, at our request, an engineered oil containment and collection system in each reactor coolant pump cubicle.

Adjacent to the cable penetration area, significant quantities of cable exist, composed of redundant instrumentation and control systems. The licensee has agreed to do the following with respect to fire protection:

- (1) Install redundant instrumentation and control cables within conduits which will be independently routed away from the congested cable area to mitigate the effects of a single fire in the congested area.

- (2) Install fire stops (at 15-foot intervals) in vertical cable trays located in the cable penetration area; vertical trays located in containment but not in the penetration area will be fire-stopped every 30 feet.
- (3) Install fire detectors in the penetration area.
- (4) Install additional hose stations just outside the containment.

As a result of our review of the licensee's fire hazards analysis for the areas inside containment, we find that, with the additional protection to be provided for the reactor coolant pumps and the instrumentation and control cable trays/conduits, as stated above, the fire protection provisions meet the guidelines of Appendix A to Branch Technical Position APCSB 9.5-1 and are, therefore, acceptable.

D. Other Plant Areas

We have also reviewed the licensee's fire hazards analysis for other plant areas. For those areas, the licensee has committed to install additional detectors, portable extinguishers, hose stations, and some additional emergency lighting as identified in Table 1. Based on our review and as a result of those commitments, we find these other plant areas to be in accordance with the guidelines of Appendix A to Branch Technical Position APCSB 9.5-1 and are, therefore, acceptable.

V. ADMINISTRATIVE CONTROLS

The administrative controls for fire protection consist of the fire protection organization, the fire brigade training, the controls over combustibles and ignition sources, the prefire plans, and procedures for fighting fires.

In response to the guidelines in Appendix A to Branch Technical Position APCS 9.5-1, the licensee described those procedures and controls that were already in existence and discussed the proposed additional items which will be included to bring the administrative controls into conformance with Appendix A guidelines.

The licensee has also agreed to review its administrative controls and training procedures, where necessary, to follow supplemental staff guidelines contained in "Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls and Quality Assurance," dated June 14, 1977.

The plant fire brigade, consisting of at least five members, is organized to provide immediate response to fires that may occur at the site. Spare air cylinders and recharge capability are provided to satisfy the guidelines of Appendix A to Branch Technical Position APCS 9.5-1. The plant fire brigade will also be equipped with pressure-demand breathing apparatus, portable communications equipment, portable lanterns, and other necessary fire fighting equipment.

The fire fighting brigade will participate in periodic drills. Liaison between the plant fire brigade and the local fire departments has been established. The local fire departments have been on plant tours and have also been involved in training sessions with the plant fire brigade.

We conclude that the fire brigade equipment and training conform to the recommendations of NFPA standards, Appendix A to Branch Technical Position APCS 9.5-1, and supplemental staff guidelines and are, therefore, acceptable.

VI. TECHNICAL SPECIFICATIONS

The technical specifications for the fire protection systems for North Anna Power Station, Unit 1, were issued on June 23, 1978. The same standard fire protection technical specifications will also be issued for Unit 2 with the initial Unit 2 Plant Technical Specifications.

We have reviewed the technical specifications proposed by the licensee and find that they are consistent with our Standard Technical Specifications for fire protection, which were issued for Unit 1 on June 23, 1978, and are, therefore, acceptable.

VII. ENVIRONMENTAL CONSIDERATIONS

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we further conclude that the amendment involves an action which is insignificant from the standpoint of environmental impact and pursuant to 10 CFR Section 51.5(d)(4), that an environmental statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

VIII. CONCLUSIONS

We have reviewed the fire protection program and fire hazards analysis submitted by the licensee for North Anna Power Station, Units 1 and 2. The fire protection program was reviewed against the guidelines of Appendix A to Branch Technical Position APCS 9.5-1, supplemental staff guidelines dated June 14, 1977, and applicable NFPA standards. As part of the review, we visited the plant site to examine the relationship of safety-related components, systems and structures in specific plant areas to both combustible materials and to associated fire detection and suppression systems. The overall objective of our review of the fire protection program for the North Anna Power Station, Units 1 and 2, was to assure that, in the event of a fire at the facility, both units would maintain the ability to safely shut down, remain in a safe shutdown condition, and be able to minimize the release of radioactivity to the environment.

In response to our guidelines, the licensee has either made modifications to improve or will improve the fire resistance capability for fire doors, dampers, fire barriers, and barrier penetration seals. The licensee has also proposed to install additional sprinkler systems for areas such as the cable vault and tunnel areas, component cooling pump area, and various other areas. To assure that fires can be detected rapidly and that plant operators are informed promptly, additional detectors will be installed in various areas of the plant. In addition, the licensee has committed to establishing emergency shutdown procedures to bring either unit of the plant to a safe cooldown condition in the event of a damaging fire in the cable vault and tunnel areas, the main control room, or the emergency switchgear and relay room.

As a result of our review, we conclude that the control of combustibles in safety-related areas of the plant, the barriers between fire zones, the existing fire detection and suppression systems, the trained onsite fire brigade, and the capability to extinguish fires manually provide adequate protection from the adverse effects of a fire during the interim period prior to implementation of the modifications listed in Table 1. We further conclude, that, with the completion of the modifications listed in Table 1, the fire protection program for North Anna Power Station, Units 1 and 2, meets the guidelines of Appendix A to Branch Technical Position APCS 9.5-1 and conforms with Criterion 3 of the General Design Criteria, and is, therefore, acceptable.

On the basis of the considerations discussed in this report, we conclude that:
(1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered or a significant decrease in any safety margin, it does not involve a significant hazards consideration;

(2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public. Also, we reaffirm our conclusions as otherwise stated in our Safety Evaluation Report and its supplements.

For Unit 1 of the plant, we require that the modifications listed in Table 1 be completed prior to the end of its second refueling outage. For Unit 2, we require that the modifications listed in Table 1 be completed prior to the end of its first refueling outage. The licensee's target dates for completion, which are shown in Table 1, are compatible with the above requirements.

TABLE 1

FIRE PROTECTION SYSTEMS MODIFICATIONS SCHEDULE
NORTH ANNA POWER STATION, UNITS 1 AND 2
VIRGINIA ELECTRIC AND POWER COMPANY

Modification: Smoke Detection Systems Additions Target Date: November 1, 1980

<u>Fire Area No.</u>	<u>Location and Description</u>	
1	Reactor Containment	- Recirculation air system - Residual heat removal pump area - Cable penetration area
2	Control Room	- General area (above floor) - Return air duct
6	Emergency Switchgear and Instrument Room	- General area
8	Water Chiller and Air Conditioning Room	- General area
10	Fuel Oil Pumphouse Motor Control Center Room	- General area
11	Auxiliary Building	- Charging pump cubicles - Component cooling pump area - Resin and filter storage area exhaust duct - Exhaust duct of small cubicle - General area of each level
12	Service Water Pump House	- General area
13	Auxiliary Service Water Pump House	- General area
14	Auxiliary Feedwater Pump House	- General area (motor and turbine pump rooms)
15	Quench Spray Pump House	- Ventilation system exhaust duct - General area of lower elevation
16	Safeguards Area	- Ventilation system exhaust duct
17	Main Steam Valve House	- General area
18	Fuel Building	- General area
19A	Waste Disposal Building	- General area
19B	Boron Recovery Building	- General area
20	Decontamination Building	- General area
26	Fire Pump Room	- General area
32	Intake Structure Control House	- General area
38	Post-Accident Vaults	- General area

TABLE 1 (Continued)

FIRE PROTECTION SYSTEMS MODIFICATIONS SCHEDULE

Modification: Smoke Detection Systems Additions (Continued) Target Date: November 1, 1980

<u>Fire Area No.</u>	<u>Location and Description</u>
39	Auxiliary Power Supply Building - General area
41	Casing Cooling Pump House - General area

Modification: Sprinkler Systems Additions Target Date: Unit 1 - October 1, 1979
Unit 2 - November 1, 1980

<u>Fire Area No.</u>	<u>Location and Description</u>
3	Cable Vault and Tunnel (Target Date - July 1979) - Open head type for 40-foot ceiling area; closed head for remainder of vault and tunnel to the gas barrier
11	Auxiliary Building - Component cooling pumps area at elevations 244.5 feet and 259.5 feet

Modification: Fire Hose Standpipe Connections, Racks and Cabinets Target Date: October 1, 1979
Unit 2, Fire Area 1 - November 1, 1980

<u>Fire Area No.</u>	<u>Location and Description</u>
1	Reactor Containment - Add dry hose connection standpipes at elevations 291 feet and 262 feet - Place lengths of hose at each station
4	Cable Tray Spreading Room - Add hose rack with 100 feet of hose near door from Unit 1 to Unit 2
6	Emergency Switchgear and Instrument Room - Add hose rack with 100 feet of hose near door to cable vault (one in each unit)
8	Turbine Building - Increase to 100 feet the hose length of racks located at elevation 279 feet immediately outside the main control room and diesel generator rooms
11	Auxiliary Building - Add hose rack with 100 feet of hose at elevation 259 feet near Unit 2 cable tunnel door - Increase to 100 feet the hose length of racks at elevation 259 feet near Unit 1 cable tunnel - Increase to 100 feet the hose length of racks at elevation 274 feet

TABLE 1 (Continued)

FIRE PROTECTION SYSTEMS MODIFICATIONS SCHEDULE

Modification: Fire Hose Standpipe Connections, Racks and Cabinets (Continued) Target Date: October 1, 1979
Unit 2, Fire Area 1 - November 1, 1980

<u>Fire Area No.</u>	<u>Location and Description</u>
12	Service Water Pump House - Add fire hose cabinet near northeast door
18	Fuel Building - Relocate hose rack from elevation 272 feet to elevation 288 feet and increase hose length to 100 feet

Modification: Portable Extinguishers (see Response No. 26 for extinguishers code) Target Date: April 1, 1979

<u>Fire Area No.</u>	<u>Location and Description</u>
3	Cable Vault and Tunnel - Replace ET-C-3 with a type W extinguisher
3	Motor Control Center Room - Replace MCC-C-2 with a type D extinguisher
6	Emergency Switchgear Room - Add two type W extinguishers near ESW-C-2-3
6	Instrument Rack Room - Replace IR-C-2 with a type W extinguisher
12	Service Water Pump House - Add a type C extinguisher in proposed hose cabinet near northeast door
13	Auxiliary Service Water Pump House - Add a type C extinguisher near door
15	Quench Spray Pump House - Add a type D extinguisher near door
16	Safeguards Area - Replace SG-C-1 with a type D extinguisher
17	Main Steam Valve House - Add two type D extinguishers near doors

Modification: Defense-in-Depth Target Date: November 1, 1980

<u>Fire Area No.</u>	<u>Location and Description</u>
1	Reactor Containment - Add instruments to primary plant for loop temperature, pressurizer pressure and pressurizer level
11	Auxiliary Building - Add cross-connection of Unit 1 and Unit 2 charging pumps discharge
18	Fuel Building - Add new auxiliary instrument panel and power supply

TABLE 1 (Continued)

FIRE PROTECTION SYSTEMS MODIFICATIONS SCHEDULE

Modification: Fire Dampers/Doors Target Date: October 1, 1979

<u>Fire Area No.</u>	<u>Location and Description</u>	
2	Control Room	- Replace 1-1/2-hour damper with 3-hour damper in wall contiguous to turbine room
3	Cable Vault and Tunnel Motor Control Center Room	- Replace 1-1/2-hour rated damper with 3-hour rated damper
6	Emergency Switchgear and Instrument Room	- Provide 3-hour fire rated barrier for air-handling duct routed through chiller room
8	Turbine Building	- Replace door between water chiller room and air conditioning room with 3-hour fire rated door

Modification: Miscellaneous Target Date: Unit 1 - October 1, 1979
Unit 2 - November 1, 1980

<u>Fire Area No.</u>	<u>Location and Description</u>	
1	Reactor Containment	- Add oil leak collection system for reactor coolant pump motors - Add heat detection system in electrical penetration area - Add fire stops for vertical cable tray risers
2	Control Room	- Additional electrical separation between main control board circuits and auxiliary shutdown panel via 43X contacts
7	Battery Rooms	- Add loss of ventilation flow alarm
11	Auxiliary Building	- Add 4-inch dike around ladder opening to charging pump cubicles

Modification: Emergency Lighting Target Date: October 1, 1979

<u>Fire Area No.</u>	<u>Location and Description</u>	
2	Control Room	- Add 8-hour battery packs
3	Cable Vault and Tunnel and Motor Control Center Room	- Add 2-hour battery packs for egress
6	Emergency Switchgear and Instrument Room	- Add 8-hour battery packs for auxiliary shutdown panel and 8-hour battery packs for egress

TABLE 1 (Continued)

FIRE PROTECTION SYSTEMS MODIFICATIONS SCHEDULE

Modification: Emergency Lighting
(Continued)

Target Date: October 1, 1979

<u>Fire Area No.</u>	<u>Location and Description</u>	
6	Emergency Diesel Generator Cubicles	- Add 2-hour battery packs for egress
11	Auxiliary Building	- Add 2-hour battery packs for egress
15	Quench Spray Pump House	- Add 2-hour battery packs for egress
16	Safeguards Area	- Add 2-hour battery packs for egress
17	Main Steam Valve House	- Add 2-hour battery packs for egress
18	Fuel Building	- Add 8-hour battery packs for proposed auxiliary instrument panel and 8-hour battery packs for egress and access routes to the panel

Notes

1. Target dates are projected dates for completion of the modification; however, all modifications will be completed by second refueling.
2. Refer to Fire Protection Systems Review and Supplement Nos. 1, 2 and 3 (dated April 1, 1977, December 15, 1977, January 2, 1978 and October 1, 1978, respectively) for further details.